444 21st Street South · La Crosse, Wisconsin · 54601

January 19, 2022

David Rozeboom
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
Eau Claire Regional Office
1300 W. Clairemont Ave.
Eau Claire, WI 54701

RE: Site Investigation Status Update
La Crosse Airport PFAS Investigation
Fisherman Rd, French Island, La Crosse, WI
WDNR BRRTS Activity # 02-32-587347

Dear Mr. Rozeboom:

The OS Group, LLC, (OSG) herein provides a site investigation status update for the La Crosse Airport PFAS Investigation site. This status update serves to inform the City of La Crosse (the City) and Wisconsin Department of Natural Resources (WDNR) about the findings of additional soil, sediment, groundwater and surface water sampling performed in 2021.

1.0 Background and Discussion

The La Crosse Municipal Wells 23 and 24 site is located at the La Crosse Regional Airport (LSE or the airport) on French Island in the Mississippi/Black River complex, in La Crosse County, WI. See Figure 1: Site Location Map and Figure 2: Site Layout Map. Please refer to the April 7, 2021 Interim Site Investigation Report and August 13, 2021 Workplan and Schedule for Additional Site Investigation for the results of prior investigation activities.

2.0 Recent Activities

The following additional site investigation activities have been conducted at the La Crosse Airport PFAS Investigation site since the August 13, 2021 Workplan and Schedule for Additional Site Investigation:

1. Surface water and sediment sampling on the Black River
2. Construction of three (3) water-table monitoring wells and two (2) piezometers
3. Development of the water-table monitoring wells and piezometers
4. Sampling of the water-table monitoring wells and piezometers
5. Surveying elevations and horizontal locations of the water-table monitoring wells and piezometers
6. Disposal of investigative waste
7. Development of potentiometric surface and PFAS isoconcentration maps
8. Preparation of this Status Update

2.1 Equipment and Supplies Blanks

Pre-fieldwork blank samples were prepared from supplies and equipment and analyzed for PFAS for the following materials: nitrile gloves (2 manufacturers), zipper-lock baggies, drilling decontamination water, PVC screen, PVC casing, and Proactive® submersible pump. During drilling, a drilling auger blank was collected after decontamination activities. Field blank samples were also collected during drilling and monitoring well sampling. All supply, equipment, and field blanks were prepared using PFAS-free water provided by Pace Analytical Services.

2.2 Surface Water Sampling

On September 2, 2021, OSG collected six (6) surface water samples and one (1) duplicate surface water sample from the Black River, which flows southerly along the east side of the site and downgradient from the PFAS source areas. One sample, representing upstream background conditions, was collected upstream from Wells 23 & 24 just below the spillway. Two (2) samples were collected near the western shoreline of the Black River down-gradient of the former burn pits. The remaining three (3) samples were collected south of the airport; one (1) near the I-90 bridge, one (1) in the western backwaters of the Black River south of I-90, and one (1) in the main channel of the Black River south of I-90. Samples were collected from the surface of the river by lowering a sample bottle into the river to a depth of approximately three (3) to six (6) inches either a) by reaching approximately two (2) feet upstream of the boat's bow, or b) by walking approximately 4 to 7 feet from the shoreline. Samples were preserved on ice and submitted to a laboratory for PFAS analysis via EPA Method 537M (WI 36 Compounds). Surface water sampling locations are depicted in Figure 3: Surface Water and Sediment Sampling Locations.

2.3 Sediment Sampling

On September 2, 2021, five (5) sediment samples were collected from the Black River, at the locations depicted in Figure 3. The sediment samples were collected at the same locations of the four (4) surface water samples located north of the I-90 bridge, and one sample was collected near the south end of airport beach, an unofficial beach. Mid-stream samples were collected via bottom grab dredge sampler. Shallow, near-shore samples were collected by gathering a sample with a spade. Sediment samples were homogenized and submitted to a certified laboratory for PFAS analysis by WI-36 method. Sampling equipment was decontaminated between samples with an Alconox® detergent solution and triple rinsed with distilled water. Decontamination wastes were containerized in a 250-gallon IBC tote, stored within the secure perimeter of the airport, and disposed with monitoring well development and purge water.

2.4 Monitoring Well Construction

On September 20 and 21, 2021, two (2) monitoring well/piezometer nests (MW-6/PZ-6 and MW-7/PZ-7) were installed at the site. Prior to installing the nests, a split-spoon sampler was advanced to sixty (60) feet below ground surface (bgs) by Geoprobe, push-rod technology. The top foot of soil was removed by spade to avoid carrying potential surface contamination to depth, and then soil samples were collected continuously by split-spoon from 1 foot bgs to 60 feet bgs. Soils were classified according to the Unified Soil Classification System. One (1) soil sample from the upper four feet of each Geoprobe was submitted for PFAS analysis by EPA Method 527M. Monitoring wells and piezometers were installed in boreholes blind drilled by hollow-stem auger. All soil cuttings and unused samples were containerized in 55-gallon drums stored on site within the secure perimeter for later off-site transportation and disposal. See Investigative Waste Management below. The piezometers were installed at depths of approximately 51 and 60 feet bgs. The mid-point of the 5-foot screens were placed approximately 30 feet below the water table. The monitoring wells were installed at depths of approximately 27 and 36 feet bgs with 15-foot screens spanning the water table.

On October 28, 2021, one (1) additional monitoring well (MW-5) was installed at the site. The procedure for installation of this well was similar to the wells MW-6 and MW-7. Push-rod split-spoon sampling was completed first followed by the hollow-stem auger drilling. monitoring well MW-5 was installed at a depth of approximately 39 feet bgs with a 15-foot screen spanning the water table. The locations of all monitoring wells and piezometers at the site are depicted in Figure 2.

Equipment decontamination water was containerized in a 250-gallon tote and treated with a granular activated carbon prior to disposal to the La Crosse sanitary sewer via a drain in the Airport Maintenance shop.

2.5 Monitoring Well Development

On October 6 (MW-6/PZ-6 and MW-7/PZ-7) and October 29 (MW-5), 2021, the five (5) newly installed wells were developed in accordance with Wisconsin Administrative Code, NR 141 requirements. Development water was containerized in a 250-gallon tote and treated with granular activated carbon prior to disposal to the La Crosse sanitary sewer via a drain in the Airport Maintenance shop. For development and sampling purposes, each well was configured with a dedicated submersible pump and HDPE tubing.

2.6 Monitoring Well Sampling

Between November 3 and November 8, 2021, all sixteen (16) of the monitoring wells/piezometers were sampled at the site. Prior to sampling, water level elevations were collected from each well for the development of the groundwater flow direction. All purge water was containerized in a 250-gallon tote and treated with a granular activated carbon treatment system prior to disposal to the La Crosse sanitary sewer via a drain in the Airport Maintenance shop. All groundwater samples were submitted to a certified laboratory for PFAS analysis by WI-36 method.

2.7 Surveying

On November 23, 2021, the five (5) recently installed wells were surveyed by Coulee Region Land Surveyors for horizontal locations and top-of-casing elevations by GPS.

2.8 Investigation Waste Management

All investigative wastes for this and prior phases of the investigation have been properly disposed.

2.8.1 Water Wastes

As described above, all decontamination water was containerized in a 250-gallon tote and treated with a granular activated carbon (GAC) prior to disposal to the La Crosse sanitary sewer via a drain in the Airport Maintenance shop. Pre-filter, mid-filter, and post-filter samples were collected from the granular activated carbon system during treatment of purge, development and decontamination water. Samples were submitted to a certified laboratory for PFAS analysis by WI-36 method.

2.8.2 Soil Wastes

On November 18, 2021, eleven (11) 55-gallon drums of soil cuttings were shipped via Covanta Environmental Solutions for disposal as non-RCRA special waste at the Chemical Waste

Management hazardous waste landfill in Emelle, Alabama. A copy of the waste manifest is provided in Attachment A.

3.0 Findings

As in the prior investigative boreholes, soils observed at the site were generally well-sorted medium-grained sand to the deepest extent of drilling (approximately 60 feet bgs). Some brown and black silt layers near the surface (upper one to three feet) were observed at various boreholes across the site. Groundwater was observed across the site at depths ranging from approximately 10 to 35 feet bgs.

3.1 Equipment and Supplies Blanks

No PFAS compounds were detected in the pre-fieldwork supply blank samples except for the samples collected from two brands of nitrile gloves. 44 ng/L of PFOS was detected in the blank sample prepared from nitrile gloves manufactured by Shihiazhuang Wally Plastic Co, Ltd. 7.7 ng/L 6:2 FTS and 47 ng/L PFOS were detected in the blank sample prepared from Venom nitrile gloves. It should be noted that the laboratory sample for the Venom nitrile glove brand was reanalyzed by the laboratory outside of the holding time due to a failure for the 6:2 FTS surrogate when there was a detection of 6:2 FTS in the sample. The re-extract failed again for the 6:2 FTS surrogate; however, neither 6:2 FTS nor PFOS was detected in the sample during the second analysis. Table 1 summarizes the equipment and supply blank sample results. The nitrile gloves did not come into direct contact with samples, and OSG is of the opinion that the above detections had no significant effect on the findings of the investigation. The laboratory analytical reports for the equipment and supply blanks are provided in Attachments B. Auger blank and field blanks are included in the analytical reports provided in Attachments D and E.

3.2 Surface Water

Total PFAS concentrations ranging from 5.9 to 30.7 ng/L were detected in the six (6) surface water samples. The lowest concentration of PFAS was detected in sample SW-1, in which two compounds (PFBA and PFHpA) totaled 5.9 ng/L. The highest total PFAS concentrations (30.7 ng/L) were detected in sample SW-5, collected just north of the I-90 bridge on the west side of the Black River. A summary of the surface water PFAS laboratory analytical results is provided in Table 2. The surface water laboratory analytical reports are provided in Attachment C.

3.3 Sediments

Sediments at the site consisted of poorly sorted sand with shell fragments south of the spillway and dark brown fine sand with black organic silt along the shoreline downstream of the former burn pits. Along Airport Beach, the sediment was a well-sorted medium sand and just north of the I90 bridge it was a dark grey, well-sorted fine sand with some small shell fragments.

No PFAS compounds were detected in four (4) of the five (5) sediment samples collected and analyzed. A concentration of 0.46 ug/kg PFOS was detected in sample (SED #5), collected at the same location as surface water sample SW-5. A summary of the sediment laboratory analytical results is provided in Table 3. The sediment laboratory analytical reports are provided in Attachment C.

3.4 Soils

At each of the three monitoring well/piezometer locations, one soil sample was collected from the upper two feet of soil for PFAS WI-36 laboratory analysis. No PFAS compounds were detected in any of the three (3) samples. The soil laboratory analytical reports are provided in Attachment D.

3.5 Groundwater

3.5.1 Groundwater Flow

Potentiometric surface maps of the water table and piezometers for November 3, 2021 are provided in Figures 4 and 5, respectively. During the November 2021 groundwater sampling event, groundwater was observed at depths ranging from approximately ten (10) to thirty-five (35) feet bgs. Lake and river elevations depicted on the figures and used in the interpretation of groundwater elevations and flow are based on lake level and tailwater elevations at Mississippi River Lock and Dam 7 on November 3, 2021[1].

At the La Crosse Airport, the groundwater flow direction was generally toward the southeast at both the water table and approximately 30 feet below the water table. West of the airport around the dam, flow lines enter the aquifer upstream of the dam, bend around the east end of the dam – more tightly near the dam – and discharge to the Mississippi River downstream from the dam. A similar flow pattern exists around the dam northeast of the airport on the Black River side of French Island. An upward hydraulic gradient of approximately 0.002 ft/ft was observed at MW-104/PZ-104 nest, and a downward hydraulic gradient of approximately 0.001 ft/ft was observed at MW-6/PZ-6 and MW-7/PZ-7. The addition of monitoring wells MW-5, MW-6 and MW-7 and piezometers PZ-6 and PZ-7 to the monitoring network generally confirmed, with only minor refinements, the flow regime interpreted from the prior-year data. A summary of groundwater elevations for all monitoring wells is provided in Table 4.

3.5.2 Groundwater Laboratory Analytical Results

Groundwater samples were collected from eleven (11) monitoring wells and five (5) piezometers during the November 2021 sampling event. Observed PFAS concentrations were

[1] United States Army Corps of Engineers (USACE), Access to Water Resources Data - Corps Water Management System (CWMS) Data Dissemination tool. https://water.usace.army.mil/a2w/f?p=100:1:0: Accessed 11/3/21.

similar to the previous sampling event. A summary of all groundwater laboratory analytical results is provided in Table 5. The groundwater laboratory analytical reports are provided in Attachment E.

The highest PFAS/PFOS (individual and combined) and PFHxS detections were detected near the AFFF test area (MW-3), former burn pits (MW-101), and jet crash area (MW-1). Of the eleven (11) water table monitoring wells sampled, three (3) had no detections above proposed standards including MW-102 located up-gradient of the former test burn pits and MW-6 and MW-7, the newly installed monitoring wells. 88 ng/L of PFOA and PFOS combined was detected in MW-5, located west of the airport. PFOA / PFOS / PFOSA (combined) and PFHxS isoconcentration maps for the water table monitoring wells are provided in Figures 6 and 7, respectively.

Of the five (5) piezometers sampled, PZ-104, located down-gradient of the former test burn pits, had the highest PFAS concentrations, with a combined PFAS/PFOS detection of 887 ng/L. The two side-gradient piezometers at this area, PZ-105 and PZ-106, were both well below proposed standards. A combined PFOA/PFOS concentration of 0.89 and “no detection” were detected in PZ-105 and PZ-106, respectively. Combined PFOA/PFOS concentrations of 66 and 44 ng/L were detected in PZ-6 and PZ-7, respectively, the two new piezometers. PFOA / PFOS / PFOSA (combined) and PFHxS isoconcentration maps for the piezometers are provided in Figures 8 and 9, respectively.

As stated previously, groundwater-purge and other investigative-waste waters were treated via GAC filter prior to sanitary sewer disposal. Analysis of pre- and post-filter samples demonstrated that the GAC treatment reduced total PFAS concentrations by greater than 99.9% to 4.9 ng/L. This indicates the GAC filter was effective in treating the investigative-waste water prior to disposal via sanitary sewer. A summary of the GAC filter results is included in Table 1 – Equipment and Supply Blank Sample Results. The laboratory analytical reports for the GAC filter samples are provided in Attachment E.

4.0 Standard of Care

In performing this scope of work, OSG has exercised that degree of care and skill ordinarily exercised under similar circumstances, such as scope, schedule and budget, by firms in the environmental consulting profession performing substantially similar services and practicing at the same time in the same or similar locality.

5.0 Closing

If you have any question, please do not hesitate to call me.

Sincerely,

John C. Storlie, PG
The OS Group, LLC
444 21st Street South
La Crosse, Wisconsin 54601
608.433.9389 – Direct
E-Mail Address: John.Storlie@theOSgrp.com

Figures:

Figure 1: Site Location Map
Figure 2: Site Layout
Figure 3: Surface Water and Sediment Sampling Locations
Figure 4: Water Table Potentiometric Surface Map – November 3, 2021
Figure 5: Potentiometric Surface Map – November 3, 2021
Figure 6: Groundwater PFOA / PFOS / PFOSA (combined) Isoconcentrations – November 2021
Figure 7: Groundwater PFHxS Isoconcentrations – November 2021
Figure 8: Piezometer PFOA / PFOS / PFOSA Isoconcentrations – November 2021
Figure 9: Piezometer PFHxS Isoconcentrations – November 2021

Tables:

Table 1: Equipment & Supply Blanks Sample Results
Table 2: Surface Water PFAS Laboratory Analytical Results
Table 3: Black River Sediment PFAS Laboratory Analytical Results
Table 4: Groundwater Elevations
Table 5: Groundwater PFAS Laboratory Analytical Results

Attachments:

Attachment A: Soil Drums Waste Manifest
Attachment B: Equipment and Supply Blank Laboratory Analytical Results
Attachment C: Surface Water and Sediment Laboratory Analytical Results
Attachment D: Soil Laboratory Analytical Results
Attachment E: Groundwater Laboratory Analytical Results

Figure 1: Site Location Map
BRRTS # 02-32-587347 - La Crosse Airport PFAS Investigation

Legend

- Open Site
- Open Site Boundary
- Closed Site
- Continuing Obligations Apply
- Facility-wide Site

La Crosse Airport PFAS Investigation

La Crosse Municipal Wells 23 & 24 Site (Solvents)

KWIK TRIP #822
ZIEGLER INC PROPERTY
MATHY CONST CO
NELSONS SPUR STATION
FLOWERS BY GUENTHERS
EXCALIBUR LAUNDRIES
RAU OIL ONALASKA
A-SPEC AUTO & ACS PROPERTIES
KWIK TRIP #767
LA CROSSE MUNICIPAL WELLS 23 & 24
BOB JOHNSON OIL AVIS CAR RENTAL
HEILEMAN AIR SERVICES
NATIONAL AUTO WRECKING CO
DOMKE CONTRACTORS
TORRANCE CASTING INC
SWANSON CONST CO
ORC INDUSTRIES
MARTIN TRUCKING FMR
DESMONDS MENS WEAR
KWIK TRIP #762
STAVLO RENTAL
ISLAND PARK BAPTIST CHURCH
RUAN LEASING CO
BONSAC TRUCKING

0.8 0 0.38 0.8 Miles

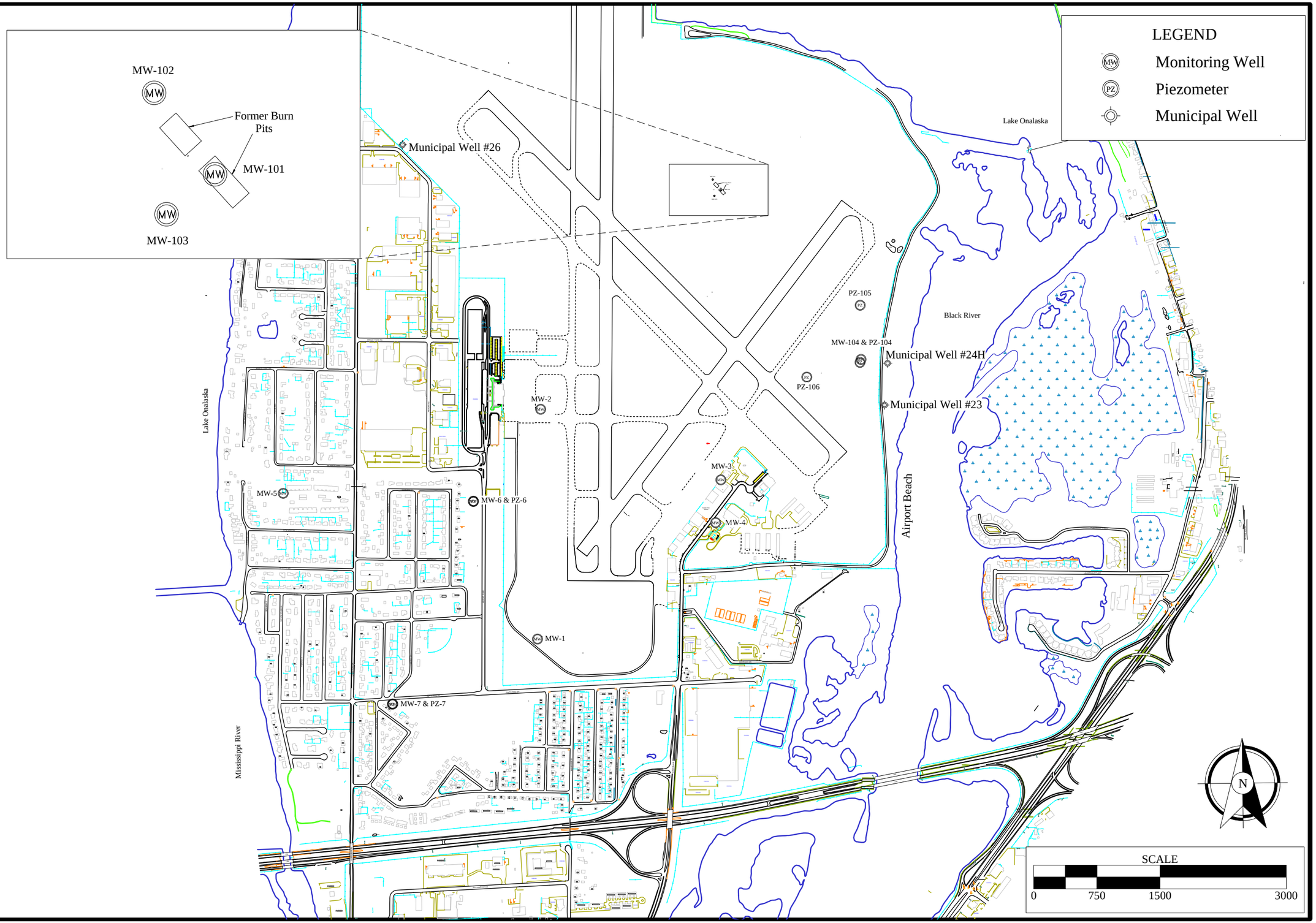
NAD_1983_HARN_Wisconsin_TM

1: 23,760

Note: Not all sites are mapped.

Notes

Source:
Wisconsin DNR RR Sites map, https://drmaps.wi.gov/H5/?viewer=rrsites
accessed 04/05/2021



The OS Group LLC

Site Plan View
La Crosse Airport PFAS Investigation
La Crosse, WI

Project No:	1901155
Drawing No:	
Scale:	
Drawn By:	SJO
Date Drawn:	01/10/22
Checked By:	JCS
Last Modified:	01/10/22
Sheet:	1 of 1
Fig:	2


Figure 3
Surface Water and Sediment Sampling Locations
September 2021
Bainbridge St
Dawson Ave
SW 6
SW 7
Rose St
Gillette St
35
90
SW/Sed 5
Airport Beach
Sed 4
Well 23
SW/Sed 3
Well 24
SW/Sed 2
Black River
SW/Sed - 1
I-90 ALT
Main St
Larson St
Enterprise Ave
Legend
Airport Beach
Municipal Well
Surface Water / Sedmient Sample
Google Earth
1 mi
N

LEGEND

- MW — Monitoring Well
- (633) — Water elevation in feet above MSL
- (633) — Watertable Elevation Contour
- Groundwater Flow Direction

Lake Onalaska

Municipal Well #26

Municipal Well #24H

Municipal Well #23

Black River

Airport Beach

Lake Onalaska

Mississippi River

(638.00)

(637.00)

(636.00)

(635.00)

(634.00)

(633.00)

(632.00)

(638.43)

(631.80)

MW-1 (633.25)

MW-2 (635.10)

MW-3 (633.28)

MW-4 (633.05)

MW-5 (635.22)

MW-6 (634.69)

MW-7 (632.99)

MW-104 (632.90)

MW-102 (636.13)

Former Burn Pits

MW-101 (635.99)

MW-103 (635.94)

SCALE

0 750 1500 3000

The OS Group LLC

Water Table Potentiometric Surface Map - November 3, 2021
La Crosse Airport PFAS Investigation
La Crosse, WI

Project No	1901155
Drawing No	
Scale	
Drawn By	SJO
Date Drawn	01/10/22
Checked By	JCS
Last Modified	01/10/22
Sheet	1 of 1
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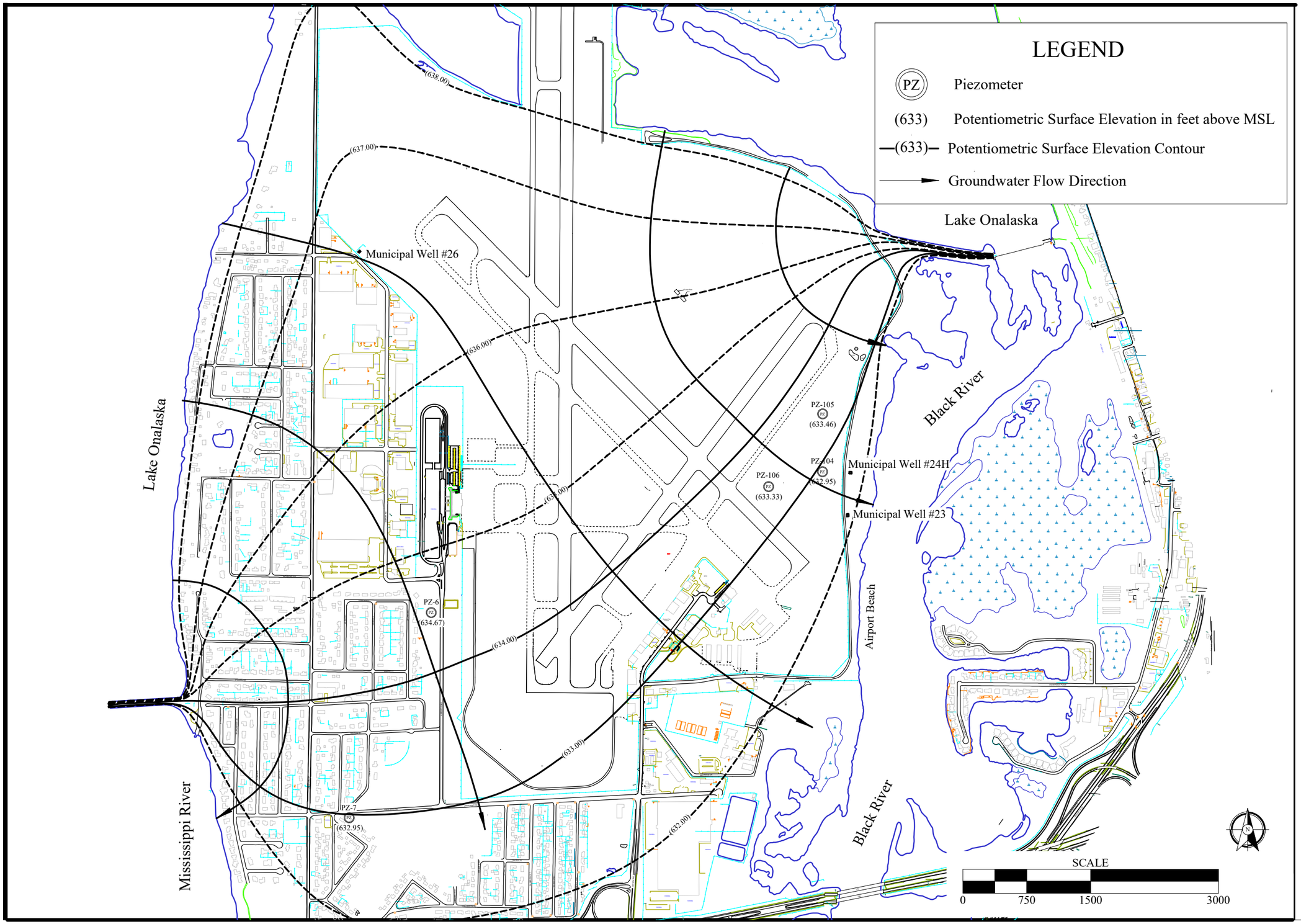

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Piezometer Potentiometric Surface Map - November 3, 2021
La Crosse Airport PFAS Investigation
La Crosse, WI

Project No	1901155
Drawing No	
Scale	
Drawn By	SJO
Date Drawn	01/10/22
Checked By	JCS
Last Modified	01/10/22

Sheet 1 of 1 | Fig. 5

LEGEND

- Monitoring Well
- (·) Groundwater PFAS/PFOS/PFOSA (Combined) Concentration (ng/L)
- 20 Groundwater PFAS/PFOS/PFOSA (Combined) Isoconcentration Contour
- (633) Watertable Elevation Contour

Lake Onalaska

Municipal Well #26

Municipal Well #24H

Municipal Well #23

Black River

Airport Beach

Mississippi River

MW-1 (5,508)

MW-2 (510)

MW-3 (23,700)

MW-4 (3,811)

MW-5 (88)

MW-6 (1.2)

MW-7 (3.9)

MW-101 (11,463)

MW-102 (4.7)

MW-103 (486)

MW-104 (3.0)

Former Burn Pits

(638.00)

(637.00)

(636.00)

(635.00)

(634.00)

(633.00)

(632.00)

20

200

1000

5000

SCALE

0 750 1500 3000

The OS Group LLC

Groundwater PFOA / PFOS / PFOSA (Combined) Isoconcentrations - November 2021
La Crosse Airport PFAS Investigation
La Crosse, WI

Project No:	1901155
Drawing No:	
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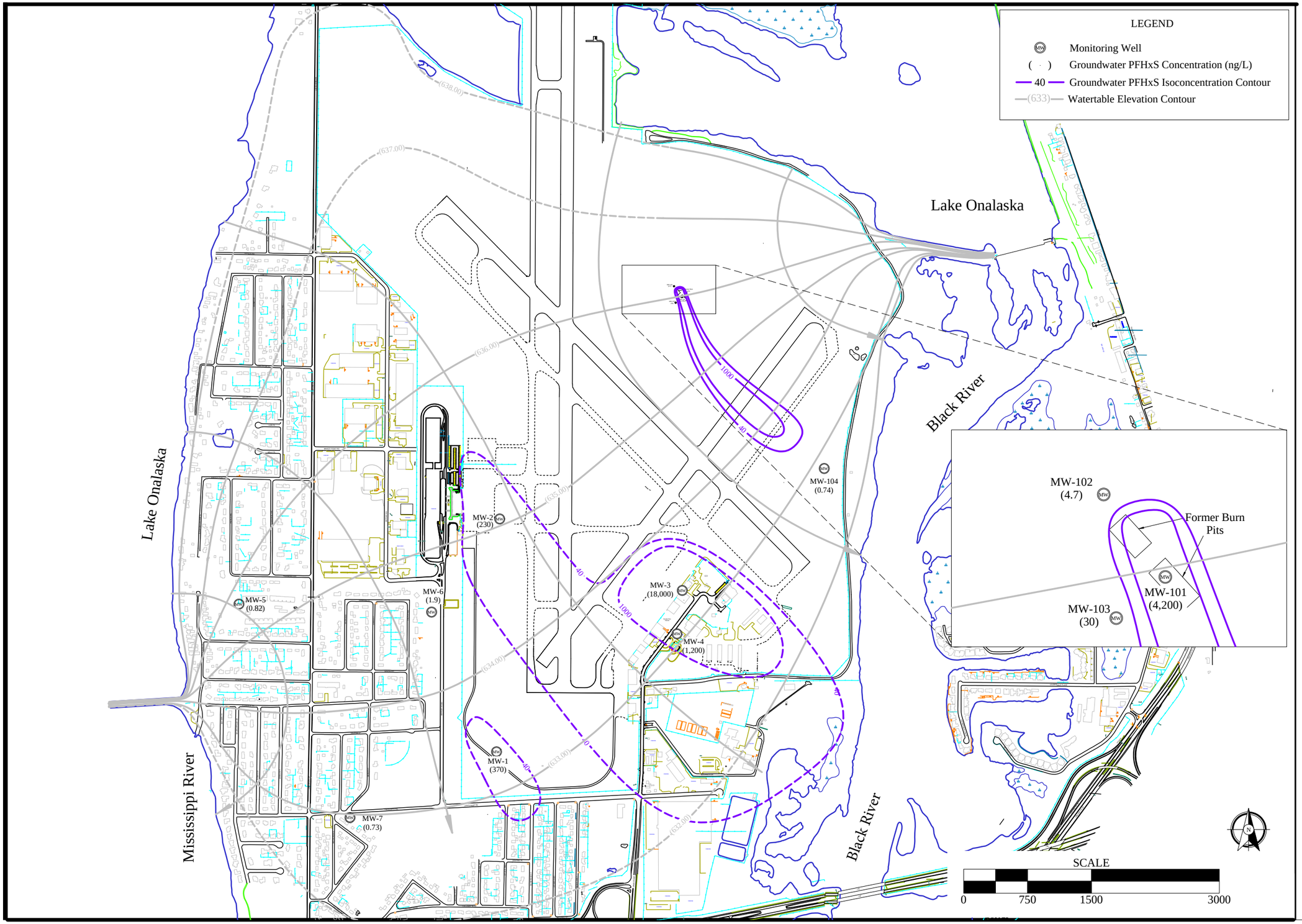

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Groundwater PFHxS Isoconcentrations - November 2021
La Crosse Airport PFAS Investigation
La Crosse, WI

Project No:	1901155
Drawing No:	
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Date Drawn:	01/10/22
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Last Modified:	01/10/22
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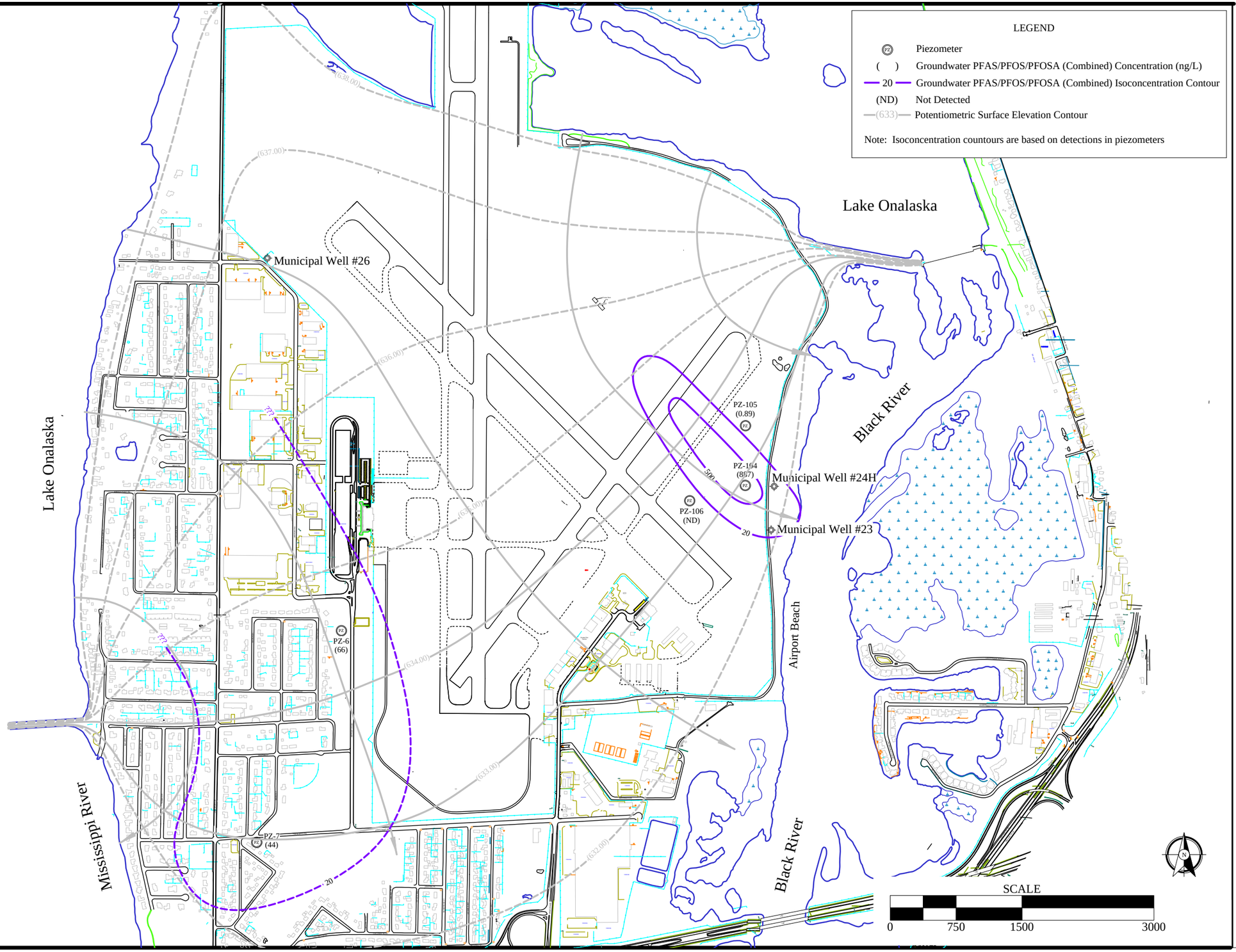
Fig:	7



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Piezometer PFOA / PFOS / PFOSA Isoconcentrations - November 2021

La Crosse Airport PFAS Investigation
La Crosse, WI

Project No:	1901155
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Date Drawn:	01/10/22
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Last Modified:	01/10/22
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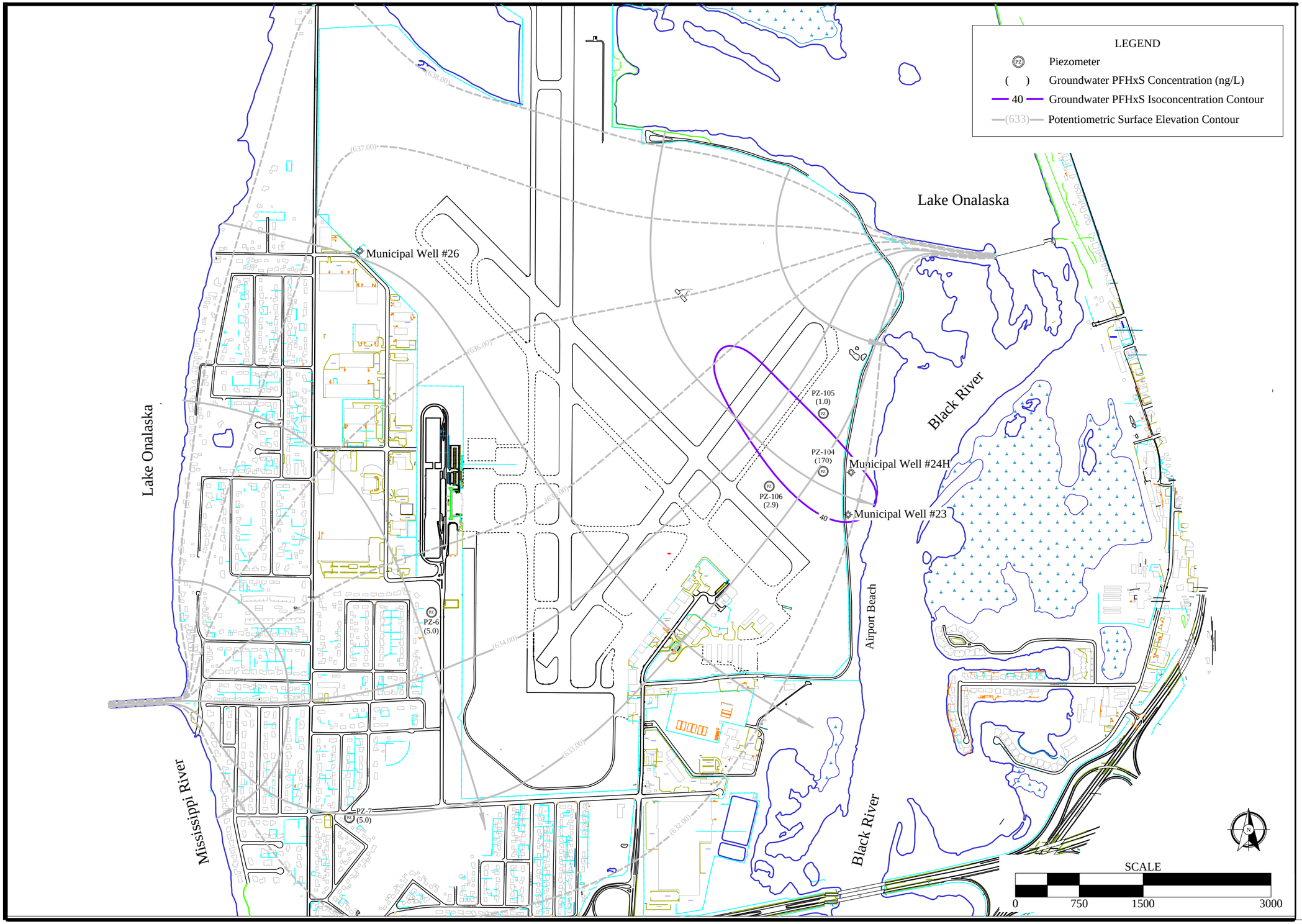

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Piezometer PFHxS Isoconcentrations - November 2021
La Crosse Airport PFAS Investigation
La Crosse, WI

Project No:	1901155
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Date Drawn:	01/10/22
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Sheet:	1 of 1
Fig:	9

Table 1
Equipment & Supply Blanks Sample Results
La Crosse Airport PFAS Investigation
La Crosse, WI

PFAS Compound	Drilling Decon Water	PVC Screen Blank	PVC Casing Blank	Baggie Blank	Shijia Glove Blank	Venom Glove Blank Lab Analy #1	Venom Glove Blank Lab Analy #2	Proactive Pump Blank	Auger Blank	Drilling Field Blank	GW Sampling Field Blank #1	GW Sampling Field Blank #2	GAC Pre-Filter	GAC Mid-Filter	GAC Post-Filter
	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	8/18/2021	9/21/2021	9/20/2021	11/5/2021	11/8/2021	11/5/2021	11/5/2021	11/5/2021
6:2 FTS	<1.7	<1.7	<1.8	<1.9	<2.3	7.7 J	<2.2	<2.1	<2.0	<2.3	<2.0	<1.9	2900	<1.8	<1.7
PFBS	<0.36	<0.36	<0.38	<0.39	<0.47	<0.47	<0.46	<0.44	<0.41	<0.47	<0.41	<0.40	280	<0.38	<0.36
PFHpS	<0.43	<0.43	<0.45	<0.47	<0.56	<0.56	<0.55	<0.54	<0.50	<0.57	<0.49	<0.48	150	<0.46	<0.43
PFPeS	<0.51	<0.51	<0.54	<0.56	<0.67	<0.67	<0.66	<0.64	<0.59	<0.67	<0.59	<0.58	490	<0.54	<0.52
PFHxS	<0.48	<0.47	<0.50	<0.52	<0.62	<0.62	<0.61	<0.59	<0.55	<0.63	<0.55	<0.53	4600	<0.51	1.3 J
PFBA	<0.52	<0.52	<0.54	<0.57	<0.68	<0.68	<0.66	<0.64	<0.60	<0.68	<0.60	<0.58	200	<0.55	<0.52
PFHpA	<0.39	<0.38	<0.41	<0.43	<0.51	<0.50	<0.49	<0.48	<0.45	<0.51	<0.44	<0.43	210	<0.41	<0.39
PFHxA	<0.59	<0.59	<0.62	<0.65	<0.78	<0.77	<0.76	<0.74	<0.69	<0.78	<0.68	<0.67	500	<0.63	<0.60
PFNA	<0.40	<0.40	<0.42	<0.44	<0.52	<0.52	<0.51	<0.50	<0.46	<0.53	<0.46	<0.45	18	<0.42	<0.40
PFOA	<0.71	<0.71	<0.75	<0.79	<0.94	<0.93	<0.92	<0.89	<0.83	<0.94	<0.82	<0.80	440	<0.76	<0.72
PFPeA	<0.47	<0.47	<0.49	<0.52	<0.62	<0.61	<0.60	<0.58	<0.54	<0.62	<0.54	<0.53	590	<0.50	<0.47
PFOS	<1.7	<1.7	<1.8	<1.9	24	47	<2.2	<2.1	<2.0	<2.3	<2.0	<1.9	7100	<1.8	3.6

Notes: All results in ng/L

J - Estimated result < limit of quantitation and ≥ limit of edetection

The following compounds are not listed in the above table and were not detected in any samples:

9Cl-PF3ONS	GenX	MeFOSA	PFOSA	PFODA
11Cl-PF3OUdS	ADONA	MeFOSAA	PFDOS	PFTeDA
8:2 FTS	EtFOSA	MeFOSE	PFDA	PFTrDA
10:2 FTS	EtFOSAA	PFDS	PFDoA	PFTuDA
4:2 FTS	EtFOSE	PFNS	PFHxDA	

Table 2
Surface Water PFAS Laboratory Analytical Results
La Crosse Airport PFAS Investigation
La Crosse, WI

PFAS Compounds	CAS #	Sampling Location						
		SW-1 (9/2/21)	SW-2 (9/2/21)	SW-3 (9/2/21)	SW-5 (9/2/21)	SW-6 (9/2/21)	SW-7 (9/2/21)	DUP (SW-3) (9/2/21)
6:2 FTS	27619-97-2	<2.0	<1.9	<2.2	<2.0	<2.3	<1.8	<1.9 H
PFBS	375-73-5	<0.42	0.81 J	0.46 J	1.5 J	1.2 J	<0.37	0.56 HJ
PFOSA	754-91-6	<0.62	<0.57	<0.66	0.67 J	0.72 J	<0.55	<0.58 H
PFPeS	2706-91-4	<0.60	<0.55	<0.64	1.4 J	<0.67	<0.54	<0.56 H
PFHxS	355-46-4	<0.56	<0.51	<0.59	4.9	0.87 J	<0.50	<0.52 H
PFBA	375-22-4	5.3	5.6	5.5	8.2	7.1	6.0	6.2 H
PFHpA	375-85-9	0.60 J	0.66 J	0.50 J	1.2 J	0.58 J	0.64 J	0.58 HJ
PFHxA	307-24-4	<0.70	0.81 J	<0.74	2.0 J	0.91 J	<0.62	0.73 HJ
PFOA	335-67-1	<0.84	0.91 J	1.0 J	1.9 J	1.2 J	1.1 J	1.2 HJ
PFPeA	2706-90-3	<0.55	0.71 J	0.90 J	2.1 J	0.98 J	<0.49	0.81 HJ
PFOS	1763-23-1	<2.0	<1.9	<2.2	6.8	<2.3	<1.8	<1.9 H
Total Detections		5.9	9.5	8.36	30.67	13.56	7.74	10.08

Note: All results are in ng/L

Results are shown only for detected compounds

J - Estimated result is less than the limit of quantitation and greater or equal to the detection limit

H - Out of holding time

Table 3
Black River Sediment PFAS Laboratory Analytical Results
La Crosse Airport PFAS Investigation
La Crosse, WI

PFAS Compounds	CAS #	Sampling Location				
		SED #1 (9/2/21)	SED #2 (9/2/21)	SED #3 (9/2/21)	SED #4 (9/2/21)	SED #5 (9/2/21)
PFOS	1763-23-1	<0.43	<0.39	<0.41	<0.42	0.46 J

Notes: All results are in ug/kg
Results are shown only for compounds detected
J - Estimated result is less than the limit of quanititation and greater or equal to the detection limit

Table 4
Groundwater Elevations
La Crosse Airport PFAS Investigation
La Crosse, WI

Date	Miss R. Dam 7 https://water.usace.army.mil/a2w/f?p=100:1:0:#			MW-1 TOC Elevation= 650.43 TOS elevation = 639.18		MW-2 TOC Elevation= 646.18 TOS elevation = 642.30		MW-3 TOC Elevation= 654.20 TOS elevation = 640.57		MW-4 TOC Elevation= 654.35 TOS elevation = 640.86		MW-101 TOC Elevation= 648.28 TOS elevation = 644.24		MW-102 TOC Elevation= 647.39 TOS elevation = 643.33		MW-103 TOC Elevation= 647.06 TOS elevation = 643.11		MW-104 TOC Elevation= 656.64 TOS elevation = 640.61	
	L. Onalaska	Tailwater	Diff.	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation
9/23/2020*	NA	NA	NA	16.63	633.80	10.55	635.63	20.35	633.85	20.76	633.59	11.97	636.31	10.98	636.41	10.8	636.26	23.62	633.02
11/6/2020	638.5	NA	NA	17.17	633.26	11.10	635.08	20.75	633.45	21.17	633.18	12.22	636.06	11.19	636.20	11.02	636.04	23.55	633.09
3/21/2021	638.5	633.8	4.7	17.31	633.12	11.35	634.83	20.60	633.60	20.96	633.39	12.23	636.05	11.22	636.17	11.07	635.99	22.78	633.86
6/18/2021	638.6	630.9	7.7	16.85	633.58	10.75	635.43	20.68	633.52	21.00	633.35	12.14	636.14	11.12	636.27	10.97	636.09	23.74	632.90
11/3/2021	638.43	631.8	6.6	17.18	633.25	11.08	635.10	20.92	633.28	21.30	633.05	12.29	635.99	11.26	636.13	11.12	635.94	23.74	632.90

Date	PZ-104 TOC Elevation= 656.69 TOS elevation = 605.59		PZ-105 TOC Elevation= 652.00 TOS elevation = 605.45		PZ-106 TOC Elevation= 644.54 TOS elevation = 606.21		MW-5 TOC Elevation - 666.88 TOS Elevation = 632.56		MW-6 TOC Elevation - 653.91 TOS Elevation = 642.27		MW-7 TOC Elevation - 660.61 TOS Elevation = 640.06		PZ-6 TOC Elevation - 653.84 TOS Elevation = 608.40		PZ-7 TOC Elevation - 660.55 TOS Elevation = 606.11	
	DTW (feet)	Elevation	TW (feet	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation	DTW (feet)	Elevation
9/23/2020*	23.64	633.05	18.42	633.58	10.89	633.65	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/6/2020	23.56	633.13	18.36	633.64	11.04	633.50	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
3/21/2021	22.81	633.88	17.70	634.30	10.58	633.96	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/18/2021	23.75	632.94	18.55	633.45	11.12	633.42	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/3/2021	23.74	632.95	18.54	633.46	11.21	633.33	31.59	635.22	19.22	634.69	27.62	632.99	19.17	634.67	27.60	632.95

Notes:
TOC - Top of Casing
TOS - Top of Screen
DTW- Depth to water
* - Elevations collected prior to monitoring well development
NA - Not available
NI - Not installed

Table 5
Groundwater PFAS Laboratory Analytical Results
La Crosse Airport PFAS Investigation
La Crosse, WI

PFAS Compounds Detected	MW-1		MW-2		MW-3		MW-4		MW-5	MW-6	PZ-6	MW-7	PZ-7	MW-101		MW-102		MW-103		MW-104		PZ-104		PZ-105		PZ-106		**NR 140 Enforcement Standard (Proposed)**
	11/11/2020	11/5/2021	11/11/2020	11/3/2021	11/5/2020	11/5/2021	11/5/2020	11/5/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/6/2021	11/5/2021	11/6/2020	11/5/2021	11/6/2020	11/5/2021	11/5/2020	11/8/2021	11/5/2020	11/8/2021	11/6/2020	11/5/2021	11/6/2020	11/5/2021	
8:2 FTS	<1.8	<6.9	<9.4	<80	<38	<7.3	<2.0	23	<7.0	<7.8	<6.9	<6.9	<6.9	770	870	<2.0	<9.0	<1.7	<7.3	<1.8	<7.4	17	7.6	<1.8	<7.4	<1.8	<7.5	NE
6:2 FTS	<1.8	<6.9	29 J	460	790	14,000	29	320	<7.0	<7.8	<6.9	<6.9	<6.9	8.7	38	<1.8	<9.0	<1.8	<7.3	<1.8	<7.4	12	<6.9	<1.8	<7.4	<1.8	<7.5	NE
10:2 FTS	<1.8	<6.9	<9.4	<80	<38	<7.3	<2.0	<6.9	<7.0	<7.8	<6.9	<6.9	<6.9	<1.9	5.0 J	<2.0	<9.0	<1.7	<7.3	<1.8	<7.4	<1.7	<6.9	<1.8	<7.4	<1.8	<7.5	NE
4:2 FTS	<1.8	<6.9	<9.4	<80	<38	1.5 J	<2.0	<6.9	<7.0	<7.8	<6.9	<6.9	<6.9	<1.9	<9.1	<2.0	<9.0	<1.7	<7.3	<1.8	<7.4	<1.7	<6.9	<1.8	<7.4	<1.8	<7.5	NE
PFBS	93	15	4.8 J	18 J	1200 B	1000	59	44	7.0	3.5 J	6.4	1.5 J	2.5 J	32	52	<0.98	<9.0	3.2 J	1.6 J	<0.88	<3.7	7.0	2.8 J	0.96 J	<3.7	<0.88	0.74	450000
PFHpS	110	39	<4.7	<40	280	680	19	54	<3.5	<3.9	0.6 J	<3.4	<3.4	18	57	<0.98	<4.5	2.4 J	1.6 J	<0.88	<3.7	8.5	3.5	<0.91	<3.7	<0.88	<3.8	NE
PFNS	<0.91	<3.5	<4.7	<40	<19	<3.6	<1.0	<3.5	<3.5	<3.9	<3.5	<3.4	<3.4	4.5	5.2	<0.98	<4.5	<0.87	<3.6	<0.88	<3.7	3.1 J	<3.5	<0.91	<3.7	<0.88	<3.8	NE
PFOSA	<0.91	<3.5	<19	<40	<19	<3.6	<1.0	**0.58** J	<3.5	<3.9	<3.5	<3.4	<3.4	**2.8** J	**2.9** J	<0.98	<4.5	<0.87	<3.6	<0.88	<3.7	<0.86	<3.5	<0.91	<3.7	<0.88	<3.8	20
PFPeS	210	21	7.5 J	31 J	1200	1800	120	82	<3.5	<3.9	2.2 J	<3.4	1.1 J	57	100	<0.98	<4.5	1.3 J	0.69 J	<0.88	<3.7	12	3.4 J	<0.91	<3.7	<0.88	<3.8	NE
PFHxS	**2,100**	**370**	**180**	**230**	**7,400**	**18,000**	**550**	**1,200**	0.82 J	1.9 J	5.0	0.73 J	5.0	**1,100**	**4,200**	1.5 J	4.7	**77**	30	1.2 J	0.74 J	**490**	**170**	1.1 J	1.0 J	0.93 J	2.9	40
PFBA	27	3.7	57	50	690 B	580	44	53	3.2 J	11	110	1.7 J	64	63	87	1.7 J	1.0 J	8.1	7.3	1.4 J	0.61 J	38	9.6	7.1	5.4	5.5	4.4	10000
PFDA	<0.91	<3.5	<4.7	8.0 J	<19	0.5 J	<1.0	2.1 J	1.5 J	<3.9	<3.5	<3.4	<3.4	23	26	<0.98	<4.5	<0.87	<3.6	<0.88	<3.7	1.9 J	0.7 J	<0.91	<3.7	<0.88	<3.8	300
PFHpA	7.8	0.95 J	150	150	300	450	68	180	1.6 J	0.53 J	0.92 J	0.45 J	0.59 J	150	300	<0.98	0.69 J	4.0	3.0 J	<0.88	<3.7	52	9.1	<0.91	<3.7	<0.88	0.42	NE
PFHxA	110	6.9	82	140	1500	2000	140	210	0.94 J	0.97 J	4.2	<3.4	1.7 J	290	550	<0.98	<4.5	6.6	7.4	<0.88	<3.7	94	18	<0.91	<3.7	<0.88	<3.8	150000
PFNA	<0.91	<3.5	59	130	<19	13	11	31	2.1 J	<3.9	<3.5	<3.4	<3.4	80	84	<0.98	<4.5	7.9	2.8 J	<0.88	<3.7	17	3.7	<0.91	<3.7	<0.88	<3.8	30
PFOA	**31**	**7.7**	**1900**	**380**	**380** B	**1700**	**66**	**210**	**4.0**	1.2 J	**47**	1.5 J	**30**	**220**	**460**	<0.98	1.2 J	**6.5**	**6.1**	<0.88	<3.7	**40**	**7.1**	<0.91	0.89 J	<0.88	<3.8	20
PFPeA	25	1.5 J	92	140	2100	2000	98	150	0.98 J	1.2 J	7.1	<3.4	2.7 J	130	210	<0.98	<4.5	5.4	5.1	<0.88	<3.7	64	12	<0.91	<3.7	1.0 J	0.86	NE
PFUdA	<0.91	<3.5	<4.7	<40	<19	<3.6	<1.0	<3.5	<3.5	<3.9	<3.5	<3.4	<3.4	<0.93	0.74 J	<0.98	<4.5	<0.87	<3.6	<0.88	<3.7	<0.86	<3.5	<0.91	<3.7	<0.88	<3.8	3000
PFOS	**7100**	**5500**	**26**	**130**	**7200**	**22000**	**960**	**3600**	**84**	<3.9	**19**	2.4 J	**14**	**12,000**	**11,000**	3.0 J	3.5 J	**700**	**480**	4.4	3.0 J	**2,700**	**880**	1.9 J	<3.7	<0.88	<3.8	20
PFOA / PFOS (6 Combined)	**7,131**	5,508	**1,926**	**510**	**7,580**	**23,700**	**1,026**	**3,810.58**	**88**	1.2	**66**	3.9	**44**	**12,222.8**	**11,462.9**	3.0	4.7	**706.5**	**486.1**	4.4	3.0	**2,740**	**887.1**	1.9	0.89	ND	ND	20

Notes:

All results are in ng/L
J - Estimated result < limit of quantitation and ≥ limit of edetection
B - Detected in the method blank
NE - None established
Bold - indicates concentration exceeds either a proposed individual or combined standard
The following Compounds were not listed in the above table because they were not detected in any samples:

9Cl-PF3ONS	EtFOSAA	PFDS	PFTeDA
11Cl-PF3OUdS	EtFOSE	PFDOS	PFTrDA
GenX	MeFOSA	PFDoA	
ADONA	MeFOSAA	PFHxDA	
EtFOSA	MeFOSE	PFODA	

ATTACHMENT A
SOIL DRUMS WASTE MANIFEST

S0242163

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number CESQG	2. Page 1 of	3. Emergency Response Phone (800) 814-1204	4. Waste Tracking Number CES 177648

5. Generator's Name and Mailing Address
La Crosse Regional Airport
2850 Airport Dr.
La Crosse Wisconsin 54603 608-789-7464
Generator's Phone:

Generator's Site Address (if different than mailing address)
La Crosse Regional Airport
2850 Airport Dr.
La Crosse Wisconsin 54603

6. Transporter 1 Company Name: Covanta Environmental Solutions Carriers II, LLC — U.S. EPA ID Number: WIR000165399

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
Chemical Waste Management, Inc.
36964 AL Hwy 17
Emelle AL 35459 (205) 652-8037
Facility's Phone:
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-RCRA, Non-DOT Regulated Material	011	drums		
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

T406679AL Non hazardous PFAS Impacted Soil CWT; N/A PO#:

Trailer #
Emergency Response Guide
Site arrival time
Site departure time
www.covanta.com

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
		11	18	21

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
Ben		11	18	21
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name	Signature	Month	Day	Year

ATTACHMENT B

EQUIPMENT AND SUPPLY BLANK LABORATORY ANALYTICAL RESULTS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

September 21, 2021

Steve Osesek
The OS Group, LLC
N6746 McCurdy Road
Holmen, WI 54636

RE: Project: LACROSSE AIRPORT PFAS
Pace Project No.: 40231915

Dear Steve Osesek:

Enclosed are the analytical results for sample(s) received by the laboratory on August 19, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Christopher Hyska
christopher.hyska@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: John Storlie, The OS Group, LLC

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: LACROSSE AIRPORT PFAS
Pace Project No.: 40231915

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40231915001	**DECON WATER**	Water	08/18/21 08:00	08/19/21 09:55
40231915002	**PVC SCREEN BLANK**	Water	08/18/21 08:10	08/19/21 09:55
40231915003	**PVC CASING BLANK**	Water	08/18/21 08:05	08/19/21 09:55

(Please Print Clearly)	
Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	LaCrosse Airport PFAS
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Anthony Kapugi
Sampled By (Sign):	
PO #:	-
Regulatory Program:	WDNR

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page of

COC No. 402 3915

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:	23492
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
Sl = Sludge	WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) PRESERVATION (CODE)* Y/N	Pick Letter	Analyses Requested: WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
001	Decon Water	8/18	8:00AM	W	N	A	X			
002	PVC Screen Blank	8/18	8:10AM	W	N	A	X			
003	PVC Casing Blank	8/18	8:05AM	W	N	A	X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Fedex	8/19/21 0955	Anthony Kapugi	8/19/21 0955

PACE Project No. 402 3915

Receipt Temp = .5 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present

Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: OS Group Project # 40231915

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN						
001										2																						2.5 / 5 / 10
002										2																						**2.5 / 5 / 10**
003										2																						2.5 / 5 / 10
004																																**2.5 / 5 / 10**
005																																2.5 / 5 / 10
006																																**2.5 / 5 / 10**
007																																2.5 / 5 / 10
008																																**2.5 / 5 / 10**
009																																2.5 / 5 / 10
010																																**2.5 / 5 / 10**
011																																2.5 / 5 / 10
012																																**2.5 / 5 / 10**
013																																2.5 / 5 / 10
014																																**2.5 / 5 / 10**
015																																2.5 / 5 / 10
016																																**2.5 / 5 / 10**
017																																2.5 / 5 / 10
018																																**2.5 / 5 / 10**
019																																2.5 / 5 / 10
020																																**2.5 / 5 / 10**

3/19/21 AJV

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 26Mar2020
	Document No.: **ENV-FRM-GBAY-0014-Rev.00**	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO#: 40231915

40231915

Client Name: OS Group

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 2827 2024 4994

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR-107 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: .5 /Corr: .5

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 8/19/21 /Initials: AN

Labeled By Initials: AN

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. no pg # 8/19/21 AN
Chain of Custody Relinquished:	☐Yes ☒No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☐Yes ☒No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☐Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Christopher Hyska

Project Name: LACROSSE AIRPORT PFAS LACROSSE

Project Number: 40231915

Lot Number:**WH20029**

Date Completed:09/15/2021

09/15/2021 5:40 PM
Approved and released by:
Project Manager II: **Karen L. Coonan**

Case Narrative
Pace Analytical Services, LLC
Lot Number: WH20029

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Surrogate recoveries for the following samples were outside the upper control limit: WH20029-001, WH20029-002, WH20029-003. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

The Matrix Spike (MS) for sample WH20029-001 had the surrogate 6:2FTS recover above the acceptance limits. This reflects a high bias for compounds associated with this surrogate. There were no detections for these compounds in the MS; therefore, there is no impact on data quality and no corrective action is required.

Sample Summary

Pace Analytical Services, LLC

Lot Number: WH20029

Project Name: LACROSSE AIRPORT PFAS LACROSSE

Project Number: 40231915

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	DECON WATER	Aqueous	08/18/2021 0800	08/20/2021
002	PVC SCREEN BLANK	Aqueous	08/18/2021 0810	08/20/2021
003	PVC CASING BLANK	Aqueous	08/18/2021 0805	08/20/2021

(3 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: WH20029

Project Name: LACROSSE AIRPORT PFAS LACROSSE

Project Number: 40231915

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(0 detections)

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WH20029-001
Description: DECON WATER
Matrix: Aqueous
Date Sampled: 08/18/2021 0800
Project Name: LACROSSE AIRPORT PFAS
Date Received: 08/20/2021
Project Number: 40231915

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/10/2021 1643	JJG	09/09/2021 1722	14898

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.82	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.90	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.70	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.86	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		116	25-150
13C2_6:2FTS	N	179	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		93	25-150
13C2_PFHxDA		111	25-150
13C2_PFTeDA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WH20029-001
Description: DECON WATER
Matrix: Aqueous
Date Sampled: 08/18/2021 0800
Project Name: LACROSSE AIRPORT PFAS
Date Received: 08/20/2021
Project Number: 40231915

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		110	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		81	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		123	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		108	25-150
13C8_PFOA		115	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		125	10-150
13C9_PFNA		117	25-150
d-EtFOSA		91	10-150
d5-EtFOSAA		110	25-150
d9-EtFOSE		103	10-150
d-MeFOSA		101	10-150
d3-MeFOSAA		108	25-150
d7-MeFOSE		103	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WH20029-002
Description: PVC SCREEN BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 0810
Project Name: LACROSSE AIRPORT PFAS
Date Received: 08/20/2021
Project Number: 40231915

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/10/2021 1705	JJG	09/09/2021 1722	14898

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	Q	6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	Q	6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND	Q	6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	Q	6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	Q	6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND	Q	6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	Q	6.9	0.64	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND	Q	6.9	0.82	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND	Q	14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	Q	6.9	0.80	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND	Q	6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND	Q	3.4	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	Q	3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	Q	3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	Q	3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	Q	3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	Q	3.4	0.51	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND	Q	6.9	0.90	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	Q	3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND	Q	3.4	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	Q	3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	Q	3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND	Q	3.4	0.38	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND	Q	6.9	0.70	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND	Q	3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	Q	3.4	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND	Q	6.9	0.86	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND	Q	3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND	Q	3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	Q	3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	Q	3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	Q	3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	Q	3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	309	25-150
13C2_6:2FTS	N	539	25-150
13C2_8:2FTS	N	232	25-150
13C2_PFDoA	N	226	25-150
13C2_PFHxDA	N	239	25-150
13C2_PFTeDA	N	237	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WH20029-002
Description: PVC SCREEN BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 0810
Project Name: LACROSSE AIRPORT PFAS
Date Received: 08/20/2021
Project Number: 40231915

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS	N	262	25-150
13C3_PFHxS	N	291	25-150
13C3-HFPO-DA	N	283	25-150
13C4_PFBA	N	273	25-150
13C4_PFHpA	N	288	25-150
13C5_PFHxA	N	263	25-150
13C5_PFPeA	N	295	25-150
13C6_PFDA	N	254	25-150
13C7_PFUdA	N	270	25-150
13C8_PFOA	N	269	25-150
13C8_PFOS	N	257	25-150
13C8_PFOSA	N	279	10-150
13C9_PFNA	N	292	25-150
d-EtFOSA	N	170	10-150
d5-EtFOSAA	N	260	25-150
d9-EtFOSE	N	221	10-150
d-MeFOSA	N	200	10-150
d3-MeFOSAA	N	246	25-150
d7-MeFOSE	N	239	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WH20029-003
Description: PVC CASING BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 0805
Project Name: LACROSSE AIRPORT PFAS
Date Received: 08/20/2021
Project Number: 40231915

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/10/2021 1715	JJG	09/09/2021 1722	14898

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.2	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.2	0.86	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.2	0.95	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.2	0.74	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.2	0.91	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		117	25-150
13C2_6:2FTS	N	159	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		94	25-150
13C2_PFHxDA		109	25-150
13C2_PFTeDA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Client: Pace Analytical Services, LLC
Laboratory ID: WH20029-003
Description: PVC CASING BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 0805
Project Name: LACROSSE AIRPORT PFAS
Date Received: 08/20/2021
Project Number: 40231915

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		106	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		117	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		110	25-150
13C8_PFOA		108	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		119	10-150
13C9_PFNA		114	25-150
d-EtFOSA		83	10-150
d5-EtFOSAA		112	25-150
d9-EtFOSE		91	10-150
d-MeFOSA		87	10-150
d3-MeFOSAA		107	25-150
d7-MeFOSE		111	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ14898-001
Batch: 14898
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/09/2021 1722

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	09/10/2021 1311
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	09/10/2021 1311
8:2 FTS	ND		1	8.0	1.6	ng/L	09/10/2021 1311
6:2 FTS	ND		1	8.0	2.0	ng/L	09/10/2021 1311
10:2 FTS	ND		1	8.0	1.2	ng/L	09/10/2021 1311
4:2 FTS	ND		1	8.0	0.87	ng/L	09/10/2021 1311
GenX	ND		1	8.0	2.1	ng/L	09/10/2021 1311
ADONA	ND		1	8.0	0.48	ng/L	09/10/2021 1311
EtFOSA	ND		1	8.0	1.4	ng/L	09/10/2021 1311
EtFOSAA	ND		1	8.0	0.75	ng/L	09/10/2021 1311
EtFOSE	ND		1	8.0	0.95	ng/L	09/10/2021 1311
MeFOSA	ND		1	16	1.3	ng/L	09/10/2021 1311
MeFOSAA	ND		1	8.0	0.93	ng/L	09/10/2021 1311
MeFOSE	ND		1	8.0	1.3	ng/L	09/10/2021 1311
PFBS	ND		1	4.0	0.41	ng/L	09/10/2021 1311
PFDS	ND		1	4.0	0.78	ng/L	09/10/2021 1311
PFHpS	ND		1	4.0	0.50	ng/L	09/10/2021 1311
PFNS	ND		1	4.0	0.71	ng/L	09/10/2021 1311
PFOSA	ND		1	4.0	0.61	ng/L	09/10/2021 1311
PFPeS	ND		1	4.0	0.59	ng/L	09/10/2021 1311
PFDOS	ND		1	8.0	1.0	ng/L	09/10/2021 1311
PFHxS	ND		1	4.0	0.55	ng/L	09/10/2021 1311
PFBA	ND		1	4.0	0.60	ng/L	09/10/2021 1311
PFDA	ND		1	4.0	0.52	ng/L	09/10/2021 1311
PFDoA	ND		1	4.0	0.47	ng/L	09/10/2021 1311
PFHpA	ND		1	4.0	0.45	ng/L	09/10/2021 1311
PFHxDA	ND		1	8.0	0.82	ng/L	09/10/2021 1311
PFHxA	ND		1	4.0	0.69	ng/L	09/10/2021 1311
PFNA	ND		1	4.0	0.46	ng/L	09/10/2021 1311
PFODA	ND		1	8.0	1.0	ng/L	09/10/2021 1311
PFOA	ND		1	4.0	0.83	ng/L	09/10/2021 1311
PFPeA	ND		1	4.0	0.54	ng/L	09/10/2021 1311
PFTeDA	ND		1	4.0	0.60	ng/L	09/10/2021 1311
PFTrDA	ND		1	4.0	0.53	ng/L	09/10/2021 1311
PFUdA	ND		1	4.0	0.63	ng/L	09/10/2021 1311
PFOS	ND		1	4.0	2.0	ng/L	09/10/2021 1311

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		115	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		89	25-150
13C2_PFHxDA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ14898-001
Batch: 14898
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/09/2021 1722

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		102	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		104	25-150
13C8_PFOA		107	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		101	25-150
d-EtFOSA		69	10-150
d5-EtFOSAA		105	25-150
d9-EtFOSE		98	10-150
d-MeFOSA		77	10-150
d3-MeFOSAA		91	25-150
d7-MeFOSE		96	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ14898-002
Batch: 14898
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/09/2021 1722

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	90	50-150	09/10/2021 1322
11Cl-PF3OUdS	15	14		1	92	50-150	09/10/2021 1322
8:2 FTS	15	15		1	95	50-150	09/10/2021 1322
6:2 FTS	15	16		1	106	50-150	09/10/2021 1322
10:2 FTS	15	11		1	71	50-150	09/10/2021 1322
4:2 FTS	15	16		1	110	50-150	09/10/2021 1322
GenX	32	29		1	91	50-150	09/10/2021 1322
ADONA	15	14		1	96	50-150	09/10/2021 1322
EtFOSA	16	16		1	97	50-150	09/10/2021 1322
EtFOSAA	16	16		1	100	50-150	09/10/2021 1322
EtFOSE	16	16		1	101	50-150	09/10/2021 1322
MeFOSA	16	14		1	90	50-150	09/10/2021 1322
MeFOSAA	16	17		1	104	50-150	09/10/2021 1322
MeFOSE	16	15		1	96	50-150	09/10/2021 1322
PFBS	14	13		1	90	50-150	09/10/2021 1322
PFDS	15	13		1	83	50-150	09/10/2021 1322
PFHpS	15	14		1	94	50-150	09/10/2021 1322
PFNS	15	15		1	96	50-150	09/10/2021 1322
PFOSA	16	15		1	92	50-150	09/10/2021 1322
PFPeS	15	13		1	88	50-150	09/10/2021 1322
PFDOS	15	15		1	95	50-150	09/10/2021 1322
PFHxS	15	13		1	92	50-150	09/10/2021 1322
PFBA	16	15		1	93	50-150	09/10/2021 1322
PFDA	16	15		1	96	50-150	09/10/2021 1322
PFDoA	16	16		1	97	50-150	09/10/2021 1322
PFHpA	16	16		1	98	50-150	09/10/2021 1322
PFHxDA	16	15		1	92	50-150	09/10/2021 1322
PFHxA	16	15		1	91	50-150	09/10/2021 1322
PFNA	16	15		1	97	50-150	09/10/2021 1322
PFODA	16	15		1	93	50-150	09/10/2021 1322
PFOA	16	15		1	92	50-150	09/10/2021 1322
PFPeA	16	15		1	92	50-150	09/10/2021 1322
PFTeDA	16	15		1	94	50-150	09/10/2021 1322
PFTrDA	16	15		1	91	50-150	09/10/2021 1322
PFUdA	16	14		1	88	50-150	09/10/2021 1322
PFOS	15	13		1	90	50-150	09/10/2021 1322

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		95	25-150
13C2_PFDoA		92	25-150
13C2_PFHxDA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ14898-002
Batch: 14898
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/09/2021 1722

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		103	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		101	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		106	25-150
d-EtFOSA		65	10-150
d5-EtFOSAA		96	25-150
d9-EtFOSE		98	10-150
d-MeFOSA		76	10-150
d3-MeFOSAA		96	25-150
d7-MeFOSE		97	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Sample ID: WH20029-001MS
Batch: 14898
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/09/2021 1722

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	11		1	89	50-150	09/10/2021 1654
11Cl-PF3OUdS	ND	13	11		1	86	50-150	09/10/2021 1654
8:2 FTS	ND	13	15		1	115	50-150	09/10/2021 1654
6:2 FTS	ND	13	10		1	80	50-150	09/10/2021 1654
10:2 FTS	ND	13	11		1	84	50-150	09/10/2021 1654
4:2 FTS	ND	13	10		1	81	50-150	09/10/2021 1654
GenX	ND	27	25		1	92	50-150	09/10/2021 1654
ADONA	ND	13	12		1	95	50-150	09/10/2021 1654
EtFOSA	ND	14	13		1	97	50-150	09/10/2021 1654
EtFOSAA	ND	14	13		1	96	50-150	09/10/2021 1654
EtFOSE	ND	14	13		1	97	50-150	09/10/2021 1654
MeFOSA	ND	14	13		1	95	50-150	09/10/2021 1654
MeFOSAA	ND	14	12		1	87	50-150	09/10/2021 1654
MeFOSE	ND	14	14		1	100	50-150	09/10/2021 1654
PFBS	ND	12	11		1	91	50-150	09/10/2021 1654
PFDS	ND	13	12		1	91	50-150	09/10/2021 1654
PFHpS	ND	13	13		1	97	50-150	09/10/2021 1654
PFNS	ND	13	12		1	94	50-150	09/10/2021 1654
PFOSA	ND	14	12		1	86	50-150	09/10/2021 1654
PFPeS	ND	13	12		1	94	50-150	09/10/2021 1654
PFDOS	ND	13	11		1	82	50-150	09/10/2021 1654
PFHxS	ND	12	12		1	95	50-150	09/10/2021 1654
PFBA	ND	14	13		1	94	50-150	09/10/2021 1654
PFDA	ND	14	12		1	92	50-150	09/10/2021 1654
PFDoA	ND	14	13		1	97	50-150	09/10/2021 1654
PFHpA	ND	14	13		1	94	50-150	09/10/2021 1654
PFHxDA	ND	14	13		1	94	50-150	09/10/2021 1654
PFHxA	ND	14	14		1	100	50-150	09/10/2021 1654
PFNA	ND	14	13		1	97	50-150	09/10/2021 1654
PFODA	ND	14	12		1	86	50-150	09/10/2021 1654
PFOA	ND	14	13		1	93	50-150	09/10/2021 1654
PFPeA	ND	14	12		1	92	50-150	09/10/2021 1654
PFTeDA	ND	14	13		1	93	50-150	09/10/2021 1654
PFTrDA	ND	14	12		1	87	50-150	09/10/2021 1654
PFUdA	ND	14	12		1	86	50-150	09/10/2021 1654
PFOS	ND	13	12		1	97	50-150	09/10/2021 1654

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		137	25-150
13C2_6:2FTS	N	175	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		93	25-150
13C2_PFHxDA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: WH20029-001MS
Batch: 14898
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/09/2021 1722

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		98	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		116	25-150
13C4_PFBA		81	25-150
13C4_PFHpA		117	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		121	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		114	25-150
13C8_PFOA		113	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		125	10-150
13C9_PFNA		111	25-150
d-EtFOSA		95	10-150
d5-EtFOSAA		114	25-150
d9-EtFOSE		99	10-150
d-MeFOSA		103	10-150
d3-MeFOSAA		112	25-150
d7-MeFOSE		100	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

ternal Transfer Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: [X] Yes ☐ No
Owner Received Date: 8/19/2021
Results Requested By: 8/13/2021

rkorder: 40231915 Workorder Name: LACROSSE AIRPORT PFAS LACROSSE

WH20029

Report To
stopher Hyska
e Analytical Green Bay
1 Bellevue Street
en Bay, WI 54302
one (920)469-2436

Subcontract To
Pace Analytical West Columbia
106 Vantage Point Drive
West Columbia, SC 29172
Phone (803)791-9700

Requested Analysis

Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved	PFAS WI 36	KLC2
DECON WATER	PS	8/18/2021 08:00	40231915001	Water	2	X	
PVC SCREEN BLANK	PS	8/18/2021 08:10	40231915002	Water	2	X	
PVC CASING BLANK	PS	8/18/2021 08:05	40231915003	Water	2	X	

Pre-Served Containers

LAB USE ONLY

Comments
IR77 - MDL reporting - Quote 23492

Transfers	Released By	Date/Time	Received By	Date/Time
		8/19/21 1600		
	UPS	8/20/21 1105		8/20/21 1105

Cooler Temperature on Receipt 3.3 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

FMT-ALL-C-002rev.00 24March2009 Page 1 of 1

August 19, 2021 11:32:08 AM

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PACE ANALYTICAL SERVICES, LLC

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page of

COC No. 402 3915

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Wash F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9368
Project Number:	LaCrosse Airport PFAS
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Anthony Kapugi
Sampled By (Sign):	
PO #:	-
Regulatory Program:	WDNR

Quote #:	23492
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	~~444 21st St S~~ ~~LaCrosse, WI 54601~~
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9368

FILTERED? (YES/NO): Y/N = N
PRESERVATION (CODE)*: Pick Letter: A

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air W = Water
B = Biota DW = Drinking Water
C = Charcoal GW = Ground Water
O = Oil SW = Surface Water
S = Soil WW = Waste Water
SL = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
001	Decon Water	8/18	8:00AM	W	X			
002	PVC Screen Blank	8/18	8:00AM	W	X			
003	PVC Casing Blank	8/18	8:00AM	W	X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Fedex	8/19/21 0955	Anthony Kapugi	8/19/21 0955

PACE Project No. 10231910
Receipt Temp = .5 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 9.3 09/14/20

CD19a(27Jun2006)

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: CS Group

Project # 40231915

All containers needing preservation have been checked and noted below: □Yes □No ☒N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	Initial when completed	Date/ Time	Volume (mL)
Pace Lab #	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN		H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	
001										2																					2.5 / 5 / 10
002										2																					2.5 / 5 / 10
003										2																					2.5 / 5 / 10
004																															2.5 / 5 / 10
005																															2.5 / 5 / 10
006																															2.5 / 5 / 10
007																															2.5 / 5 / 10
008																															2.5 / 5 / 10
009																															2.5 / 5 / 10
010																		5/14/21													2.5 / 5 / 10
011																					CQL										2.5 / 5 / 10
012																															2.5 / 5 / 10
013																															2.5 / 5 / 10
014																															2.5 / 5 / 10
015																															2.5 / 5 / 10
016																															2.5 / 5 / 10
017																															2.5 / 5 / 10
018																															2.5 / 5 / 10
019																															2.5 / 5 / 10
020																															2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm): □Yes □No ☒N/A *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: CS Group

WO#: 40231915

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 2827 3024 4994

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR-107 Type of Ice: (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 5 /Corr: 5

Temp Blank Present: ☐ yes ☒ no Biological Tissue is Frozen: ☐ yes ☐ no

Person examining contents: Date: 8/19/21 /Initials: MJ

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Labeled By Initials:

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. no PM # 8/19/21 MJ
Chain of Custody Relinquished:	☐Yes ☒No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☐Yes ☒No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☐Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WJ		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased)		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample login

Page 2 of 2

PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Pace

Cooler Inspected by/date: JSM / 08/20/2021 Lot #: WH20029

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: 21-1425

3.3 / 3.3 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.

Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: JRG2 Date: 08/20/2021

Comments:

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

September 21, 2021

Steve Osesek
The OS Group, LLC
N6746 McCurdy Road
Holmen, WI 54636

RE: Project: LACROSSE WELLS 23 & 24
Pace Project No.: 40232057

Dear Steve Osesek:

Enclosed are the analytical results for sample(s) received by the laboratory on August 20, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Christopher Hyska
christopher.hyska@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: John Storlie, The OS Group, LLC

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: LACROSSE WELLS 23 & 24
Pace Project No.: 40232057

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40232057001	**BAGGIE BLANK**	Water	08/18/21 15:12	08/20/21 12:35
40232057002	**SHIJIA GLOVE BLANK**	Water	08/18/21 15:22	08/20/21 12:35
40232057003	**VENOM GLOVE BLANK**	Water	08/18/21 15:28	08/20/21 12:35
40232057004	**PROACTIVE PUMP BLANK**	Water	08/18/21 16:31	08/20/21 12:35

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UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

COC No. 40232057

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	-
Regulatory Program:	WDNR

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) PRESERVATION (CODE)*

Analyses Requested

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Y/N	Pick Letter	WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
001	Baggie Blank	8-18-21	3:12	W	N	A	X			
002	Shijia Glove Blank	↓	3:22	W	N	A	X			
003	Venom Glove Blank	↓	3:28	W	N	A	X			
004	Proactive Pump Blank	↓	4:31	W	N	A	X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	8/19/21 4:00		
FedEx	8/20/21 1235	MBenson	8/20/21 1235

PACE Project No. 40232057

Receipt Temp = 6 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

8/20/21

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: OS Group LLC Project # 40232057

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN							
001										2																						2.5 / 5 / 10
002										2																						**2.5 / 5 / 10**
003										2																						2.5 / 5 / 10
004										2																						**2.5 / 5 / 10**
005																																2.5 / 5 / 10
006																																**2.5 / 5 / 10**
007																																2.5 / 5 / 10
008																																**2.5 / 5 / 10**
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018																																**2.5 / 5 / 10**
019																																2.5 / 5 / 10
020																																**2.5 / 5 / 10**

LB 8/20/21

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40232057

40232057

Client Name: OS Group LLC

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other:

Tracking #: 282762567647

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR - 99 **Type of Ice:** Wet Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: — /Corr: Le

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 8/20/21 /Initials: MB

Labeled By Initials: MP

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☒Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Christopher Hyska

Project Name: LACROSSE WELLS 23 & 24

Project Number: 40232057

Lot Number:**WH24012**

Date Completed:09/20/2021

09/20/2021 5:53 PM
Approved and released by:
Project Manager II: **Karen L. Coonan**

Case Narrative
Pace Analytical Services, LLC
Lot Number: WH24012

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Surrogate recoveries for the following samples were outside the upper control limit: WH24012-001, WH24012-002. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Reanalysis of the following sample was performed outside of the analytical holding time: WH24012-003 (Run 2). Reanalysis was performed due to a failure for the 6:2-FTS surrogate when there was a detection for 6:2-FTS in the sample. The re-extract failed again for 6:2-FTS surrogate; however, 6:2-FTS was not detected. Both runs have been reported.

Sample Summary
Pace Analytical Services, LLC
Lot Number: WH24012
Project Name: LACROSSE WELLS 23 & 24
Project Number: 40232057

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	BAGGIE BLANK	Aqueous	08/18/2021 1512	08/24/2021
002	SHIJIA GLOVE BLANK	Aqueous	08/18/2021 1522	08/24/2021
003	VENOM GLOVE BLANK	Aqueous	08/18/2021 1528	08/24/2021
004	PROACTIVE PUMP BLANK	Aqueous	08/18/2021 1631	08/24/2021

(4 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: WH24012

Project Name: LACROSSE WELLS 23 & 24

Project Number: 40232057

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
002	SHIJIA GLOVE BLANK	Aqueous	PFOS	PFAS by ID	24		ng/L	7
003	VENOM GLOVE BLANK	Aqueous	PFOS	PFAS by ID	47		ng/L	9

(2 detections)

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WH24012-001
Description: BAGGIE BLANK | Matrix: Aqueous
Date Sampled: 08/18/2021 1512 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021 | Project Number: 40232057

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/13/2021 2214	JJG	09/12/2021 1358	15106

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.6	0.63	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.6	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.6	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.6	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.6	0.83	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.6	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.6	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.6	0.71	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.6	0.91	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.6	0.89	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.6	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.8	0.39	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.74	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.68	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.6	0.99	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.8	0.43	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.6	0.78	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.8	0.65	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.6	0.95	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.8	0.79	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.60	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.8	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		131	25-150
13C2_6:2FTS	N	342	25-150
13C2_8:2FTS	N	189	25-150
13C2_PFDoA		104	25-150
13C2_PFHxDA		82	25-150
13C2_PFTeDA		108	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WH24012-001
Description: BAGGIE BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 1512
Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021
Project Number: 40232057

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		120	25-150
13C3_PFHxS		119	25-150
13C3-HFPO-DA		126	25-150
13C4_PFBA		123	25-150
13C4_PFHpA		118	25-150
13C5_PFHxA		130	25-150
13C5_PFPeA		129	25-150
13C6_PFDA		123	25-150
13C7_PFUdA		112	25-150
13C8_PFOA		137	25-150
13C8_PFOS		120	25-150
13C8_PFOSA		135	10-150
13C9_PFNA		133	25-150
d-EtFOSA		104	10-150
d5-EtFOSAA		116	25-150
d9-EtFOSE		88	10-150
d-MeFOSA		105	10-150
d3-MeFOSAA		116	25-150
d7-MeFOSE		120	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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J = Estimated result < LOQ and ≥ DL
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H = Out of holding time
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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WH24012-002
Description: SHIJIA GLOVE BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 1522
Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021
Project Number: 40232057

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/13/2021 2225	JJG	09/12/2021 1358	15106
2	SOP SPE	PFAS by ID SOP	1	09/14/2021 2240	JJG	09/12/2021 1358	15106

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.0	0.55	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.0	0.75	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.0	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	9.0	2.3	ng/L	2
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		9.0	1.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.0	0.99	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.0	2.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.0	0.55	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		9.0	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.0	0.85	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		9.0	1.5	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.5	0.47	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.5	0.88	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.5	0.56	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.5	0.81	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.5	0.69	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		9.0	1.2	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.5	0.62	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.5	0.59	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.5	0.53	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.5	0.51	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		9.0	0.92	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.5	0.78	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.5	0.52	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.5	0.94	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.5	0.62	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.5	0.60	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.5	0.71	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	24		4.5	2.3	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_4:2FTS		128	25-150		139	25-150
13C2_6:2FTS	N	368	25-150	N	164	25-150
13C2_8:2FTS		102	25-150		119	25-150
13C2_PFDoA		96	25-150		111	25-150
13C2_PFHxDA		110	25-150		79	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WH24012-002
Description: SHIJIA GLOVE BLANK | Matrix: Aqueous
Date Sampled: 08/18/2021 1522 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021 | Project Number: 40232057

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		113	25-150		103	25-150
13C3_PFBS		113	25-150		118	25-150
13C3_PFHxS		112	25-150		118	25-150
13C3-HFPO-DA		129	25-150		114	25-150
13C4_PFBA		117	25-150		117	25-150
13C4_PFHpA		120	25-150		123	25-150
13C5_PFHxA		120	25-150		113	25-150
13C5_PFPeA		119	25-150		115	25-150
13C6_PFDA		117	25-150		116	25-150
13C7_PFUdA		124	25-150		110	25-150
13C8_PFOA		136	25-150		118	25-150
13C8_PFOS		117	25-150		105	25-150
13C8_PFOSA		121	10-150		127	10-150
13C9_PFNA		132	25-150		120	25-150
d-EtFOSA		94	10-150		112	10-150
d5-EtFOSAA		142	25-150		112	25-150
d9-EtFOSE		92	10-150		112	10-150
d-MeFOSA		87	10-150		94	10-150
d3-MeFOSAA		137	25-150		131	25-150
d7-MeFOSE		97	10-150		125	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WH24012-003
Description: VENOM GLOVE BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 1528
Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021
Project Number: 40232057

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/13/2021 2235	JJG	09/12/2021 1358	15106
2	SOP SPE	PFAS by ID SOP	1	09/17/2021 2132	MMM	09/16/2021 1718	15601

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.0	0.54	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.0	0.75	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.0	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	7.7	JQ	9.0	2.3	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		9.0	1.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.0	0.98	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.0	2.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.0	0.54	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		9.0	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.0	0.84	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.0	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		9.0	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.5	0.47	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.5	0.88	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.5	0.56	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.5	0.80	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.5	0.69	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		9.0	1.2	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.5	0.62	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.5	0.59	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.5	0.53	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.5	0.50	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		9.0	0.92	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.5	0.77	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.5	0.52	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.5	0.93	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.5	0.61	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.5	0.60	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.5	0.71	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	47		4.5	2.3	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_4:2FTS		131	25-150	H	97	25-150
13C2_6:2FTS	N	280	25-150	HN	186	25-150
13C2_8:2FTS		137	25-150	HN	228	25-150
13C2_PFDoA		101	25-150	H	114	25-150
13C2_PFHxDA		64	25-150	H	87	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WH24012-003
Description: VENOM GLOVE BLANK
Matrix: Aqueous
Date Sampled: 08/18/2021 1528
Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021
Project Number: 40232057

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		104	25-150	H	97	25-150
13C3_PFBS		123	25-150	H	98	25-150
13C3_PFHxS		121	25-150	H	92	25-150
13C3-HFPO-DA		140	25-150	H	95	25-150
13C4_PFBA		128	25-150	H	97	25-150
13C4_PFHpA		131	25-150	H	100	25-150
13C5_PFHxA		129	25-150	H	95	25-150
13C5_PFPeA		136	25-150	H	102	25-150
13C6_PFDA		118	25-150	H	115	25-150
13C7_PFUdA		118	25-150	H	126	25-150
13C8_PFOA		135	25-150	H	98	25-150
13C8_PFOS		123	25-150	H	92	25-150
13C8_PFOSA		120	10-150	H	112	10-150
13C9_PFNA		127	25-150	H	103	25-150
d-EtFOSA		74	10-150	H	101	10-150
d5-EtFOSAA		116	25-150	HN	191	25-150
d9-EtFOSE		91	10-150	H	143	10-150
d-MeFOSA		88	10-150	H	107	10-150
d3-MeFOSAA		116	25-150	HN	166	25-150
d7-MeFOSE		107	10-150	H	114	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
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S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC — Laboratory ID: WH24012-003
Description: VENOM GLOVE BLANK — Matrix: Aqueous
Date Sampled: 08/18/2021 1528 — Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021 — Project Number: 40232057

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/13/2021 2235	JJG	09/12/2021 1358	15106
2	SOP SPE	PFAS by ID SOP	1	09/17/2021 2132	MMM	09/16/2021 1718	15601

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	8.8	0.53	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	8.8	0.73	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	HQ	8.8	1.8	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	HQ	8.8	2.2	ng/L	2
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND	H	8.8	1.3	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	H	8.8	0.97	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	8.8	2.3	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	8.8	0.53	ng/L	2
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND	H	8.8	1.5	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	HQ	8.8	0.83	ng/L	2
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND	H	8.8	1.1	ng/L	2
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND	H	18	1.4	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	HQ	8.8	1.0	ng/L	2
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND	H	8.8	1.4	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND	H	4.4	0.46	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	4.4	0.86	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	4.4	0.55	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	4.4	0.79	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	4.4	0.68	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	4.4	0.66	ng/L	2
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND	H	8.8	1.2	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	H	4.4	0.61	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND	H	4.4	0.66	ng/L	2
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	H	4.4	0.58	ng/L	2
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	4.4	0.52	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND	H	4.4	0.49	ng/L	2
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND	H	8.8	0.90	ng/L	2
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND	H	4.4	0.76	ng/L	2
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	H	4.4	0.51	ng/L	2
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND	H	8.8	1.1	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND	H	4.4	0.92	ng/L	2
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND	H	4.4	0.60	ng/L	2
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	4.4	0.66	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	4.4	0.59	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	4.4	0.69	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	H	4.4	2.2	ng/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_4:2FTS		131	25-150	H	97	25-150
13C2_6:2FTS	N	280	25-150	HN	186	25-150
13C2_8:2FTS		137	25-150	HN	228	25-150
13C2_PFDoA		101	25-150	H	114	25-150
13C2_PFHxDA		64	25-150	H	87	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WH24012-003
Description: VENOM GLOVE BLANK | Matrix: Aqueous
Date Sampled: 08/18/2021 1528 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021 | Project Number: 40232057

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		104	25-150	H	97	25-150
13C3_PFBS		123	25-150	H	98	25-150
13C3_PFHxS		121	25-150	H	92	25-150
13C3-HFPO-DA		140	25-150	H	95	25-150
13C4_PFBA		128	25-150	H	97	25-150
13C4_PFHpA		131	25-150	H	100	25-150
13C5_PFHxA		129	25-150	H	95	25-150
13C5_PFPeA		136	25-150	H	102	25-150
13C6_PFDA		118	25-150	H	115	25-150
13C7_PFUdA		118	25-150	H	126	25-150
13C8_PFOA		135	25-150	H	98	25-150
13C8_PFOS		123	25-150	H	92	25-150
13C8_PFOSA		120	10-150	H	112	10-150
13C9_PFNA		127	25-150	H	103	25-150
d-EtFOSA		74	10-150	H	101	10-150
d5-EtFOSAA		116	25-150	HN	191	25-150
d9-EtFOSE		91	10-150	H	143	10-150
d-MeFOSA		88	10-150	H	107	10-150
d3-MeFOSAA		116	25-150	HN	166	25-150
d7-MeFOSE		107	10-150	H	114	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
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J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC — Laboratory ID: WH24012-004
Description: PROACTIVE PUMP BLANK — Matrix: Aqueous
Date Sampled: 08/18/2021 1631 — Project Name: LACROSSE WELLS 23 & 24
Date Received: 08/24/2021 — Project Number: 40232057

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/14/2021 2301	JJG	09/12/2021 1358	15106

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.6	0.52	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.6	0.71	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.6	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.6	2.1	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.6	1.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.6	0.94	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.6	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.6	0.52	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.6	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.6	0.81	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.6	1.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		17	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.6	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.6	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.3	0.44	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.3	0.83	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.3	0.54	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.3	0.76	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.3	0.66	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.3	0.64	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.6	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.3	0.59	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.3	0.64	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.3	0.56	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.3	0.51	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.3	0.48	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.6	0.87	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.3	0.74	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.3	0.50	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.6	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.3	0.89	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.3	0.58	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.3	0.64	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.3	0.57	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.3	0.67	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.3	2.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		124	25-150
13C2_6:2FTS		139	25-150
13C2_8:2FTS		119	25-150
13C2_PFDoA		107	25-150
13C2_PFHxDA		104	25-150
13C2_PFTeDA		114	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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DL = Detection Limit
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ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC			Laboratory ID: WH24012-004
Description: PROACTIVE PUMP BLANK			Matrix: Aqueous
Date Sampled: 08/18/2021 1631	Project Name: LACROSSE WELLS 23 & 24		
Date Received: 08/24/2021	Project Number: 40232057		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		104	25-150
13C3_PFHxS		127	25-150
13C3-HFPO-DA		109	25-150
13C4_PFBA		115	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		114	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		110	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		125	10-150
13C9_PFNA		114	25-150
d-EtFOSA		125	10-150
d5-EtFOSAA		116	25-150
d9-EtFOSE		101	10-150
d-MeFOSA		97	10-150
d3-MeFOSAA		137	25-150
d7-MeFOSE		111	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ15106-001
Batch: 15106
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/12/2021 1358

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	09/13/2021 2028
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	09/13/2021 2028
8:2 FTS	ND		1	8.0	1.6	ng/L	09/13/2021 2028
6:2 FTS	ND		1	8.0	2.0	ng/L	09/13/2021 2028
10:2 FTS	ND		1	8.0	1.2	ng/L	09/13/2021 2028
4:2 FTS	ND		1	8.0	0.87	ng/L	09/13/2021 2028
GenX	ND		1	8.0	2.1	ng/L	09/13/2021 2028
ADONA	ND		1	8.0	0.48	ng/L	09/13/2021 2028
EtFOSA	ND		1	8.0	1.4	ng/L	09/13/2021 2028
EtFOSAA	ND		1	8.0	0.75	ng/L	09/13/2021 2028
EtFOSE	ND		1	8.0	0.95	ng/L	09/13/2021 2028
MeFOSA	ND		1	16	1.3	ng/L	09/13/2021 2028
MeFOSAA	ND		1	8.0	0.93	ng/L	09/13/2021 2028
MeFOSE	ND		1	8.0	1.3	ng/L	09/13/2021 2028
PFBS	ND		1	4.0	0.41	ng/L	09/13/2021 2028
PFDS	ND		1	4.0	0.78	ng/L	09/13/2021 2028
PFHpS	ND		1	4.0	0.50	ng/L	09/13/2021 2028
PFNS	ND		1	4.0	0.71	ng/L	09/13/2021 2028
PFOSA	ND		1	4.0	0.61	ng/L	09/13/2021 2028
PFPeS	ND		1	4.0	0.59	ng/L	09/13/2021 2028
PFDOS	ND		1	8.0	1.0	ng/L	09/13/2021 2028
PFHxS	ND		1	4.0	0.55	ng/L	09/13/2021 2028
PFBA	ND		1	4.0	0.60	ng/L	09/13/2021 2028
PFDA	ND		1	4.0	0.52	ng/L	09/13/2021 2028
PFDoA	ND		1	4.0	0.47	ng/L	09/13/2021 2028
PFHpA	ND		1	4.0	0.45	ng/L	09/13/2021 2028
PFHxDA	ND		1	8.0	0.82	ng/L	09/13/2021 2028
PFHxA	ND		1	4.0	0.69	ng/L	09/13/2021 2028
PFNA	ND		1	4.0	0.46	ng/L	09/13/2021 2028
PFODA	ND		1	8.0	1.0	ng/L	09/13/2021 2028
PFOA	ND		1	4.0	0.83	ng/L	09/13/2021 2028
PFPeA	ND		1	4.0	0.54	ng/L	09/13/2021 2028
PFTeDA	ND		1	4.0	0.60	ng/L	09/13/2021 2028
PFTrDA	ND		1	4.0	0.53	ng/L	09/13/2021 2028
PFUdA	ND		1	4.0	0.63	ng/L	09/13/2021 2028
PFOS	ND		1	4.0	2.0	ng/L	09/13/2021 2028

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		114	25-150
13C2_6:2FTS		120	25-150
13C2_8:2FTS		90	25-150
13C2_PFDoA		90	25-150
13C2_PFHxDA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ15106-001
Batch: 15106
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/12/2021 1358

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		97	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		111	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		108	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		104	25-150
d-EtFOSA		91	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		93	10-150
d-MeFOSA		96	10-150
d3-MeFOSAA		94	25-150
d7-MeFOSE		94	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ15106-002
Batch: 15106
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/12/2021 1358

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	95	50-150	09/13/2021 2039
11Cl-PF3OUdS	15	13		1	89	50-150	09/13/2021 2039
8:2 FTS	15	15		1	96	50-150	09/13/2021 2039
6:2 FTS	15	15		1	100	50-150	09/13/2021 2039
10:2 FTS	15	12		1	78	50-150	09/13/2021 2039
4:2 FTS	15	16		1	105	50-150	09/13/2021 2039
GenX	32	30		1	94	50-150	09/13/2021 2039
ADONA	15	16		1	104	50-150	09/13/2021 2039
EtFOSA	16	13		1	84	50-150	09/13/2021 2039
EtFOSAA	16	15		1	92	50-150	09/13/2021 2039
EtFOSE	16	14		1	87	50-150	09/13/2021 2039
MeFOSA	16	14		1	88	50-150	09/13/2021 2039
MeFOSAA	16	15		1	91	50-150	09/13/2021 2039
MeFOSE	16	17		1	105	50-150	09/13/2021 2039
PFBS	14	14		1	97	50-150	09/13/2021 2039
PFDS	15	14		1	92	50-150	09/13/2021 2039
PFHpS	15	15		1	99	50-150	09/13/2021 2039
PFNS	15	16		1	101	50-150	09/13/2021 2039
PFOSA	16	12		1	75	50-150	09/13/2021 2039
PFPeS	15	17		1	114	50-150	09/13/2021 2039
PFDOS	15	17		1	110	50-150	09/13/2021 2039
PFHxS	15	14		1	99	50-150	09/13/2021 2039
PFBA	16	15		1	93	50-150	09/13/2021 2039
PFDA	16	17		1	105	50-150	09/13/2021 2039
PFDoA	16	15		1	95	50-150	09/13/2021 2039
PFHpA	16	17		1	104	50-150	09/13/2021 2039
PFHxDA	16	12		1	78	50-150	09/13/2021 2039
PFHxA	16	14		1	87	50-150	09/13/2021 2039
PFNA	16	16		1	100	50-150	09/13/2021 2039
PFODA	16	15		1	96	50-150	09/13/2021 2039
PFOA	16	15		1	94	50-150	09/13/2021 2039
PFPeA	16	16		1	99	50-150	09/13/2021 2039
PFTeDA	16	17		1	107	50-150	09/13/2021 2039
PFTrDA	16	16		1	102	50-150	09/13/2021 2039
PFUdA	16	16		1	99	50-150	09/13/2021 2039
PFOS	15	15		1	102	50-150	09/13/2021 2039

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		111	25-150
13C2_6:2FTS		118	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		95	25-150
13C2_PFHxDA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ15106-002
Batch: 15106
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/12/2021 1358

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		104	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		108	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		118	10-150
13C9_PFNA		106	25-150
d-EtFOSA		94	10-150
d5-EtFOSAA		97	25-150
d9-EtFOSE		89	10-150
d-MeFOSA		88	10-150
d3-MeFOSAA		99	25-150
d7-MeFOSE		93	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ15601-001
Batch: 15601
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/16/2021 1718

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	09/17/2021 1759
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	09/17/2021 1759
8:2 FTS	ND		1	8.0	1.6	ng/L	09/17/2021 1759
6:2 FTS	ND		1	8.0	2.0	ng/L	09/17/2021 1759
10:2 FTS	ND		1	8.0	1.2	ng/L	09/17/2021 1759
4:2 FTS	ND		1	8.0	0.87	ng/L	09/17/2021 1759
GenX	ND		1	8.0	2.1	ng/L	09/17/2021 1759
ADONA	ND		1	8.0	0.48	ng/L	09/17/2021 1759
EtFOSA	ND		1	8.0	1.4	ng/L	09/17/2021 1759
EtFOSAA	ND		1	8.0	0.75	ng/L	09/17/2021 1759
EtFOSE	ND		1	8.0	0.95	ng/L	09/17/2021 1759
MeFOSA	ND		1	16	1.3	ng/L	09/17/2021 1759
MeFOSAA	ND		1	8.0	0.93	ng/L	09/17/2021 1759
MeFOSE	ND		1	8.0	1.3	ng/L	09/17/2021 1759
PFBS	ND		1	4.0	0.41	ng/L	09/17/2021 1759
PFDS	ND		1	4.0	0.78	ng/L	09/17/2021 1759
PFHpS	ND		1	4.0	0.50	ng/L	09/17/2021 1759
PFNS	ND		1	4.0	0.71	ng/L	09/17/2021 1759
PFOSA	ND		1	4.0	0.61	ng/L	09/17/2021 1759
PFPeS	ND		1	4.0	0.59	ng/L	09/17/2021 1759
PFDOS	ND		1	8.0	1.0	ng/L	09/17/2021 1759
PFHxS	ND		1	4.0	0.55	ng/L	09/17/2021 1759
PFBA	ND		1	4.0	0.60	ng/L	09/17/2021 1759
PFDA	ND		1	4.0	0.52	ng/L	09/17/2021 1759
PFDoA	ND		1	4.0	0.47	ng/L	09/17/2021 1759
PFHpA	ND		1	4.0	0.45	ng/L	09/17/2021 1759
PFHxDA	ND		1	8.0	0.82	ng/L	09/17/2021 1759
PFHxA	ND		1	4.0	0.69	ng/L	09/17/2021 1759
PFNA	ND		1	4.0	0.46	ng/L	09/17/2021 1759
PFODA	ND		1	8.0	1.0	ng/L	09/17/2021 1759
PFOA	ND		1	4.0	0.83	ng/L	09/17/2021 1759
PFPeA	ND		1	4.0	0.54	ng/L	09/17/2021 1759
PFTeDA	ND		1	4.0	0.60	ng/L	09/17/2021 1759
PFTrDA	ND		1	4.0	0.53	ng/L	09/17/2021 1759
PFUdA	ND		1	4.0	0.63	ng/L	09/17/2021 1759
PFOS	ND		1	4.0	2.0	ng/L	09/17/2021 1759

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		86	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		88	25-150
13C2_PFHxDA		87	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ15601-001
Batch: 15601
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/16/2021 1718

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		93	25-150
13C3_PFBS		87	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		86	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		88	25-150
13C5_PFHxA		85	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		89	25-150
13C7_PFUdA		87	25-150
13C8_PFOA		91	25-150
13C8_PFOS		86	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		85	25-150
d-EtFOSA		85	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		97	10-150
d-MeFOSA		81	10-150
d3-MeFOSAA		93	25-150
d7-MeFOSE		91	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ15601-002
Batch: 15601
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/16/2021 1718

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	90	50-150	09/17/2021 1810
11Cl-PF3OUdS	15	13		1	86	50-150	09/17/2021 1810
8:2 FTS	15	16		1	103	50-150	09/17/2021 1810
6:2 FTS	15	13		1	85	50-150	09/17/2021 1810
10:2 FTS	15	14		1	90	50-150	09/17/2021 1810
4:2 FTS	15	14		1	91	50-150	09/17/2021 1810
GenX	32	30		1	93	50-150	09/17/2021 1810
ADONA	15	16		1	106	50-150	09/17/2021 1810
EtFOSA	16	14		1	86	50-150	09/17/2021 1810
EtFOSAA	16	15		1	94	50-150	09/17/2021 1810
EtFOSE	16	16		1	99	50-150	09/17/2021 1810
MeFOSA	16	14		1	87	50-150	09/17/2021 1810
MeFOSAA	16	16		1	98	50-150	09/17/2021 1810
MeFOSE	16	14		1	87	50-150	09/17/2021 1810
PFBS	14	14		1	98	50-150	09/17/2021 1810
PFDS	15	14		1	88	50-150	09/17/2021 1810
PFHpS	15	14		1	95	50-150	09/17/2021 1810
PFNS	15	12		1	75	50-150	09/17/2021 1810
PFOSA	16	16		1	98	50-150	09/17/2021 1810
PFPeS	15	13		1	90	50-150	09/17/2021 1810
PFDOS	15	12		1	76	50-150	09/17/2021 1810
PFHxS	15	14		1	96	50-150	09/17/2021 1810
PFBA	16	15		1	96	50-150	09/17/2021 1810
PFDA	16	15		1	91	50-150	09/17/2021 1810
PFDoA	16	16		1	101	50-150	09/17/2021 1810
PFHpA	16	15		1	94	50-150	09/17/2021 1810
PFHxDA	16	15		1	97	50-150	09/17/2021 1810
PFHxA	16	15		1	94	50-150	09/17/2021 1810
PFNA	16	16		1	98	50-150	09/17/2021 1810
PFODA	16	14		1	85	50-150	09/17/2021 1810
PFOA	16	14		1	91	50-150	09/17/2021 1810
PFPeA	16	15		1	92	50-150	09/17/2021 1810
PFTeDA	16	16		1	100	50-150	09/17/2021 1810
PFTrDA	16	16		1	99	50-150	09/17/2021 1810
PFUdA	16	16		1	99	50-150	09/17/2021 1810
PFOS	15	13		1	88	50-150	09/17/2021 1810

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		90	25-150
13C2_6:2FTS		85	25-150
13C2_8:2FTS		84	25-150
13C2_PFDoA		80	25-150
13C2_PFHxDA		79	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ15601-002
Batch: 15601
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/16/2021 1718

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		81	25-150
13C3_PFBS		81	25-150
13C3_PFHxS		76	25-150
13C3-HFPO-DA		88	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		89	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		84	25-150
13C7_PFUdA		81	25-150
13C8_PFOA		86	25-150
13C8_PFOS		77	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		83	25-150
d-EtFOSA		83	10-150
d5-EtFOSAA		84	25-150
d9-EtFOSE		90	10-150
d-MeFOSA		75	10-150
d3-MeFOSAA		86	25-150
d7-MeFOSE		89	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

ternal Transfer Chain of Custody

Pace Analytical®
www.pacelabs.com

Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: Yes No
Owner Received Date: 8/20/2021 Results Requested By: 9/14/2021

rkorder: 40232057 Workorder Name: LACROSSE WELLS 23 & 24

WH24012

KLC2

Report To	Subcontract To	Requested Analyses
ristopher Hyska ce Analytical Green Bay 41 Bellevue Street ite 9 een Bay, WI 54302 one (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700	WI 36 PFAS

	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	WI 36 PFAS	LAB USE ONLY
	BAGGIE BLANK	PS	8/18/2021 15:12	40232057001	Water	2	X	
	SHIJIA GLOVE BLANK	PS	8/18/2021 15:22	40232057002	Water	2	X	
	VENOM GLOVE BLANK	PS	8/18/2021 15:28	40232057003	Water	2	X	
	PROACTIVCE PUMP BLANK	PS	8/18/2021 16:31	40232057004	Water	2	X	

ransfers	Released By	Date/Time	Received By	Date/Time
		8/23/21 1040		
	UPS	8/24/21 940		8/24/21 940

Comments: IR77 - MDL reporting - Quote 23492

Cooler Temperature on Receipt 3 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

**In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

(Please Print Clearly)

Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	-
Regulatory Program:	WDNR

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www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1

COC No. 40232057

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, Sl = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO): N
PRESERVATION (CODE)*: A
Analyses Requested: WI 36 PFAS by ID

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
001	Baggie Blank	8/18/21	3:12	W	X		
002	Shijia Glove Blank	↓	3:22	W	X		
003	Venom Glove Blank		3:28	W	X		
004	Proactive Pump Blank	↓	4:31	W	X		

Profile # 4532

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By	Date/Time	Received By	Date/Time
Steven Osesek	8/19/21 4:00		
Fed Ex	8/20/21 1235	M Bensen	8/20/21 1235

PACE Project No. 40232057
Receipt Temp = 6 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present Intact / Not Intact
8/20/21

C019a(27Jun2006)

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: OS Group LLC Project # 40232057

All containers needing preservation have been checked and noted below: ○Yes ○No ⊗N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																																	2.5 / 5 / 10
002																																	2.5 / 5 / 10
003																																	2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
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015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ / Headspace in VOA Vials (>6mm): ○Yes ○No ⊗N/A *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Pace

Cooler Inspected by/date: JRG2 / 08/24/2021 Lot #: WH24012

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt: %Solid Snap-Cup ID: NA

3.6 / 3.6 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: JRG2 Date: 08/24/2021

Comments:

ATTACHMENT C

SURFACE WATER AND SEDIMENT LABORATORY ANALTYICAL RESULTS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 16, 2021

Steve Osesek
The OS Group, LLC
N6746 McCurdy Road
Holmen, WI 54636

RE: Project: LACROSSE WELLS 23 & 24
Pace Project No.: 40232887

Dear Steve Osesek:

Enclosed are the analytical results for sample(s) received by the laboratory on September 08, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Christopher Hyska
christopher.hyska@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: John Storlie, The OS Group, LLC

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: LACROSSE WELLS 23 & 24
Pace Project No.: 40232887

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40232887001	**SED #1**	Solid	09/02/21 14:20	09/08/21 12:35
40232887002	**SED #2**	Solid	09/02/21 14:45	09/08/21 12:35
40232887003	**SED #3**	Solid	09/02/21 15:01	09/08/21 12:35
40232887004	**SED #4**	Solid	09/02/21 15:10	09/08/21 12:35
40232887005	**SED #5**	Solid	09/02/21 14:01	09/08/21 12:35
40232887006	**SW #1**	Water	09/02/21 14:15	09/08/21 12:35
40232887007	**SW #2**	Water	09/02/21 14:47	09/08/21 12:35
40232887008	**SW #3**	Water	09/02/21 14:57	09/08/21 12:35
40232887009	**SW #5**	Water	09/02/21 13:55	09/08/21 12:35
40232887010	**SW #6**	Water	09/02/21 13:37	09/08/21 12:35
40232887011	**SW #7**	Water	09/02/21 13:28	09/08/21 12:35
40232887012	**DUPLICATE**	Water	09/02/21 00:00	09/08/21 12:35
40232887013	**TRIP BLANK**	Water	09/02/21 13:20	09/08/21 12:35

(Please Print Clearly)

Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	-
Regulatory Program:	WDNR

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1

COC No. 40232887

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SL = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) PRESERVATION (CODE)* Y/N	Pick Letter	Analyses Requested: WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
001	SED #1	9/2/21	2:20	SED	N	A	X			
002	SED #2		2:45				X			
003	SED #3		3:01				X			
004	SED #4		3:10				X			
005	SED #5		2:01				X			
006	SW #1		2:15	SW			X			
007	SW #2		2:47				X			
008	SW #3		2:57				X			
009	SW #5		1:55				X			
010	SW #6		1:37				X			
011	SW #7		1:28				X			
012	Duplicate						X			
013	Trip Blank		1:20				X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	-
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	9/7/21 4:10		
Fed Ex	9/8/21 1235	HBensonPace	9/8/21 1235

PACE Project No. 40232887

Receipt Temp = 3.5 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present

Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: OS Group Project # 40232887

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN						
001																										1						2.5 / 5 / 10
002																										1						2.5 / 5 / 10
003																										1						2.5 / 5 / 10
004																										1						2.5 / 5 / 10
005																										1						2.5 / 5 / 10
006										2																						2.5 / 5 / 10
007										2																						2.5 / 5 / 10
008										2																						2.5 / 5 / 10
009										2																						2.5 / 5 / 10
010										2																						2.5 / 5 / 10
011										2																						2.5 / 5 / 10
012										2																						2.5 / 5 / 10
013										2																						2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018		MB	9/8/21																													2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	125ml plastic unpres

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO#: 40232887

40232887

Client Name: OS Group LLC

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: 2034 1740 6707

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR - 90 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4 /Corr: 3.5

Person examining contents:
Date: 9/8/21 /Initials: LB

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Labeled By Initials: MP

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S/W		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Christopher Hyska

Project Name: LACROSSE WELLS 23 & 24

Project Number: 40232887

Lot Number:**WI10061**

Date Completed:10/07/2021
Revision Date: 10/14/2021

10/14/2021 9:08 AM
Approved and released by:
Project Manager II: **Karen L. Coonan**

Case Narrative
Pace Analytical Services, LLC
Lot Number: WI10061

Revised report – October 14, 2021
A revised report has been issued. The following note has been added to the Case Narrative:

Sample WI10061-012: The initial extraction was done within the holding time. After analysis, it was found that the internal standard (EIS) was not added during extraction and therefore, results could not be calculated from the data. The re-extraction was done outside of the holding time and data was reported from Run 2.

All other sample results are as reported in the original PDF report. This report supersedes and replaces any prior reports issued under this lot number.

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation:

Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, Fecal Coliform SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, Solid Chemical Material: TOC Walkley-Black.

Where applicable, all soil sample results (including LOQ and DL if requested) are corrected for dry weight unless flagged with a "W" qualifier.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Surrogate recoveries for the following samples were outside the upper control limit: WI10061-007, WI10061-008, WI10061-009, WI10061-013. These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary
Pace Analytical Services, LLC
Lot Number: WI10061
Project Name: LACROSSE WELLS 23 & 24
Project Number: 40232887

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	SED #1	Solid	09/02/2021 1420	09/10/2021
002	SED #2	Solid	09/02/2021 1445	09/10/2021
003	SED #3	Solid	09/02/2021 1501	09/10/2021
004	SED #4	Solid	09/02/2021 1510	09/10/2021
005	SED #5	Solid	09/02/2021 1401	09/10/2021
006	SW #1	Aqueous	09/02/2021 1415	09/10/2021
007	SW #2	Aqueous	09/02/2021 1447	09/10/2021
008	SW #3	Aqueous	09/02/2021 1457	09/10/2021
009	SW #5	Aqueous	09/02/2021 1355	09/10/2021
010	SW #6	Aqueous	09/02/2021 1337	09/10/2021
011	SW #7	Aqueous	09/02/2021 1328	09/10/2021
012	DUPLICATE	Aqueous	09/02/2021	09/10/2021
013	TRIP BLANK	Aqueous	09/02/2021 1320	09/10/2021

(13 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: WI10061

Project Name: LACROSSE WELLS 23 & 24

Project Number: 40232887

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	SED #5	Solid	PFOS	PFAS by ID	0.46	J	ug/kg	14
006	SW #1	Aqueous	PFBA	PFAS by ID	5.3		ng/L	16
006	SW #1	Aqueous	PFHpA	PFAS by ID	0.60	J	ng/L	16
007	SW #2	Aqueous	PFBS	PFAS by ID	0.81	J	ng/L	18
007	SW #2	Aqueous	PFBA	PFAS by ID	5.6		ng/L	18
007	SW #2	Aqueous	PFHpA	PFAS by ID	0.66	J	ng/L	18
007	SW #2	Aqueous	PFHxA	PFAS by ID	0.81	J	ng/L	18
007	SW #2	Aqueous	PFOA	PFAS by ID	0.91	J	ng/L	18
007	SW #2	Aqueous	PFPeA	PFAS by ID	0.71	J	ng/L	18
008	SW #3	Aqueous	PFBS	PFAS by ID	0.46	J	ng/L	20
008	SW #3	Aqueous	PFBA	PFAS by ID	5.5		ng/L	20
008	SW #3	Aqueous	PFHpA	PFAS by ID	0.50	J	ng/L	20
008	SW #3	Aqueous	PFOA	PFAS by ID	1.0	J	ng/L	20
008	SW #3	Aqueous	PFPeA	PFAS by ID	0.90	J	ng/L	20
009	SW #5	Aqueous	PFBS	PFAS by ID	1.5	J	ng/L	22
009	SW #5	Aqueous	PFOSA	PFAS by ID	0.67	J	ng/L	22
009	SW #5	Aqueous	PFPeS	PFAS by ID	1.4	J	ng/L	22
009	SW #5	Aqueous	PFHxS	PFAS by ID	4.9		ng/L	22
009	SW #5	Aqueous	PFBA	PFAS by ID	8.2		ng/L	22
009	SW #5	Aqueous	PFHpA	PFAS by ID	1.2	J	ng/L	22
009	SW #5	Aqueous	PFHxA	PFAS by ID	2.0	J	ng/L	22
009	SW #5	Aqueous	PFOA	PFAS by ID	1.9	J	ng/L	22
009	SW #5	Aqueous	PFPeA	PFAS by ID	2.1	J	ng/L	22
009	SW #5	Aqueous	PFOS	PFAS by ID	6.8		ng/L	22
010	SW #6	Aqueous	PFBS	PFAS by ID	1.2	J	ng/L	24
010	SW #6	Aqueous	PFOSA	PFAS by ID	0.72	J	ng/L	24
010	SW #6	Aqueous	PFHxS	PFAS by ID	0.87	J	ng/L	24
010	SW #6	Aqueous	PFBA	PFAS by ID	7.1		ng/L	24
010	SW #6	Aqueous	PFHpA	PFAS by ID	0.58	J	ng/L	24
010	SW #6	Aqueous	PFHxA	PFAS by ID	0.91	J	ng/L	24
010	SW #6	Aqueous	PFOA	PFAS by ID	1.2	J	ng/L	24
010	SW #6	Aqueous	PFPeA	PFAS by ID	0.98	J	ng/L	24
011	SW #7	Aqueous	PFBA	PFAS by ID	6.0		ng/L	26
011	SW #7	Aqueous	PFHpA	PFAS by ID	0.64	J	ng/L	26
011	SW #7	Aqueous	PFOA	PFAS by ID	1.1	J	ng/L	26
012	DUPLICATE	Aqueous	PFBS	PFAS by ID	0.56	HJ	ng/L	28
012	DUPLICATE	Aqueous	PFBA	PFAS by ID	6.2	H	ng/L	28
012	DUPLICATE	Aqueous	PFHpA	PFAS by ID	0.58	HJ	ng/L	28
012	DUPLICATE	Aqueous	PFHxA	PFAS by ID	0.73	HJ	ng/L	28
012	DUPLICATE	Aqueous	PFOA	PFAS by ID	1.2	HJ	ng/L	28
012	DUPLICATE	Aqueous	PFPeA	PFAS by ID	0.81	HJ	ng/L	28

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(41 detections)

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-001
Description: SED #1 | Matrix: Solid
Date Sampled: 09/02/2021 1420 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 80.1 09/11/2021 1910
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/16/2021 2056	NK1	09/14/2021 1149	15246

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.4	0.19	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.4	0.21	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.4	0.33	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.4	0.37	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		2.4	0.45	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.4	0.26	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.8	0.70	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.4	0.18	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.4	0.43	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.4	0.35	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.4	0.27	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.4	0.42	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.4	0.48	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.4	0.40	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.2	0.16	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.2	0.27	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.2	0.26	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.2	0.31	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.2	0.50	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.2	0.19	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.2	0.17	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		2.4	0.27	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.2	0.18	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.2	0.42	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.2	0.26	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.2	0.19	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.2	0.23	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.2	0.43	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		106	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		100	25-150
13C2_PFHxDA		98	25-150
13C2_PFTeDA		93	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC		Laboratory ID: WI10061-001	
Description: SED #1		Matrix: Solid	
Date Sampled: 09/02/2021 1420	Project Name: LACROSSE WELLS 23 & 24	% Solids: 80.1	09/11/2021 1910
Date Received: 09/10/2021	Project Number: 40232887		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		100	25-150
13C3_PFHxS		94	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		96	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		92	25-150
13C8_PFOA		91	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		94	25-150
d-EtFOSA		97	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		101	10-150
d-MeFOSA		93	10-150
d3-MeFOSAA		100	25-150
d7-MeFOSE		90	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-002
Description: SED #2 | Matrix: Solid
Date Sampled: 09/02/2021 1445 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 79.9 09/11/2021 1910
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/16/2021 2109	NK1	09/14/2021 1149	15246

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.2	0.17	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.2	0.19	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.2	0.30	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.2	0.33	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		2.2	0.41	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.2	0.24	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.4	0.63	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.2	0.16	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.2	0.39	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.2	0.32	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.2	0.25	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.2	0.38	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.2	0.43	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.2	0.36	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	0.14	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.1	0.24	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.1	0.24	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.1	0.28	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	0.45	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		2.2	0.24	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.1	0.38	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.23	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	0.21	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.1	0.39	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		97	25-150
13C2_6:2FTS		91	25-150
13C2_8:2FTS		92	25-150
13C2_PFDoA		94	25-150
13C2_PFHxDA		91	25-150
13C2_PFTeDA		88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: Pace Analytical Services, LLC		Laboratory ID: WI10061-002
Description: SED #2		Matrix: Solid
Date Sampled: 09/02/2021 1445	Project Name: LACROSSE WELLS 23 & 24	% Solids: 79.9 09/11/2021 1910
Date Received: 09/10/2021	Project Number: 40232887	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		93	25-150
13C3_PFHxS		90	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		95	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		57	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		90	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		90	25-150
13C8_PFOS		93	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		85	25-150
d-EtFOSA		87	10-150
d5-EtFOSAA		94	25-150
d9-EtFOSE		102	10-150
d-MeFOSA		91	10-150
d3-MeFOSAA		91	25-150
d7-MeFOSE		88	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-003
Description: SED #3 | Matrix: Solid
Date Sampled: 09/02/2021 1501 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 79.0 09/11/2021 1910
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/16/2021 2122	NK1	09/14/2021 1149	15246

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.3	0.18	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.3	0.19	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.3	0.31	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.3	0.35	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		2.3	0.43	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.3	0.25	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.6	0.66	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.3	0.17	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.3	0.41	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.3	0.33	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.3	0.26	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.3	0.40	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.3	0.45	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.3	0.38	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	0.15	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.1	0.25	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.1	0.25	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	0.21	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.1	0.29	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	0.47	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	0.18	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		2.3	0.25	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.1	0.21	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.1	0.40	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.24	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	0.18	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	0.22	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	0.21	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.1	0.41	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		94	25-150
13C2_6:2FTS		96	25-150
13C2_8:2FTS		90	25-150
13C2_PFDoA		93	25-150
13C2_PFHxDA		89	25-150
13C2_PFTeDA		86	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Client: Pace Analytical Services, LLC			Laboratory ID: WI10061-003
Description: SED #3			Matrix: Solid
Date Sampled: 09/02/2021 1501	Project Name: LACROSSE WELLS 23 & 24		% Solids: 79.0 09/11/2021 1910
Date Received: 09/10/2021	Project Number: 40232887		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		90	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		92	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		92	25-150
13C7_PFUdA		92	25-150
13C8_PFOA		82	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		91	25-150
d-EtFOSA		87	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		94	10-150
d-MeFOSA		81	10-150
d3-MeFOSAA		94	25-150
d7-MeFOSE		94	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-004
Description: SED #4 | Matrix: Solid
Date Sampled: 09/02/2021 1510 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 79.9 09/11/2021 1910
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/16/2021 2135	NK1	09/14/2021 1149	15246

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.4	0.19	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.4	0.20	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.4	0.32	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.4	0.36	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		2.4	0.44	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.4	0.26	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.7	0.69	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.4	0.18	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.4	0.42	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.4	0.34	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.4	0.27	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.4	0.41	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.4	0.47	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.4	0.39	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.2	0.15	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.2	0.26	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.2	0.26	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.2	0.30	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.2	0.49	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.2	0.19	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.2	0.17	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		2.4	0.26	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.2	0.18	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.2	0.41	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.2	0.25	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.2	0.19	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.2	0.20	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.2	0.42	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		101	25-150
13C2_6:2FTS		98	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		103	25-150
13C2_PFHxDA		95	25-150
13C2_PFTeDA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-004
Description: SED #4 | Matrix: Solid
Date Sampled: 09/02/2021 1510 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 79.9 09/11/2021 1910
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		99	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		63	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		94	25-150
13C8_PFOA		93	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		94	25-150
d-EtFOSA		101	10-150
d5-EtFOSAA		101	25-150
d9-EtFOSE		100	10-150
d-MeFOSA		95	10-150
d3-MeFOSAA		98	25-150
d7-MeFOSE		88	10-150

LOQ = Limit of Quantitation | B = Detected in the method blank | E = Quantitation of compound exceeded the calibration range | DL = Detection Limit | Q = Surrogate failure
ND = Not detected at or above the DL | N = Recovery is out of criteria | P = The RPD between two GC columns exceeds 40% | J = Estimated result < LOQ and ≥ DL | L = LCS/LCSD failure
H = Out of holding time | W = Reported on wet weight basis | S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-005
Description: SED #5 | Matrix: Solid
Date Sampled: 09/02/2021 1401 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 75.8 09/11/2021 1910
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/16/2021 2147	NK1	09/14/2021 1149	15246

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.4	0.19	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.4	0.21	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.4	0.34	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.4	0.37	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		2.4	0.46	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.4	0.27	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.9	0.71	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.4	0.18	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.4	0.44	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.4	0.35	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.4	0.28	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.4	0.43	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.4	0.48	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.4	0.41	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.2	0.16	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.2	0.27	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.2	0.27	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.2	0.23	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.2	0.32	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.2	0.22	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.2	0.51	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.2	0.19	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.2	0.17	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		2.4	0.27	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.2	0.23	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.2	0.18	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.2	0.43	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.2	0.26	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.2	0.19	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.2	0.23	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.2	0.21	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.2	0.23	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	0.46	J	1.2	0.44	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		99	25-150
13C2_6:2FTS		91	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		96	25-150
13C2_PFHxDA		90	25-150
13C2_PFTeDA		89	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC		Laboratory ID: WI10061-005
Description: SED #5		Matrix: Solid
Date Sampled: 09/02/2021 1401	Project Name: LACROSSE WELLS 23 & 24	% Solids: 75.8 09/11/2021 1910
Date Received: 09/10/2021	Project Number: 40232887	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		92	25-150
13C3_PFHxS		93	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		95	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		96	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		92	25-150
13C8_PFOA		89	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		90	25-150
d-EtFOSA		101	10-150
d5-EtFOSAA		91	25-150
d9-EtFOSE		103	10-150
d-MeFOSA		94	10-150
d3-MeFOSAA		96	25-150
d7-MeFOSE		88	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-006
Description: SW #1 | Matrix: Aqueous
Date Sampled: 09/02/2021 1415 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/30/2021 0229	MMM	09/27/2021 1202	16655

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.1	0.49	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.1	0.67	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.1	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.1	1.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.1	0.88	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.1	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.1	0.49	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.1	1.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.1	0.76	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.1	0.96	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.3	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.1	0.94	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.1	1.3	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.42	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.79	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.72	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.1	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	0.56	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	5.3		4.0	0.61	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.48	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.60	J	4.0	0.45	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.1	0.83	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.0	0.70	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.1	1.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.0	0.84	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	0.55	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.54	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.0	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		121	25-150
13C2_6:2FTS		92	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		67	25-150
13C2_PFHxDA		26	25-150
13C2_PFTeDA		47	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-006
Description: SW #1 | Matrix: Aqueous
Date Sampled: 09/02/2021 1415 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		73	25-150
13C3_PFHxS		64	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		78	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		91	25-150
13C5_PFPeA		94	25-150
13C6_PFDA		80	25-150
13C7_PFUdA		72	25-150
13C8_PFOA		90	25-150
13C8_PFOS		63	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		84	25-150
d-EtFOSA		82	10-150
d5-EtFOSAA		69	25-150
d9-EtFOSE		60	10-150
d-MeFOSA		76	10-150
d3-MeFOSAA		80	25-150
d7-MeFOSE		72	10-150

LOQ = Limit of Quantitation | B = Detected in the method blank | E = Quantitation of compound exceeded the calibration range | DL = Detection Limit | Q = Surrogate failure
ND = Not detected at or above the DL | N = Recovery is out of criteria | P = The RPD between two GC columns exceeds 40% | J = Estimated result < LOQ and ≥ DL | L = LCS/LCSD failure
H = Out of holding time | W = Reported on wet weight basis | S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-007
Description: SW #2 | Matrix: Aqueous
Date Sampled: 09/02/2021 1447 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/30/2021 1745	MMM	09/27/2021 1202	16655

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.4	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.4	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	0.88	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	0.81	J	3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	0.97	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	5.6		3.7	0.56	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.66	J	3.7	0.41	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.4	0.75	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	0.81	J	3.7	0.64	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.4	0.93	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	0.91	J	3.7	0.77	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	0.71	J	3.7	0.50	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	161	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		85	25-150
13C2_PFHxDA		33	25-150
13C2_PFTeDA		55	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-007
Description: SW #2 | Matrix: Aqueous
Date Sampled: 09/02/2021 1447 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		86	25-150
13C3_PFHxS		78	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA		73	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		81	25-150
13C7_PFUdA		86	25-150
13C8_PFOA		99	25-150
13C8_PFOS		72	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		101	25-150
d-EtFOSA		89	10-150
d5-EtFOSAA		89	25-150
d9-EtFOSE		78	10-150
d-MeFOSA		90	10-150
d3-MeFOSAA		90	25-150
d7-MeFOSE		91	10-150

LOQ = Limit of Quantitation | B = Detected in the method blank | E = Quantitation of compound exceeded the calibration range | DL = Detection Limit | Q = Surrogate failure
ND = Not detected at or above the DL | N = Recovery is out of criteria | P = The RPD between two GC columns exceeds 40% | J = Estimated result < LOQ and ≥ DL | L = LCS/LCSD failure
H = Out of holding time | W = Reported on wet weight basis | S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-008
Description: SW #3 | Matrix: Aqueous
Date Sampled: 09/02/2021 1457 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/30/2021 1755	MMM	09/27/2021 1202	16655

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.6	0.52	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.6	0.71	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.6	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.6	2.2	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.6	1.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.6	0.94	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.6	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.6	0.52	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.6	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.6	0.81	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.6	1.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		17	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.6	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.6	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	0.46	J	4.3	0.45	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.3	0.84	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.3	0.54	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.3	0.77	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.3	0.66	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.3	0.64	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.6	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.3	0.59	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	5.5		4.3	0.65	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.3	0.57	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.3	0.51	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.50	J	4.3	0.48	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.6	0.88	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.3	0.74	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.3	0.50	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.6	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.0	J	4.3	0.89	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	0.90	J	4.3	0.59	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.3	0.65	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.3	0.57	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.3	0.67	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.3	2.2	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	153	25-150
13C2_6:2FTS		128	25-150
13C2_8:2FTS		94	25-150
13C2_PFDoA		75	25-150
13C2_PFHxDA		30	25-150
13C2_PFTeDA		49	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-008
Description: SW #3 | Matrix: Aqueous
Date Sampled: 09/02/2021 1457 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		86	25-150
13C3_PFHxS		73	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		77	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		72	25-150
13C8_PFOA		100	25-150
13C8_PFOS		66	25-150
13C8_PFOSA		91	10-150
13C9_PFNA		99	25-150
d-EtFOSA		93	10-150
d5-EtFOSAA		78	25-150
d9-EtFOSE		72	10-150
d-MeFOSA		91	10-150
d3-MeFOSAA		86	25-150
d7-MeFOSE		97	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-009
Description: SW #5 | Matrix: Aqueous
Date Sampled: 09/02/2021 1355 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/30/2021 1806	MMM	09/27/2021 1202	16655

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.1	0.49	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.1	0.67	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.1	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.1	1.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.1	0.88	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.1	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.1	0.49	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.1	1.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.1	0.76	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.1	0.96	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.3	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.1	0.94	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.1	1.3	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	1.5	J	4.0	0.42	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.79	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.72	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	0.67	J	4.0	0.62	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	1.4	J	4.0	0.60	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.1	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	4.9		4.0	0.56	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	8.2		4.0	0.61	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.48	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	1.2	J	4.0	0.45	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.1	0.83	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	2.0	J	4.0	0.70	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.1	1.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.9	J	4.0	0.84	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	2.1	J	4.0	0.55	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.54	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	6.8		4.0	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	161	25-150
13C2_6:2FTS		123	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		95	25-150
13C2_PFHxDA		46	25-150
13C2_PFTeDA		65	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-009
Description: SW #5 | Matrix: Aqueous
Date Sampled: 09/02/2021 1355 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		89	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		103	25-150
13C8_PFOS		76	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		99	25-150
d-EtFOSA		92	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		69	10-150
d-MeFOSA		97	10-150
d3-MeFOSAA		96	25-150
d7-MeFOSE		90	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-010
Description: SW #6 | Matrix: Aqueous
Date Sampled: 09/02/2021 1337 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/30/2021 1816	MMM	09/27/2021 1202	16655

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.0	0.55	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.0	0.75	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.0	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		9.0	2.3	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		9.0	1.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.0	0.99	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.0	2.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.0	0.55	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		9.0	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.0	0.85	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		9.0	1.5	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	1.2	J	4.5	0.47	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.5	0.88	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.5	0.56	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.5	0.81	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	0.72	J	4.5	0.69	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		9.0	1.2	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.87	J	4.5	0.62	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	7.1		4.5	0.68	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.5	0.59	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.5	0.53	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.58	J	4.5	0.51	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		9.0	0.92	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	0.91	J	4.5	0.78	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.5	0.52	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.2	J	4.5	0.94	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	0.98	J	4.5	0.62	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.5	0.60	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.5	0.71	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.5	2.3	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		145	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		96	25-150
13C2_PFHxDA		69	25-150
13C2_PFTeDA		81	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-010
Description: SW #6 | Matrix: Aqueous
Date Sampled: 09/02/2021 1337 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		93	25-150
13C3_PFHxS		89	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		85	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		102	25-150
13C8_PFOS		85	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		101	25-150
d-EtFOSA		95	10-150
d5-EtFOSAA		101	25-150
d9-EtFOSE		85	10-150
d-MeFOSA		85	10-150
d3-MeFOSAA		104	25-150
d7-MeFOSE		91	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-011
Description: SW #7 | Matrix: Aqueous
Date Sampled: 09/02/2021 1328 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/30/2021 1827	MMM	09/27/2021 1202	16655

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.2	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.2	0.86	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.2	0.94	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	6.0		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.64	J	3.6	0.40	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.2	0.74	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.2	0.90	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.1	J	3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		150	25-150
13C2_6:2FTS		114	25-150
13C2_8:2FTS		92	25-150
13C2_PFDoA		73	25-150
13C2_PFHxDA		38	25-150
13C2_PFTeDA		52	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-011
Description: SW #7 | Matrix: Aqueous
Date Sampled: 09/02/2021 1328 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		79	25-150
13C3_PFHxS		78	25-150
13C3-HFPO-DA		86	25-150
13C4_PFBA		73	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		96	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		84	25-150
13C7_PFUdA		75	25-150
13C8_PFOA		90	25-150
13C8_PFOS		59	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		86	25-150
d-EtFOSA		85	10-150
d5-EtFOSAA		84	25-150
d9-EtFOSE		73	10-150
d-MeFOSA		92	10-150
d3-MeFOSAA		79	25-150
d7-MeFOSE		77	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-012
Description: DUPLICATE | Matrix: Aqueous
Date Sampled: 09/02/2021 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	SOP SPE	PFAS by ID SOP	1	10/04/2021 2301	JJG	10/03/2021 1359	17482

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	7.6	0.46	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	7.6	0.63	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	H	7.6	1.5	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	H	7.6	1.9	ng/L	2
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND	H	7.6	1.1	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	H	7.6	0.83	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	7.6	2.0	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	7.6	0.46	ng/L	2
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND	H	7.6	1.3	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	7.6	0.71	ng/L	2
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND	H	7.6	0.90	ng/L	2
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND	H	15	1.2	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	7.6	0.88	ng/L	2
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND	H	7.6	1.2	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	0.56	HJ	3.8	0.39	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	3.8	0.74	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	3.8	0.47	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	3.8	0.67	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	3.8	0.58	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	3.8	0.56	ng/L	2
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND	H	7.6	0.99	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	H	3.8	0.52	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	6.2	H	3.8	0.57	ng/L	2
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	H	3.8	0.50	ng/L	2
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	3.8	0.45	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.58	HJ	3.8	0.42	ng/L	2
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND	H	7.6	0.77	ng/L	2
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	0.73	HJ	3.8	0.65	ng/L	2
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	H	3.8	0.44	ng/L	2
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND	H	7.6	0.95	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.2	HJ	3.8	0.79	ng/L	2
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	0.81	HJ	3.8	0.52	ng/L	2
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	3.8	0.57	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	3.8	0.50	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	3.8	0.59	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	H	3.8	1.9	ng/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
13C2_4:2FTS	H	139	25-150
13C2_6:2FTS	H	105	25-150
13C2_8:2FTS	H	88	25-150
13C2_PFDoA	H	77	25-150
13C2_PFHxDA	H	30	25-150
13C2_PFTeDA	H	49	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-012
Description: DUPLICATE | Matrix: Aqueous
Date Sampled: 09/02/2021 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
13C3_PFBS	H	88	25-150
13C3_PFHxS	H	93	25-150
13C3-HFPO-DA	H	96	25-150
13C4_PFBA	H	72	25-150
13C4_PFHpA	H	97	25-150
13C5_PFHxA	H	90	25-150
13C5_PFPeA	H	95	25-150
13C6_PFDA	H	80	25-150
13C7_PFUdA	H	93	25-150
13C8_PFOA	H	86	25-150
13C8_PFOS	H	83	25-150
13C8_PFOSA	H	92	10-150
13C9_PFNA	H	93	25-150
d-EtFOSA	H	74	10-150
d5-EtFOSAA	H	91	25-150
d9-EtFOSE	H	61	10-150
d-MeFOSA	H	64	10-150
d3-MeFOSAA	H	84	25-150
d7-MeFOSE	H	69	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI10061-013
Description: TRIP BLANK | Matrix: Aqueous
Date Sampled: 09/02/2021 1320 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021 | Project Number: 40232887

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/30/2021 1848	MMM	09/27/2021 1202	16655

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.7	0.52	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.7	0.72	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.7	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.7	2.2	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.7	1.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.7	0.95	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.7	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.7	0.52	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.7	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.7	0.81	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.7	1.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		17	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.7	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.7	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.3	0.45	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.3	0.84	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.3	0.54	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.3	0.77	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.3	0.66	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.3	0.64	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.7	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.3	0.60	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.3	0.65	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.3	0.57	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.3	0.51	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.3	0.48	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.7	0.88	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.3	0.74	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.3	0.50	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.7	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.3	0.90	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.3	0.59	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.3	0.65	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.3	0.57	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.3	0.68	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.3	2.2	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		125	25-150
13C2_6:2FTS	N	284	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		107	25-150
13C2_PFHxDA		122	25-150
13C2_PFTeDA		113	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WI10061-013
Description: TRIP BLANK
Matrix: Aqueous
Date Sampled: 09/02/2021 1320
Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/10/2021
Project Number: 40232887

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		102	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		122	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		106	25-150
d-EtFOSA		95	10-150
d5-EtFOSAA		98	25-150
d9-EtFOSE		100	10-150
d-MeFOSA		78	10-150
d3-MeFOSAA		102	25-150
d7-MeFOSE		121	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ15246-001
Batch: 15246
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 09/14/2021 1149

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	2.0	0.16	ug/kg	09/16/2021 2031
11Cl-PF3OUdS	ND		1	2.0	0.17	ug/kg	09/16/2021 2031
8:2 FTS	ND		1	2.0	0.27	ug/kg	09/16/2021 2031
6:2 FTS	ND		1	2.0	0.31	ug/kg	09/16/2021 2031
10:2 FTS	ND		1	2.0	0.38	ug/kg	09/16/2021 2031
4:2 FTS	ND		1	2.0	0.22	ug/kg	09/16/2021 2031
GenX	ND		1	4.0	0.58	ug/kg	09/16/2021 2031
ADONA	ND		1	2.0	0.15	ug/kg	09/16/2021 2031
EtFOSA	ND		1	2.0	0.36	ug/kg	09/16/2021 2031
EtFOSAA	ND		1	2.0	0.29	ug/kg	09/16/2021 2031
EtFOSE	ND		1	2.0	0.23	ug/kg	09/16/2021 2031
MeFOSA	ND		1	2.0	0.35	ug/kg	09/16/2021 2031
MeFOSAA	ND		1	2.0	0.40	ug/kg	09/16/2021 2031
MeFOSE	ND		1	2.0	0.33	ug/kg	09/16/2021 2031
PFBS	ND		1	1.0	0.13	ug/kg	09/16/2021 2031
PFDS	ND		1	1.0	0.22	ug/kg	09/16/2021 2031
PFHpS	ND		1	1.0	0.18	ug/kg	09/16/2021 2031
PFNS	ND		1	1.0	0.22	ug/kg	09/16/2021 2031
PFOSA	ND		1	1.0	0.18	ug/kg	09/16/2021 2031
PFPeS	ND		1	1.0	0.19	ug/kg	09/16/2021 2031
PFDOS	ND		1	1.0	0.26	ug/kg	09/16/2021 2031
PFHxS	ND		1	1.0	0.18	ug/kg	09/16/2021 2031
PFBA	ND		1	1.0	0.42	ug/kg	09/16/2021 2031
PFDA	ND		1	1.0	0.16	ug/kg	09/16/2021 2031
PFDoA	ND		1	1.0	0.18	ug/kg	09/16/2021 2031
PFHpA	ND		1	1.0	0.14	ug/kg	09/16/2021 2031
PFHxDA	ND		1	2.0	0.22	ug/kg	09/16/2021 2031
PFHxA	ND		1	1.0	0.18	ug/kg	09/16/2021 2031
PFNA	ND		1	1.0	0.15	ug/kg	09/16/2021 2031
PFODA	ND		1	1.0	0.35	ug/kg	09/16/2021 2031
PFOA	ND		1	1.0	0.21	ug/kg	09/16/2021 2031
PFPeA	ND		1	1.0	0.16	ug/kg	09/16/2021 2031
PFTeDA	ND		1	1.0	0.19	ug/kg	09/16/2021 2031
PFTrDA	ND		1	1.0	0.17	ug/kg	09/16/2021 2031
PFUdA	ND		1	1.0	0.18	ug/kg	09/16/2021 2031
PFOS	ND		1	1.0	0.36	ug/kg	09/16/2021 2031

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		95	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		98	25-150
13C2_PFHxDA		93	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ15246-001
Batch: 15246
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 09/14/2021 1149

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		92	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		99	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		97	25-150
13C7_PFUdA		92	25-150
13C8_PFOA		93	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		94	25-150
d-EtFOSA		101	10-150
d5-EtFOSAA		97	25-150
d9-EtFOSE		102	10-150
d-MeFOSA		95	10-150
d3-MeFOSAA		101	25-150
d7-MeFOSE		86	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ15246-002
Batch: 15246
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 09/14/2021 1149

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	1.9	1.9		1	100	50-150	09/16/2021 2044
11Cl-PF3OUdS	1.9	1.7		1	92	50-150	09/16/2021 2044
8:2 FTS	1.9	1.9		1	102	50-150	09/16/2021 2044
6:2 FTS	1.9	1.7		1	90	50-150	09/16/2021 2044
10:2 FTS	1.9	1.9		1	98	50-150	09/16/2021 2044
4:2 FTS	1.9	1.7		1	93	50-150	09/16/2021 2044
GenX	4.0	3.9		1	97	50-150	09/16/2021 2044
ADONA	1.9	1.8		1	96	50-150	09/16/2021 2044
EtFOSA	2.0	1.9		1	96	50-150	09/16/2021 2044
EtFOSAA	2.0	1.5		1	77	50-150	09/16/2021 2044
EtFOSE	2.0	1.7		1	87	50-150	09/16/2021 2044
MeFOSA	2.0	1.6		1	82	50-150	09/16/2021 2044
MeFOSAA	2.0	2.1		1	107	50-150	09/16/2021 2044
MeFOSE	2.0	1.9		1	95	50-150	09/16/2021 2044
PFBS	1.8	1.7		1	96	50-150	09/16/2021 2044
PFDS	1.9	1.9		1	97	50-150	09/16/2021 2044
PFHpS	1.9	1.9		1	98	50-150	09/16/2021 2044
PFNS	1.9	1.9		1	98	50-150	09/16/2021 2044
PFOSA	2.0	2.0		1	101	50-150	09/16/2021 2044
PFPeS	1.9	1.7		1	90	50-150	09/16/2021 2044
PFDOS	1.9	1.8		1	93	50-150	09/16/2021 2044
PFHxS	1.8	1.8		1	98	50-150	09/16/2021 2044
PFBA	2.0	1.8		1	92	50-150	09/16/2021 2044
PFDA	2.0	2.0		1	99	50-150	09/16/2021 2044
PFDoA	2.0	2.1		1	103	50-150	09/16/2021 2044
PFHpA	2.0	1.9		1	96	50-150	09/16/2021 2044
PFHxDA	2.0	2.0		1	98	50-150	09/16/2021 2044
PFHxA	2.0	1.8		1	88	50-150	09/16/2021 2044
PFNA	2.0	2.1		1	105	50-150	09/16/2021 2044
PFODA	2.0	1.8		1	92	50-150	09/16/2021 2044
PFOA	2.0	2.1		1	105	50-150	09/16/2021 2044
PFPeA	2.0	1.9		1	94	50-150	09/16/2021 2044
PFTeDA	2.0	2.0		1	98	50-150	09/16/2021 2044
PFTrDA	2.0	2.0		1	102	50-150	09/16/2021 2044
PFUdA	2.0	1.9		1	95	50-150	09/16/2021 2044
PFOS	1.9	1.7		1	91	50-150	09/16/2021 2044

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		93	25-150
13C2_PFHxDA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ15246-002
Batch: 15246
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 09/14/2021 1149

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		89	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		91	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		94	25-150
d-EtFOSA		97	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		95	10-150
d-MeFOSA		96	10-150
d3-MeFOSAA		90	25-150
d7-MeFOSE		91	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ16655-001
Batch: 16655
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2021 1202

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	09/29/2021 2257
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	09/29/2021 2257
8:2 FTS	ND		1	8.0	1.6	ng/L	09/29/2021 2257
6:2 FTS	ND		1	8.0	2.0	ng/L	09/29/2021 2257
10:2 FTS	ND		1	8.0	1.2	ng/L	09/29/2021 2257
4:2 FTS	ND		1	8.0	0.87	ng/L	09/29/2021 2257
GenX	ND		1	8.0	2.1	ng/L	09/29/2021 2257
ADONA	ND		1	8.0	0.48	ng/L	09/29/2021 2257
EtFOSA	ND		1	8.0	1.4	ng/L	09/29/2021 2257
EtFOSAA	ND		1	8.0	0.75	ng/L	09/29/2021 2257
EtFOSE	ND		1	8.0	0.95	ng/L	09/29/2021 2257
MeFOSA	ND		1	16	1.3	ng/L	09/29/2021 2257
MeFOSAA	ND		1	8.0	0.93	ng/L	09/29/2021 2257
MeFOSE	ND		1	8.0	1.3	ng/L	09/29/2021 2257
PFBS	ND		1	4.0	0.41	ng/L	09/29/2021 2257
PFDS	ND		1	4.0	0.78	ng/L	09/29/2021 2257
PFHpS	ND		1	4.0	0.50	ng/L	09/29/2021 2257
PFNS	ND		1	4.0	0.71	ng/L	09/29/2021 2257
PFOSA	ND		1	4.0	0.61	ng/L	09/29/2021 2257
PFPeS	ND		1	4.0	0.59	ng/L	09/29/2021 2257
PFDOS	ND		1	8.0	1.0	ng/L	09/29/2021 2257
PFHxS	ND		1	4.0	0.55	ng/L	09/29/2021 2257
PFBA	ND		1	4.0	0.60	ng/L	09/29/2021 2257
PFDA	ND		1	4.0	0.52	ng/L	09/29/2021 2257
PFDoA	ND		1	4.0	0.47	ng/L	09/29/2021 2257
PFHpA	ND		1	4.0	0.45	ng/L	09/29/2021 2257
PFHxDA	ND		1	8.0	0.82	ng/L	09/29/2021 2257
PFHxA	ND		1	4.0	0.69	ng/L	09/29/2021 2257
PFNA	ND		1	4.0	0.46	ng/L	09/29/2021 2257
PFODA	ND		1	8.0	1.0	ng/L	09/29/2021 2257
PFOA	ND		1	4.0	0.83	ng/L	09/29/2021 2257
PFPeA	ND		1	4.0	0.54	ng/L	09/29/2021 2257
PFTeDA	ND		1	4.0	0.60	ng/L	09/29/2021 2257
PFTrDA	ND		1	4.0	0.53	ng/L	09/29/2021 2257
PFUdA	ND		1	4.0	0.63	ng/L	09/29/2021 2257
PFOS	ND		1	4.0	2.0	ng/L	09/29/2021 2257

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		117	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		107	25-150
13C2_PFHxDA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ16655-001
Batch: 16655
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2021 1202

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		105	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		117	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		104	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		104	25-150
d-EtFOSA		99	10-150
d5-EtFOSAA		117	25-150
d9-EtFOSE		100	10-150
d-MeFOSA		102	10-150
d3-MeFOSAA		104	25-150
d7-MeFOSE		104	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ16655-002
Batch: 16655
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2021 1202

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	95	50-150	09/29/2021 2308
11Cl-PF3OUdS	15	13		1	87	50-150	09/29/2021 2308
8:2 FTS	15	14		1	90	50-150	09/29/2021 2308
6:2 FTS	15	14		1	95	50-150	09/29/2021 2308
10:2 FTS	15	13		1	86	50-150	09/29/2021 2308
4:2 FTS	15	12		1	83	50-150	09/29/2021 2308
GenX	32	28		1	89	50-150	09/29/2021 2308
ADONA	15	14		1	95	50-150	09/29/2021 2308
EtFOSA	16	14		1	85	50-150	09/29/2021 2308
EtFOSAA	16	14		1	86	50-150	09/29/2021 2308
EtFOSE	16	16		1	100	50-150	09/29/2021 2308
MeFOSA	16	15		1	96	50-150	09/29/2021 2308
MeFOSAA	16	16		1	103	50-150	09/29/2021 2308
MeFOSE	16	13		1	82	50-150	09/29/2021 2308
PFBS	14	12		1	86	50-150	09/29/2021 2308
PFDS	15	15		1	95	50-150	09/29/2021 2308
PFHpS	15	15		1	97	50-150	09/29/2021 2308
PFNS	15	15		1	95	50-150	09/29/2021 2308
PFOSA	16	14		1	89	50-150	09/29/2021 2308
PFPeS	15	15		1	101	50-150	09/29/2021 2308
PFDOS	15	15		1	96	50-150	09/29/2021 2308
PFHxS	15	13		1	87	50-150	09/29/2021 2308
PFBA	16	16		1	99	50-150	09/29/2021 2308
PFDA	16	14		1	87	50-150	09/29/2021 2308
PFDoA	16	15		1	94	50-150	09/29/2021 2308
PFHpA	16	16		1	100	50-150	09/29/2021 2308
PFHxDA	16	15		1	95	50-150	09/29/2021 2308
PFHxA	16	15		1	94	50-150	09/29/2021 2308
PFNA	16	16		1	97	50-150	09/29/2021 2308
PFODA	16	14		1	89	50-150	09/29/2021 2308
PFOA	16	15		1	92	50-150	09/29/2021 2308
PFPeA	16	15		1	95	50-150	09/29/2021 2308
PFTeDA	16	16		1	98	50-150	09/29/2021 2308
PFTrDA	16	15		1	92	50-150	09/29/2021 2308
PFUdA	16	15		1	94	50-150	09/29/2021 2308
PFOS	15	15		1	101	50-150	09/29/2021 2308

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		104	25-150
13C2_6:2FTS		90	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		102	25-150
13C2_PFHxDA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ16655-002
Batch: 16655
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2021 1202

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		102	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		100	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		115	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		103	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		102	25-150
d-EtFOSA		82	10-150
d5-EtFOSAA		125	25-150
d9-EtFOSE		92	10-150
d-MeFOSA		73	10-150
d3-MeFOSAA		98	25-150
d7-MeFOSE		98	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ17482-001
Batch: 17482
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/03/2021 1359

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	10/04/2021 2157
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	10/04/2021 2157
8:2 FTS	ND		1	8.0	1.6	ng/L	10/04/2021 2157
6:2 FTS	ND		1	8.0	2.0	ng/L	10/04/2021 2157
10:2 FTS	ND		1	8.0	1.2	ng/L	10/04/2021 2157
4:2 FTS	ND		1	8.0	0.87	ng/L	10/04/2021 2157
GenX	ND		1	8.0	2.1	ng/L	10/04/2021 2157
ADONA	ND		1	8.0	0.48	ng/L	10/04/2021 2157
EtFOSA	ND		1	8.0	1.4	ng/L	10/04/2021 2157
EtFOSAA	ND		1	8.0	0.75	ng/L	10/04/2021 2157
EtFOSE	ND		1	8.0	0.95	ng/L	10/04/2021 2157
MeFOSA	ND		1	16	1.3	ng/L	10/04/2021 2157
MeFOSAA	ND		1	8.0	0.93	ng/L	10/04/2021 2157
MeFOSE	ND		1	8.0	1.3	ng/L	10/04/2021 2157
PFBS	ND		1	4.0	0.41	ng/L	10/04/2021 2157
PFDS	ND		1	4.0	0.78	ng/L	10/04/2021 2157
PFHpS	ND		1	4.0	0.50	ng/L	10/04/2021 2157
PFNS	ND		1	4.0	0.71	ng/L	10/04/2021 2157
PFOSA	ND		1	4.0	0.61	ng/L	10/04/2021 2157
PFPeS	ND		1	4.0	0.59	ng/L	10/04/2021 2157
PFDOS	ND		1	8.0	1.0	ng/L	10/04/2021 2157
PFHxS	ND		1	4.0	0.55	ng/L	10/04/2021 2157
PFBA	ND		1	4.0	0.60	ng/L	10/04/2021 2157
PFDA	ND		1	4.0	0.52	ng/L	10/04/2021 2157
PFDoA	ND		1	4.0	0.47	ng/L	10/04/2021 2157
PFHpA	ND		1	4.0	0.45	ng/L	10/04/2021 2157
PFHxDA	ND		1	8.0	0.82	ng/L	10/04/2021 2157
PFHxA	ND		1	4.0	0.69	ng/L	10/04/2021 2157
PFNA	ND		1	4.0	0.46	ng/L	10/04/2021 2157
PFODA	ND		1	8.0	1.0	ng/L	10/04/2021 2157
PFOA	ND		1	4.0	0.83	ng/L	10/04/2021 2157
PFPeA	ND		1	4.0	0.54	ng/L	10/04/2021 2157
PFTeDA	ND		1	4.0	0.60	ng/L	10/04/2021 2157
PFTrDA	ND		1	4.0	0.53	ng/L	10/04/2021 2157
PFUdA	ND		1	4.0	0.63	ng/L	10/04/2021 2157
PFOS	ND		1	4.0	2.0	ng/L	10/04/2021 2157

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		81	25-150
13C2_6:2FTS		76	25-150
13C2_8:2FTS		76	25-150
13C2_PFDoA		80	25-150
13C2_PFHxDA		74	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ17482-001
Batch: 17482
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/03/2021 1359

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		76	25-150
13C3_PFBS		74	25-150
13C3_PFHxS		76	25-150
13C3-HFPO-DA		80	25-150
13C4_PFBA		76	25-150
13C4_PFHpA		75	25-150
13C5_PFHxA		76	25-150
13C5_PFPeA		80	25-150
13C6_PFDA		74	25-150
13C7_PFUdA		82	25-150
13C8_PFOA		71	25-150
13C8_PFOS		77	25-150
13C8_PFOSA		81	10-150
13C9_PFNA		80	25-150
d-EtFOSA		70	10-150
d5-EtFOSAA		85	25-150
d9-EtFOSE		79	10-150
d-MeFOSA		61	10-150
d3-MeFOSAA		78	25-150
d7-MeFOSE		67	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ17482-002
Batch: 17482
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/03/2021 1359

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	102	50-150	10/04/2021 2208
11Cl-PF3OUdS	15	14		1	92	50-150	10/04/2021 2208
8:2 FTS	15	19		1	124	50-150	10/04/2021 2208
6:2 FTS	15	15		1	99	50-150	10/04/2021 2208
10:2 FTS	15	13		1	83	50-150	10/04/2021 2208
4:2 FTS	15	16		1	104	50-150	10/04/2021 2208
GenX	32	32		1	101	50-150	10/04/2021 2208
ADONA	15	17		1	114	50-150	10/04/2021 2208
EtFOSA	16	14		1	88	50-150	10/04/2021 2208
EtFOSAA	16	15		1	96	50-150	10/04/2021 2208
EtFOSE	16	21		1	132	50-150	10/04/2021 2208
MeFOSA	16	18		1	113	50-150	10/04/2021 2208
MeFOSAA	16	16		1	101	50-150	10/04/2021 2208
MeFOSE	16	20		1	124	50-150	10/04/2021 2208
PFBS	14	14		1	98	50-150	10/04/2021 2208
PFDS	15	15		1	95	50-150	10/04/2021 2208
PFHpS	15	16		1	107	50-150	10/04/2021 2208
PFNS	15	15		1	101	50-150	10/04/2021 2208
PFOSA	16	17		1	104	50-150	10/04/2021 2208
PFPeS	15	15		1	102	50-150	10/04/2021 2208
PFDOS	15	12		1	75	50-150	10/04/2021 2208
PFHxS	15	16		1	108	50-150	10/04/2021 2208
PFBA	16	16		1	103	50-150	10/04/2021 2208
PFDA	16	17		1	108	50-150	10/04/2021 2208
PFDoA	16	16		1	101	50-150	10/04/2021 2208
PFHpA	16	17		1	105	50-150	10/04/2021 2208
PFHxDA	16	18		1	111	50-150	10/04/2021 2208
PFHxA	16	17		1	107	50-150	10/04/2021 2208
PFNA	16	18		1	114	50-150	10/04/2021 2208
PFODA	16	16		1	101	50-150	10/04/2021 2208
PFOA	16	17		1	108	50-150	10/04/2021 2208
PFPeA	16	16		1	103	50-150	10/04/2021 2208
PFTeDA	16	17		1	105	50-150	10/04/2021 2208
PFTrDA	16	15		1	93	50-150	10/04/2021 2208
PFUdA	16	18		1	112	50-150	10/04/2021 2208
PFOS	15	15		1	103	50-150	10/04/2021 2208

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		97	25-150
13C2_6:2FTS		92	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		75	25-150
13C2_PFHxDA		69	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ17482-002
Batch: 17482
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/03/2021 1359

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		70	25-150
13C3_PFBS		82	25-150
13C3_PFHxS		83	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		80	25-150
13C5_PFHxA		85	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		81	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		76	25-150
13C8_PFOS		80	25-150
13C8_PFOSA		80	10-150
13C9_PFNA		80	25-150
d-EtFOSA		68	10-150
d5-EtFOSAA		89	25-150
d9-EtFOSE		72	10-150
d-MeFOSA		58	10-150
d3-MeFOSAA		82	25-150
d7-MeFOSE		71	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Internal Transfer Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples Pre-Logged into eCOC

State Of Origin: WI
Cert. Needed: [X] Yes ☐ No
Owner Received Date: 9/8/2021
Results Requested By: 10/1/2021

Workorder: 40232887 **Workorder Name:** LACROSSE WELLS 23 & 24

WI10061
KLC2

Report To	Subcontract To	Requested Analysis
Christopher Hyska Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700	

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	4-L PFAS Prec Rinse Water	Dry Weight	WI15 PFAS (w) ID	LAB USE ONLY
1	SED #1	PS	9/2/2021 14:20	40232887001	Solid	1	X	X	X	
2	SED #2	PS	9/2/2021 14:45	40232887002	Solid	1		X	X	
3	SED #3	PS	9/2/2021 15:01	40232887003	Solid	1		X	X	
4	SED #4	PS	9/2/2021 15:10	40232887004	Solid	1		X	X	
5	SED #5	PS	9/2/2021 14:01	40232887005	Solid	1		X	X	
6	SW #1	PS	9/2/2021 14:15	40232887006	Water	2			X	
7	SW #2	PS	9/2/2021 14:47	40232887007	Water	2			X	
8	SW #3	PS	9/2/2021 14:57	40232887008	Water	2			X	
9	SW #5	PS	9/2/2021 13:55	40232887009	Water	2			X	
10	SW #6	PS	9/2/2021 13:37	40232887010	Water	2			X	
11	SW #7	PS	9/2/2021 13:28	40232887011	Water	2			X	
12	DUPLICATE	PS	9/2/2021 00:00	40232887012	Water	2			X	
13	TRIP BLANK	PS	9/2/2021 13:20	40232887013	Water	2			X	

Transfers	Released By	Date/Time	Received By	Date/Time
1		9/8/21 1644		
2				
3	UPS	9/10/21 1105		9/10/21 1105

Comments: IR77 - MDL reporting - Quote 23492

Cooler Temperature on Receipt 3.5 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

(Please Print Clearly)

Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	-
Regulatory Program:	WDNR

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CHAIN OF CUSTODY

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1

COC No. 40232887

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED? (YES/NO): Y/N — N
PRESERVATION (CODE)*: Pick Letter — A

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, Sl = Sludge
W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

Analyses Requested: WI 38 PFAS by ID

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	WI 38 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
001	SED #1	9/2/21	2:30	SED	X		
002	SED #2	↓	2:45	↓	X		
003	SED #3		3:01		X		
004	SED #4		3:10		X		
005	SED #5		2:01		X		
006	SW #1		2:15	SW	X		
007	SW #2		2:47		X		
008	SW #3		2:57		X		
009	SW #5		1:55		X		
010	SW #6		1:37		X		
011	SW #7		1:28		X		
012	Duplicate			↓	X		
013	Trip Blank	↓	1:20		X		

Profile # 4632

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	9/3/21 4:10		
Fed Ex	9/8/21 12:35	MBenson/Pace	9/8/21 12:35

PACE Project No. 40232887

Receipt Temp = 3.5 °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C016a(27Jun2006)

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: OS Group Project # 40232887

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

	Glass							Plastic					Vials						Jars				General							
Pace Lab #	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																										1						2.5 / 5 / 10
002																										1						2.5 / 5 / 10
003																										1						2.5 / 5 / 10
004																										1						2.5 / 5 / 10
005																										1						2.5 / 5 / 10
006										2																						2.5 / 5 / 10
007										2																						2.5 / 5 / 10
008										2																						2.5 / 5 / 10
009										2																						2.5 / 5 / 10
010										2																						2.5 / 5 / 10
011										2																						2.5 / 5 / 10
012										2																						2.5 / 5 / 10
013										2																						2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018		1	1	1	1	1	1	1																								2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	125ml plastic unpres

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: WO#: 40232887

Client Name: OS Group LLC

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: 2034 1740 6707

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____

Thermometer Used SR - 90 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4 /Corr: 3.5

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 9/8/21 /Initials: LB

Labeled By Initials: _____

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: S/W	☒Yes ☐No ☐N/A	12.
Trip Blank Present	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Pace Cooler Inspected by/date: KSC / 09/10/2021 Lot #: WI10061

Means of receipt: ☐ Pace ☐ Client ☑ UPS ☐ FedEx ☐ Other: _____

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: 21-1928

3.5 / 3.5 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☑ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # 34418

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.

Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: JRG2 Date: 09/10/2021

Comments:

ATTACHMENT D

SOIL LABORATORY ANALYTICAL RESULTS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 28, 2021

Steve Osesek
The OS Group, LLC
N6746 McCurdy Road
Holmen, WI 54636

RE: Project: LACROSSE WELLS 23 & 24
Pace Project No.: 40233816

Dear Steve Osesek:

Enclosed are the analytical results for sample(s) received by the laboratory on September 23, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Christopher Hyska

Christopher Hyska
christopher.hyska@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: John Storlie, The OS Group, LLC

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: LACROSSE WELLS 23 & 24
Pace Project No.: 40233816

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40233816001	**MW-6 1-2'**	Solid	09/20/21 10:08	09/23/21 10:30
40233816002	**MW-7 1-2'**	Solid	09/21/21 08:12	09/23/21 10:30
40233816003	**AUGEN BLANK** AUGER BLANK	Water	09/21/21 13:34	09/23/21 10:30
40233816004	**FIELD BLANK**	Water	09/20/21 10:00	09/23/21 10:30

(Please Print Clearly)

Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	-
Regulatory Program:	WDNR

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CHAIN OF COUSTODY

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page of

COC No. 4023381 6

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, Sl = Sludge
W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) — Y/N: N
PRESERVATION (CODE)* — Pick Letter: A

Analyses Requested: WI 36 PFAS by ID

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
001	MW-6 1-2'	9-20-21	10:08	S	X			
002	MW-7 1-2'	9-21-21	8:12	S	X			
003	Auger Blank	9-21-21	1:34	W	X			
004	Field Blank	9-20-21	10:00	W	X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	9/22/21 7:00		
Fed Ex	9/23/21 1030	[signature] Pace	9/23/21 1030

PACE Project No. 4023381 6

Receipt Temp = 2 °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present (circled)
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: The OS Group Project # 40233816

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☑N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																										1						2.5 / 5 / 10
002																										1						2.5 / 5 / 10
003										2																						2.5 / 5 / 10
004										2																						2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																													9/23/21	800		2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	125 mL poly Unpreserved

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40233816

40233816

Client Name: The OS Group

Courier: ☐ CS Logistics ☑ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other:

Tracking #: 284046288872

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Thermometer Used SR - 105 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2.5 /Corr: 2

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 9/23/21 /Initials: SW

Labeled By Initials: MP

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. Pg # 9/23/21 SW
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☐No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☐Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☐N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: SW	☐Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Christopher Hyska

Project Name: LACROSSE WELLS 23 & 24

Project Number: 40233816

Lot Number:**WI30011**

Date Completed:10/27/2021

10/27/2021 6:01 PM
Approved and released by:
Project Manager II: **Marcia K. McGinnity**

Case Narrative
Pace Analytical Services, LLC
Lot Number: WI30011

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation:

Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, Fecal Coliform SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, Solid Chemical Material: TOC Walkley-Black.

Where applicable, all soil sample results (including LOQ and DL if requested) are corrected for dry weight unless flagged with a "W" qualifier.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Comments:

EIS recovery of 13C2_6:2FTS for the sample WI30011-001 was outside the upper control limit. This sample did not contain the associated target analyte (6:2 FTS); therefore, re-extraction and/or re-analysis was not performed. The associated results are qualified “Q”.
WI30011-001 (MW-6 1-2') (Run 1) (Analysis Batch 18943) (Prep Batch 18728) PFAS by Isotope Dilution (36 analytes)

The laboratory control sample (LCS) associated to sample WI30011-003 exceeded recovery limits with a positive bias for PFOA and/or PFOS. These target analytes were not detected. The associated results are qualified “L”.
WI30011-003 (AUGEN BLANK) (Run 1) (Analysis Batch 19906) (Prep Batch 19306) PFAS by Isotope Dilution (36 analytes)

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene

autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Sample Summary
Pace Analytical Services, LLC
Lot Number: WI30011
Project Name: LACROSSE WELLS 23 & 24
Project Number: 40233816

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-6 1-2'	Solid	09/20/2021 1008	09/28/2021
002	MW-7 1-2'	Solid	09/20/2021 0812	09/28/2021
003	AUGEN BLANK	Aqueous	09/21/2021 1334	09/28/2021
004	FIELD BLANK	Aqueous	09/20/2021 1000	09/28/2021

(4 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: WI30011

Project Name: LACROSSE WELLS 23 & 24

Project Number: 40233816

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(0 detections)

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI30011-001
Description: MW-6 1-2' | Matrix: Solid
Date Sampled: 09/20/2021 1008 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 88.7 09/30/2021 2304
Date Received: 09/28/2021 | Project Number: 40233816

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/15/2021 1744	MMM	10/14/2021 1206	18728

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		1.8	0.15	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		1.8	0.16	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		1.8	0.25	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	1.8	0.28	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.8	0.35	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		1.8	0.20	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		3.7	0.54	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		1.8	0.14	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		1.8	0.33	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.8	0.27	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		1.8	0.21	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		1.8	0.32	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.8	0.37	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		1.8	0.31	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		0.92	0.12	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		0.92	0.21	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		0.92	0.20	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		0.92	0.24	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		0.92	0.38	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		0.92	0.15	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		0.92	0.13	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.8	0.21	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		0.92	0.14	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		0.92	0.32	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		0.92	0.20	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		0.92	0.15	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		0.92	0.33	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		95	25-150
13C2_6:2FTS	N	162	25-150
13C2_8:2FTS		90	25-150
13C2_PFDoA		71	25-150
13C2_PFHxDA		77	25-150
13C2_PFTeDA		80	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC		Laboratory ID: WI30011-001	
Description: MW-6 1-2'		Matrix: Solid	
Date Sampled: 09/20/2021 1008	Project Name: LACROSSE WELLS 23 & 24	% Solids: 88.7	09/30/2021 2304
Date Received: 09/28/2021	Project Number: 40233816		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		84	25-150
13C3_PFHxS		74	25-150
13C3-HFPO-DA		72	25-150
13C4_PFBA		77	25-150
13C4_PFHpA		72	25-150
13C5_PFHxA		76	25-150
13C5_PFPeA		79	25-150
13C6_PFDA		74	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		82	25-150
13C8_PFOS		74	25-150
13C8_PFOSA		75	10-150
13C9_PFNA		80	25-150
d-EtFOSA		74	10-150
d5-EtFOSAA		89	25-150
d9-EtFOSE		73	10-150
d-MeFOSA		98	10-150
d3-MeFOSAA		87	25-150
d7-MeFOSE		75	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI30011-002
Description: MW-7 1-2' | Matrix: Solid
Date Sampled: 09/20/2021 0812 | Project Name: LACROSSE WELLS 23 & 24 | % Solids: 91.8 09/30/2021 2304
Date Received: 09/28/2021 | Project Number: 40233816

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/15/2021 1755	MMM	10/14/2021 1206	18728

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		1.9	0.15	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		1.9	0.17	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		1.9	0.27	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		1.9	0.30	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.9	0.36	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		1.9	0.21	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		3.9	0.56	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		1.9	0.15	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		1.9	0.35	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.9	0.28	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		1.9	0.22	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		1.9	0.34	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.9	0.38	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		1.9	0.32	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		0.97	0.13	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		0.97	0.22	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		0.97	0.17	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		0.97	0.21	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		0.97	0.17	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		0.97	0.18	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		0.97	0.25	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		0.97	0.17	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		0.97	0.40	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		0.97	0.15	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		0.97	0.17	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		0.97	0.14	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.9	0.22	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		0.97	0.18	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		0.97	0.15	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		0.97	0.34	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		0.97	0.21	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		0.97	0.15	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		0.97	0.18	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		0.97	0.17	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		0.97	0.18	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		0.97	0.35	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		120	25-150
13C2_6:2FTS		142	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		85	25-150
13C2_PFHxDA		93	25-150
13C2_PFTeDA		95	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC		Laboratory ID: WI30011-002	
Description: MW-7 1-2'		Matrix: Solid	
Date Sampled: 09/20/2021 0812	Project Name: LACROSSE WELLS 23 & 24	% Solids: 91.8	09/30/2021 2304
Date Received: 09/28/2021	Project Number: 40233816		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		94	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		90	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		87	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		89	25-150
13C8_PFOS		84	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		91	25-150
d-EtFOSA		96	10-150
d5-EtFOSAA		104	25-150
d9-EtFOSE		92	10-150
d-MeFOSA		92	10-150
d3-MeFOSAA		96	25-150
d7-MeFOSE		102	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WI30011-003
Description: AUGEN BLANK | Matrix: Aqueous
Date Sampled: 09/21/2021 1334 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/28/2021 | Project Number: 40233816

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/22/2021 1852	MMM	10/19/2021 1138	19306

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.0	1.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.0	0.87	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.0	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	0.75	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.0	0.95	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.3	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.93	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.0	1.3	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.41	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.0	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	0.55	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.0	0.45	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.0	0.81	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.0	0.69	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.46	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.0	1.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND	L	4.0	0.83	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	0.54	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	L	4.0	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		137	25-150
13C2_6:2FTS		147	25-150
13C2_8:2FTS		122	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		108	25-150
13C2_PFTeDA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WI30011-003
Description: AUGEN BLANK | Matrix: Aqueous
Date Sampled: 09/21/2021 1334 | Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/28/2021 | Project Number: 40233816

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		109	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		112	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		104	25-150
d-EtFOSA		107	10-150
d5-EtFOSAA		116	25-150
d9-EtFOSE		98	10-150
d-MeFOSA		103	10-150
d3-MeFOSAA		102	25-150
d7-MeFOSE		103	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WI30011-004
Description: FIELD BLANK
Matrix: Aqueous
Date Sampled: 09/20/2021 1000
Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/28/2021
Project Number: 40233816

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/17/2021 2201	JJG	10/16/2021 1423	19096

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.1	0.55	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.1	0.75	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.1	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		9.1	2.3	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		9.1	1.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.1	0.99	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.1	2.4	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.1	0.55	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		9.1	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.1	0.85	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		9.1	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.1	1.1	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		9.1	1.5	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.5	0.47	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.5	0.88	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.5	0.57	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.5	0.81	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.5	0.70	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		9.1	1.2	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.5	0.63	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.5	0.60	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.5	0.54	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.5	0.51	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		9.1	0.93	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.5	0.78	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.5	0.53	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		9.1	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.5	0.94	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.5	0.62	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.5	0.60	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.5	0.71	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.5	2.3	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		102	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		55	25-150
13C2_PFHxDA		77	25-150
13C2_PFTeDA		59	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WI30011-004
Description: FIELD BLANK
Matrix: Aqueous
Date Sampled: 09/20/2021 1000
Project Name: LACROSSE WELLS 23 & 24
Date Received: 09/28/2021
Project Number: 40233816

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		100	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		95	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		80	25-150
13C7_PFUdA		68	25-150
13C8_PFOA		95	25-150
13C8_PFOS		82	25-150
13C8_PFOSA		71	10-150
13C9_PFNA		98	25-150
d-EtFOSA		51	10-150
d5-EtFOSAA		58	25-150
d9-EtFOSE		53	10-150
d-MeFOSA		48	10-150
d3-MeFOSAA		73	25-150
d7-MeFOSE		63	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ18728-001
Batch: 18728
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 10/14/2021 1206

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	2.0	0.16	ug/kg	10/15/2021 1702
11Cl-PF3OUdS	ND		1	2.0	0.17	ug/kg	10/15/2021 1702
8:2 FTS	ND		1	2.0	0.27	ug/kg	10/15/2021 1702
6:2 FTS	ND		1	2.0	0.31	ug/kg	10/15/2021 1702
10:2 FTS	ND		1	2.0	0.38	ug/kg	10/15/2021 1702
4:2 FTS	ND		1	2.0	0.22	ug/kg	10/15/2021 1702
GenX	ND		1	4.0	0.58	ug/kg	10/15/2021 1702
ADONA	ND		1	2.0	0.15	ug/kg	10/15/2021 1702
EtFOSA	ND		1	2.0	0.36	ug/kg	10/15/2021 1702
EtFOSAA	ND		1	2.0	0.29	ug/kg	10/15/2021 1702
EtFOSE	ND		1	2.0	0.23	ug/kg	10/15/2021 1702
MeFOSA	ND		1	2.0	0.35	ug/kg	10/15/2021 1702
MeFOSAA	ND		1	2.0	0.40	ug/kg	10/15/2021 1702
MeFOSE	ND		1	2.0	0.33	ug/kg	10/15/2021 1702
PFBS	ND		1	1.0	0.13	ug/kg	10/15/2021 1702
PFDS	ND		1	1.0	0.22	ug/kg	10/15/2021 1702
PFHpS	ND		1	1.0	0.18	ug/kg	10/15/2021 1702
PFNS	ND		1	1.0	0.22	ug/kg	10/15/2021 1702
PFOSA	ND		1	1.0	0.18	ug/kg	10/15/2021 1702
PFPeS	ND		1	1.0	0.19	ug/kg	10/15/2021 1702
PFDOS	ND		1	1.0	0.26	ug/kg	10/15/2021 1702
PFHxS	ND		1	1.0	0.18	ug/kg	10/15/2021 1702
PFBA	ND		1	1.0	0.42	ug/kg	10/15/2021 1702
PFDA	ND		1	1.0	0.16	ug/kg	10/15/2021 1702
PFDoA	ND		1	1.0	0.18	ug/kg	10/15/2021 1702
PFHpA	ND		1	1.0	0.14	ug/kg	10/15/2021 1702
PFHxDA	ND		1	2.0	0.22	ug/kg	10/15/2021 1702
PFHxA	ND		1	1.0	0.18	ug/kg	10/15/2021 1702
PFNA	ND		1	1.0	0.15	ug/kg	10/15/2021 1702
PFODA	ND		1	1.0	0.35	ug/kg	10/15/2021 1702
PFOA	ND		1	1.0	0.21	ug/kg	10/15/2021 1702
PFPeA	ND		1	1.0	0.16	ug/kg	10/15/2021 1702
PFTeDA	ND		1	1.0	0.19	ug/kg	10/15/2021 1702
PFTrDA	ND		1	1.0	0.17	ug/kg	10/15/2021 1702
PFUdA	ND		1	1.0	0.18	ug/kg	10/15/2021 1702
PFOS	ND		1	1.0	0.36	ug/kg	10/15/2021 1702

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		92	25-150
13C2_6:2FTS		90	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		92	25-150
13C2_PFHxDA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ18728-001
Batch: 18728
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 10/14/2021 1206

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		99	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		96	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		99	25-150
13C8_PFOS		85	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		99	25-150
d-EtFOSA		96	10-150
d5-EtFOSAA		98	25-150
d9-EtFOSE		95	10-150
d-MeFOSA		87	10-150
d3-MeFOSAA		92	25-150
d7-MeFOSE		100	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ18728-002
Batch: 18728
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 10/14/2021 1206

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	1.9	1.8		1	99	50-150	10/15/2021 1713
11Cl-PF3OUdS	1.9	1.8		1	94	50-150	10/15/2021 1713
8:2 FTS	1.9	1.8		1	96	50-150	10/15/2021 1713
6:2 FTS	1.9	1.7		1	91	50-150	10/15/2021 1713
10:2 FTS	1.9	1.6		1	81	50-150	10/15/2021 1713
4:2 FTS	1.9	2.0		1	106	50-150	10/15/2021 1713
GenX	4.0	3.9		1	97	50-150	10/15/2021 1713
ADONA	1.9	1.6		1	86	50-150	10/15/2021 1713
EtFOSA	2.0	2.0		1	101	50-150	10/15/2021 1713
EtFOSAA	2.0	1.7		1	84	50-150	10/15/2021 1713
EtFOSE	2.0	1.9		1	95	50-150	10/15/2021 1713
MeFOSA	2.0	1.7		1	86	50-150	10/15/2021 1713
MeFOSAA	2.0	1.8		1	91	50-150	10/15/2021 1713
MeFOSE	2.0	1.6		1	79	50-150	10/15/2021 1713
PFBS	1.8	1.6		1	93	50-150	10/15/2021 1713
PFDS	1.9	1.8		1	91	50-150	10/15/2021 1713
PFHpS	1.9	1.6		1	85	50-150	10/15/2021 1713
PFNS	1.9	1.7		1	91	50-150	10/15/2021 1713
PFOSA	2.0	1.9		1	96	50-150	10/15/2021 1713
PFPeS	1.9	1.7		1	90	50-150	10/15/2021 1713
PFDOS	1.9	1.7		1	86	50-150	10/15/2021 1713
PFHxS	1.8	1.8		1	97	50-150	10/15/2021 1713
PFBA	2.0	1.9		1	94	50-150	10/15/2021 1713
PFDA	2.0	1.9		1	97	50-150	10/15/2021 1713
PFDoA	2.0	1.8		1	90	50-150	10/15/2021 1713
PFHpA	2.0	1.8		1	91	50-150	10/15/2021 1713
PFHxDA	2.0	2.0		1	101	50-150	10/15/2021 1713
PFHxA	2.0	2.1		1	103	50-150	10/15/2021 1713
PFNA	2.0	1.8		1	92	50-150	10/15/2021 1713
PFODA	2.0	1.8		1	90	50-150	10/15/2021 1713
PFOA	2.0	1.9		1	96	50-150	10/15/2021 1713
PFPeA	2.0	1.9		1	96	50-150	10/15/2021 1713
PFTeDA	2.0	2.0		1	99	50-150	10/15/2021 1713
PFTrDA	2.0	1.7		1	87	50-150	10/15/2021 1713
PFUdA	2.0	1.9		1	93	50-150	10/15/2021 1713
PFOS	1.9	1.9		1	101	50-150	10/15/2021 1713

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		82	25-150
13C2_6:2FTS		95	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		90	25-150
13C2_PFHxDA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ18728-002
Batch: 18728
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 10/14/2021 1206

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		96	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		94	25-150
13C3-HFPO-DA		89	25-150
13C4_PFBA		92	25-150
13C4_PFHpA		90	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		86	25-150
13C7_PFUdA		111	25-150
13C8_PFOA		92	25-150
13C8_PFOS		83	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		95	25-150
d-EtFOSA		80	10-150
d5-EtFOSAA		91	25-150
d9-EtFOSE		95	10-150
d-MeFOSA		96	10-150
d3-MeFOSAA		92	25-150
d7-MeFOSE		99	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ19096-001
Batch: 19096
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/16/2021 1423

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	10/17/2021 1656
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	10/17/2021 1656
8:2 FTS	ND		1	8.0	1.6	ng/L	10/17/2021 1656
6:2 FTS	ND		1	8.0	2.0	ng/L	10/17/2021 1656
10:2 FTS	ND		1	8.0	1.2	ng/L	10/17/2021 1656
4:2 FTS	ND		1	8.0	0.87	ng/L	10/17/2021 1656
GenX	ND		1	8.0	2.1	ng/L	10/17/2021 1656
ADONA	ND		1	8.0	0.48	ng/L	10/17/2021 1656
EtFOSA	ND		1	8.0	1.4	ng/L	10/17/2021 1656
EtFOSAA	ND		1	8.0	0.75	ng/L	10/17/2021 1656
EtFOSE	ND		1	8.0	0.95	ng/L	10/17/2021 1656
MeFOSA	ND		1	16	1.3	ng/L	10/17/2021 1656
MeFOSAA	ND		1	8.0	0.93	ng/L	10/17/2021 1656
MeFOSE	ND		1	8.0	1.3	ng/L	10/17/2021 1656
PFBS	ND		1	4.0	0.41	ng/L	10/17/2021 1656
PFDS	ND		1	4.0	0.78	ng/L	10/17/2021 1656
PFHpS	ND		1	4.0	0.50	ng/L	10/17/2021 1656
PFNS	ND		1	4.0	0.71	ng/L	10/17/2021 1656
PFOSA	ND		1	4.0	0.61	ng/L	10/17/2021 1656
PFPeS	ND		1	4.0	0.59	ng/L	10/17/2021 1656
PFDOS	ND		1	8.0	1.0	ng/L	10/17/2021 1656
PFHxS	ND		1	4.0	0.55	ng/L	10/17/2021 1656
PFBA	ND		1	4.0	0.60	ng/L	10/17/2021 1656
PFDA	ND		1	4.0	0.52	ng/L	10/17/2021 1656
PFDoA	ND		1	4.0	0.47	ng/L	10/17/2021 1656
PFHpA	ND		1	4.0	0.45	ng/L	10/17/2021 1656
PFHxDA	ND		1	8.0	0.82	ng/L	10/17/2021 1656
PFHxA	ND		1	4.0	0.69	ng/L	10/17/2021 1656
PFNA	ND		1	4.0	0.46	ng/L	10/17/2021 1656
PFODA	ND		1	8.0	1.0	ng/L	10/17/2021 1656
PFOA	ND		1	4.0	0.83	ng/L	10/17/2021 1656
PFPeA	ND		1	4.0	0.54	ng/L	10/17/2021 1656
PFTeDA	ND		1	4.0	0.60	ng/L	10/17/2021 1656
PFTrDA	ND		1	4.0	0.53	ng/L	10/17/2021 1656
PFUdA	ND		1	4.0	0.63	ng/L	10/17/2021 1656
PFOS	ND		1	4.0	2.0	ng/L	10/17/2021 1656

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		120	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		89	25-150
13C2_PFHxDA		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ19096-001
Batch: 19096
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/16/2021 1423

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		88	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		100	25-150
13C8_PFOS		93	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		106	25-150
d-EtFOSA		71	10-150
d5-EtFOSAA		89	25-150
d9-EtFOSE		89	10-150
d-MeFOSA		62	10-150
d3-MeFOSAA		86	25-150
d7-MeFOSE		96	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ19096-002
Batch: 19096
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/16/2021 1423

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	95	50-150	10/17/2021 1707
11Cl-PF3OUdS	15	15		1	97	50-150	10/17/2021 1707
8:2 FTS	15	16		1	106	50-150	10/17/2021 1707
6:2 FTS	15	16		1	108	50-150	10/17/2021 1707
10:2 FTS	15	15		1	95	50-150	10/17/2021 1707
4:2 FTS	15	15		1	97	50-150	10/17/2021 1707
GenX	32	33		1	104	50-150	10/17/2021 1707
ADONA	15	16		1	104	50-150	10/17/2021 1707
EtFOSA	16	18		1	110	50-150	10/17/2021 1707
EtFOSAA	16	13		1	84	50-150	10/17/2021 1707
EtFOSE	16	16		1	97	50-150	10/17/2021 1707
MeFOSA	16	21		1	133	50-150	10/17/2021 1707
MeFOSAA	16	16		1	101	50-150	10/17/2021 1707
MeFOSE	16	15		1	96	50-150	10/17/2021 1707
PFBS	14	13		1	95	50-150	10/17/2021 1707
PFDS	15	14		1	92	50-150	10/17/2021 1707
PFHpS	15	15		1	96	50-150	10/17/2021 1707
PFNS	15	15		1	97	50-150	10/17/2021 1707
PFOSA	16	16		1	102	50-150	10/17/2021 1707
PFPeS	15	15		1	99	50-150	10/17/2021 1707
PFDOS	15	9.5		1	61	50-150	10/17/2021 1707
PFHxS	15	14		1	99	50-150	10/17/2021 1707
PFBA	16	16		1	99	50-150	10/17/2021 1707
PFDA	16	16		1	97	50-150	10/17/2021 1707
PFDoA	16	16		1	98	50-150	10/17/2021 1707
PFHpA	16	16		1	101	50-150	10/17/2021 1707
PFHxDA	16	18		1	112	50-150	10/17/2021 1707
PFHxA	16	15		1	96	50-150	10/17/2021 1707
PFNA	16	15		1	91	50-150	10/17/2021 1707
PFODA	16	11		1	66	50-150	10/17/2021 1707
PFOA	16	16		1	103	50-150	10/17/2021 1707
PFPeA	16	15		1	92	50-150	10/17/2021 1707
PFTeDA	16	17		1	103	50-150	10/17/2021 1707
PFTrDA	16	15		1	92	50-150	10/17/2021 1707
PFUdA	16	17		1	105	50-150	10/17/2021 1707
PFOS	15	14		1	96	50-150	10/17/2021 1707

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		121	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		89	25-150
13C2_PFDoA		85	25-150
13C2_PFHxDA		88	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ19096-002
Batch: 19096
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/16/2021 1423

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		84	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		88	25-150
13C8_PFOA		94	25-150
13C8_PFOS		90	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		111	25-150
d-EtFOSA		76	10-150
d5-EtFOSAA		87	25-150
d9-EtFOSE		87	10-150
d-MeFOSA		67	10-150
d3-MeFOSAA		88	25-150
d7-MeFOSE		93	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ19306-001
Batch: 19306
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/19/2021 1138

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	10/20/2021 1445
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	10/20/2021 1445
8:2 FTS	ND		1	8.0	1.6	ng/L	10/20/2021 1445
6:2 FTS	ND		1	8.0	2.0	ng/L	10/20/2021 1445
10:2 FTS	ND		1	8.0	1.2	ng/L	10/20/2021 1445
4:2 FTS	ND		1	8.0	0.87	ng/L	10/20/2021 1445
GenX	ND		1	8.0	2.1	ng/L	10/20/2021 1445
ADONA	ND		1	8.0	0.48	ng/L	10/20/2021 1445
EtFOSA	ND		1	8.0	1.4	ng/L	10/20/2021 1445
EtFOSAA	ND		1	8.0	0.75	ng/L	10/20/2021 1445
EtFOSE	ND		1	8.0	0.95	ng/L	10/20/2021 1445
MeFOSA	ND		1	16	1.3	ng/L	10/20/2021 1445
MeFOSAA	ND		1	8.0	0.93	ng/L	10/20/2021 1445
MeFOSE	ND		1	8.0	1.3	ng/L	10/20/2021 1445
PFBS	ND		1	4.0	0.41	ng/L	10/20/2021 1445
PFDS	ND		1	4.0	0.78	ng/L	10/20/2021 1445
PFHpS	ND		1	4.0	0.50	ng/L	10/20/2021 1445
PFNS	ND		1	4.0	0.71	ng/L	10/20/2021 1445
PFOSA	ND		1	4.0	0.61	ng/L	10/20/2021 1445
PFPeS	ND		1	4.0	0.59	ng/L	10/20/2021 1445
PFDOS	ND		1	8.0	1.0	ng/L	10/20/2021 1445
PFHxS	ND		1	4.0	0.55	ng/L	10/20/2021 1445
PFBA	ND		1	4.0	0.60	ng/L	10/20/2021 1445
PFDA	ND		1	4.0	0.52	ng/L	10/20/2021 1445
PFDoA	ND		1	4.0	0.47	ng/L	10/20/2021 1445
PFHpA	ND		1	4.0	0.45	ng/L	10/20/2021 1445
PFHxDA	ND		1	8.0	0.82	ng/L	10/20/2021 1445
PFHxA	ND		1	4.0	0.69	ng/L	10/20/2021 1445
PFNA	ND		1	4.0	0.46	ng/L	10/20/2021 1445
PFODA	ND		1	8.0	1.0	ng/L	10/20/2021 1445
PFOA	ND		1	4.0	0.83	ng/L	10/20/2021 1445
PFPeA	ND		1	4.0	0.54	ng/L	10/20/2021 1445
PFTeDA	ND		1	4.0	0.60	ng/L	10/20/2021 1445
PFTrDA	ND		1	4.0	0.53	ng/L	10/20/2021 1445
PFUdA	ND		1	4.0	0.63	ng/L	10/20/2021 1445
PFOS	ND		1	4.0	2.0	ng/L	10/20/2021 1445

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		111	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		115	25-150
13C2_PFDoA		102	25-150
13C2_PFHxDA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ19306-001
Batch: 19306
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/19/2021 1138

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		99	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		119	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		114	25-150
13C8_PFOA		96	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		109	25-150
d-EtFOSA		98	10-150
d5-EtFOSAA		109	25-150
d9-EtFOSE		98	10-150
d-MeFOSA		95	10-150
d3-MeFOSAA		107	25-150
d7-MeFOSE		106	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ19306-002
Batch: 19306
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/19/2021 1138

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	96	50-150	10/20/2021 1455
11Cl-PF3OUdS	15	14		1	93	50-150	10/20/2021 1455
8:2 FTS	15	17		1	110	50-150	10/20/2021 1455
6:2 FTS	15	16		1	108	50-150	10/20/2021 1455
10:2 FTS	15	14		1	88	50-150	10/20/2021 1455
4:2 FTS	15	14		1	96	50-150	10/20/2021 1455
GenX	32	32		1	99	50-150	10/20/2021 1455
ADONA	15	15		1	103	50-150	10/20/2021 1455
EtFOSA	16	14		1	89	50-150	10/20/2021 1455
EtFOSAA	16	15		1	94	50-150	10/20/2021 1455
EtFOSE	16	17		1	105	50-150	10/20/2021 1455
MeFOSA	16	16		1	97	50-150	10/20/2021 1455
MeFOSAA	16	17		1	103	50-150	10/20/2021 1455
MeFOSE	16	15		1	93	50-150	10/20/2021 1455
PFBS	14	14		1	97	50-150	10/20/2021 1455
PFDS	15	15		1	97	50-150	10/20/2021 1455
PFHpS	15	15		1	98	50-150	10/20/2021 1455
PFNS	15	13		1	82	50-150	10/20/2021 1455
PFOSA	16	14		1	90	50-150	10/20/2021 1455
PFPeS	15	15		1	103	50-150	10/20/2021 1455
PFDOS	15	12		1	81	50-150	10/20/2021 1455
PFHxS	15	16		1	109	50-150	10/20/2021 1455
PFBA	16	16		1	98	50-150	10/20/2021 1455
PFDA	16	18		1	110	50-150	10/20/2021 1455
PFDoA	16	16		1	101	50-150	10/20/2021 1455
PFHpA	16	17		1	104	50-150	10/20/2021 1455
PFHxDA	16	15		1	93	50-150	10/20/2021 1455
PFHxA	16	15		1	96	50-150	10/20/2021 1455
PFNA	16	17		1	107	50-150	10/20/2021 1455
PFODA	16	12		1	76	50-150	10/20/2021 1455
PFOA	16	26	N	1	165	50-150	10/20/2021 1455
PFPeA	16	16		1	103	50-150	10/20/2021 1455
PFTeDA	16	17		1	104	50-150	10/20/2021 1455
PFTrDA	16	16		1	100	50-150	10/20/2021 1455
PFUdA	16	16		1	103	50-150	10/20/2021 1455
PFOS	15	27	N	1	184	50-150	10/20/2021 1455

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		113	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		100	25-150
13C2_PFHxDA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ19306-002
Batch: 19306
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/19/2021 1138

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		98	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		118	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		97	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		110	25-150
d-EtFOSA		95	10-150
d5-EtFOSAA		101	25-150
d9-EtFOSE		94	10-150
d-MeFOSA		103	10-150
d3-MeFOSAA		106	25-150
d7-MeFOSE		104	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Internal Transfer Chain of Custody

Pace Analytical
www.pacelabs.com

Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 9/23/2021 Results Requested By: 10/15/2021

Workorder: 40233816 **Workorder Name:** LACROSSE WELLS 23 & 24

Report To	Subcontract To
Christopher Hyska Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (303)791-9700

Requested Analysis

WI30011
KLC2

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	WI 35 PFAS by ID	Dry Weight /%TS	LAB USE ONLY
1	MW-6 1-2'	PS	9/20/2021 10:08	40233816001	Solid	1	X	X	
2	MW-7 1-2'	PS	9/21/2021 05:12	40233816002	Solid	1	X	X	
3	AUGER BLANK	PS	9/21/2021 13:34	40233816003	Water	2	X		
4	FIELD BLANK	PS	9/20/2021 10:00	40233816004	Water	2	X		
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] Price	9/23/21 1600		
2				
3	JD	9/23/21 1732	[illegible]	9/23/21 1752

Comments: IR77 - MDL reporting - Quote 23492

Cooler Temperature on Receipt 3.9 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

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UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page of

COC No: 402338 16

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	LACROSSE WELLS 23 & 24
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	-
Regulatory Programs:	WI NR

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air; B = Biota; C = Charcoal; O = Oil; S = Soil; SL = Sludge; W = Water; DW = Drinking Water; GW = Ground Water; SW = Surface Water; WW = Waste Water; WP = Wipe

FILTERED? (YES/NO) PRESERVATION [CODE]*

Analyses Requested: WI 36 PFAS by ID

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Filtered? (Y/N)	Preservation [Code]	WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
001	MW-6 1-2'	9-20-21	10:08	S		N A	X			
002	MW-7 1-2'	9-21-21	8:12	S			X			
003	Argon Blank	9-21-21	1:34	W			X			
004	Field Blank	9-22-21	10:00	W			X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	9/24/21 7:00		
Fed Ex	9/23/21 1030		
		Fed Ex	9/23/21 1030

PACE Project No. 402338 16
Receipt Temp = 2 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 8.0 073107

C016s(27Jun2006)

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: The OS Group Project # 40233816

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																										1						2.5 / 5 / 10
002																										1						2.5 / 5 / 10
003										3																						2.5 / 5 / 10
004										3																						2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
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016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	125 ml poly Unpreserved

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40233816

40233816

Client Name: The OS Group

Courier: ☐ CS Logistics ☑ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other:

Tracking #: 284046288872

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Thermometer Used SR - 105 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2.5 /Corr: 2

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 9/23/21 /Initials: SW

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Labeled By Initials:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. Pg # 9/23/21 SW
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume:		8.
For Analysis: ☑Yes ☐No MS/MSD:	☐Yes ☐No ☑N/A	
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☐Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:	SW	
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Pace Cooler Inspected by/date: KSC / 09/30/2021 Lot #: WI30911

Means of receipt: ☐ Pace ☐ Client ☑ UPS ☐ FedEx ☐ Other:

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.9 / 3.9 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KSC Date: 09/30/2021

Comments:

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

November 22, 2021

Steve Osesek
The OS Group, LLC
N6746 McCurdy Road
Holmen, WI 54636

RE: Project: LA CROSSE AIRPORT PFAs INV.
Pace Project No.: 40236055

Dear Steve Osesek:

Enclosed are the analytical results for sample(s) received by the laboratory on October 29, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Christopher Hyska

Christopher Hyska
christopher.hyska@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: John Storlie, The OS Group, LLC

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: LA CROSSE AIRPORT PFAs INV.
Pace Project No.: 40236055

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40236055001	**MW-5 1-2'**	Solid	10/28/21 08:31	10/29/21 10:10

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

40236055

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CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	The OS Group, LLC
Branch/Location:	La Crosse, WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	
Project Name:	La Crosse Airport PFAS Inv.
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group, LLC
Mail To Address:	444 21st Street S La Crosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group, LLC
Invoice To Address:	444 21st Street S La Crosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
SI = Sludge	WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: WI PFAS 36	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW-5 1-2'	10-28-21	8:31	S	N	A	X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	10/28/21 17:45		
Fedex	10/29/21 1010	[signature]	10/29/21 1010

PACE Project No. 40236055

Receipt Temp = 5.1 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Client Name: OS Group

Sample Preservation Receipt Form

Project # 40236055

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A

Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
Pace Lab #	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN						
001																										1						2.5 / 5 / 10
002																																2.5 / 5 / 10
003																																2.5 / 5 / 10
004																																2.5 / 5 / 10
005																																2.5 / 5 / 10
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018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

10/28/21 mp

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	125mL poly unpres.

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: WO# : 40236055

Client Name: OS Group

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 2854 6791 1548

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR - 114 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 5 /Corr: 5.1

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents:
Date: 10/29/21 /Initials: MP
Labeled By Initials: MP

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. proj# 10/29/21 MP
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used: 10/29/21 MP	☒Yes (☒No) ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: S	☒Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Brian Basten

Project Name: PFAS

Project Number: 40236055

Lot Number:**WK03067**

Date Completed:11/18/2021

11/21/2021 10:14 AM
Approved and released by:
Project Manager II: **Marcia K. McGinnity**

The electronic signature above is the equivalent of a handwritten signature.

Case Narrative
Pace Analytical Services, LLC
Lot Number: WK03067

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation:

Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, Fecal Coliform SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, Solid Chemical Material: TOC Walkley-Black.

Where applicable, all soil sample results (including LOQ and DL if requested) are corrected for dry weight unless flagged with a "W" qualifier.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

Where

Cs is on column concentration of target analyte in the sample (ng/L)
Cis is concentration of internal standard in the sample (ng/L)
As is peak response of target analyte in the sample
Ais is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Sample Summary
Pace Analytical Services, LLC
Lot Number: WK03067
Project Name: PFAS
Project Number: 40236055

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-5 1-2'	Solid	10/28/2021 0831	11/02/2021

(1 sample)

Detection Summary

Pace Analytical Services, LLC

Lot Number: WK03067

Project Name: PFAS

Project Number: 40236055

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(0 detections)

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK03067-001
Description: MW-5 1-2'
Matrix: Solid
Date Sampled: 10/28/2021 0831
Project Name: PFAS
% Solids: 96.9 11/04/2021 0111
Date Received: 11/02/2021
Project Number: 40236055

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/10/2021 2259	NK1	11/10/2021 1304	21942

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		1.8	0.15	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		1.8	0.16	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		1.8	0.25	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		1.8	0.28	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.8	0.35	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		1.8	0.20	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		3.7	0.54	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		1.8	0.14	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		1.8	0.33	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.8	0.27	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		1.8	0.21	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		1.8	0.32	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.8	0.36	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		1.8	0.31	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		0.92	0.12	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		0.92	0.21	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		0.92	0.20	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		0.92	0.24	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		0.92	0.38	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		0.92	0.15	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		0.92	0.13	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.8	0.21	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		0.92	0.14	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		0.92	0.32	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		0.92	0.20	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		0.92	0.15	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		0.92	0.33	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		94	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		90	25-150
13C2_PFHxDA		82	25-150
13C2_PFTeDA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC		Laboratory ID: WK03067-001	
Description: MW-5 1-2'		Matrix: Solid	
Date Sampled: 10/28/2021 0831	Project Name: PFAS	% Solids: 96.9	11/04/2021 0111
Date Received: 11/02/2021	Project Number: 40236055		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		90	25-150
13C3_PFHxS		90	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		97	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		86	25-150
13C7_PFUdA		85	25-150
13C8_PFOA		91	25-150
13C8_PFOS		88	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		88	25-150
d-EtFOSA		85	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		84	10-150
d-MeFOSA		82	10-150
d3-MeFOSAA		96	25-150
d7-MeFOSE		82	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ21942-001
Batch: 21942
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 11/10/2021 1304

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	2.0	0.16	ug/kg	11/11/2021 1538
11Cl-PF3OUdS	ND		1	2.0	0.17	ug/kg	11/11/2021 1538
8:2 FTS	ND		1	2.0	0.27	ug/kg	11/11/2021 1538
6:2 FTS	ND		1	2.0	0.31	ug/kg	11/11/2021 1538
10:2 FTS	ND		1	2.0	0.38	ug/kg	11/11/2021 1538
4:2 FTS	ND		1	2.0	0.22	ug/kg	11/11/2021 1538
GenX	ND		1	4.0	0.58	ug/kg	11/11/2021 1538
ADONA	ND		1	2.0	0.15	ug/kg	11/11/2021 1538
EtFOSA	ND		1	2.0	0.36	ug/kg	11/11/2021 1538
EtFOSAA	ND		1	2.0	0.29	ug/kg	11/11/2021 1538
EtFOSE	ND		1	2.0	0.23	ug/kg	11/11/2021 1538
MeFOSA	ND		1	2.0	0.35	ug/kg	11/11/2021 1538
MeFOSAA	ND		1	2.0	0.40	ug/kg	11/11/2021 1538
MeFOSE	ND		1	2.0	0.33	ug/kg	11/11/2021 1538
PFBS	ND		1	1.0	0.13	ug/kg	11/11/2021 1538
PFDS	ND		1	1.0	0.22	ug/kg	11/11/2021 1538
PFHpS	ND		1	1.0	0.18	ug/kg	11/11/2021 1538
PFNS	ND		1	1.0	0.22	ug/kg	11/11/2021 1538
PFOSA	ND		1	1.0	0.18	ug/kg	11/11/2021 1538
PFPeS	ND		1	1.0	0.19	ug/kg	11/11/2021 1538
PFDOS	ND		1	1.0	0.26	ug/kg	11/11/2021 1538
PFHxS	ND		1	1.0	0.18	ug/kg	11/11/2021 1538
PFBA	ND		1	1.0	0.42	ug/kg	11/11/2021 1538
PFDA	ND		1	1.0	0.16	ug/kg	11/11/2021 1538
PFDoA	ND		1	1.0	0.18	ug/kg	11/11/2021 1538
PFHpA	ND		1	1.0	0.14	ug/kg	11/11/2021 1538
PFHxDA	ND		1	2.0	0.22	ug/kg	11/11/2021 1538
PFHxA	ND		1	1.0	0.18	ug/kg	11/11/2021 1538
PFNA	ND		1	1.0	0.15	ug/kg	11/11/2021 1538
PFODA	ND		1	1.0	0.35	ug/kg	11/11/2021 1538
PFOA	ND		1	1.0	0.21	ug/kg	11/11/2021 1538
PFPeA	ND		1	1.0	0.16	ug/kg	11/11/2021 1538
PFTeDA	ND		1	1.0	0.19	ug/kg	11/11/2021 1538
PFTrDA	ND		1	1.0	0.17	ug/kg	11/11/2021 1538
PFUdA	ND		1	1.0	0.18	ug/kg	11/11/2021 1538
PFOS	ND		1	1.0	0.36	ug/kg	11/11/2021 1538

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		95	25-150
13C2_PFDoA		98	25-150
13C2_PFHxDA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ21942-001
Batch: 21942
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 11/10/2021 1304

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		98	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		90	25-150
13C7_PFUdA		92	25-150
13C8_PFOA		100	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		101	25-150
d-EtFOSA		101	10-150
d5-EtFOSAA		98	25-150
d9-EtFOSE		106	10-150
d-MeFOSA		105	10-150
d3-MeFOSAA		117	25-150
d7-MeFOSE		99	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ21942-002
Batch: 21942
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 11/10/2021 1304

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	1.9	1.7		1	90	50-150	11/10/2021 1858
11Cl-PF3OUdS	1.9	1.8		1	96	50-150	11/10/2021 1858
8:2 FTS	1.9	1.9		1	98	50-150	11/10/2021 1858
6:2 FTS	1.9	2.0		1	104	50-150	11/10/2021 1858
10:2 FTS	1.9	1.7		1	90	50-150	11/10/2021 1858
4:2 FTS	1.9	1.8		1	97	50-150	11/10/2021 1858
GenX	4.0	3.8		1	95	50-150	11/10/2021 1858
ADONA	1.9	1.7		1	91	50-150	11/10/2021 1858
EtFOSA	2.0	2.0		1	99	50-150	11/10/2021 1858
EtFOSAA	2.0	1.8		1	92	50-150	11/10/2021 1858
EtFOSE	2.0	1.9		1	96	50-150	11/10/2021 1858
MeFOSA	2.0	2.5		1	124	50-150	11/10/2021 1858
MeFOSAA	2.0	1.9		1	93	50-150	11/10/2021 1858
MeFOSE	2.0	1.9		1	93	50-150	11/10/2021 1858
PFBS	1.8	1.7		1	95	50-150	11/10/2021 1858
PFDS	1.9	1.8		1	93	50-150	11/10/2021 1858
PFHpS	1.9	1.7		1	90	50-150	11/10/2021 1858
PFNS	1.9	1.8		1	95	50-150	11/10/2021 1858
PFOSA	2.0	2.0		1	98	50-150	11/10/2021 1858
PFPeS	1.9	1.9		1	101	50-150	11/10/2021 1858
PFDOS	1.9	1.5		1	75	50-150	11/10/2021 1858
PFHxS	1.8	1.8		1	98	50-150	11/10/2021 1858
PFBA	2.0	1.9		1	96	50-150	11/10/2021 1858
PFDA	2.0	1.9		1	93	50-150	11/10/2021 1858
PFDoA	2.0	2.1		1	103	50-150	11/10/2021 1858
PFHpA	2.0	2.1		1	104	50-150	11/10/2021 1858
PFHxDA	2.0	2.0		1	99	50-150	11/10/2021 1858
PFHxA	2.0	1.9		1	96	50-150	11/10/2021 1858
PFNA	2.0	2.0		1	102	50-150	11/10/2021 1858
PFODA	2.0	1.8		1	88	50-150	11/10/2021 1858
PFOA	2.0	2.0		1	98	50-150	11/10/2021 1858
PFPeA	2.0	2.0		1	99	50-150	11/10/2021 1858
PFTeDA	2.0	2.0		1	100	50-150	11/10/2021 1858
PFTrDA	2.0	1.7		1	86	50-150	11/10/2021 1858
PFUdA	2.0	1.9		1	96	50-150	11/10/2021 1858
PFOS	1.9	1.8		1	99	50-150	11/10/2021 1858

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		111	25-150
13C2_6:2FTS		119	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ21942-002
Batch: 21942
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 11/10/2021 1304

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		103	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		110	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		107	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		102	25-150
d-EtFOSA		102	10-150
d5-EtFOSAA		107	25-150
d9-EtFOSE		102	10-150
d-MeFOSA		92	10-150
d3-MeFOSAA		111	25-150
d7-MeFOSE		100	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Internal Transfer Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

Workorder: 40236055 Workorder Name: LA CROSSE AIRPORT PFAs INV

State Of Origin: WI
Cert. Needed: ☒ Yes ☐ No
Owner Received Date: 10/29/2021 Results Requested By: 11/23/2021

Report To	Subcontract To
Christopher Hyska Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700

WK03067

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: WI 36 PFAS by ID	Dry Weight	LAB USE ONLY
1	MW-5 1-2'	PS	10/26/2021 08:31	40236055001	Solid	1						X	X	
2														
3														
4														
5														

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	11/1/21 1600		
2				
3	[signature]	11/2/21 0940	[signature]	11/2/21 0940

Comments:

Cooler Temperature on Receipt 1.4 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Monday, November 01, 2021 8:14:44 AM

FMT-ALL-C-002rev.00 24March2009 Page 1 of 1

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1

CHAIN OF CUSTODY

40236055

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	The OS Group, LLC
Branch/Location:	La Crosse, WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	
Project Name:	La Crosse Airport PFAS
Project State:	WI Inv.
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group, LLC
Mail To Address:	444 21st Street S La Crosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group, LLC
Invoice To Address:	444 21st Street S La Crosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air; B = Biota; C = Charcoal; O = Oil; S = Soil; SL = Sludge; W = Water; DW = Drinking Water; GW = Ground Water; SW = Surface Water; WW = Waste Water; WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested	FILTERED? (YES/NO)	PRESERVATION (CODE)								CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW-5 1-2'	10-28-21	8:31	S	WI PFAS 36	N	A										
					X												

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	10/28/21 12:45		
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.: 40236055

Receipt Temp = °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/08

ORIGINAL

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: OS Group

Project # 40236055

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/ Time:

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																																2.5 / 5 / 10
002																																2.5 / 5 / 10
003																																2.5 / 5 / 10
004																																2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

10/28/2020

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	125 mm poly unpres

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
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Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 28Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: OS Group

Project #:

AFFIX WORKORDER LABEL HERE

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 2854 6794 1548

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR - 114 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 5 /Corr: 5.1

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 10/29/21 Initials: MP

Labeled By Initials:

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. proj# 10/29/21 MP
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume:		8.
For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used: 10/29/21 MP	☒Yes (☒No) ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2

PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Pace Cooler Inspected by/date: JRG2 / 11/03/2021 Lot #: WK03067

Means of receipt: ☐ Pace ☐ Client ☑ UPS ☐ FedEx ☐ Other:

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: 21-1928

1.4 / 1.4 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.

Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: JRG2 Date: 11/03/2021

Comments:

ATTACHMENT E

GROUNDWATER LABORATORY ANALYTICAL RESULTS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

December 02, 2021

Steve Osesek
The OS Group, LLC
N6746 McCurdy Road
Holmen, WI 54636

RE: Project: LACROSSE AIRPORT PFAS
Pace Project No.: 40236693

Dear Steve Osesek:

Enclosed are the analytical results for sample(s) received by the laboratory on November 10, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Christopher Hyska
christopher.hyska@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: John Storlie, The OS Group, LLC

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: LACROSSE AIRPORT PFAS
Pace Project No.: 40236693

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40236693001	**MW-1**	Water	11/05/21 11:24	11/10/21 09:30
40236693002	**MW-2**	Water	11/03/21 10:25	11/10/21 09:30
40236693003	**MW-3**	Water	11/05/21 10:49	11/10/21 09:30
40236693004	**MW-4**	Water	11/05/21 10:19	11/10/21 09:30
40236693005	**MW-5**	Water	11/08/21 12:41	11/10/21 09:30
40236693006	**MW-6**	Water	11/08/21 13:27	11/10/21 09:30
40236693007	**MW-7**	Water	11/08/21 14:37	11/10/21 09:30
40236693008	**MW-101**	Water	11/05/21 16:35	11/10/21 09:30
40236693009	**MW-102**	Water	11/05/21 15:28	11/10/21 09:30
40236693010	**MW-103**	Water	11/05/21 16:00	11/10/21 09:30
40236693011	**MW-104**	Water	11/08/21 10:27	11/10/21 09:30
40236693012	**PZ-104**	Water	11/08/21 10:48	11/10/21 09:30
40236693013	**PZ-105**	Water	11/05/21 14:39	11/10/21 09:30
40236693014	**PZ-106**	Water	11/05/21 14:01	11/10/21 09:30
40236693015	**PZ-6**	Water	11/08/21 13:54	11/10/21 09:30
40236693016	**PZ-7**	Water	11/08/21 14:58	11/10/21 09:30
40236693017	**DUP #1**	Water	11/05/21 00:00	11/10/21 09:30
40236693018	**DUP #2**	Water	11/08/21 00:00	11/10/21 09:30
40236693019	**PRE-FILTER**	Water	11/05/21 12:52	11/10/21 09:30
40236693020	**MID-FILTER**	Water	11/05/21 12:50	11/10/21 09:30
40236693021	**POST-FILTER**	Water	11/05/21 12:48	11/10/21 09:30
40236693022	**FIELD BLANK #1**	Water	11/05/21 16:20	11/10/21 09:30
40236693023	**FIELD BLANK #2**	Water	11/08/21 13:16	11/10/21 09:30

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

COC No. 40236693

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CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	LaCrosse Airport PFAS
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	-
Regulatory Program:	WDNR

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
SI = Sludge	WP = Wipe

FILTERED? (YES/NO) PRESERVATION (CODE)*

Analyses Requested: Y/N = N; Pick Letter = A; WI 36 PFAS by ID

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
001	MW-1	11-5	11:24	GW	X			
002	MW-2	11-3	10:25					
003	MW-3	11-5	10:49					
004	MW-4	11-5	10:19					
005	MW-5	11-8	12:41					
006	MW-6	11-8	1:27					
007	MW-7	11-8	2:37					
008	MW-101	11-5	4:35					
009	MW-102	11-5	3:28					
010	MW-103	11-5	4:00					
011	MW-104	11-8	10:27					
012	PZ-104	11-8	10:48					
013	PZ-105	11-5	2:39					

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	11/9/21 4:00		
Fed Ex	11/10/21 930	W.11 Conrreu Pace	11/10/21 0930

PACE Project No. 40236693

Receipt Temp = 0.1 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present

Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

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UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

COC No. 40356693

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	The OS Group LLC
Branch/Location:	LaCrosse WI
Project Contact:	Steven Osesek
Phone:	608-433-9388
Project Number:	-
Project Name:	La Crosse Airport PFAS Inv.
Project State:	WI
Sampled By (Print):	Steven Osesek
Sampled By (Sign):	Steven Osesek
PO #:	
Regulatory Program:	WDNR

Quote #:	-
Mail To Contact:	Steven Osesek
Mail To Company:	The OS Group LLC
Mail To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Contact:	Steven Osesek
Invoice To Company:	The OS Group LLC
Invoice To Address:	444 21st St S LaCrosse, WI 54601
Invoice To Phone:	608-433-9388

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) PRESERVATION (CODE)*

Analyses Requested: WI 36 PFAS by ID

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Y/N	Pick Letter	WI 36 PFAS by ID	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile # 4532
014	PZ-106	11-5	2:01	GW	N	A	X			
015	PZ-6	11-8	1:54							
016	PZ-7	11-8	2:58							
017	Dup #1	11-5								
018	Dup #2	11-8								
019	Pre-Filter	11-5	12:52							
020	mid-Filter	11-5	12:50							
021	Post-Filter	11-5	12:48							
022 Field	Blank #1	11-5	4:20							
023	Field Blank #2	11-8	1:16							

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Steven Osesek	11/9/21 4:00		
Fed Ex	11/10/21 0930	Will Comreau Pace	11/10/21 0930

PACE Project No. 40356693

Receipt Temp = 0.1 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / ~~Not Present~~

Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: The OS Group Project # 4D736693

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN						
001										2																						2.5 / 5 / 10
002										2																						2.5 / 5 / 10
003										2																						2.5 / 5 / 10
004										2																						2.5 / 5 / 10
005										2																						2.5 / 5 / 10
006										2																						2.5 / 5 / 10
007										2																						2.5 / 5 / 10
008										2																						2.5 / 5 / 10
009										2																						2.5 / 5 / 10
010										2																						2.5 / 5 / 10
011										2																						2.5 / 5 / 10
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017										2																						2.5 / 5 / 10
018										2																						2.5 / 5 / 10
019										2																						2.5 / 5 / 10
020										2																						2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: The OS Group Project #: 40236695

	Glass								Plastic					Vials						Jars				General									
Pace Lab #	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
021										2																							2.5 / 5 / 10
022										2																							2.5 / 5 / 10
023										2																							2.5 / 5 / 10
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WC 11/10/21

Page 2 of 3

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40236693

40236693

Client Name: The OS Group

Courier: ☐ CS Logistics ☑ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 2859 2060 3967

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Thermometer Used SR - 113 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0.0 /Corr: 0.1

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 11/10/21 /Initials: WC
Labeled By Initials: MP

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. proj.# WC 11/10/21
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD:	☐Yes ☑No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: GW	☑Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

WC 11/10/21 3/3

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Christopher Hyska

Project Name: LACROSSE AIRPORT PFAS

Project Number: 40236693

Lot Number:**WK17050**

Date Completed:11/29/2021
Revision Date: 11/30/2021

12/01/2021 7:35 AM
Approved and released by:
Project Manager II: **Marcia K. McGinnity**

The electronic signature above is the equivalent of a handwritten signature.

Case Narrative
Pace Analytical Services, LLC
Lot Number: WK17050

Revision 20211130 was performed to add sample receipt confirmation documentation to the end of the report. No results have changed. This report supersedes and replaces any prior reports issued under this lot number.

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation:

Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, Fecal Coliform SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, Solid Chemical Material: TOC Walkley-Black.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Sample Notes:

The listed sample was diluted due to the nature of the sample matrix. The LOQ has been elevated to reflect the dilution.
WK17050-002 (MW-2) (Run 1) (Analysis Batch 23048) (Prep Batch 22931) PFAS by Isotope Dilution (36 analytes)

Sample matrix prevented full volume from being extracted for the listed samples, precluding method mandated bottle rinse. Elution solvent was aliquoted directly into the reservoir, rinsing the inside. Surrogate recovery may be adversely affected.
Duplicate of WK17050-006 (MW-6) (Run 1) (Analysis Batch 23048) (Prep Batch 22931) PFAS by Isotope Dilution (36 analytes)
WK17050-008 (MW-101) (Run 1) (Analysis Batch 23048) (Prep Batch 22931) PFAS by Isotope Dilution (36 analytes)
WK17050-009 (MW-102) (Run 1) (Analysis Batch 23048) (Prep Batch 22931) PFAS by Isotope Dilution (36 analytes)
WK17050-019 (PRE-FILTER) (Run 2) (Analysis Batch 23668) (Prep Batch 23339) PFAS by Isotope Dilution (36 analytes)

The listed sample required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into 6 50mL tubes and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge tubes. Original sample bottle was rinsed as normal and centrifuge tubes were rinsed with 0.5mL of MeOH each (total of 3mL). Centrifuge bottle rinsate was added to the elution. Samples concentrated to <10mL and reconstituted to 10mL using MeOH by transfer pipet.
WK17050-019 (PRE-FILTER) (Run 1) (Analysis Batch 23649) (Prep Batch 23010) PFAS by Isotope Dilution (36 analytes)

The laboratory control sample (LCS) for prep batch 23010 recovered outside acceptance criteria for PFDOS. For the listed sample, there was an insufficient amount to perform a re-extraction. The data has been reported and PFDOS results qualified "L"
WK17050-021 (POST- FILTER) (Run 1) (Analysis Batch 23649) (Prep Batch 23010) PFAS by Isotope Dilution (36 analytes)

Recoveries for one or more EIS were outside control limits for the listed samples. Evidence of matrix interference is present or the recovery is high and the associated analyte is non-detect. Re-extraction and/or re-analysis was not performed. Associated results are qualified “Q”.
WK17050-004 (MW-4) (Run 1) (Analysis Batch 23048) (Prep Batch 22931) PFAS by Isotope Dilution (36 analytes)

Recoveries and/or relative percent differences for one or more targets were outside control limits for the matrix spike/matrix spike duplicate performed on the listed sample. Associated results are qualified “S”.
WK17050-004 (MW-4) (Run 1) (Analysis Batch 23048) (Prep Batch 22931) PFAS by Isotope Dilution (36 analytes)

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

Cs is on column concentration of target analyte in the sample (ng/L)
Cis is concentration of internal standard in the sample (ng/L)
As is peak response of target analyte in the sample
Ais is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Sample Summary
Pace Analytical Services, LLC
Lot Number: WK17050
Project Name: LACROSSE AIRPORT PFAS
Project Number: 40236693

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-1	Aqueous	11/05/2021 1124	11/11/2021
002	MW-2	Aqueous	11/03/2021 1025	11/11/2021
003	MW-3	Aqueous	11/05/2021 1049	11/11/2021
004	MW-4	Aqueous	11/05/2021 1019	11/11/2021
005	MW-5	Aqueous	11/08/2021 1241	11/11/2021
006	MW-6	Aqueous	11/08/2021 1327	11/11/2021
007	MW-7	Aqueous	11/08/2021 1437	11/11/2021
008	MW-101	Aqueous	11/05/2021 1635	11/11/2021
009	MW-102	Aqueous	11/05/2021 1528	11/11/2021
010	MW-103	Aqueous	11/05/2021 1600	11/11/2021
011	MW-104	Aqueous	11/08/2021 1027	11/11/2021
012	PZ-104	Aqueous	11/08/2021 1048	11/11/2021
013	PZ-105	Aqueous	11/05/2021 1439	11/11/2021
014	PZ-106	Aqueous	11/05/2021 1401	11/11/2021
015	PZ-6	Aqueous	11/05/2021 1354	11/11/2021
016	PZ-7	Aqueous	11/08/2021 1458	11/11/2021
017	DUP #1	Aqueous	11/05/2021	11/11/2021
018	DUP #2	Aqueous	11/08/2021	11/11/2021
019	PRE-FILTER	Aqueous	11/05/2021 1252	11/11/2021
020	MID-FILTER	Aqueous	11/05/2021 1250	11/11/2021
021	POST- FILTER	Aqueous	11/05/2021 1248	11/11/2021
022	FIELD BLANK #1	Aqueous	11/05/2021 1620	11/11/2021
023	FIELD BLANK #2	Aqueous	11/08/2021 1316	11/11/2021

(23 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: WK17050

Project Name: LACROSSE AIRPORT PFAS

Project Number: 40236693

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-1	Aqueous	PFBS	PFAS by ID	15		ng/L	11
001	MW-1	Aqueous	PFHpS	PFAS by ID	39		ng/L	11
001	MW-1	Aqueous	PFPeS	PFAS by ID	21		ng/L	11
001	MW-1	Aqueous	PFHxS	PFAS by ID	370		ng/L	11
001	MW-1	Aqueous	PFBA	PFAS by ID	3.7		ng/L	11
001	MW-1	Aqueous	PFHpA	PFAS by ID	0.95	J	ng/L	11
001	MW-1	Aqueous	PFHxA	PFAS by ID	6.9		ng/L	11
001	MW-1	Aqueous	PFOA	PFAS by ID	7.7		ng/L	11
001	MW-1	Aqueous	PFPeA	PFAS by ID	1.5	J	ng/L	11
001	MW-1	Aqueous	PFOS	PFAS by ID	5500		ng/L	11
002	MW-2	Aqueous	6:2 FTS	PFAS by ID	460		ng/L	13
002	MW-2	Aqueous	PFBS	PFAS by ID	18	J	ng/L	13
002	MW-2	Aqueous	PFPeS	PFAS by ID	31	J	ng/L	13
002	MW-2	Aqueous	PFHxS	PFAS by ID	230		ng/L	13
002	MW-2	Aqueous	PFBA	PFAS by ID	50		ng/L	13
002	MW-2	Aqueous	PFDA	PFAS by ID	8.0	J	ng/L	13
002	MW-2	Aqueous	PFHpA	PFAS by ID	150		ng/L	13
002	MW-2	Aqueous	PFHxA	PFAS by ID	140		ng/L	13
002	MW-2	Aqueous	PFNA	PFAS by ID	130		ng/L	13
002	MW-2	Aqueous	PFOA	PFAS by ID	380		ng/L	13
002	MW-2	Aqueous	PFPeA	PFAS by ID	140		ng/L	13
002	MW-2	Aqueous	PFOS	PFAS by ID	130		ng/L	13
003	MW-3	Aqueous	6:2 FTS	PFAS by ID	14000		ng/L	15
003	MW-3	Aqueous	4:2 FTS	PFAS by ID	1.5	J	ng/L	15
003	MW-3	Aqueous	PFBS	PFAS by ID	1000		ng/L	15
003	MW-3	Aqueous	PFHpS	PFAS by ID	680		ng/L	15
003	MW-3	Aqueous	PFPeS	PFAS by ID	1800		ng/L	15
003	MW-3	Aqueous	PFHxS	PFAS by ID	18000		ng/L	15
003	MW-3	Aqueous	PFBA	PFAS by ID	580		ng/L	15
003	MW-3	Aqueous	PFDA	PFAS by ID	0.50	J	ng/L	15
003	MW-3	Aqueous	PFHpA	PFAS by ID	450		ng/L	15
003	MW-3	Aqueous	PFHxA	PFAS by ID	2000		ng/L	15
003	MW-3	Aqueous	PFNA	PFAS by ID	13		ng/L	15
003	MW-3	Aqueous	PFOA	PFAS by ID	1700		ng/L	15
003	MW-3	Aqueous	PFPeA	PFAS by ID	2000		ng/L	15
003	MW-3	Aqueous	PFOS	PFAS by ID	22000		ng/L	15
004	MW-4	Aqueous	8:2 FTS	PFAS by ID	23		ng/L	17
004	MW-4	Aqueous	6:2 FTS	PFAS by ID	320	S	ng/L	17
004	MW-4	Aqueous	PFBS	PFAS by ID	44		ng/L	17
004	MW-4	Aqueous	PFHpS	PFAS by ID	54		ng/L	17
004	MW-4	Aqueous	PFOSA	PFAS by ID	0.58	J	ng/L	17
004	MW-4	Aqueous	PFPeS	PFAS by ID	82		ng/L	17
004	MW-4	Aqueous	PFHxS	PFAS by ID	1200		ng/L	17

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	MW-4	Aqueous	PFBA	PFAS by ID	53		ng/L	17
004	MW-4	Aqueous	PFDA	PFAS by ID	2.1	J	ng/L	17
004	MW-4	Aqueous	PFHpA	PFAS by ID	180	S	ng/L	17
004	MW-4	Aqueous	PFHxA	PFAS by ID	210		ng/L	17
004	MW-4	Aqueous	PFNA	PFAS by ID	31		ng/L	17
004	MW-4	Aqueous	PFOA	PFAS by ID	210	S	ng/L	17
004	MW-4	Aqueous	PFPeA	PFAS by ID	150		ng/L	17
004	MW-4	Aqueous	PFOS	PFAS by ID	3600		ng/L	17
005	MW-5	Aqueous	PFBS	PFAS by ID	7.0		ng/L	19
005	MW-5	Aqueous	PFHxS	PFAS by ID	0.82	J	ng/L	19
005	MW-5	Aqueous	PFBA	PFAS by ID	3.2	J	ng/L	19
005	MW-5	Aqueous	PFDA	PFAS by ID	1.5	J	ng/L	19
005	MW-5	Aqueous	PFHpA	PFAS by ID	1.6	J	ng/L	19
005	MW-5	Aqueous	PFHxA	PFAS by ID	0.94	J	ng/L	19
005	MW-5	Aqueous	PFNA	PFAS by ID	2.1	J	ng/L	19
005	MW-5	Aqueous	PFOA	PFAS by ID	4.0		ng/L	19
005	MW-5	Aqueous	PFPeA	PFAS by ID	0.98	J	ng/L	19
005	MW-5	Aqueous	PFOS	PFAS by ID	84		ng/L	19
006	MW-6	Aqueous	PFBS	PFAS by ID	3.5	J	ng/L	21
006	MW-6	Aqueous	PFHxS	PFAS by ID	1.9	J	ng/L	21
006	MW-6	Aqueous	PFBA	PFAS by ID	11		ng/L	21
006	MW-6	Aqueous	PFHpA	PFAS by ID	0.53	J	ng/L	21
006	MW-6	Aqueous	PFHxA	PFAS by ID	0.97	J	ng/L	21
006	MW-6	Aqueous	PFOA	PFAS by ID	1.2	J	ng/L	21
006	MW-6	Aqueous	PFPeA	PFAS by ID	1.2	J	ng/L	21
007	MW-7	Aqueous	PFBS	PFAS by ID	1.5	J	ng/L	23
007	MW-7	Aqueous	PFHxS	PFAS by ID	0.73	J	ng/L	23
007	MW-7	Aqueous	PFBA	PFAS by ID	1.7	J	ng/L	23
007	MW-7	Aqueous	PFHpA	PFAS by ID	0.45	J	ng/L	23
007	MW-7	Aqueous	PFOA	PFAS by ID	1.5	J	ng/L	23
007	MW-7	Aqueous	PFOS	PFAS by ID	2.4	J	ng/L	23
008	MW-101	Aqueous	8:2 FTS	PFAS by ID	870		ng/L	25
008	MW-101	Aqueous	6:2 FTS	PFAS by ID	38		ng/L	25
008	MW-101	Aqueous	10:2 FTS	PFAS by ID	5.0	J	ng/L	25
008	MW-101	Aqueous	PFBS	PFAS by ID	52		ng/L	25
008	MW-101	Aqueous	PFHpS	PFAS by ID	57		ng/L	25
008	MW-101	Aqueous	PFNS	PFAS by ID	5.2		ng/L	25
008	MW-101	Aqueous	PFOSA	PFAS by ID	2.9	J	ng/L	25
008	MW-101	Aqueous	PFPeS	PFAS by ID	100		ng/L	25
008	MW-101	Aqueous	PFHxS	PFAS by ID	4200		ng/L	25
008	MW-101	Aqueous	PFBA	PFAS by ID	87		ng/L	25
008	MW-101	Aqueous	PFDA	PFAS by ID	26		ng/L	25
008	MW-101	Aqueous	PFHpA	PFAS by ID	300		ng/L	25
008	MW-101	Aqueous	PFHxA	PFAS by ID	550		ng/L	25
008	MW-101	Aqueous	PFNA	PFAS by ID	84		ng/L	25
008	MW-101	Aqueous	PFOA	PFAS by ID	460		ng/L	25
008	MW-101	Aqueous	PFPeA	PFAS by ID	210		ng/L	25
008	MW-101	Aqueous	PFUdA	PFAS by ID	0.74	J	ng/L	25

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
008	MW-101	Aqueous	PFOS	PFAS by ID	11000		ng/L	25
009	MW-102	Aqueous	PFHxS	PFAS by ID	4.7		ng/L	27
009	MW-102	Aqueous	PFBA	PFAS by ID	1.0	J	ng/L	27
009	MW-102	Aqueous	PFHpA	PFAS by ID	0.69	J	ng/L	27
009	MW-102	Aqueous	PFOA	PFAS by ID	1.2	J	ng/L	27
009	MW-102	Aqueous	PFOS	PFAS by ID	3.5	J	ng/L	27
010	MW-103	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	29
010	MW-103	Aqueous	PFHpS	PFAS by ID	1.6	J	ng/L	29
010	MW-103	Aqueous	PFPeS	PFAS by ID	0.69	J	ng/L	29
010	MW-103	Aqueous	PFHxS	PFAS by ID	30		ng/L	29
010	MW-103	Aqueous	PFBA	PFAS by ID	7.3		ng/L	29
010	MW-103	Aqueous	PFHpA	PFAS by ID	3.0	J	ng/L	29
010	MW-103	Aqueous	PFHxA	PFAS by ID	7.4		ng/L	29
010	MW-103	Aqueous	PFNA	PFAS by ID	2.8	J	ng/L	29
010	MW-103	Aqueous	PFOA	PFAS by ID	6.1		ng/L	29
010	MW-103	Aqueous	PFPeA	PFAS by ID	5.1		ng/L	29
010	MW-103	Aqueous	PFOS	PFAS by ID	480		ng/L	29
011	MW-104	Aqueous	PFHxS	PFAS by ID	0.74	J	ng/L	31
011	MW-104	Aqueous	PFBA	PFAS by ID	0.61	J	ng/L	31
011	MW-104	Aqueous	PFOS	PFAS by ID	3.0	J	ng/L	31
012	PZ-104	Aqueous	8:2 FTS	PFAS by ID	7.6		ng/L	33
012	PZ-104	Aqueous	PFBS	PFAS by ID	2.8	J	ng/L	33
012	PZ-104	Aqueous	PFHpS	PFAS by ID	3.5		ng/L	33
012	PZ-104	Aqueous	PFPeS	PFAS by ID	3.4	J	ng/L	33
012	PZ-104	Aqueous	PFHxS	PFAS by ID	170		ng/L	33
012	PZ-104	Aqueous	PFBA	PFAS by ID	9.6		ng/L	33
012	PZ-104	Aqueous	PFDA	PFAS by ID	0.70	J	ng/L	33
012	PZ-104	Aqueous	PFHpA	PFAS by ID	9.1		ng/L	33
012	PZ-104	Aqueous	PFHxA	PFAS by ID	18		ng/L	33
012	PZ-104	Aqueous	PFNA	PFAS by ID	3.7		ng/L	33
012	PZ-104	Aqueous	PFOA	PFAS by ID	7.1		ng/L	33
012	PZ-104	Aqueous	PFPeA	PFAS by ID	12		ng/L	33
012	PZ-104	Aqueous	PFOS	PFAS by ID	880		ng/L	33
013	PZ-105	Aqueous	PFHxS	PFAS by ID	1.0	J	ng/L	35
013	PZ-105	Aqueous	PFBA	PFAS by ID	5.4		ng/L	35
013	PZ-105	Aqueous	PFOA	PFAS by ID	0.89	J	ng/L	35
014	PZ-106	Aqueous	PFBS	PFAS by ID	0.74	J	ng/L	37
014	PZ-106	Aqueous	PFHxS	PFAS by ID	2.9	J	ng/L	37
014	PZ-106	Aqueous	PFBA	PFAS by ID	4.4		ng/L	37
014	PZ-106	Aqueous	PFHpA	PFAS by ID	0.42	J	ng/L	37
014	PZ-106	Aqueous	PFPeA	PFAS by ID	0.86	J	ng/L	37
015	PZ-6	Aqueous	PFBS	PFAS by ID	6.4		ng/L	39
015	PZ-6	Aqueous	PFHpS	PFAS by ID	0.60	J	ng/L	39
015	PZ-6	Aqueous	PFPeS	PFAS by ID	2.2	J	ng/L	39
015	PZ-6	Aqueous	PFHxS	PFAS by ID	5.0		ng/L	39
015	PZ-6	Aqueous	PFBA	PFAS by ID	110		ng/L	39
015	PZ-6	Aqueous	PFHpA	PFAS by ID	0.92	J	ng/L	39
015	PZ-6	Aqueous	PFHxA	PFAS by ID	4.2		ng/L	39

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
015	PZ-6	Aqueous	PFOA	PFAS by ID	47		ng/L	39
015	PZ-6	Aqueous	PFPeA	PFAS by ID	7.1		ng/L	39
015	PZ-6	Aqueous	PFOS	PFAS by ID	19		ng/L	39
016	PZ-7	Aqueous	PFBS	PFAS by ID	2.5	J	ng/L	41
016	PZ-7	Aqueous	PFPeS	PFAS by ID	1.1	J	ng/L	41
016	PZ-7	Aqueous	PFHxS	PFAS by ID	5.0		ng/L	41
016	PZ-7	Aqueous	PFBA	PFAS by ID	64		ng/L	41
016	PZ-7	Aqueous	PFHpA	PFAS by ID	0.59	J	ng/L	41
016	PZ-7	Aqueous	PFHxA	PFAS by ID	1.7	J	ng/L	41
016	PZ-7	Aqueous	PFOA	PFAS by ID	30		ng/L	41
016	PZ-7	Aqueous	PFPeA	PFAS by ID	2.7	J	ng/L	41
016	PZ-7	Aqueous	PFOS	PFAS by ID	14		ng/L	41
017	DUP #1	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	43
017	DUP #1	Aqueous	PFHpS	PFAS by ID	1.7	J	ng/L	43
017	DUP #1	Aqueous	PFPeS	PFAS by ID	0.84	J	ng/L	43
017	DUP #1	Aqueous	PFHxS	PFAS by ID	29		ng/L	43
017	DUP #1	Aqueous	PFBA	PFAS by ID	7.6		ng/L	43
017	DUP #1	Aqueous	PFHpA	PFAS by ID	3.1	J	ng/L	43
017	DUP #1	Aqueous	PFHxA	PFAS by ID	7.2		ng/L	43
017	DUP #1	Aqueous	PFNA	PFAS by ID	3.0	J	ng/L	43
017	DUP #1	Aqueous	PFOA	PFAS by ID	5.3		ng/L	43
017	DUP #1	Aqueous	PFPeA	PFAS by ID	5.6		ng/L	43
017	DUP #1	Aqueous	PFOS	PFAS by ID	470		ng/L	43
018	DUP #2	Aqueous	PFBS	PFAS by ID	3.0	J	ng/L	45
018	DUP #2	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	45
018	DUP #2	Aqueous	PFBA	PFAS by ID	11		ng/L	45
018	DUP #2	Aqueous	PFHpA	PFAS by ID	0.63	J	ng/L	45
018	DUP #2	Aqueous	PFHxA	PFAS by ID	1.0	J	ng/L	45
018	DUP #2	Aqueous	PFOA	PFAS by ID	0.82	J	ng/L	45
018	DUP #2	Aqueous	PFPeA	PFAS by ID	1.1	J	ng/L	45
019	PRE-FILTER	Aqueous	6:2 FTS	PFAS by ID	2900		ng/L	47
019	PRE-FILTER	Aqueous	PFBS	PFAS by ID	280		ng/L	47
019	PRE-FILTER	Aqueous	PFHpS	PFAS by ID	150		ng/L	47
019	PRE-FILTER	Aqueous	PFPeS	PFAS by ID	490		ng/L	47
019	PRE-FILTER	Aqueous	PFHxS	PFAS by ID	4600		ng/L	47
019	PRE-FILTER	Aqueous	PFBA	PFAS by ID	200		ng/L	47
019	PRE-FILTER	Aqueous	PFHpA	PFAS by ID	210		ng/L	47
019	PRE-FILTER	Aqueous	PFHxA	PFAS by ID	500		ng/L	47
019	PRE-FILTER	Aqueous	PFNA	PFAS by ID	18	J	ng/L	47
019	PRE-FILTER	Aqueous	PFOA	PFAS by ID	440		ng/L	47
019	PRE-FILTER	Aqueous	PFPeA	PFAS by ID	590		ng/L	47
019	PRE-FILTER	Aqueous	PFOS	PFAS by ID	7100		ng/L	47
021	POST- FILTER	Aqueous	PFHxS	PFAS by ID	1.3	J	ng/L	51
021	POST- FILTER	Aqueous	PFOS	PFAS by ID	3.6		ng/L	51

(183 detections)

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-001
Description: MW-1
Matrix: Aqueous
Date Sampled: 11/05/2021 1124
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 1915	JJG	11/18/2021 1018	22931
2	SOP SPE	PFAS by ID SOP	20	11/22/2021 0203	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	15		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	39		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	21		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	370		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	3.7		3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.95	J	3.5	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	6.9		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	7.7		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	1.5	J	3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	5500		69	35	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		123	25-150		103	25-150
13C2_6:2FTS		114	25-150		90	25-150
13C2_8:2FTS		107	25-150		107	25-150
13C2_PFDoA		91	25-150		84	25-150
13C2_PFHxDA		112	25-150		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-001
Description: MW-1
Matrix: Aqueous
Date Sampled: 11/05/2021 1124
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		89	25-150		90	25-150
13C3_PFBS		121	25-150		102	25-150
13C3_PFHxS		114	25-150		105	25-150
13C3-HFPO-DA		113	25-150		94	25-150
13C4_PFBA		110	25-150		97	25-150
13C4_PFHpA		111	25-150		98	25-150
13C5_PFHxA		114	25-150		93	25-150
13C5_PFPeA		112	25-150		97	25-150
13C6_PFDA		102	25-150		90	25-150
13C7_PFUdA		92	25-150		93	25-150
13C8_PFOA		111	25-150		93	25-150
13C8_PFOS		90	25-150		91	25-150
13C8_PFOSA		103	10-150		102	10-150
13C9_PFNA		85	25-150		90	25-150
d-EtFOSA		78	10-150		90	10-150
d5-EtFOSAA		94	25-150		94	25-150
d9-EtFOSE		91	10-150		92	10-150
d-MeFOSA		73	10-150		79	10-150
d3-MeFOSAA		101	25-150		102	25-150
d7-MeFOSE		90	10-150		94	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-002
Description: MW-2 | Matrix: Aqueous
Date Sampled: 11/03/2021 1025 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 1925	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		80	4.8	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		80	6.6	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		80	16	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	460		80	20	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		80	12	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		80	8.7	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		80	21	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		80	4.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		80	14	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		80	7.5	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		80	9.5	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		160	13	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		80	9.3	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		80	13	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	18	J	40	4.1	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		40	7.8	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		40	5.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		40	7.1	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		40	6.1	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	31	J	40	5.9	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		80	10	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	230		40	5.5	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	50		40	6.0	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	8.0	J	40	5.2	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		40	4.7	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	150		40	4.5	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		80	8.2	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	140		40	6.9	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	130		40	4.6	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		80	10	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	380		40	8.3	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	140		40	5.4	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		40	6.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		40	5.3	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		40	6.3	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	130		40	20	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		112	25-150
13C2_6:2FTS		105	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		98	25-150
13C2_PFHxDA		98	25-150
13C2_PFTeDA		85	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-002
Description: MW-2
Matrix: Aqueous
Date Sampled: 11/03/2021 1025
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		117	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		115	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		117	25-150
d-EtFOSA		101	10-150
d5-EtFOSAA		109	25-150
d9-EtFOSE		103	10-150
d-MeFOSA		85	10-150
d3-MeFOSAA		108	25-150
d7-MeFOSE		100	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-003
Description: MW-3
Matrix: Aqueous
Date Sampled: 11/05/2021 1049
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 1936	JJG	11/18/2021 1018	22931
2	SOP SPE	PFAS by ID SOP	100	11/22/2021 0214	JJG	11/18/2021 1018	22931
3	SOP SPE	PFAS by ID SOP	100	11/26/2021 1643	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	14000		730	180	ng/L	3
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.3	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	1.5	J	7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.3	0.87	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	1000		360	38	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	680		360	46	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	1800		360	54	ng/L	2
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.3	0.95	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	18000		360	50	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	580		3.6	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	0.50	J	3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	450		3.6	0.41	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.3	0.74	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	2000		360	63	ng/L	2
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	13		3.6	0.42	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.3	0.91	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1700		360	76	ng/L	2
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	2000		360	50	ng/L	2
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	22000		360	180	ng/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits	Q	Run 3 % Recovery	Acceptance Limits
13C2_4:2FTS		108	25-150		109	25-150		96	25-150
13C2_6:2FTS		95	25-150		99	25-150		96	25-150
13C2_8:2FTS		100	25-150		108	25-150		96	25-150
13C2_PFDoA		73	25-150		95	25-150		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-003
Description: MW-3
Matrix: Aqueous
Date Sampled: 11/05/2021 1049
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits	Q	Run 3 % Recovery	Acceptance Limits
13C2_PFHxDA		95	25-150		116	25-150		106	25-150
13C2_PFTeDA		71	25-150		98	25-150		96	25-150
13C3_PFBS		105	25-150		109	25-150		101	25-150
13C3_PFHxS		56	25-150		112	25-150		96	25-150
13C3-HFPO-DA		104	25-150		102	25-150		101	25-150
13C4_PFBA		99	25-150		107	25-150		99	25-150
13C4_PFHpA		64	25-150		103	25-150		105	25-150
13C5_PFHxA		92	25-150		106	25-150		101	25-150
13C5_PFPeA		86	25-150		108	25-150		103	25-150
13C6_PFDA		89	25-150		96	25-150		95	25-150
13C7_PFUdA		70	25-150		104	25-150		99	25-150
13C8_PFOA		91	25-150		106	25-150		96	25-150
13C8_PFOS		66	25-150		96	25-150		93	25-150
13C8_PFOSA		90	10-150		110	10-150		107	10-150
13C9_PFNA		58	25-150		103	25-150		97	25-150
d-EtFOSA		68	10-150		101	10-150		94	10-150
d5-EtFOSAA		83	25-150		100	25-150		100	25-150
d9-EtFOSE		76	10-150		110	10-150		99	10-150
d-MeFOSA		72	10-150		90	10-150		93	10-150
d3-MeFOSAA		89	25-150		113	25-150		106	25-150
d7-MeFOSE		80	10-150		96	10-150		111	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-004
Description: MW-4
Matrix: Aqueous
Date Sampled: 11/05/2021 1019
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 1946	JJG	11/18/2021 1018	22931
2	SOP SPE	PFAS by ID SOP	20	11/22/2021 0224	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	23		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	320	S	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	44		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	54		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	0.58	J	3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	82		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	1200		69	9.6	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	53		3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	2.1	J	3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	180	S	3.5	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	210		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	31		3.5	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	210	S	3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	150		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	3600		69	35	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	197	25-150		125	25-150
13C2_6:2FTS		110	25-150		111	25-150
13C2_8:2FTS		100	25-150		121	25-150
13C2_PFDoA		81	25-150		98	25-150
13C2_PFHxDA		103	25-150		119	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-004
Description: MW-4 | Matrix: Aqueous
Date Sampled: 11/05/2021 1019 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		76	25-150		104	25-150
13C3_PFBS		110	25-150		120	25-150
13C3_PFHxS		103	25-150		115	25-150
13C3-HFPO-DA		105	25-150		112	25-150
13C4_PFBA		91	25-150		116	25-150
13C4_PFHpA		101	25-150		107	25-150
13C5_PFHxA		108	25-150		111	25-150
13C5_PFPeA		100	25-150		108	25-150
13C6_PFDA		94	25-150		108	25-150
13C7_PFUdA		90	25-150		106	25-150
13C8_PFOA		102	25-150		111	25-150
13C8_PFOS		104	25-150		105	25-150
13C8_PFOSA		105	10-150		119	10-150
13C9_PFNA		87	25-150		108	25-150
d-EtFOSA		75	10-150		102	10-150
d5-EtFOSAA		87	25-150		101	25-150
d9-EtFOSE		84	10-150		108	10-150
d-MeFOSA		77	10-150		101	10-150
d3-MeFOSAA		94	25-150		117	25-150
d7-MeFOSE		93	10-150		107	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-005
Description: MW-5 | Matrix: Aqueous
Date Sampled: 11/08/2021 1241 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2007	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.0	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.0	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.0	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.0	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	7.0		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.0	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.82	J	3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	3.2	J	3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	1.5	J	3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	1.6	J	3.5	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.0	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	0.94	J	3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	2.1	J	3.5	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.0	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	4.0		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	0.98	J	3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	84		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		115	25-150
13C2_6:2FTS		105	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		69	25-150
13C2_PFHxDA		91	25-150
13C2_PFTeDA		73	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-005
Description: MW-5 | Matrix: Aqueous
Date Sampled: 11/08/2021 1241 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		108	25-150
13C3_PFHxS		120	25-150
13C3-HFPO-DA		115	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		91	25-150
13C7_PFUdA		71	25-150
13C8_PFOA		116	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		104	25-150
d-EtFOSA		74	10-150
d5-EtFOSAA		78	25-150
d9-EtFOSE		67	10-150
d-MeFOSA		63	10-150
d3-MeFOSAA		89	25-150
d7-MeFOSE		74	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-006
Description: MW-6
Matrix: Aqueous
Date Sampled: 11/08/2021 1327
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2018	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.8	1.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.8	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.8	0.92	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.90	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.8	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	3.5	J	3.9	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.75	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.48	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.69	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.8	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	1.9	J	3.9	0.53	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	11		3.9	0.58	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.53	J	3.9	0.43	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.8	0.79	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	0.97	J	3.9	0.67	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.8	0.97	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.2	J	3.9	0.80	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	1.2	J	3.9	0.53	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		112	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		87	25-150
13C2_PFHxDA		98	25-150
13C2_PFTeDA		75	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: Pace Analytical Services, LLC	Laboratory ID: WK17050-006
Description: MW-6	Matrix: Aqueous
Date Sampled: 11/08/2021 1327	Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021	Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		117	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		109	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		92	25-150
13C7_PFUdA		83	25-150
13C8_PFOA		108	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		106	25-150
d-EtFOSA		75	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		83	10-150
d-MeFOSA		64	10-150
d3-MeFOSAA		96	25-150
d7-MeFOSE		78	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-007
Description: MW-7
Matrix: Aqueous
Date Sampled: 11/08/2021 1437
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2039	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.82	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	1.5	J	3.4	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.90	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.73	J	3.4	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	1.7	J	3.4	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.45	J	3.4	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.70	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.86	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.5	J	3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	2.4	J	3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		124	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		84	25-150
13C2_PFHxDA		99	25-150
13C2_PFTeDA		77	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-007
Description: MW-7
Matrix: Aqueous
Date Sampled: 11/08/2021 1437
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		116	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		111	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		107	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		107	25-150
d-EtFOSA		92	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		77	10-150
d-MeFOSA		69	10-150
d3-MeFOSAA		97	25-150
d7-MeFOSE		81	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-008
Description: MW-101
Matrix: Aqueous
Date Sampled: 11/05/2021 1635
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2132	JJG	11/18/2021 1018	22931
2	SOP SPE	PFAS by ID SOP	50	11/22/2021 0235	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.1	0.55	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.1	0.76	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	870		9.1	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	38		9.1	2.3	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	5.0	J	9.1	1.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.1	1.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.1	2.4	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.1	0.55	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		9.1	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.1	0.86	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		9.1	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.1	1.1	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		9.1	1.5	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	52		4.6	0.47	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.6	0.89	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	57		4.6	0.57	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	5.2		4.6	0.81	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	2.9	J	4.6	0.70	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	100		4.6	0.68	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		9.1	1.2	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	4200		230	31	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	87		4.6	0.68	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	26		4.6	0.60	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.6	0.54	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	300		4.6	0.51	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		9.1	0.93	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	550		4.6	0.79	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	84		4.6	0.53	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		9.1	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	460		4.6	0.95	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	210		4.6	0.62	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.6	0.68	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.6	0.60	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	0.74	J	4.6	0.72	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	11000		230	110	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		124	25-150		98	25-150
13C2_6:2FTS		104	25-150		96	25-150
13C2_8:2FTS		109	25-150		108	25-150
13C2_PFDoA		70	25-150		85	25-150
13C2_PFHxDA		85	25-150		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-008
Description: MW-101
Matrix: Aqueous
Date Sampled: 11/05/2021 1635
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		61	25-150		89	25-150
13C3_PFBS		119	25-150		94	25-150
13C3_PFHxS		94	25-150		102	25-150
13C3-HFPO-DA		112	25-150		96	25-150
13C4_PFBA		110	25-150		96	25-150
13C4_PFHpA		95	25-150		94	25-150
13C5_PFHxA		107	25-150		91	25-150
13C5_PFPeA		107	25-150		95	25-150
13C6_PFDA		97	25-150		93	25-150
13C7_PFUdA		81	25-150		93	25-150
13C8_PFOA		103	25-150		91	25-150
13C8_PFOS		79	25-150		85	25-150
13C8_PFOSA		91	10-150		99	10-150
13C9_PFNA		74	25-150		94	25-150
d-EtFOSA		63	10-150		86	10-150
d5-EtFOSAA		85	25-150		85	25-150
d9-EtFOSE		57	10-150		89	10-150
d-MeFOSA		54	10-150		80	10-150
d3-MeFOSAA		91	25-150		100	25-150
d7-MeFOSE		59	10-150		96	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-009
Description: MW-102
Matrix: Aqueous
Date Sampled: 11/05/2021 1528
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2142	JJG	11/18/2021 1018	22931
2	SOP SPE	PFAS by ID SOP	1	11/26/2021 1653	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.0	0.54	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.0	0.74	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.0	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		9.0	2.2	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		9.0	1.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.0	0.98	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.0	2.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.0	0.54	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		9.0	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.0	0.84	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.0	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		9.0	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.5	0.46	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.5	0.87	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.5	0.56	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.5	0.80	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.5	0.69	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		9.0	1.2	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	4.7		4.5	0.62	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	1.0	J	4.5	0.67	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.5	0.59	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.5	0.53	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.69	J	4.5	0.50	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		9.0	0.91	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.5	0.77	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.5	0.52	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		9.0	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	1.2	J	4.5	0.93	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.5	0.61	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.5	0.59	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.5	0.70	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	3.5	J	4.5	2.2	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		91	25-150		84	25-150
13C2_6:2FTS		88	25-150		99	25-150
13C2_8:2FTS		82	25-150		81	25-150
13C2_PFDoA		72	25-150		78	25-150
13C2_PFHxDA		80	25-150		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-009
Description: MW-102
Matrix: Aqueous
Date Sampled: 11/05/2021 1528
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		64	25-150		81	25-150
13C3_PFBS		94	25-150		92	25-150
13C3_PFHxS		90	25-150		91	25-150
13C3-HFPO-DA		94	25-150		97	25-150
13C4_PFBA		90	25-150		93	25-150
13C4_PFHpA		89	25-150		95	25-150
13C5_PFHxA		87	25-150		93	25-150
13C5_PFPeA		89	25-150		98	25-150
13C6_PFDA		74	25-150		85	25-150
13C7_PFUdA		74	25-150		86	25-150
13C8_PFOA		91	25-150		97	25-150
13C8_PFOS		97	25-150		86	25-150
13C8_PFOSA		77	10-150		86	10-150
13C9_PFNA		88	25-150		94	25-150
d-EtFOSA		60	10-150		55	10-150
d5-EtFOSAA		75	25-150		90	25-150
d9-EtFOSE		67	10-150		73	10-150
d-MeFOSA		58	10-150		59	10-150
d3-MeFOSAA		77	25-150		95	25-150
d7-MeFOSE		64	10-150		81	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-010
Description: MW-103 | Matrix: Aqueous
Date Sampled: 11/05/2021 1600 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2153	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.3	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.3	0.87	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	1.6	J	3.6	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	1.6	J	3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	0.69	J	3.6	0.54	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.3	0.95	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	30		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	7.3		3.6	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	3.0	J	3.6	0.41	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.3	0.74	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	7.4		3.6	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	2.8	J	3.6	0.42	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.3	0.91	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	6.1		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	5.1		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	480		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		115	25-150
13C2_6:2FTS		102	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		97	25-150
13C2_PFHxDA		95	25-150
13C2_PFTeDA		75	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-010
Description: MW-103 | Matrix: Aqueous
Date Sampled: 11/05/2021 1600 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		111	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		109	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		97	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		106	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		104	25-150
d-EtFOSA		76	10-150
d5-EtFOSAA		89	25-150
d9-EtFOSE		76	10-150
d-MeFOSA		75	10-150
d3-MeFOSAA		105	25-150
d7-MeFOSE		82	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-011
Description: MW-104 | Matrix: Aqueous
Date Sampled: 11/08/2021 1027 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2203	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.4	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	0.88	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	0.96	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.74	J	3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	0.61	J	3.7	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.41	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.4	0.75	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.4	0.92	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.7	0.76	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	3.0	J	3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		107	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		91	25-150
13C2_PFHxDA		96	25-150
13C2_PFTeDA		79	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-011
Description: MW-104 | Matrix: Aqueous
Date Sampled: 11/08/2021 1027 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		113	25-150
13C3_PFHxS		118	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		110	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		109	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		106	25-150
d-EtFOSA		73	10-150
d5-EtFOSAA		91	25-150
d9-EtFOSE		76	10-150
d-MeFOSA		84	10-150
d3-MeFOSAA		97	25-150
d7-MeFOSE		86	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-012
Description: PZ-104
Matrix: Aqueous
Date Sampled: 11/08/2021 1048
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2214	JJG	11/18/2021 1018	22931
2	SOP SPE	PFAS by ID SOP	5	11/26/2021 1704	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	7.6		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	2.8	J	3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	3.5		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	3.4	J	3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	170		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	9.6		3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	0.70	J	3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	9.1		3.5	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	18		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	3.7		3.5	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	7.1		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	12		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	880		17	8.7	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		109	25-150		102	25-150
13C2_6:2FTS		102	25-150		115	25-150
13C2_8:2FTS		100	25-150		102	25-150
13C2_PFDoA		86	25-150		101	25-150
13C2_PFHxDA		95	25-150		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-012
Description: PZ-104 | Matrix: Aqueous
Date Sampled: 11/08/2021 1048 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		78	25-150		105	25-150
13C3_PFBS		111	25-150		114	25-150
13C3_PFHxS		106	25-150		109	25-150
13C3-HFPO-DA		107	25-150		113	25-150
13C4_PFBA		106	25-150		109	25-150
13C4_PFHpA		102	25-150		112	25-150
13C5_PFHxA		110	25-150		111	25-150
13C5_PFPeA		103	25-150		114	25-150
13C6_PFDA		98	25-150		106	25-150
13C7_PFUdA		88	25-150		107	25-150
13C8_PFOA		111	25-150		107	25-150
13C8_PFOS		106	25-150		101	25-150
13C8_PFOSA		107	10-150		112	10-150
13C9_PFNA		98	25-150		104	25-150
d-EtFOSA		89	10-150		105	10-150
d5-EtFOSAA		89	25-150		110	25-150
d9-EtFOSE		81	10-150		109	10-150
d-MeFOSA		98	10-150		98	10-150
d3-MeFOSAA		92	25-150		116	25-150
d7-MeFOSE		87	10-150		112	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-013
Description: PZ-105 | Matrix: Aqueous
Date Sampled: 11/05/2021 1439 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2224	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.4	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.4	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.70	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	0.89	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.87	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.39	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	0.97	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	1.0	J	3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	5.4		3.7	0.56	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.4	0.76	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.64	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.4	0.93	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	0.89	J	3.7	0.77	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		115	25-150
13C2_6:2FTS		108	25-150
13C2_8:2FTS		118	25-150
13C2_PFDoA		94	25-150
13C2_PFHxDA		99	25-150
13C2_PFTeDA		77	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-013
Description: PZ-105
Matrix: Aqueous
Date Sampled: 11/05/2021 1439
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		112	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		110	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		94	25-150
13C8_PFOA		109	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		106	25-150
d-EtFOSA		83	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		86	10-150
d-MeFOSA		84	10-150
d3-MeFOSAA		103	25-150
d7-MeFOSE		85	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-014
Description: PZ-106 | Matrix: Aqueous
Date Sampled: 11/05/2021 1401 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2235	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.5	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.5	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.5	0.82	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.5	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.5	0.71	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.5	0.90	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.5	0.88	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.5	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	0.74	J	3.8	0.39	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.73	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.5	0.98	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	2.9	J	3.8	0.52	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	4.4		3.8	0.56	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.42	J	3.8	0.42	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.5	0.77	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.8	0.65	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.43	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.5	0.94	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.8	0.78	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	0.86	J	3.8	0.51	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.59	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.8	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		113	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		79	25-150
13C2_PFHxDA		93	25-150
13C2_PFTeDA		71	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-014
Description: PZ-106
Matrix: Aqueous
Date Sampled: 11/05/2021 1401
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		108	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		86	25-150
13C8_PFOA		106	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		111	25-150
d-EtFOSA		82	10-150
d5-EtFOSAA		84	25-150
d9-EtFOSE		67	10-150
d-MeFOSA		78	10-150
d3-MeFOSAA		89	25-150
d7-MeFOSE		71	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-015
Description: PZ-6 | Matrix: Aqueous
Date Sampled: 11/05/2021 1354 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2245	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	6.4		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	0.60	J	3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	2.2	J	3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	5.0		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	110		3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.92	J	3.5	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	4.2		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	47		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	7.1		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	19		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		119	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		73	25-150
13C2_PFHxDA		95	25-150
13C2_PFTeDA		68	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-015
Description: PZ-6 | Matrix: Aqueous
Date Sampled: 11/05/2021 1354 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		114	25-150
13C3_PFHxS		118	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		110	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		79	25-150
13C8_PFOA		109	25-150
13C8_PFOS		117	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		108	25-150
d-EtFOSA		75	10-150
d5-EtFOSAA		75	25-150
d9-EtFOSE		63	10-150
d-MeFOSA		68	10-150
d3-MeFOSAA		90	25-150
d7-MeFOSE		57	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-016
Description: PZ-7 | Matrix: Aqueous
Date Sampled: 11/08/2021 1458 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2256	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.82	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	2.5	J	3.4	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	1.1	J	3.4	0.51	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.90	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	5.0		3.4	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	64		3.4	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.59	J	3.4	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.70	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	1.7	J	3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.86	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	30		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	2.7	J	3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	14		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		108	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		78	25-150
13C2_PFHxDA		94	25-150
13C2_PFTeDA		71	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-016
Description: PZ-7
Matrix: Aqueous
Date Sampled: 11/08/2021 1458
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		109	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		91	25-150
13C7_PFUdA		88	25-150
13C8_PFOA		106	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		104	25-150
d-EtFOSA		79	10-150
d5-EtFOSAA		84	25-150
d9-EtFOSE		72	10-150
d-MeFOSA		84	10-150
d3-MeFOSAA		89	25-150
d7-MeFOSE		71	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-017
Description: DUP #1 | Matrix: Aqueous
Date Sampled: 11/05/2021 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2307	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.4	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	0.88	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	1.6	J	3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	1.7	J	3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	0.84	J	3.7	0.55	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	0.96	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	29		3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	7.6		3.7	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	3.1	J	3.7	0.41	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.4	0.75	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	7.2		3.7	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	3.0	J	3.7	0.42	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.4	0.92	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	5.3		3.7	0.76	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	5.6		3.7	0.50	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	470		3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		110	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		84	25-150
13C2_PFHxDA		92	25-150
13C2_PFTeDA		73	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC	Laboratory ID: WK17050-017
Description: DUP #1	Matrix: Aqueous
Date Sampled: 11/05/2021	Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021	Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		109	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		87	25-150
13C8_PFOA		105	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		91	10-150
13C9_PFNA		95	25-150
d-EtFOSA		69	10-150
d5-EtFOSAA		84	25-150
d9-EtFOSE		73	10-150
d-MeFOSA		60	10-150
d3-MeFOSAA		94	25-150
d7-MeFOSE		73	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-018
Description: DUP #2 | Matrix: Aqueous
Date Sampled: 11/08/2021 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2338	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.2	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.2	0.85	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	3.0	J	3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.2	0.94	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	1.8	J	3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	11		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.63	J	3.6	0.40	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.2	0.73	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	1.0	J	3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.2	0.90	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	0.82	J	3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	1.1	J	3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		107	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		73	25-150
13C2_PFHxDA		91	25-150
13C2_PFTeDA		66	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Client: Pace Analytical Services, LLC	Laboratory ID: WK17050-018
Description: DUP #2	Matrix: Aqueous
Date Sampled: 11/08/2021	Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021	Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		108	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		106	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		80	25-150
13C8_PFOA		106	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		95	25-150
d-EtFOSA		70	10-150
d5-EtFOSAA		76	25-150
d9-EtFOSE		65	10-150
d-MeFOSA		62	10-150
d3-MeFOSAA		82	25-150
d7-MeFOSE		64	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC — Laboratory ID: WK17050-019
Description: PRE-FILTER — Matrix: Aqueous
Date Sampled: 11/05/2021 1252 — Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 — Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	20	11/20/2021 1105	MMM	11/18/2021 1626	23010
2	SOP SPE	PFAS by ID SOP	50	11/23/2021 2307	JJG	11/22/2021 1230	23339

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		140	8.5	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		140	12	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		140	28	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	2900		140	35	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		140	21	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		140	15	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		140	37	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		140	8.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		140	24	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		140	13	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		140	17	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		280	22	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		140	16	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		140	23	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	280		71	7.3	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		71	14	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	150		71	8.8	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		71	13	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		71	11	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	490		71	10	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		650	84	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	4600		71	9.7	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	200		71	11	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		71	9.3	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		71	8.3	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	210		71	7.9	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		140	14	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	500		71	12	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	18	J	71	8.2	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		140	18	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	440		71	15	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	590		71	9.6	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		71	11	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		71	9.3	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		71	11	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	7100		71	35	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		120	25-150		114	25-150
13C2_6:2FTS		107	25-150		114	25-150
13C2_8:2FTS		138	25-150		99	25-150
13C2_PFDoA		108	25-150		104	25-150
13C2_PFHxDA		105	25-150		114	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-019
Description: PRE-FILTER
Matrix: Aqueous
Date Sampled: 11/05/2021 1252
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		108	25-150		109	25-150
13C3_PFBS		106	25-150		117	25-150
13C3_PFHxS		103	25-150		107	25-150
13C3-HFPO-DA		102	25-150		115	25-150
13C4_PFBA		109	25-150		111	25-150
13C4_PFHpA		102	25-150		111	25-150
13C5_PFHxA		111	25-150		111	25-150
13C5_PFPeA		108	25-150		115	25-150
13C6_PFDA		103	25-150		108	25-150
13C7_PFUdA		107	25-150		110	25-150
13C8_PFOA		107	25-150		112	25-150
13C8_PFOS		98	25-150		117	25-150
13C8_PFOSA		112	10-150		121	10-150
13C9_PFNA		104	25-150		109	25-150
d-EtFOSA		91	10-150		124	10-150
d5-EtFOSAA		103	25-150		108	25-150
d9-EtFOSE		102	10-150		108	10-150
d-MeFOSA		104	10-150		102	10-150
d3-MeFOSAA		107	25-150		122	25-150
d7-MeFOSE		111	10-150		117	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-020
Description: MID-FILTER | Matrix: Aqueous
Date Sampled: 11/05/2021 1250 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2021 2349	JJG	11/18/2021 1018	22931

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.3	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.69	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.3	0.87	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.54	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.3	0.96	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.41	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.3	0.75	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.3	0.92	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.7	0.76	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		108	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		86	25-150
13C2_PFDoA		64	25-150
13C2_PFHxDA		89	25-150
13C2_PFTeDA		58	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-020
Description: MID-FILTER
Matrix: Aqueous
Date Sampled: 11/05/2021 1250
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		109	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		109	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		84	25-150
13C7_PFUdA		75	25-150
13C8_PFOA		109	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		103	25-150
d-EtFOSA		63	10-150
d5-EtFOSAA		70	25-150
d9-EtFOSE		60	10-150
d-MeFOSA		67	10-150
d3-MeFOSAA		80	25-150
d7-MeFOSE		55	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-021
Description: POST- FILTER
Matrix: Aqueous
Date Sampled: 11/05/2021 1248
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/20/2021 1115	MMM	11/18/2021 1626	23010

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND	L	6.9	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	1.3	J	3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	3.6		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		112	25-150
13C2_6:2FTS		127	25-150
13C2_8:2FTS		141	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		102	25-150
13C2_PFTeDA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-021
Description: POST- FILTER
Matrix: Aqueous
Date Sampled: 11/05/2021 1248
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		105	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		110	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		121	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		108	25-150
13C8_PFOA		114	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		122	10-150
13C9_PFNA		111	25-150
d-EtFOSA		82	10-150
d5-EtFOSAA		101	25-150
d9-EtFOSE		115	10-150
d-MeFOSA		98	10-150
d3-MeFOSAA		116	25-150
d7-MeFOSE		116	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC — Laboratory ID: WK17050-022
Description: FIELD BLANK #1 — Matrix: Aqueous
Date Sampled: 11/05/2021 1620 — Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 — Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/20/2021 1126	MMM	11/18/2021 1626	23010
2	SOP SPE	PFAS by ID SOP	1	11/23/2021 2132	JJG	11/22/2021 1230	23339

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.9	1.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.9	0.87	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.9	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	0.74	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.9	0.95	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.3	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	0.92	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.9	1.3	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.41	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	0.96	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	0.55	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.0	0.44	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.9	0.81	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.0	0.68	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.46	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.9	0.99	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.0	0.82	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	0.54	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.0	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		121	25-150		104	25-150
13C2_6:2FTS		150	25-150		121	25-150
13C2_8:2FTS	N	153	25-150		101	25-150
13C2_PFDoA		117	25-150		99	25-150
13C2_PFHxDA		80	25-150		68	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC
Laboratory ID: WK17050-022
Description: FIELD BLANK #1
Matrix: Aqueous
Date Sampled: 11/05/2021 1620
Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021
Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		111	25-150		90	25-150
13C3_PFBS		116	25-150		107	25-150
13C3_PFHxS		118	25-150		100	25-150
13C3-HFPO-DA		122	25-150		109	25-150
13C4_PFBA		115	25-150		105	25-150
13C4_PFHpA		122	25-150		106	25-150
13C5_PFHxA		124	25-150		103	25-150
13C5_PFPeA		115	25-150		106	25-150
13C6_PFDA		110	25-150		100	25-150
13C7_PFUdA		114	25-150		99	25-150
13C8_PFOA		120	25-150		106	25-150
13C8_PFOS		107	25-150		105	25-150
13C8_PFOSA		120	10-150		111	10-150
13C9_PFNA		115	25-150		104	25-150
d-EtFOSA		81	10-150		95	10-150
d5-EtFOSAA		113	25-150		96	25-150
d9-EtFOSE		120	10-150		101	10-150
d-MeFOSA		93	10-150		84	10-150
d3-MeFOSAA		125	25-150		111	25-150
d7-MeFOSE		118	10-150		118	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC — Laboratory ID: WK17050-023
Description: FIELD BLANK #2 — Matrix: Aqueous
Date Sampled: 11/08/2021 1316 — Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 — Project Number: 40236693

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/20/2021 1147	MMM	11/18/2021 1626	23010
2	SOP SPE	PFAS by ID SOP	1	11/23/2021 2143	JJG	11/22/2021 1230	23339

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.8	1.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.8	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.8	0.92	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.90	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.8	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.9	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.75	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.48	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.69	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.1	1.1	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.53	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.9	0.43	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.8	0.79	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.9	0.67	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.8	0.97	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.9	0.80	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.9	0.53	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	1.9	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		130	25-150		115	25-150
13C2_6:2FTS		132	25-150		135	25-150
13C2_8:2FTS		146	25-150		108	25-150
13C2_PFDoA		114	25-150		103	25-150
13C2_PFHxDA		98	25-150		46	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: WK17050-023
Description: FIELD BLANK #2 | Matrix: Aqueous
Date Sampled: 11/08/2021 1316 | Project Name: LACROSSE AIRPORT PFAS
Date Received: 11/11/2021 | Project Number: 40236693

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		114	25-150		86	25-150
13C3_PFBS		121	25-150		116	25-150
13C3_PFHxS		122	25-150		109	25-150
13C3-HFPO-DA		125	25-150		121	25-150
13C4_PFBA		124	25-150		112	25-150
13C4_PFHpA		125	25-150		107	25-150
13C5_PFHxA		134	25-150		114	25-150
13C5_PFPeA		123	25-150		112	25-150
13C6_PFDA		102	25-150		104	25-150
13C7_PFUdA		117	25-150		105	25-150
13C8_PFOA		139	25-150		118	25-150
13C8_PFOS		115	25-150		112	25-150
13C8_PFOSA		122	10-150		117	10-150
13C9_PFNA		122	25-150		108	25-150
d-EtFOSA		92	10-150		94	10-150
d5-EtFOSAA		108	25-150		105	25-150
d9-EtFOSE		122	10-150		109	10-150
d-MeFOSA		102	10-150		88	10-150
d3-MeFOSAA		120	25-150		110	25-150
d7-MeFOSE		122	10-150		108	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ22931-001
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/18/2021 1843
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/18/2021 1843
8:2 FTS	ND		1	8.0	1.6	ng/L	11/18/2021 1843
6:2 FTS	ND		1	8.0	2.0	ng/L	11/18/2021 1843
10:2 FTS	ND		1	8.0	1.2	ng/L	11/18/2021 1843
4:2 FTS	ND		1	8.0	0.87	ng/L	11/18/2021 1843
GenX	ND		1	8.0	2.1	ng/L	11/18/2021 1843
ADONA	ND		1	8.0	0.48	ng/L	11/18/2021 1843
EtFOSA	ND		1	8.0	1.4	ng/L	11/18/2021 1843
EtFOSAA	ND		1	8.0	0.75	ng/L	11/18/2021 1843
EtFOSE	ND		1	8.0	0.95	ng/L	11/18/2021 1843
MeFOSA	ND		1	16	1.3	ng/L	11/18/2021 1843
MeFOSAA	ND		1	8.0	0.93	ng/L	11/18/2021 1843
MeFOSE	ND		1	8.0	1.3	ng/L	11/18/2021 1843
PFBS	ND		1	4.0	0.41	ng/L	11/18/2021 1843
PFDS	ND		1	4.0	0.78	ng/L	11/18/2021 1843
PFHpS	ND		1	4.0	0.50	ng/L	11/18/2021 1843
PFNS	ND		1	4.0	0.71	ng/L	11/18/2021 1843
PFOSA	ND		1	4.0	0.61	ng/L	11/18/2021 1843
PFPeS	ND		1	4.0	0.59	ng/L	11/18/2021 1843
PFDOS	ND		1	8.0	1.0	ng/L	11/18/2021 1843
PFHxS	ND		1	4.0	0.55	ng/L	11/18/2021 1843
PFBA	ND		1	4.0	0.60	ng/L	11/18/2021 1843
PFDA	ND		1	4.0	0.52	ng/L	11/18/2021 1843
PFDoA	ND		1	4.0	0.47	ng/L	11/18/2021 1843
PFHpA	ND		1	4.0	0.45	ng/L	11/18/2021 1843
PFHxDA	ND		1	8.0	0.82	ng/L	11/18/2021 1843
PFHxA	ND		1	4.0	0.69	ng/L	11/18/2021 1843
PFNA	ND		1	4.0	0.46	ng/L	11/18/2021 1843
PFODA	ND		1	8.0	1.0	ng/L	11/18/2021 1843
PFOA	ND		1	4.0	0.83	ng/L	11/18/2021 1843
PFPeA	ND		1	4.0	0.54	ng/L	11/18/2021 1843
PFTeDA	ND		1	4.0	0.60	ng/L	11/18/2021 1843
PFTrDA	ND		1	4.0	0.53	ng/L	11/18/2021 1843
PFUdA	ND		1	4.0	0.63	ng/L	11/18/2021 1843
PFOS	ND		1	4.0	2.0	ng/L	11/18/2021 1843

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		110	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		120	25-150
13C2_PFDoA		111	25-150
13C2_PFHxDA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ22931-001
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		92	25-150
13C3_PFBS		119	25-150
13C3_PFHxS		125	25-150
13C3-HFPO-DA		116	25-150
13C4_PFBA		113	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		120	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		116	25-150
13C8_PFOS		123	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		116	25-150
d-EtFOSA		92	10-150
d5-EtFOSAA		108	25-150
d9-EtFOSE		115	10-150
d-MeFOSA		91	10-150
d3-MeFOSAA		118	25-150
d7-MeFOSE		114	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ22931-002
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	94	50-150	11/18/2021 1853
11Cl-PF3OUdS	15	13		1	84	50-150	11/18/2021 1853
8:2 FTS	15	15		1	99	50-150	11/18/2021 1853
6:2 FTS	15	14		1	92	50-150	11/18/2021 1853
10:2 FTS	15	13		1	82	50-150	11/18/2021 1853
4:2 FTS	15	15		1	101	50-150	11/18/2021 1853
GenX	32	30		1	93	50-150	11/18/2021 1853
ADONA	15	14		1	95	50-150	11/18/2021 1853
EtFOSA	16	15		1	95	50-150	11/18/2021 1853
EtFOSAA	16	16		1	102	50-150	11/18/2021 1853
EtFOSE	16	16		1	102	50-150	11/18/2021 1853
MeFOSA	16	21		1	133	50-150	11/18/2021 1853
MeFOSAA	16	15		1	96	50-150	11/18/2021 1853
MeFOSE	16	15		1	94	50-150	11/18/2021 1853
PFBS	14	14		1	97	50-150	11/18/2021 1853
PFDS	15	13		1	84	50-150	11/18/2021 1853
PFHpS	15	14		1	94	50-150	11/18/2021 1853
PFNS	15	14		1	94	50-150	11/18/2021 1853
PFOSA	16	16		1	98	50-150	11/18/2021 1853
PFPeS	15	15		1	97	50-150	11/18/2021 1853
PFDOS	15	13		1	81	50-150	11/18/2021 1853
PFHxS	15	14		1	97	50-150	11/18/2021 1853
PFBA	16	15		1	96	50-150	11/18/2021 1853
PFDA	16	15		1	96	50-150	11/18/2021 1853
PFDoA	16	16		1	99	50-150	11/18/2021 1853
PFHpA	16	17		1	108	50-150	11/18/2021 1853
PFHxDA	16	16		1	97	50-150	11/18/2021 1853
PFHxA	16	15		1	95	50-150	11/18/2021 1853
PFNA	16	15		1	96	50-150	11/18/2021 1853
PFODA	16	14		1	90	50-150	11/18/2021 1853
PFOA	16	16		1	101	50-150	11/18/2021 1853
PFPeA	16	16		1	100	50-150	11/18/2021 1853
PFTeDA	16	17		1	104	50-150	11/18/2021 1853
PFTrDA	16	14		1	89	50-150	11/18/2021 1853
PFUdA	16	15		1	93	50-150	11/18/2021 1853
PFOS	15	14		1	94	50-150	11/18/2021 1853

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		107	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		102	25-150
13C2_PFHxDA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ22931-002
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		81	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		108	25-150
13C8_PFOS		122	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		113	25-150
d-EtFOSA		96	10-150
d5-EtFOSAA		94	25-150
d9-EtFOSE		100	10-150
d-MeFOSA		80	10-150
d3-MeFOSAA		109	25-150
d7-MeFOSE		105	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Sample ID: WK17050-004MS
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	14	14		1	99	50-150	11/18/2021 1957
11Cl-PF3OUdS	ND	14	13		1	94	50-150	11/18/2021 1957
8:2 FTS	23	14	34		1	78	50-150	11/18/2021 1957
6:2 FTS	320	14	350	N	1	196	50-150	11/18/2021 1957
10:2 FTS	ND	14	9.8		1	69	50-150	11/18/2021 1957
4:2 FTS	ND	14	13		1	92	50-150	11/18/2021 1957
GenX	ND	30	28		1	96	50-150	11/18/2021 1957
ADONA	ND	14	14		1	101	50-150	11/18/2021 1957
EtFOSA	ND	15	17		1	113	50-150	11/18/2021 1957
EtFOSAA	ND	15	15		1	100	50-150	11/18/2021 1957
EtFOSE	ND	15	15		1	100	50-150	11/18/2021 1957
MeFOSA	ND	15	16		1	107	50-150	11/18/2021 1957
MeFOSAA	ND	15	12		1	82	50-150	11/18/2021 1957
MeFOSE	ND	15	14		1	93	50-150	11/18/2021 1957
PFBS	44	13	55		1	83	50-150	11/18/2021 1957
PFDS	ND	14	13		1	88	50-150	11/18/2021 1957
PFHpS	54	14	72		1	133	50-150	11/18/2021 1957
PFNS	ND	14	14		1	102	50-150	11/18/2021 1957
PFOSA	0.58	15	14		1	92	50-150	11/18/2021 1957
PFPeS	82	14	94		1	87	50-150	11/18/2021 1957
PFDOS	ND	14	14		1	95	50-150	11/18/2021 1957
PFHxS	1000	13	1000	N	1	169	50-150	11/18/2021 1957
PFBA	53	15	68		1	100	50-150	11/18/2021 1957
PFDA	2.1	15	17		1	100	50-150	11/18/2021 1957
PFDoA	ND	15	13		1	91	50-150	11/18/2021 1957
PFHpA	180	15	200	N	1	159	50-150	11/18/2021 1957
PFHxDA	ND	15	14		1	94	50-150	11/18/2021 1957
PFHxA	210	15	220		1	64	50-150	11/18/2021 1957
PFNA	31	15	45		1	92	50-150	11/18/2021 1957
PFODA	ND	15	14		1	95	50-150	11/18/2021 1957
PFOA	210	15	230	N	1	190	50-150	11/18/2021 1957
PFPeA	150	15	170		1	101	50-150	11/18/2021 1957
PFTeDA	ND	15	15		1	100	50-150	11/18/2021 1957
PFTrDA	ND	15	15		1	99	50-150	11/18/2021 1957
PFUdA	ND	15	16		1	107	50-150	11/18/2021 1957
PFOS	3100	14	3500	N	1	2630	50-150	11/18/2021 1957

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	220	25-150
13C2_6:2FTS		115	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		88	25-150
13C2_PFHxDA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Sample ID: WK17050-004MS
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		82	25-150
13C3_PFBS		118	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		96	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		87	25-150
13C8_PFOA		107	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		94	25-150
d-EtFOSA		81	10-150
d5-EtFOSAA		93	25-150
d9-EtFOSE		88	10-150
d-MeFOSA		86	10-150
d3-MeFOSAA		103	25-150
d7-MeFOSE		88	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: WK17050-006DU
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	11/18/2021 2028
11Cl-PF3OUdS	ND	ND		1	0.00	20	11/18/2021 2028
8:2 FTS	ND	ND		1	0.00	20	11/18/2021 2028
6:2 FTS	ND	ND		1	0.00	20	11/18/2021 2028
10:2 FTS	ND	ND		1	0.00	20	11/18/2021 2028
4:2 FTS	ND	ND		1	0.00	20	11/18/2021 2028
GenX	ND	ND		1	0.00	20	11/18/2021 2028
ADONA	ND	ND		1	0.00	20	11/18/2021 2028
EtFOSA	ND	ND		1	0.00	20	11/18/2021 2028
EtFOSAA	ND	ND		1	0.00	20	11/18/2021 2028
EtFOSE	ND	ND		1	0.00	20	11/18/2021 2028
MeFOSA	ND	ND		1	0.00	20	11/18/2021 2028
MeFOSAA	ND	ND		1	0.00	20	11/18/2021 2028
MeFOSE	ND	ND		1	0.00	20	11/18/2021 2028
PFBS	3.5	3.2	J	1	9.8	20	11/18/2021 2028
PFDS	ND	ND		1	0.00	20	11/18/2021 2028
PFHpS	ND	ND		1	0.00	20	11/18/2021 2028
PFNS	ND	ND		1	0.00	20	11/18/2021 2028
PFOSA	ND	ND		1	0.00	20	11/18/2021 2028
PFPeS	ND	ND		1	0.00	20	11/18/2021 2028
PFDOS	ND	ND		1	0.00	20	11/18/2021 2028
PFHxS	1.9	2.1	J	1	11	20	11/18/2021 2028
PFBA	11	11		1	5.7	20	11/18/2021 2028
PFDA	ND	ND		1	0.00	20	11/18/2021 2028
PFDoA	ND	ND		1	0.00	20	11/18/2021 2028
PFHpA	0.53	0.58	J	1	10	20	11/18/2021 2028
PFHxDA	ND	ND		1	0.00	20	11/18/2021 2028
PFHxA	0.97	1.3	+	1	28	20	11/18/2021 2028
PFNA	ND	ND		1	0.00	20	11/18/2021 2028
PFODA	ND	ND		1	0.00	20	11/18/2021 2028
PFOA	1.2	1.3	J	1	7.4	20	11/18/2021 2028
PFPeA	1.2	1.2	J	1	1.6	20	11/18/2021 2028
PFTeDA	ND	ND		1	0.00	20	11/18/2021 2028
PFTrDA	ND	ND		1	0.00	20	11/18/2021 2028
PFUdA	ND	ND		1	0.00	20	11/18/2021 2028
PFOS	ND	ND		1	0.00	20	11/18/2021 2028

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		110	25-150
13C2_8:2FTS		80	25-150
13C2_PFDoA		81	25-150
13C2_PFHxDA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: WK17050-006DU
Batch: 22931
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1018

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		77	25-150
13C3_PFBS		109	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		78	25-150
13C8_PFOA		110	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		104	25-150
d-EtFOSA		73	10-150
d5-EtFOSAA		82	25-150
d9-EtFOSE		78	10-150
d-MeFOSA		66	10-150
d3-MeFOSAA		90	25-150
d7-MeFOSE		74	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ23010-001
Batch: 23010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1626

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/20/2021 0016
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/20/2021 0016
8:2 FTS	ND		1	8.0	1.6	ng/L	11/20/2021 0016
6:2 FTS	ND		1	8.0	2.0	ng/L	11/20/2021 0016
10:2 FTS	ND		1	8.0	1.2	ng/L	11/20/2021 0016
4:2 FTS	ND		1	8.0	0.87	ng/L	11/20/2021 0016
GenX	ND		1	8.0	2.1	ng/L	11/20/2021 0016
ADONA	ND		1	8.0	0.48	ng/L	11/20/2021 0016
EtFOSA	ND		1	8.0	1.4	ng/L	11/20/2021 0016
EtFOSAA	ND		1	8.0	0.75	ng/L	11/20/2021 0016
EtFOSE	ND		1	8.0	0.95	ng/L	11/20/2021 0016
MeFOSA	ND		1	16	1.3	ng/L	11/20/2021 0016
MeFOSAA	ND		1	8.0	0.93	ng/L	11/20/2021 0016
MeFOSE	ND		1	8.0	1.3	ng/L	11/20/2021 0016
PFBS	ND		1	4.0	0.41	ng/L	11/20/2021 0016
PFDS	ND		1	4.0	0.78	ng/L	11/20/2021 0016
PFHpS	ND		1	4.0	0.50	ng/L	11/20/2021 0016
PFNS	ND		1	4.0	0.71	ng/L	11/20/2021 0016
PFOSA	ND		1	4.0	0.61	ng/L	11/20/2021 0016
PFPeS	ND		1	4.0	0.59	ng/L	11/20/2021 0016
PFDOS	ND		1	8.0	1.0	ng/L	11/20/2021 0016
PFHxS	ND		1	4.0	0.55	ng/L	11/20/2021 0016
PFBA	ND		1	4.0	0.60	ng/L	11/20/2021 0016
PFDA	ND		1	4.0	0.52	ng/L	11/20/2021 0016
PFDoA	ND		1	4.0	0.47	ng/L	11/20/2021 0016
PFHpA	ND		1	4.0	0.45	ng/L	11/20/2021 0016
PFHxDA	ND		1	8.0	0.82	ng/L	11/20/2021 0016
PFHxA	ND		1	4.0	0.69	ng/L	11/20/2021 0016
PFNA	ND		1	4.0	0.46	ng/L	11/20/2021 0016
PFODA	ND		1	8.0	1.0	ng/L	11/20/2021 0016
PFOA	ND		1	4.0	0.83	ng/L	11/20/2021 0016
PFPeA	ND		1	4.0	0.54	ng/L	11/20/2021 0016
PFTeDA	ND		1	4.0	0.60	ng/L	11/20/2021 0016
PFTrDA	ND		1	4.0	0.53	ng/L	11/20/2021 0016
PFUdA	ND		1	4.0	0.63	ng/L	11/20/2021 0016
PFOS	ND		1	4.0	2.0	ng/L	11/20/2021 0016

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		110	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		99	25-150
13C2_PFHxDA		87	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ23010-001
Batch: 23010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1626

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		92	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		96	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		87	25-150
13C8_PFOA		94	25-150
13C8_PFOS		94	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		100	25-150
d-EtFOSA		63	10-150
d5-EtFOSAA		93	25-150
d9-EtFOSE		96	10-150
d-MeFOSA		64	10-150
d3-MeFOSAA		85	25-150
d7-MeFOSE		81	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ23010-002
Batch: 23010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1626

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	99	50-150	11/20/2021 0027
11Cl-PF3OUdS	15	14		1	92	50-150	11/20/2021 0027
8:2 FTS	15	15		1	98	50-150	11/20/2021 0027
6:2 FTS	15	14		1	93	50-150	11/20/2021 0027
10:2 FTS	15	13		1	82	50-150	11/20/2021 0027
4:2 FTS	15	14		1	92	50-150	11/20/2021 0027
GenX	32	30		1	95	50-150	11/20/2021 0027
ADONA	15	15		1	97	50-150	11/20/2021 0027
EtFOSA	16	15		1	93	50-150	11/20/2021 0027
EtFOSAA	16	17		1	104	50-150	11/20/2021 0027
EtFOSE	16	14		1	86	50-150	11/20/2021 0027
MeFOSA	16	18		1	113	50-150	11/20/2021 0027
MeFOSAA	16	16		1	100	50-150	11/20/2021 0027
MeFOSE	16	14		1	87	50-150	11/20/2021 0027
PFBS	14	13		1	90	50-150	11/20/2021 0027
PFDS	15	14		1	93	50-150	11/20/2021 0027
PFHpS	15	15		1	98	50-150	11/20/2021 0027
PFNS	15	15		1	100	50-150	11/20/2021 0027
PFOSA	16	14		1	88	50-150	11/20/2021 0027
PFPeS	15	15		1	101	50-150	11/20/2021 0027
PFDOS	15	6.8	N	1	44	50-150	11/20/2021 0027
PFHxS	15	13		1	92	50-150	11/20/2021 0027
PFBA	16	15		1	95	50-150	11/20/2021 0027
PFDA	16	15		1	96	50-150	11/20/2021 0027
PFDoA	16	14		1	90	50-150	11/20/2021 0027
PFHpA	16	15		1	95	50-150	11/20/2021 0027
PFHxDA	16	14		1	89	50-150	11/20/2021 0027
PFHxA	16	15		1	95	50-150	11/20/2021 0027
PFNA	16	15		1	96	50-150	11/20/2021 0027
PFODA	16	12		1	72	50-150	11/20/2021 0027
PFOA	16	16		1	100	50-150	11/20/2021 0027
PFPeA	16	16		1	101	50-150	11/20/2021 0027
PFTeDA	16	14		1	88	50-150	11/20/2021 0027
PFTrDA	16	12		1	73	50-150	11/20/2021 0027
PFUdA	16	16		1	97	50-150	11/20/2021 0027
PFOS	15	14		1	95	50-150	11/20/2021 0027

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		97	25-150
13C2_6:2FTS		149	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		96	25-150
13C2_PFHxDA		26	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ23010-002
Batch: 23010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1626

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		48	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		99	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		98	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		103	25-150
d-EtFOSA		69	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		94	10-150
d-MeFOSA		78	10-150
d3-MeFOSAA		86	25-150
d7-MeFOSE		87	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Sample ID: WK17050-021MS
Batch: 23010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1626

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	15	12		1	84	50-150	11/20/2021 1136
11Cl-PF3OUdS	ND	15	13		1	84	50-150	11/20/2021 1136
8:2 FTS	ND	15	13		1	87	50-150	11/20/2021 1136
6:2 FTS	ND	15	14		1	90	50-150	11/20/2021 1136
10:2 FTS	ND	15	11		1	71	50-150	11/20/2021 1136
4:2 FTS	ND	15	14		1	94	50-150	11/20/2021 1136
GenX	ND	32	26		1	81	50-150	11/20/2021 1136
ADONA	ND	15	15		1	102	50-150	11/20/2021 1136
EtFOSA	ND	16	14		1	85	50-150	11/20/2021 1136
EtFOSAA	ND	16	14		1	88	50-150	11/20/2021 1136
EtFOSE	ND	16	13		1	82	50-150	11/20/2021 1136
MeFOSA	ND	16	16		1	101	50-150	11/20/2021 1136
MeFOSAA	ND	16	14		1	89	50-150	11/20/2021 1136
MeFOSE	ND	16	13		1	84	50-150	11/20/2021 1136
PFBS	ND	14	11		1	77	50-150	11/20/2021 1136
PFDS	ND	15	14		1	91	50-150	11/20/2021 1136
PFHpS	ND	15	14		1	92	50-150	11/20/2021 1136
PFNS	ND	15	13		1	82	50-150	11/20/2021 1136
PFOSA	ND	16	13		1	79	50-150	11/20/2021 1136
PFPeS	ND	15	13		1	89	50-150	11/20/2021 1136
PFDOS	ND	15	12		1	79	50-150	11/20/2021 1136
PFHxS	1.3	15	14		1	88	50-150	11/20/2021 1136
PFBA	ND	16	14		1	89	50-150	11/20/2021 1136
PFDA	ND	16	14		1	90	50-150	11/20/2021 1136
PFDoA	ND	16	14		1	85	50-150	11/20/2021 1136
PFHpA	ND	16	15		1	91	50-150	11/20/2021 1136
PFHxDA	ND	16	14		1	88	50-150	11/20/2021 1136
PFHxA	ND	20	13		1	66	50-150	11/20/2021 1136
PFNA	ND	16	14		1	86	50-150	11/20/2021 1136
PFODA	ND	16	11		1	67	50-150	11/20/2021 1136
PFOA	ND	16	13		1	82	50-150	11/20/2021 1136
PFPeA	ND	16	14		1	90	50-150	11/20/2021 1136
PFTeDA	ND	16	15		1	96	50-150	11/20/2021 1136
PFTrDA	ND	16	14		1	88	50-150	11/20/2021 1136
PFUdA	ND	16	11		1	72	50-150	11/20/2021 1136
PFOS	3.6	15	15		1	77	50-150	11/20/2021 1136

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		118	25-150
13C2_6:2FTS		119	25-150
13C2_8:2FTS		135	25-150
13C2_PFDoA		100	25-150
13C2_PFHxDA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Sample ID: WK17050-021MS
Batch: 23010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/18/2021 1626

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		98	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		126	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		110	25-150
13C8_PFOA		116	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		112	25-150
d-EtFOSA		79	10-150
d5-EtFOSAA		98	25-150
d9-EtFOSE		109	10-150
d-MeFOSA		92	10-150
d3-MeFOSAA		108	25-150
d7-MeFOSE		103	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ23339-001
Batch: 23339
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/22/2021 1230

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
PFDOS	ND		1	8.0	1.0	ng/L	11/23/2021 1359

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		107	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		112	25-150
13C2_PFHxDA		104	25-150
13C2_PFTeDA		109	25-150
13C3_PFBS		116	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		119	25-150
13C4_PFBA		117	25-150
13C4_PFHpA		122	25-150
13C5_PFHxA		118	25-150
13C5_PFPeA		111	25-150
13C6_PFDA		113	25-150
13C7_PFUdA		116	25-150
13C8_PFOA		111	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		114	25-150
d-EtFOSA		101	10-150
d5-EtFOSAA		105	25-150
d9-EtFOSE		117	10-150
d-MeFOSA		92	10-150
d3-MeFOSAA		123	25-150
d7-MeFOSE		122	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ23339-002
Batch: 23339
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/22/2021 1230

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
PFDOS	15	14		1	88	50-150	11/23/2021 1410

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		119	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		109	25-150
13C2_PFHxDA		103	25-150
13C2_PFTeDA		101	25-150
13C3_PFBS		115	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		123	25-150
13C4_PFBA		117	25-150
13C4_PFHpA		117	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		111	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		117	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		115	25-150
d-EtFOSA		90	10-150
d5-EtFOSAA		105	25-150
d9-EtFOSE		110	10-150
d-MeFOSA		87	10-150
d3-MeFOSAA		125	25-150
d7-MeFOSE		116	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Internal Transfer Chain of Custody

☐ Samples Pre Logged into eCOC

State Of Origin: WI
Cert. Needed: [X] Yes ☐ No
Owner Received Date: 11/10/2021 Results Requested By: 12/8/2021

Pace Analytical
www.pacelabs.com

Workorder: 40236693 **Workorder Name:** LACROSSE AIRPORT PFAS

Report To	Subcontract To	Requested Analysis
Christopher Hyska Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700	WK17050

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	WI 36 PFAS by ID	LAB USE ONLY
1	MW-1	PS	11/5/2021 11:24	40236693001	Water	2	X	
2	MW-2	PS	11/3/2021 10:25	40236693002	Water	2	X	
3	MW-3	PS	11/5/2021 10:49	40236693003	Water	2	X	
4	MW-4	PS	11/5/2021 10:19	40236693004	Water	2	X	
5	MW-5	PS	11/8/2021 12:41	40236693005	Water	2	X	
6	MW-6	PS	11/5/2021 13:27	40236693006	Water	2	X	
7	MW-7	PS	11/8/2021 14:37	40236693007	Water	2	X	
8	MW-101	PS	11/5/2021 16:36	40236693008	Water	2	X	
9	MW-102	PS	11/5/2021 15:28	40236693009	Water	2	X	
10	MW-103	PS	11/5/2021 16:00	40236693010	Water	2	X	
11	MW-104	PS	11/8/2021 10:27	40236693011	Water	2	X	
12	PZ-104	PS	11/8/2021 10:48	40236693012	Water	2	X	
13	PZ-105	PS	11/5/2021 14:39	40236693013	Water	2	X	
14	PZ-106	PS	11/5/2021 14:01	40236693014	Water	2	X	
15	PZ-6	PS	11/8/2021 13:54	40236693015	Water	2	X	
16	PZ-7	PS	11/8/2021 14:58	40236693016	Water	2	X	
17	DUP #1	PS	11/5/2021 00:00	40236693017	Water	2	X	
18	DUP #2	PS	11/8/2021 00:00	40236693018	Water	2	X	
19	PRE-FILTER	PS	11/5/2021 12:52	40236693019	Water	2	X	

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PACE ANALYTICAL SERVICES, LLC

Internal Transfer Chain of Custody

☐ Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: ☒ Yes ☐ No
Owner Received Date: 11/10/2021 Results Requested By: 12/8/2021

Workorder: 40236693 Workorder Name: LACROSSE AIRPORT PFAS

Pace Analytical
www.pacelabs.com

Report To	Subcontract To	Requested Analysis
Christopher Hyska Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700	WK17050 MKM

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	# Preserved Containers: Unpreserved						WI 36 PFAS by ID											LAB USE ONLY
20	MID-FILTER	PS	11/5/2021 12:50	40236693020	Water	2						X											
21	POST-FILTER	PS	11/5/2021 12:48	40236693021	Water	2						X											
22	FIELD BLANK #1	PS	11/5/2021 16:20	40236693022	Water	2						X											
23	FIELD BLANK #2	PS	11/8/2021 13:16	40236693023	Water	2						X											
24																							

Transfers	Released By	Date/Time	Received By	Date/Time
1		11/10/21 1600		
2				
3	UPS FEDEX 1032	11-11-2021		11-11-2021 1032

Comments: IR77 - MDL reporting - Quote 23492

Cooler Temperature on Receipt 3.7 °C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Pace Cooler Inspected by/date: JRG2 / 11/17/2021 Lot #: WK17050

Means of receipt: ☐ Pace ☐ Client: ☑ UPS ☐ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.7 / 3.7 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: JRG2 Date: 11/17/2021

Comments: