GEL Laboratories LLC
a member of The GEL Group INC

2040 Savage Road | Charleston, SC 29407
843.556.8171
gel.com

September 14, 2023

[redacted]

Re: RFNWR Site
Work Order: 634200

Dear David Lucas:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 22, 2023. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. Chain of custody did not include collect times for samples received, client was notified and advised the correct sample collection times..

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at [redacted]

S[redacted]

Meredith Boddiford
Project Manager

Purchase Order: 140FS223P0076
Enclosures

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Case Narrative

Receipt Narrative
for
US Fish and Wildlife Service (140FS223P0076)
SDG: 634200

September 14, 2023

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on August 22, 2023 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. Chain of custody did not include collect times for samples received, client was notified and advised the correct sample collection times..

Sample Identification: The laboratory received the following samples:

Laboratory ID	Client ID
634200001	EL23-2833-MEAT #1
634200002	EL23-2833-MEAT #2
634200003	EL23-2833-LIVER #1
634200004	EL23-2833-LIVER #2

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: LCMSMS-PFC.

[redacted]

Meredith Boddiford
Project Manager

Chain of Custody and Supporting Documentation

Page: 1 of 1
Project # EL23 ELK TISSUE
GEL Quote #: GELP23-0058
COC Number (1):
PO Number: 140FS223P0076

634200 GEL gel.com Laboratories LLC
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number: *GEL Project Manager:*

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: U.S FISH & WILDLIFE SERVICE Phone # (303) 289-0232
Project/Site Name: ROCKY FLATS NATIONAL WILDLIFE REFUGE Fax # (303) 289-0863
Address: 6550 GATEWAY ROAD, COMMERCE CITY, CO 80022
Collected By: B. YETTER Send Results To: david_c_lucas@fws.gov

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID *For composites - indicate start and stop date/time	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive *Please supply isotopic info.*	Should this sample be considered: (7) Known or possible hazards	Total number of containers	EPA DRAFT 1633	<-- Preservative Type (6)	Comments
EL23-2833-MEAT #1	08/04/23		N					1	X		Note: extra sample is required for sample specific QC
EL23-2833-MEAT #2	08/04/23		FD					1	X		DUPLICATE
EL23-2833-LIVER #1	08/04/23		N					1	X		
EL23-2833-LIVER #2	08/04/23		FD					1	X		DUPLICATE

Chain of Custody Signatures

[redacted]	Date	Time	[redacted]	Date	Time
	8/21/23	0900		8.22.23	905

TAT Requested: Normal: ____ Rush: ____ Specify: ____ (Subject to Surcharge)

Fax Results: [ ] Yes [X] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** 0 °C

> ***For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)***

Sample Collection Time Zone: [ ] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other: ____

1.) Chain of Custody Number = Client Determined

2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

3.) Field Filtered: For liquid matrices, indicate with a - **Y** - for yes the sample was field filtered or - **N** - for sample was not field filtered.

4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B 7470A* - 1)

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

7.) *Are there any known or possible hazards associated with these samples?*

RCRA Metals
As = Arsenic **Hg**= Mercury
Ba = Barium **Se**= Selenium
Cd = Cadmium **Ag**= Silver
Cr = Chromium **MR**= Miscellaneous
Pb = Lead RCRA metals

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM 634200 mB

Client: FUSE	SDG/AR/COC/Work Order:
Received By: MVH	Date Received: 8/22/2023
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 773113724975

Suspected Hazard Information	Yes	No	
			*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes___ No___
B) Did the client designate the samples are to be received as radioactive?		✓	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr **Classified as: Rad 1 Rad 2 Rad 3**
D) Did the client designate samples are hazardous?		✓	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		✓	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 6
4	Daily check performed and passed on IR temperature gun?	✓			**Temperature Device Serial #:** IR2-21 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?			✓	Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, are Encores or Soil Kits present for solids? Yes___ No___ NA___(If yes, take to VOA Freezer) DO liquid VOA vials contain acid preservation? Yes___ No___ NA___(If unknown, select No) Are liquid VOA vials free of headspace? Yes___ No___ NA___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			ID's and containers affected:
10	Date & time on COC match date & time on bottles?			✓	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	✓			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided by use of GEL labels?	✓			[redacted] 8/22/2023
13	COC form is properly signed in relinquished/received sections?	✓			[redacted]e: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials [redacted] Date 8/24/23 Page 1 of 1

GL-CHL-SR-001 Rev 7

Anna Johnson

From: Anna Johnson
Sent: Friday, August 25, 2023 4:27 PM
To: Lucas, David C
Cc: Team Boddiford
Subject: RE: [EXTERNAL] No times listed on the COC, 634200

Works for me! I'll log that into our system, thanks!

From: Lucas, David C [redacted]
Sent: Friday, August 25, 2023 4:22 PM
To: Anna Johnson [redacted]
Cc: Team Boddiford [redacted]
Subject: Re: [EXTERNAL] No times listed on the COC, 634200

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Thank you -- I don't have a specific time on this one. He texted me at 10:00 on this kill, so we could use that.

From: Anna Johnson [redacted]
Sent: Friday, August 25, 2023 2:18 PM
To: Lucas, David C [redacted]
Cc: Team Boddiford [redacted]
Subject: [EXTERNAL] No times listed on the COC, 634200

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good afternoon,
we received the attached chain of custody without times listed, no need to reply I just wanted to let you know!
Thanks!

Anna Johnson
Project Manager Assistant
GEL Laboratories LLC 1981
2040 Savage Road, Charleston, SC 29407
Office Main: 843.556.8171 | Fax: 843.766.1178

E-Mail: anna.johnson@gel.com | Website: www.gel.com
Analytical Testing

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Laboratory Certifications

List of current GEL Certifications as of 14 September 2023

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122023-4
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2022-160
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-23-21
Utah NELAP	SC000122022-37
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

LC-MS/MS Analysis

Case Narrative

LCMSMS-PFC
Technical Case Narrative
US Fish and Wildlife Service
SDG #: 634200

Product: **Extraction and Analysis of Per- and Polyfluoroalkyl (PFAS) Substances using LCMSMS by Method 1633**
Analytical Method: draft EPA 1633
Analytical Procedure: GL-OA-E-076D REV# 1
Analytical Batches: 2491242 and 2491241

Analytical Method: GEL Prep Method
Analytical Procedure: GL-OA-E-076 REV# 14
Analytical Batch: 2491238

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
634200001	EL23-2833-MEAT #1
634200002	EL23-2833-MEAT #2
634200003	EL23-2833-LIVER #1
634200004	EL23-2833-LIVER #2
1205514626	Method Blank (MB)
1205514628	Laboratory Control Sample (LCS)
1205514630	Laboratory Control Sample (LCS)
1205514632	634200001(EL23-2833-MEAT #1) Matrix Spike (MS)
1205514633	634200001(EL23-2833-MEAT #1) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

CCV Requirements
Calibration verification standards (ICV or CCV) requirements have not been met for samples in this batch in this SDG. One or more target analytes failed acceptance criteria with a positive bias in the standards bracketing the samples in this SDG. These target analytes were not detected in the associated environmental samples; therefore, the non-compliance had no adverse effect on the data.

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery
The laboratory control standards analyzed with this SDG did not meet the established acceptance criteria. There were recovery failures of target analytes that are attributed to the tissue source used for the extraction and analysis. Tissue matrices can exhibit matrix interferences that can cause failures. The data is being flagged accordingly.

Sample	Analyte	Value
1205514628 (LCS)	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUdS)	194* (40%-150%)
	2H, 2H, 3H, 3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)	182* (40%-150%)
	2H, 2H, 3H, 3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)	289* (40%-150%)
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)	195* (40%-150%)
1205514630 (LCS)	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUdS)	176* (40%-150%)
	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)	30* (40%-150%)
	2H, 2H, 3H, 3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)	162* (40%-150%)
	2H, 2H, 3H, 3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)	293* (40%-150%)
	4, 8-Dioxa-3H-perfluorononanoic acid (DONA)	151* (40%-150%)
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)	192* (40%-150%)
	Perfluorobutane sulfonic acid (PFBS)	31* (40%-150%)

Matrix Spike (MS) Recovery Statement

The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. As similar recoveries were displayed in the MS and MSD, the failures were attributed to sample matrix interference and the data were reported.

Sample	Analyte	Value
1205514632 (EL23-2833-MEAT #1MS)	Perfluorododecane sulfonic acid (PFDoS)	34* (40%-150%)
	Perfluorotridecanoic acid (PFTrDA)	195* (40%-150%)
1205514633 (EL23-2833-MEAT #1MSD)	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUdS)	157* (40%-150%)
	Perfluorododecane sulfonic acid (PFDoS)	36* (40%-150%)
	Perfluorotridecanoic acid (PFTrDA)	201* (40%-150%)

Internal Standard (ISTD) Acceptance

The internal standards analyzed with this SDG did not meet the established acceptance criteria. There were recovery failures that are attributed to the tissue source used for the extraction and analysis. Tissue matrices can exhibit matrix interferences that can cause failures. The data is being flagged accordingly.

Sample	Analyte	Value

1205514626 (MB)	13C2_4:2 FTS Recovery	203* (20%-150%)
	13C2_6:2 FTS Recovery	201* (20%-150%)
	13C2_8:2 FTS Recovery	223* (20%-150%)
	d7-N-MeFOSE Recovery	16* (20%-150%)
1205514628 (LCS)	13C2_6:2 FTS Recovery	220* (20%-150%)
	13C2_8:2 FTS Recovery	217* (20%-150%)
	13C4_PFHpA Recovery	199* (20%-150%)
1205514630 (LCS)	13C2_6:2 FTS Recovery	216* (20%-150%)
	13C2_8:2 FTS Recovery	257* (20%-150%)
	13C4_PFHpA Recovery	211* (20%-150%)
1205514632 (EL23-2833-MEAT #1MS)	13C2_4:2 FTS Recovery	190* (20%-150%)
	13C2_6:2 FTS Recovery	186* (20%-150%)
	13C2_8:2 FTS Recovery	210* (20%-150%)
	d-N-MeFOSA Recovery	16* (20%-150%)
	d3-N-MeFOSAA Recovery	155* (20%-150%)
	d7-N-MeFOSE Recovery	7* (20%-150%)
	d9-N-EtFOSE Recovery	5* (20%-150%)
1205514633 (EL23-2833-MEAT #1MSD)	13C2_4:2 FTS Recovery	179* (20%-150%)
	13C2_6:2 FTS Recovery	158* (20%-150%)
	13C2_8:2 FTS Recovery	206* (20%-150%)
	13C4_PFHpA Recovery	161* (20%-150%)
	d-N-EtFOSA Recovery	19* (20%-150%)
	d-N-MeFOSA Recovery	15* (20%-150%)
	d7-N-MeFOSE Recovery	7* (20%-150%)
	d9-N-EtFOSE Recovery	4* (20%-150%)
634200001 (EL23-2833-MEAT #1)	13C2_4:2 FTS Recovery	167* (20%-150%)
	13C2_6:2 FTS Recovery	169* (20%-150%)
	13C2_8:2 FTS Recovery	168* (20%-150%)
	d-N-MeFOSA Recovery	16* (20%-150%)
	d7-N-MeFOSE Recovery	8* (20%-150%)
	d9-N-EtFOSE Recovery	12* (20%-150%)
634200002 (EL23-2833-MEAT #2)	13C2_4:2 FTS Recovery	170* (20%-150%)
	13C2_6:2 FTS Recovery	155* (20%-150%)
	13C2_8:2 FTS Recovery	187* (20%-150%)
	d-N-EtFOSA Recovery	18* (20%-150%)
	d-N-MeFOSA Recovery	13* (20%-150%)
	d7-N-MeFOSE Recovery	7* (20%-150%)
	d9-N-EtFOSE Recovery	11* (20%-150%)

634200003 (EL23-2833-LIVER #1)	13C2_4:2 FTS Recovery	251* (20%-150%)
	13C2_6:2 FTS Recovery	209* (20%-150%)
	13C2_8:2 FTS Recovery	238* (20%-150%)
	13C3_PFBS Recovery	205* (20%-150%)
	13C4_PFHpA Recovery	152* (20%-150%)
	d3-N-MeFOSAA Recovery	170* (20%-150%)
	d7-N-MeFOSE Recovery	12* (20%-150%)
634200004 (EL23-2833-LIVER #2)	13C2_4:2 FTS Recovery	237* (20%-150%)
	13C2_6:2 FTS Recovery	216* (20%-150%)
	13C2_8:2 FTS Recovery	187* (20%-150%)
	13C3_PFBS Recovery	189* (20%-150%)
	13C4_PFHpA Recovery	159* (20%-150%)
	d7-N-MeFOSE Recovery	10* (20%-150%)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

FWSE001 US Fish and Wildlife Service (140FS223P0076)

Client SDG: 634200 GEL Work Order: 634200

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a surrogate compound
J Value is estimated
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: [redacted] **Name: Nik-cole Elmore**

Date: 18 SEP 2023 **Title: Analyst II**

Sample Data Summary

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200001**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #1**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 12:56**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.09 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223076.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)	U	9.17	ng/g	3.06	9.17
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)	U	1.83	ng/g	0.612	1.83
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)	U	3.52	ng/g	1.17	3.52
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	U	0.851	ng/g	0.284	0.851
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)	U	9.17	ng/g	3.06	9.17
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)	U	3.67	ng/g	1.22	3.67
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	U	1.63	ng/g	0.544	1.63
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr	U	3.67	ng/g	1.22	3.67
68259-12-1	Perfluorononane sulfonic acid (PFNS)	U	0.883	ng/g	0.294	0.883
754-91-6	Perfluorooctane sulfonamide (PFOSAm)	U	0.917	ng/g	0.306	0.917
307-55-1	Perfluorododecanoic acid (PFDOA)	U	0.917	ng/g	0.306	0.917
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	0.839	ng/g	0.279	0.839
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)	U	0.863	ng/g	0.288	0.863
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)	U	0.917	ng/g	0.306	0.917
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	0.814	ng/g	0.271	0.814
335-67-1	Perfluorooctanoic acid (PFOA)	U	0.917	ng/g	0.306	0.917
2706-90-3	Perfluoropentanoic acid (PFPeA)	U	1.83	ng/g	0.611	1.83
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	0.917	ng/g	0.306	0.917
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)	U	0.917	ng/g	0.306	0.917
335-76-2	Perfluorodecanoic acid (PFDA)	U	0.917	ng/g	0.306	0.917
307-24-4	Perfluorohexanoic acid (PFHxA)	U	0.917	ng/g	0.306	0.917
375-95-1	Perfluorononanoic acid (PFNA)	U	0.917	ng/g	0.306	0.917
2058-94-8	Perfluoroundecanoic acid (PFUnDA)	U	0.917	ng/g	0.306	0.917
335-77-3	Perfluorodecane sulfonic acid (PFDS)	U	0.885	ng/g	0.295	0.885
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	U	3.47	ng/g	1.16	3.47
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O	U	3.43	ng/g	1.14	3.43
376-06-7	Perfluorotetradecanoic acid (PFTDA)	U	0.917	ng/g	0.306	0.917
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3	U	3.47	ng/g	1.16	3.47
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)	U	3.44	ng/g	1.15	3.44
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	0.917	ng/g	0.306	0.917
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	0.917	ng/g	0.306	0.917
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	U	1.83	ng/g	0.612	1.83
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)	U	0.890	ng/g	0.297	0.890
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)	U	18.3	ng/g	0.612	18.3
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)	U	0.874	ng/g	0.291	0.874
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	0.917	ng/g	0.306	0.917
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)	U	18.3	ng/g	6.12	18.3
375-22-4	Perfluorobutanoic acid (PFBA)	U	3.67	ng/g	1.22	3.67

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200001**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #1**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 12:56**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.09 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223076.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)	U	3.49	ng/g	1.16	3.49
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)	U	1.83	ng/g	0.612	1.83

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200002**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #2**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 13:44**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.19 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223079.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)	U	8.40	ng/g	2.80	8.40
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)	U	1.68	ng/g	0.560	1.68
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)	U	3.23	ng/g	1.08	3.23
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	U	0.780	ng/g	0.260	0.780
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)	U	8.40	ng/g	2.80	8.40
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)	U	3.36	ng/g	1.12	3.36
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	U	1.50	ng/g	0.499	1.50
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr	U	3.36	ng/g	1.12	3.36
68259-12-1	Perfluorononane sulfonic acid (PFNS)	U	0.808	ng/g	0.269	0.808
754-91-6	Perfluorooctane sulfonamide (PFOSAm)	U	0.840	ng/g	0.280	0.840
307-55-1	Perfluorododecanoic acid (PFDOA)	U	0.840	ng/g	0.280	0.840
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	0.768	ng/g	0.256	0.768
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)	U	0.791	ng/g	0.264	0.791
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)	U	0.840	ng/g	0.280	0.840
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	0.745	ng/g	0.248	0.745
335-67-1	Perfluorooctanoic acid (PFOA)	U	0.840	ng/g	0.280	0.840
2706-90-3	Perfluoropentanoic acid (PFPeA)	U	1.68	ng/g	0.560	1.68
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	0.840	ng/g	0.280	0.840
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)	U	0.840	ng/g	0.280	0.840
335-76-2	Perfluorodecanoic acid (PFDA)	U	0.840	ng/g	0.280	0.840
307-24-4	Perfluorohexanoic acid (PFHxA)	U	0.840	ng/g	0.280	0.840
375-95-1	Perfluorononanoic acid (PFNA)	U	0.840	ng/g	0.280	0.840
2058-94-8	Perfluoroundecanoic acid (PFUnDA)	U	0.840	ng/g	0.280	0.840
335-77-3	Perfluorodecane sulfonic acid (PFDS)	U	0.811	ng/g	0.270	0.811
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	U	3.18	ng/g	1.06	3.18
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O	U	3.14	ng/g	1.05	3.14
376-06-7	Perfluorotetradecanoic acid (PFTDA)	U	0.840	ng/g	0.280	0.840
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3	U	3.18	ng/g	1.06	3.18
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)	U	3.15	ng/g	1.05	3.15
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	0.840	ng/g	0.280	0.840
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	0.840	ng/g	0.280	0.840
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	U	1.68	ng/g	0.560	1.68
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)	U	0.815	ng/g	0.272	0.815
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)	U	16.8	ng/g	0.560	16.8
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)	U	0.801	ng/g	0.267	0.801
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	0.840	ng/g	0.280	0.840
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)	U	16.8	ng/g	5.60	16.8
375-22-4	Perfluorobutanoic acid (PFBA)	U	3.36	ng/g	1.12	3.36

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200002**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #2**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 13:44**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.19 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223079.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)	U	3.19	ng/g	1.06	3.19
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)	U	1.68	ng/g	0.560	1.68

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200003**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-LIVER #1**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 14:00**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**.14 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223080.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)	U	71.4	ng/g	23.8	71.4
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)	U	14.3	ng/g	4.76	14.3
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)	U	27.4	ng/g	9.14	27.4
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		8.17	ng/g	2.21	6.63
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)	U	71.4	ng/g	23.8	71.4
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)	U	28.6	ng/g	9.52	28.6
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	U	12.7	ng/g	4.24	12.7
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr	U	28.6	ng/g	9.52	28.6
68259-12-1	Perfluorononane sulfonic acid (PFNS)	U	6.87	ng/g	2.29	6.87
754-91-6	Perfluorooctane sulfonamide (PFOSAm)	U	7.14	ng/g	2.38	7.14
307-55-1	Perfluorododecanoic acid (PFDOA)	U	7.14	ng/g	2.38	7.14
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	6.53	ng/g	2.18	6.53
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)	U	6.72	ng/g	2.24	6.72
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)	U	7.14	ng/g	2.38	7.14
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	6.34	ng/g	2.11	6.34
335-67-1	Perfluorooctanoic acid (PFOA)	U	7.14	ng/g	2.38	7.14
2706-90-3	Perfluoropentanoic acid (PFPeA)	U	14.3	ng/g	4.76	14.3
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	7.14	ng/g	2.38	7.14
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)	U	7.14	ng/g	2.38	7.14
335-76-2	Perfluorodecanoic acid (PFDA)	U	7.14	ng/g	2.38	7.14
307-24-4	Perfluorohexanoic acid (PFHxA)	U	7.14	ng/g	2.38	7.14
375-95-1	Perfluorononanoic acid (PFNA)	U	7.14	ng/g	2.38	7.14
2058-94-8	Perfluoroundecanoic acid (PFUnDA)	U	7.14	ng/g	2.38	7.14
335-77-3	Perfluorodecane sulfonic acid (PFDS)	U	6.89	ng/g	2.30	6.89
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	U	27.0	ng/g	9.00	27.0
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O	U	26.7	ng/g	8.90	26.7
376-06-7	Perfluorotetradecanoic acid (PFTDA)	U	7.14	ng/g	2.38	7.14
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3	U	27.0	ng/g	9.00	27.0
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)	U	26.8	ng/g	8.93	26.8
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	7.14	ng/g	2.38	7.14
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	7.14	ng/g	2.38	7.14
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	U	14.3	ng/g	4.76	14.3
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)	U	6.93	ng/g	2.31	6.93
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)	U	143	ng/g	4.76	143
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)	U	6.81	ng/g	2.27	6.81
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	7.14	ng/g	2.38	7.14
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)	U	143	ng/g	47.6	143
375-22-4	Perfluorobutanoic acid (PFBA)	U	28.6	ng/g	9.52	28.6

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200003**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-LIVER #1**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 14:00**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**.14 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223080.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)	U	27.1	ng/g	9.05	27.1
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)	U	14.3	ng/g	4.76	14.3

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200004**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-LIVER #2**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 14:16**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**.16 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223081.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)	U	62.5	ng/g	20.8	62.5
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)	U	12.5	ng/g	4.17	12.5
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)	U	24.0	ng/g	8.00	24.0
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		7.32	ng/g	1.93	5.80
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)	U	62.5	ng/g	20.8	62.5
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)	U	25.0	ng/g	8.33	25.0
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	U	11.1	ng/g	3.71	11.1
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr	U	25.0	ng/g	8.33	25.0
68259-12-1	Perfluorononane sulfonic acid (PFNS)	U	6.01	ng/g	2.00	6.01
754-91-6	Perfluorooctane sulfonamide (PFOSAm)	U	6.25	ng/g	2.08	6.25
307-55-1	Perfluorododecanoic acid (PFDOA)	U	6.25	ng/g	2.08	6.25
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	5.71	ng/g	1.90	5.71
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)	U	5.88	ng/g	1.96	5.88
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)	U	6.25	ng/g	2.08	6.25
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	5.54	ng/g	1.85	5.54
335-67-1	Perfluorooctanoic acid (PFOA)	U	6.25	ng/g	2.08	6.25
2706-90-3	Perfluoropentanoic acid (PFPeA)	U	12.5	ng/g	4.17	12.5
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	6.25	ng/g	2.08	6.25
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)	U	6.25	ng/g	2.08	6.25
335-76-2	Perfluorodecanoic acid (PFDA)	U	6.25	ng/g	2.08	6.25
307-24-4	Perfluorohexanoic acid (PFHxA)	U	6.25	ng/g	2.08	6.25
375-95-1	Perfluorononanoic acid (PFNA)	U	6.25	ng/g	2.08	6.25
2058-94-8	Perfluoroundecanoic acid (PFUnDA)	U	6.25	ng/g	2.08	6.25
335-77-3	Perfluorodecane sulfonic acid (PFDS)	U	6.03	ng/g	2.01	6.03
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	U	23.6	ng/g	7.88	23.6
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O	U	23.4	ng/g	7.79	23.4
376-06-7	Perfluorotetradecanoic acid (PFTDA)	U	6.25	ng/g	2.08	6.25
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3	U	23.6	ng/g	7.88	23.6
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)	U	23.4	ng/g	7.81	23.4
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	6.25	ng/g	2.08	6.25
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	6.25	ng/g	2.08	6.25
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	U	12.5	ng/g	4.17	12.5
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)	U	6.06	ng/g	2.02	6.06
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)	U	125	ng/g	4.17	125
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)	U	5.96	ng/g	1.99	5.96
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	6.25	ng/g	2.08	6.25
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)	U	125	ng/g	41.7	125
375-22-4	Perfluorobutanoic acid (PFBA)	U	25.0	ng/g	8.33	25.0

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**634200004**	**Date Received:**	**08/22/2023 09:05**		
		Client:	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-LIVER #2**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 14:16**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**.16 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223081.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)	U	23.8	ng/g	7.92	23.8
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)	U	12.5	ng/g	4.17	12.5

Quality Control Summary

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 2491241**
Matrix: **TISSUE**
Lab Sample ID: **1205514628**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 11:52**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g	Spike Conc. ng/g	Recovery %	Acceptance Limits
113507-82-7	LCS	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	21.0	0.0	26.8	128	40-150
13252-13-6	LCS	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(*2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop*	47.2	0.0	52.0	110	40-150
151772-58-6	LCS	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	23.6	0.0	11.6	49	40-150
1691-99-2	LCS	N-Ethylperfluorooctane sulfonamido ethanol (NEtF *2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (*	118	0.0	88.8	75	40-150
1763-23-1	LCS	Perfluorooctane sulfonic acid (PFOS) *Perfluorooctanesulfonate (PFOS)*	10.9	0.0	10.3	95	40-150
2058-94-8	LCS	Perfluoroundecanoic acid (PFUnDA) *Perfluoroundecanoic acid (PFUdA)*	11.8	0.0	10.7	91	40-150
2355-31-9	LCS	N-Methylperfluorooctane sulfonamido acetic acid (N *N-methylperfluoro-1-octanesulfonamidoacetic acid*	11.8	0.0	10.3	87	40-150
24448-09-7	LCS	N-Methylperfluorooctane sulfonamido ethanol (NM *2-(N-methylperfluoro-1-octanesulfonamido)-ethano*	118	0.0	94.1	80	40-150
2706-90-3	LCS	Perfluoropentanoic acid (PFPeA)	23.6	0.0	17.2	73	40-150
2706-91-4	LCS	Perfluoropentane sulfonic acid (PFPeS) *Perfluoropentanesulfonate (PFPeS)*	11.1	0.0	11.7	106	40-150
27619-97-2	LCS	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 F *Fluorotelomer sulfonate 6:2 (6:2 FTS)*	44.8	0.0	34.5	77	40-150
2991-50-6	LCS	N-Ethylperfluorooctane sulfonamido acetic acid (NE *N-ethylperfluoro-1-octanesulfonamidoacetic acid*	11.8	0.0	10.9	92	40-150
307-24-4	LCS	Perfluorohexanoic acid (PFHxA)	11.8	0.0	12.8	108	40-150
307-55-1	LCS	Perfluorododecanoic acid (PFDOA) *Perfluorododecanoic acid (PFDoA)*	11.8	0.0	10.8	92	40-150
31506-32-8	LCS	N-Methylperfluorooctane sulfonamide (NMeFOSA) *N-methylperfluoro-1-octanesulfonamide (N-MeFOSA*	11.8	0.0	9.85	84	40-150
335-67-1	LCS	Perfluorooctanoic acid (PFOA)	11.8	0.0	8.83	75	40-150
335-76-2	LCS	Perfluorodecanoic acid (PFDA)	11.8	0.0	10.4	88	40-150
335-77-3	LCS	Perfluorodecane sulfonic acid (PFDS) *Perfluorodecanesulfonate (PFDS)*	11.4	0.0	9.32	82	40-150
355-46-4	LCS	Perfluorohexane sulfonic acid (PFHxS) *Perfluorohexanesulfonate (PFHxS)*	10.8	0.0	10.7	99	40-150
356-02-5	LCS	4,4,5,5,6,6,6-Heptafluorohexanoic acid (3:3 FTCA)(F *3-Perfluoropropyl propanoic acid (FPrPA)*	47.2	0.0	36.4	77	40-150
375-22-4	LCS	Perfluorobutanoic acid (PFBA) *Perfluorobutyric acid (PFBA)*	47.2	0.0	42.8	91	40-150
375-73-5	LCS	Perfluorobutane sulfonic acid (PFBS) *Perfluorobutanesulfonate (PFBS)*	10.5	0.0	6.63	63	40-150

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 2491241**
Matrix: **TISSUE**
Lab Sample ID: **1205514628**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 11:52**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g	Spike Conc. ng/g	Recovery %	Acceptance Limits
375-85-9	LCS	Perfluoroheptanoic acid (PFHpA)	11.8	0.0	8.67	74	40-150
375-92-8	LCS	Perfluoroheptane sulfonic acid (PFHpS) *Perfluoroheptanesulfonate (PFHpS)*	11.2	0.0	9.41	84	40-150
375-95-1	LCS	Perfluorononanoic acid (PFNA)	11.8	0.0	9.96	84	40-150
376-06-7	LCS	Perfluorotetradecanoic acid (PFTDA) *Perfluorotetradecanoic acid (PFTeDA)*	11.8	0.0	10.7	91	40-150
377-73-1	LCS	Perfluoro-3-methoxypropanoic acid (PFMPA) *Perfluoro-3-methoxypropanoic acid (PFMOPrA)*	23.6	0.0	18.5	79	40-150
39108-34-4	LCS	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 *Fluorotelomer sulfonate 8:2 (8:2 FTS)*	45.3	0.0	43.8	97	40-150
4151-50-2	LCS	N-Ethylperfluorooctane sulfonamide (EtFOSAm) *N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)*	11.8	0.0	9.52	81	40-150
68259-12-1	LCS	Perfluorononane sulfonic acid (PFNS) *Perfluorononanesulfonate (PFNS)*	11.3	0.0	10.7	95	40-150
72629-94-8	LCS	Perfluorotridecanoic acid (PFTrDA)	11.8	0.0	8.07	68	40-150
754-91-6	LCS	Perfluorooctane sulfonamide (PFOSAm) *Perfluorooctanesulfonamide (PFOSA)*	11.8	0.0	9.59	81	40-150
756426-58-1	LCS	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic *9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (*	44.1	0.0	85.9	195 *	40-150
757124-72-4	LCS	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 *Fluorotelomer sulfonate 4:2 (4:2 FTS)*	44.2	0.0	23.9	54	40-150
763051-92-9	LCS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic *11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (*	44.6	0.0	86.5	194 *	40-150
79780-39-5	LCS	Perfluorododecane sulfonic acid (PFDoS) *Perfluoro-1-dodecanesulfonate (PFDoS)*	11.4	0.0	10.2	89	40-150
812-70-4	LCS	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(F *3-Perfluoroheptyl propanoic acid (FHpPA)*	236	0.0	428	182 *	40-150
914637-49-3	LCS	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(F *3-Perfluoropentyl propanoic acid (FPePA)*	236	0.0	683	289 *	40-150
919005-14-4	LCS	4,8-Dioxa-3H-perfluorononanoic acid (DONA) *Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON*	44.6	0.0	65.1	146	40-150
863090-89-5	LCS	Perfluoro-4-methoxybutanoic acid (PFMBA) *Perfluoro-4-methoxybutanic acid (PFMOBA)*	23.6	0.0	12.3	52	40-150

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 2491241**
Matrix: **TISSUE**
Lab Sample ID: **1205514630**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 12:24**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g	Spike Conc. ng/g	Recovery %	Acceptance Limits
113507-82-7	LCS	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.31	0.0	1.49	114	40-150
13252-13-6	LCS	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(	2.94	0.0	2.87	98	40-150
		2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop					
151772-58-6	LCS	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.47	0.0	0.621	42	40-150
1691-99-2	LCS	N-Ethylperfluorooctane sulfonamido ethanol (NEtF	7.34	0.0	5.52	75	40-150
		2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (					
1763-23-1	LCS	Perfluorooctane sulfonic acid (PFOS)	0.681	0.0	0.688	101	40-150
		Perfluorooctanesulfonate (PFOS)					
2058-94-8	LCS	Perfluoroundecanoic acid (PFUnDA)	0.734	0.0	0.782	107	40-150
		Perfluoroundecanoic acid (PFUdA)					
2355-31-9	LCS	N-Methylperfluorooctane sulfonamido acetic acid (N	0.734	0.0	0.706	96	40-150
		N-methylperfluoro-1-octanesulfonamidoacetic acid					
24448-09-7	LCS	N-Methylperfluorooctane sulfonamido ethanol (NM	7.34	0.0	5.82	79	40-150
		2-(N-methylperfluoro-1-octanesulfonamido)-ethano					
2706-90-3	LCS	Perfluoropentanoic acid (PFPeA)	1.47	0.0	1.09	74	40-150
2706-91-4	LCS	Perfluoropentane sulfonic acid (PFPeS)	0.690	0.0	0.882	128	40-150
		Perfluoropentanesulfonate (PFPeS)					
27619-97-2	LCS	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 F	2.79	0.0	2.55	91	40-150
		Fluorotelomer sulfonate 6:2 (6:2 FTS)					
2991-50-6	LCS	N-Ethylperfluorooctane sulfonamido acetic acid (NE	0.734	0.0	0.563	77	40-150
		N-ethylperfluoro-1-octanesulfonamidoacetic acid					
307-24-4	LCS	Perfluorohexanoic acid (PFHxA)	0.734	0.0	0.811	111	40-150
307-55-1	LCS	Perfluorododecanoic acid (PFDOA)	0.734	0.0	0.629	86	40-150
		Perfluorododecanoic acid (PFDoA)					
31506-32-8	LCS	N-Methylperfluorooctane sulfonamide (NMeFOSA)	0.734	0.0	0.585	80	40-150
		N-methylperfluoro-1-octanesulfonamide (N-MeFOSA					
335-67-1	LCS	Perfluorooctanoic acid (PFOA)	0.734	0.0	0.646	88	40-150
335-76-2	LCS	Perfluorodecanoic acid (PFDA)	0.734	0.0	0.646	88	40-150
335-77-3	LCS	Perfluorodecane sulfonic acid (PFDS)	0.708	0.0	0.494	70	40-150
		Perfluorodecanesulfonate (PFDS)					
355-46-4	LCS	Perfluorohexane sulfonic acid (PFHxS)	0.671	0.0	0.591	88	40-150
		Perfluorohexanesulfonate (PFHxS)					
356-02-5	LCS	4,4,5,5,6,6,6-Heptafluorohexanoic acid (3:3 FTCA)(F	2.94	0.0	2.39	81	40-150
		3-Perfluoropropyl propanoic acid (FPrPA)					
375-22-4	LCS	Perfluorobutanoic acid (PFBA)	2.94	0.0	2.51	85	40-150
		Perfluorobutyric acid (PFBA)					
375-73-5	LCS	Perfluorobutane sulfonic acid (PFBS)	0.651	0.0	0.199	31 *	40-150
		Perfluorobutanesulfonate (PFBS)					

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 2491241**
Matrix: **TISSUE**
Lab Sample ID: **1205514630**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 12:24**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g	Spike Conc. ng/g	Recovery %	Acceptance Limits
375-85-9	LCS	Perfluoroheptanoic acid (PFHpA)	0.734	0.0	0.503	69	40-150
375-92-8	LCS	Perfluoroheptane sulfonic acid (PFHpS) *Perfluoroheptanesulfonate (PFHpS)*	0.699	0.0	0.442	63	40-150
375-95-1	LCS	Perfluorononanoic acid (PFNA)	0.734	0.0	0.657	89	40-150
376-06-7	LCS	Perfluorotetradecanoic acid (PFTDA) *Perfluorotetradecanoic acid (PFTeDA)*	0.734	0.0	0.605	82	40-150
377-73-1	LCS	Perfluoro-3-methoxypropanoic acid (PFMPA) *Perfluoro-3-methoxypropanoic acid (PFMOPrA)*	1.47	0.0	1.10	75	40-150
39108-34-4	LCS	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 *Fluorotelomer sulfonate 8:2 (8:2 FTS)*	2.82	0.0	2.19	78	40-150
4151-50-2	LCS	N-Ethylperfluorooctane sulfonamide (EtFOSAm) *N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)*	0.734	0.0	0.642	87	40-150
68259-12-1	LCS	Perfluorononane sulfonic acid (PFNS) *Perfluorononanesulfonate (PFNS)*	0.706	0.0	0.592	84	40-150
72629-94-8	LCS	Perfluorotridecanoic acid (PFTrDA)	0.734	0.0	0.526	72	40-150
754-91-6	LCS	Perfluorooctane sulfonamide (PFOSAm) *Perfluorooctanesulfonamide (PFOSA)*	0.734	0.0	0.545	74	40-150
756426-58-1	LCS	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic *9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (*	2.74	0.0	5.27	192 *	40-150
757124-72-4	LCS	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 *Fluorotelomer sulfonate 4:2 (4:2 FTS)*	2.87	0.0	0.869	30 *	40-150
763051-92-9	LCS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic *11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (*	2.77	0.0	4.88	176 *	40-150
79780-39-5	LCS	Perfluorododecane sulfonic acid (PFDoS) *Perfluoro-1-dodecanesulfonate (PFDoS)*	0.712	0.0	0.484	68	40-150
812-70-4	LCS	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(F *3-Perfluoroheptyl propanoic acid (FHpPA)*	14.7	0.0	23.8	162 *	40-150
914637-49-3	LCS	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(F *3-Perfluoropentyl propanoic acid (FPePA)*	14.7	0.0	43.1	293 *	40-150
919005-14-4	LCS	4,8-Dioxa-3H-perfluorononanoic acid (DONA) *Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON*	2.77	0.0	4.18	151 *	40-150
863090-89-5	LCS	Perfluoro-4-methoxybutanoic acid (PFMBA) *Perfluoro-4-methoxybutanic acid (PFMOBA)*	1.47	0.0	0.717	49	40-150

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Matrix Spike**
Client ID: **EL23-2833-MEAT #1MS**
Matrix: **TISSUE**
Lab Sample ID: **1205514632**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 13:12**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g		Spike Conc. ng/g	Recovery %	Acceptance Limits
113507-82-7	MS	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	21.2	0.000	U	15.8	75	40-150
13252-13-6	MS	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(*2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop*	47.6	0.000	U	47.2	99	40-150
151772-58-6	MS	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	23.8	0.000	U	12.7	53	40-150
1691-99-2	MS	N-Ethylperfluorooctane sulfonamido ethanol (NEtF *2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (*	119	0.000	U	107	90	40-150
1763-23-1	MS	Perfluorooctane sulfonic acid (PFOS) *Perfluorooctanesulfonate (PFOS)*	11.0	0.000	U	10.0	91	40-150
2058-94-8	MS	Perfluoroundecanoic acid (PFUnDA) *Perfluoroundecanoic acid (PFUdA)*	11.9	0.000	U	10.3	86	40-150
2355-31-9	MS	N-Methylperfluorooctane sulfonamido acetic acid (N *N-methylperfluoro-1-octanesulfonamidoacetic acid*	11.9	0.000	U	10.4	87	40-150
24448-09-7	MS	N-Methylperfluorooctane sulfonamido ethanol (NM *2-(N-methylperfluoro-1-octanesulfonamido)-ethano*	119	0.000	U	77.1	65	40-150
2706-90-3	MS	Perfluoropentanoic acid (PFPeA)	23.8	0.000	U	19.0	80	40-150
2706-91-4	MS	Perfluoropentane sulfonic acid (PFPeS) *Perfluoropentanesulfonate (PFPeS)*	11.2	0.000	U	13.5	121	40-150
27619-97-2	MS	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 F *Fluorotelomer sulfonate 6:2 (6:2 FTS)*	45.2	0.000	U	32.8	73	40-150
2991-50-6	MS	N-Ethylperfluorooctane sulfonamido acetic acid (NE *N-ethylperfluoro-1-octanesulfonamidoacetic acid*	11.9	0.000	U	11.2	94	40-150
307-24-4	MS	Perfluorohexanoic acid (PFHxA)	11.9	0.000	U	9.18	77	40-150
307-55-1	MS	Perfluorododecanoic acid (PFDOA) *Perfluorododecanoic acid (PFDoA)*	11.9	0.000	U	10.4	87	40-150
31506-32-8	MS	N-Methylperfluorooctane sulfonamide (NMeFOSA) *N-methylperfluoro-1-octanesulfonamide (N-MeFOSA*	11.9	0.000	U	8.22	69	40-150
335-67-1	MS	Perfluorooctanoic acid (PFOA)	11.9	0.000	U	9.59	81	40-150
335-76-2	MS	Perfluorodecanoic acid (PFDA)	11.9	0.000	U	10.2	86	40-150
335-77-3	MS	Perfluorodecane sulfonic acid (PFDS) *Perfluorodecanesulfonate (PFDS)*	11.5	0.000	U	8.41	73	40-150
355-46-4	MS	Perfluorohexane sulfonic acid (PFHxS) *Perfluorohexanesulfonate (PFHxS)*	10.9	0.000	U	9.30	85	40-150
356-02-5	MS	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(F *3-Perfluoropropyl propanoic acid (FPrPA)*	47.6	0.000	U	29.9	63	40-150
375-22-4	MS	Perfluorobutanoic acid (PFBA) *Perfluorobutyric acid (PFBA)*	47.6	0.000	U	45.7	96	40-150
375-73-5	MS	Perfluorobutane sulfonic acid (PFBS) *Perfluorobutanesulfonate (PFBS)*	10.6	0.000	U	6.49	62	40-150

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Matrix Spike**
Client ID: **EL23-2833-MEAT #1MS**
Matrix: **TISSUE**
Lab Sample ID: **1205514632**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 13:12**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g		Spike Conc. ng/g	Recovery %	Acceptance Limits
375-85-9	MS	Perfluoroheptanoic acid (PFHpA)	11.9	0.000	U	10.2	85	40-150
375-92-8	MS	Perfluoroheptane sulfonic acid (PFHpS) *Perfluoroheptanesulfonate (PFHpS)*	11.3	0.000	U	8.57	75	40-150
375-95-1	MS	Perfluorononanoic acid (PFNA)	11.9	0.000	U	9.31	78	40-150
376-06-7	MS	Perfluorotetradecanoic acid (PFTDA) *Perfluorotetradecanoic acid (PFTeDA)*	11.9	0.000	U	10.7	90	40-150
377-73-1	MS	Perfluoro-3-methoxypropanoic acid (PFMPA) *Perfluoro-3-methoxypropanoic acid (PFMOPrA)*	23.8	0.000	U	17.1	72	40-150
39108-34-4	MS	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 *Fluorotelomer sulfonate 8:2 (8:2 FTS)*	45.7	0.000	U	41.7	91	40-150
4151-50-2	MS	N-Ethylperfluorooctane sulfonamide (EtFOSAm) *N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)*	11.9	0.000	U	10.7	90	40-150
68259-12-1	MS	Perfluorononane sulfonic acid (PFNS) *Perfluorononanesulfonate (PFNS)*	11.5	0.000	U	10.8	94	40-150
72629-94-8	MS	Perfluorotridecanoic acid (PFTrDA)	11.9	0.000	U	23.2	195 *	40-150
754-91-6	MS	Perfluorooctane sulfonamide (PFOSAm) *Perfluorooctanesulfonamide (PFOSA)*	11.9	0.000	U	9.94	84	40-150
756426-58-1	MS	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic *9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (*	44.5	0.000	U	62.9	141	40-150
757124-72-4	MS	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 *Fluorotelomer sulfonate 4:2 (4:2 FTS)*	44.6	0.000	U	24.4	55	40-150
763051-92-9	MS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic *11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (*	45.0	0.000	U	64.7	144	40-150
79780-39-5	MS	Perfluorododecane sulfonic acid (PFDoS) *Perfluoro-1-dodecanesulfonate (PFDoS)*	11.5	0.000	U	3.95	34 *	40-150
812-70-4	MS	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(F *3-Perfluoroheptyl propanoic acid (FHpPA)*	238	0.000	U	236	99	40-150
914637-49-3	MS	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(F *3-Perfluoropentyl propanoic acid (FPePA)*	238	0.000	U	294	124	40-150
919005-14-4	MS	4,8-Dioxa-3H-perfluorononanoic acid (DONA) *Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON*	45.0	0.000	U	47.5	106	40-150
863090-89-5	MS	Perfluoro-4-methoxybutanoic acid (PFMBA) *Perfluoro-4-methoxybutanic acid (PFMOBA)*	23.8	0.000	U	11.4	48	40-150

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Matrix Spike Duplicate**
Client ID: **EL23-2833-MEAT #1MSD**
Matrix: **TISSUE**
Lab Sample ID: **1205514633**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 13:28**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g		Spike Conc. ng/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
113507-82-7	MSD	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	21.0	0.000	U	16.8	80	40-150	6	0-30
13252-13-6	MSD	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(*2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop*	47.2	0.000	U	48.7	103	40-150	3	0-30
151772-58-6	MSD	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	23.6	0.000	U	14.6	62	40-150	13	0-30
1691-99-2	MSD	N-Ethylperfluorooctane sulfonamido ethanol (NEtF *2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (*	118	0.000	U	108	92	40-150	1	
1763-23-1	MSD	Perfluorooctane sulfonic acid (PFOS) *Perfluorooctanesulfonate (PFOS)*	10.9	0.000	U	10.0	91	40-150	0	0-30
2058-94-8	MSD	Perfluoroundecanoic acid (PFUnDA) *Perfluoroundecanoic acid (PFUdA)*	11.8	0.000	U	10.5	89	40-150	2	0-30
2355-31-9	MSD	N-Methylperfluorooctane sulfonamido acetic acid (N *N-methylperfluoro-1-octanesulfonamidoacetic acid*	11.8	0.000	U	10.5	89	40-150	2	
24448-09-7	MSD	N-Methylperfluorooctane sulfonamido ethanol (NM *2-(N-methylperfluoro-1-octanesulfonamido)-ethano*	118	0.000	U	77.1	65	40-150	0	
2706-90-3	MSD	Perfluoropentanoic acid (PFPeA)	23.6	0.000	U	17.0	72	40-150	11	0-30
2706-91-4	MSD	Perfluoropentane sulfonic acid (PFPeS) *Perfluoropentanesulfonate (PFPeS)*	11.1	0.000	U	12.3	111	40-150	9	0-30
27619-97-2	MSD	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 F *Fluorotelomer sulfonate 6:2 (6:2 FTS)*	44.8	0.000	U	40.2	90	40-150	20	0-30
2991-50-6	MSD	N-Ethylperfluorooctane sulfonamido acetic acid (NE *N-ethylperfluoro-1-octanesulfonamidoacetic acid*	11.8	0.000	U	10.7	91	40-150	5	
307-24-4	MSD	Perfluorohexanoic acid (PFHxA)	11.8	0.000	U	10.9	92	40-150	17	0-30
307-55-1	MSD	Perfluorododecanoic acid (PFDOA) *Perfluorododecanoic acid (PFDoA)*	11.8	0.000	U	10.1	85	40-150	3	0-30
31506-32-8	MSD	N-Methylperfluorooctane sulfonamide (NMeFOSA) *N-methylperfluoro-1-octanesulfonamide (N-MeFOSA*	11.8	0.000	U	8.23	70	40-150	0	
335-67-1	MSD	Perfluorooctanoic acid (PFOA)	11.8	0.000	U	8.82	75	40-150	8	0-30
335-76-2	MSD	Perfluorodecanoic acid (PFDA)	11.8	0.000	U	10.3	87	40-150	1	0-30
335-77-3	MSD	Perfluorodecane sulfonic acid (PFDS) *Perfluorodecanesulfonate (PFDS)*	11.4	0.000	U	8.55	75	40-150	2	
355-46-4	MSD	Perfluorohexane sulfonic acid (PFHxS) *Perfluorohexanesulfonate (PFHxS)*	10.8	0.000	U	9.03	84	40-150	3	0-30
356-02-5	MSD	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(F *3-Perfluoropropyl propanoic acid (FPrPA)*	47.2	0.000	U	30.9	65	40-150	3	
375-22-4	MSD	Perfluorobutanoic acid (PFBA) *Perfluorobutyric acid (PFBA)*	47.2	0.000	U	43.7	93	40-150	4	0-30
375-73-5	MSD	Perfluorobutane sulfonic acid (PFBS) *Perfluorobutanesulfonate (PFBS)*	10.5	0.000	U	5.87	56	40-150	10	0-30

Quality Control Summary
Spike Recovery Report

SDG Number: **634200**
Sample Type: **Matrix Spike Duplicate**
Client ID: **EL23-2833-MEAT #1MSD**
Matrix: **TISSUE**
Lab Sample ID: **1205514633**
Instrument: **LCMSMS11**
Analysis Date: **09/14/2023 13:28**
Dilution: **1**
Analyst: **RR3**
Prep Batch ID: **2491241**
Batch ID: **2491242**

CAS No.		Parmname	Amount Added ng/g	Sample Conc. ng/g		Spike Conc. ng/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
375-85-9	MSD	Perfluoroheptanoic acid (PFHpA)	11.8	0.000	U	9.12	77	40-150	11	0-30
375-92-8	MSD	Perfluoroheptane sulfonic acid (PFHpS) *Perfluoroheptanesulfonate (PFHpS)*	11.2	0.000	U	8.37	74	40-150	2	0-30
375-95-1	MSD	Perfluorononanoic acid (PFNA)	11.8	0.000	U	10.0	85	40-150	7	0-30
376-06-7	MSD	Perfluorotetradecanoic acid (PFTDA) *Perfluorotetradecanoic acid (PFTeDA)*	11.8	0.000	U	10.2	87	40-150	4	
377-73-1	MSD	Perfluoro-3-methoxypropanoic acid (PFMPA) *Perfluoro-3-methoxypropanoic acid (PFMOPrA)*	23.6	0.000	U	16.2	69	40-150	5	0-30
39108-34-4	MSD	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 *Fluorotelomer sulfonate 8:2 (8:2 FTS)*	45.3	0.000	U	39.3	87	40-150	6	0-30
4151-50-2	MSD	N-Ethylperfluorooctane sulfonamide (EtFOSAm) *N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)*	11.8	0.000	U	10.3	88	40-150	3	
68259-12-1	MSD	Perfluorononane sulfonic acid (PFNS) *Perfluorononanesulfonate (PFNS)*	11.3	0.000	U	10.9	96	40-150	1	
72629-94-8	MSD	Perfluorotridecanoic acid (PFTrDA)	11.8	0.000	U	23.7	201 *	40-150	2	
754-91-6	MSD	Perfluorooctane sulfonamide (PFOSAm) *Perfluorooctanesulfonamide (PFOSA)*	11.8	0.000	U	9.79	83	40-150	2	
756426-58-1	MSD	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic *9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (*	44.1	0.000	U	65.7	149	40-150	4	0-30
757124-72-4	MSD	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 *Fluorotelomer sulfonate 4:2 (4:2 FTS)*	44.2	0.000	U	25.6	58	40-150	5	0-30
763051-92-9	MSD	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic *11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (*	44.6	0.000	U	69.9	157 *	40-150	8	0-30
79780-39-5	MSD	Perfluorododecane sulfonic acid (PFDoS) *Perfluoro-1-dodecanesulfonate (PFDoS)*	11.4	0.000	U	4.14	36 *	40-150	5	
812-70-4	MSD	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(F *3-Perfluoroheptyl propanoic acid (FHpPA)*	236	0.000	U	263	112	40-150	11	
914637-49-3	MSD	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(F *3-Perfluoropentyl propanoic acid (FPePA)*	236	0.000	U	337	143	40-150	14	
919005-14-4	MSD	4,8-Dioxa-3H-perfluorononanoic acid (DONA) *Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON*	44.6	0.000	U	53.7	120	40-150	12	0-30
863090-89-5	MSD	Perfluoro-4-methoxybutanoic acid (PFMBA) *Perfluoro-4-methoxybutanic acid (PFMOBA)*	23.6	0.000	U	10.4	44	40-150	10	0-30

Method Blank Summary

SDG Number:	**634200**	**Client:**	**FWSE001**	**Matrix:**	**TISSUE**
Client ID:	**MB for batch 2491241**	**Instrument ID:**	**LCMSMS11**	**Data File:**	**PFC091223070.wiff**
Lab Sample ID:	**1205514626**	**Prep Date:**	**09/12/2023 19:17**	**Analyzed:**	**09/14/23 11:20**
Column:					

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 2491241	1205514628	PFC091223072.wiff	09/14/23	1152
02	LCS for batch 2491241	1205514630	PFC091223074.wiff	09/14/23	1224
03	EL23-2833-MEAT #1	634200001	PFC091223076.wiff	09/14/23	1256
04	EL23-2833-MEAT #1MS	1205514632	PFC091223077.wiff	09/14/23	1312
05	EL23-2833-MEAT #1MSD	1205514633	PFC091223078.wiff	09/14/23	1328
06	EL23-2833-MEAT #2	634200002	PFC091223079.wiff	09/14/23	1344
07	EL23-2833-LIVER #1	634200003	PFC091223080.wiff	09/14/23	1400
08	EL23-2833-LIVER #2	634200004	PFC091223081.wiff	09/14/23	1416

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*

Sample ID: *1205514626* **Dilution:** *1*

Datafile: *PFC091223070.wiff* **Run Date:** *14-SEP-23 11:20*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	35.5	17.5	203	20 - 150	Q
13C2_6:2 FTS Recovery	35.7	17.8	201	20 - 150	Q
13C2_8:2 FTS Recovery	40	17.9	223	20 - 150	Q
13C2_PFDoA Recovery	4.35	4.67	93	20 - 150	
13C2_PFTeDA Recovery	4.54	4.67	97	20 - 150	
13C3_PFBS Recovery	12.3	8.71	141	20 - 150	
13C3_PFHxS Recovery	9.5	8.86	107	20 - 150	
13C3_PFPrOPrA Recovery	29.5	37.4	79	20 - 150	
13C4_PFBA Recovery	16.1	37.4	43	20 - 150	
13C4_PFHpA Recovery	13.6	9.35	146	20 - 150	
13C5_PFHxA Recovery	8.95	9.35	96	20 - 150	
13C5_PFPeA Recovery	18.4	18.7	99	20 - 150	
13C6_PFDA Recovery	4.41	4.67	94	20 - 150	
13C7_PFUdA Recovery	5.92	4.67	127	20 - 150	
13C8_PFOA Recovery	9.2	9.35	98	20 - 150	
13C8_PFOS Recovery	8.38	8.95	94	20 - 150	
13C8_PFOSA Recovery	8.06	9.35	86	20 - 150	
13C9_PFNA Recovery	4.64	4.67	99	20 - 150	
d-N-EtFOSA Recovery	3.68	9.35	39	20 - 150	
d-N-MeFOSA Recovery	4.92	9.35	53	20 - 150	
d3-N-MeFOSAA Recovery	22.7	18.7	121	20 - 150	
d5-N-EtFOSAA Recovery	19.2	18.7	103	20 - 150	
d7-N-MeFOSE Recovery	14.7	93.5	16	20 - 150	Q
d9-N-EtFOSE Recovery	21.9	93.5	23	20 - 150	

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *1205514628* **Dilution:** *1*
Datafile: *PFC091223072.wiff* **Run Date:** *14-SEP-23 11:52*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	25.4	17.7	144	20 - 150	
13C2_6:2 FTS Recovery	39.5	17.9	220	20 - 150	Q
13C2_8:2 FTS Recovery	39.4	18.1	217	20 - 150	Q
13C2_PFDoA Recovery	4.57	4.72	97	20 - 150	
13C2_PFTeDA Recovery	6.39	4.72	135	20 - 150	
13C3_PFBS Recovery	8.53	8.79	97	20 - 150	
13C3_PFHxS Recovery	10.4	8.94	116	20 - 150	
13C3_PFPrOPrA Recovery	33.8	37.7	90	20 - 150	
13C4_PFBA Recovery	25.2	37.7	67	20 - 150	
13C4_PFHpA Recovery	18.8	9.43	199	20 - 150	Q
13C5_PFHxA Recovery	7.32	9.43	78	20 - 150	
13C5_PFPeA Recovery	28.1	18.9	149	20 - 150	
13C6_PFDA Recovery	4.8	4.72	102	20 - 150	
13C7_PFUdA Recovery	5.58	4.72	118	20 - 150	
13C8_PFOA Recovery	9.66	9.43	102	20 - 150	
13C8_PFOS Recovery	8.57	9.04	95	20 - 150	
13C8_PFOSA Recovery	9.23	9.43	98	20 - 150	
13C9_PFNA Recovery	5.34	4.72	113	20 - 150	
d-N-EtFOSA Recovery	5.49	9.43	58	20 - 150	
d-N-MeFOSA Recovery	6.27	9.43	66	20 - 150	
d3-N-MeFOSAA Recovery	23.3	18.9	124	20 - 150	
d5-N-EtFOSAA Recovery	20.3	18.9	108	20 - 150	
d7-N-MeFOSE Recovery	26.5	94.3	28	20 - 150	
d9-N-EtFOSE Recovery	28.5	94.3	30	20 - 150	

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *1205514630* **Dilution:** *1*
Datafile: *PFC091223074.wiff* **Run Date:** *14-SEP-23 12:24*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	23.4	17.2	136	20 - 150	
13C2_6:2 FTS Recovery	37.6	17.4	216	20 - 150	Q
13C2_8:2 FTS Recovery	45.3	17.6	257	20 - 150	Q
13C2_PFDoA Recovery	4.5	4.59	98	20 - 150	
13C2_PFTeDA Recovery	5.42	4.59	118	20 - 150	
13C3_PFBS Recovery	8.84	8.55	103	20 - 150	
13C3_PFHxS Recovery	10.3	8.7	119	20 - 150	
13C3_PFPrOPrA Recovery	32.3	36.7	88	20 - 150	
13C4_PFBA Recovery	30.7	36.7	84	20 - 150	
13C4_PFHpA Recovery	19.4	9.17	211	20 - 150	Q
13C5_PFHxA Recovery	7.24	9.17	79	20 - 150	
13C5_PFPeA Recovery	26.5	18.3	144	20 - 150	
13C6_PFDA Recovery	4.48	4.59	98	20 - 150	
13C7_PFUdA Recovery	5.14	4.59	112	20 - 150	
13C8_PFOA Recovery	9.85	9.17	107	20 - 150	
13C8_PFOS Recovery	8.78	8.79	100	20 - 150	
13C8_PFOSA Recovery	8.95	9.17	98	20 - 150	
13C9_PFNA Recovery	4.61	4.59	100	20 - 150	
d-N-EtFOSA Recovery	4.67	9.17	51	20 - 150	
d-N-MeFOSA Recovery	5.88	9.17	64	20 - 150	
d3-N-MeFOSAA Recovery	24	18.3	131	20 - 150	
d5-N-EtFOSAA Recovery	18.9	18.3	103	20 - 150	
d7-N-MeFOSE Recovery	24.5	91.7	27	20 - 150	
d9-N-EtFOSE Recovery	25.8	91.7	28	20 - 150	

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *1205514632* **Dilution:** *1*
Datafile: *PFC091223077.wiff* **Run Date:** *14-SEP-23 13:12*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	33.9	17.9	190	20 - 150	Q
13C2_6:2 FTS Recovery	33.7	18.1	186	20 - 150	Q
13C2_8:2 FTS Recovery	38.5	18.3	210	20 - 150	Q
13C2_PFDoA Recovery	4.16	4.76	87	20 - 150	
13C2_PFTeDA Recovery	1.9	4.76	40	20 - 150	
13C3_PFBS Recovery	11.9	8.88	134	20 - 150	
13C3_PFHxS Recovery	10.2	9.03	113	20 - 150	
13C3_PFPrOPrA Recovery	37.1	38.1	97	20 - 150	
13C4_PFBA Recovery	18.4	38.1	48	20 - 150	
13C4_PFHpA Recovery	14.2	9.52	150	20 - 150	
13C5_PFHxA Recovery	10.8	9.52	113	20 - 150	
13C5_PFPeA Recovery	21.2	19	111	20 - 150	
13C6_PFDA Recovery	4.92	4.76	103	20 - 150	
13C7_PFUdA Recovery	4.6	4.76	97	20 - 150	
13C8_PFOA Recovery	10.8	9.52	113	20 - 150	
13C8_PFOS Recovery	10	9.12	110	20 - 150	
13C8_PFOSA Recovery	11.3	9.52	118	20 - 150	
13C9_PFNA Recovery	5.41	4.76	114	20 - 150	
d-N-EtFOSA Recovery	1.9	9.52	20	20 - 150	
d-N-MeFOSA Recovery	1.56	9.52	16	20 - 150	Q
d3-N-MeFOSAA Recovery	29.5	19	155	20 - 150	Q
d5-N-EtFOSAA Recovery	19.1	19	101	20 - 150	
d7-N-MeFOSE Recovery	6.76	95.2	7	20 - 150	Q
d9-N-EtFOSE Recovery	4.56	95.2	5	20 - 150	Q

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *1205514633* **Dilution:** *1*
Datafile: *PFC091223078.wiff* **Run Date:** *14-SEP-23 13:28*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	31.7	17.7	179	20 - 150	Q
13C2_6:2 FTS Recovery	28.3	17.9	158	20 - 150	Q
13C2_8:2 FTS Recovery	37.3	18.1	206	20 - 150	Q
13C2_PFDoA Recovery	4.08	4.72	86	20 - 150	
13C2_PFTeDA Recovery	1.91	4.72	41	20 - 150	
13C3_PFBS Recovery	12.4	8.79	141	20 - 150	
13C3_PFHxS Recovery	10.2	8.94	114	20 - 150	
13C3_PFPrOPrA Recovery	33.9	37.7	90	20 - 150	
13C4_PFBA Recovery	20.8	37.7	55	20 - 150	
13C4_PFHpA Recovery	15.2	9.43	161	20 - 150	Q
13C5_PFHxA Recovery	9.38	9.43	99	20 - 150	
13C5_PFPeA Recovery	23.2	18.9	123	20 - 150	
13C6_PFDA Recovery	4.68	4.72	99	20 - 150	
13C7_PFUdA Recovery	4.16	4.72	88	20 - 150	
13C8_PFOA Recovery	10.1	9.43	107	20 - 150	
13C8_PFOS Recovery	9.91	9.04	110	20 - 150	
13C8_PFOSA Recovery	11.3	9.43	120	20 - 150	
13C9_PFNA Recovery	4.8	4.72	102	20 - 150	
d-N-EtFOSA Recovery	1.83	9.43	19	20 - 150	Q
d-N-MeFOSA Recovery	1.45	9.43	15	20 - 150	Q
d3-N-MeFOSAA Recovery	26	18.9	138	20 - 150	
d5-N-EtFOSAA Recovery	18.2	18.9	97	20 - 150	
d7-N-MeFOSE Recovery	6.73	94.3	7	20 - 150	Q
d9-N-EtFOSE Recovery	4.07	94.3	4	20 - 150	Q

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *634200001* **Dilution:** *1*
Datafile: *PFC091223076.wiff* **Run Date:** *14-SEP-23 12:56*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	28.7	17.2	167	20 - 150	Q
13C2_6:2 FTS Recovery	29.6	17.4	169	20 - 150	Q
13C2_8:2 FTS Recovery	29.6	17.6	168	20 - 150	Q
13C2_PFDoA Recovery	3.84	4.59	84	20 - 150	
13C2_PFTeDA Recovery	2.08	4.59	45	20 - 150	
13C3_PFBS Recovery	10.1	8.55	118	20 - 150	
13C3_PFHxS Recovery	10.3	8.7	118	20 - 150	
13C3_PFPrOPrA Recovery	33.7	36.7	92	20 - 150	
13C4_PFBA Recovery	33	36.7	90	20 - 150	
13C4_PFHpA Recovery	12.5	9.17	136	20 - 150	
13C5_PFHxA Recovery	8.43	9.17	92	20 - 150	
13C5_PFPeA Recovery	19.5	18.3	106	20 - 150	
13C6_PFDA Recovery	4.41	4.59	96	20 - 150	
13C7_PFUdA Recovery	4.27	4.59	93	20 - 150	
13C8_PFOA Recovery	9.77	9.17	107	20 - 150	
13C8_PFOS Recovery	9.66	8.79	110	20 - 150	
13C8_PFOSA Recovery	10.5	9.17	115	20 - 150	
13C9_PFNA Recovery	4.59	4.59	100	20 - 150	
d-N-EtFOSA Recovery	1.89	9.17	21	20 - 150	
d-N-MeFOSA Recovery	1.42	9.17	16	20 - 150	Q
d3-N-MeFOSAA Recovery	22.9	18.3	125	20 - 150	
d5-N-EtFOSAA Recovery	17.5	18.3	96	20 - 150	
d7-N-MeFOSE Recovery	7.13	91.7	8	20 - 150	Q
d9-N-EtFOSE Recovery	10.7	91.7	12	20 - 150	Q

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *634200002* **Dilution:** *1*
Datafile: *PFC091223079.wiff* **Run Date:** *14-SEP-23 13:44*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	26.8	15.8	170	20 - 150	Q
13C2_6:2 FTS Recovery	24.8	16	155	20 - 150	Q
13C2_8:2 FTS Recovery	30.1	16.1	187	20 - 150	Q
13C2_PFDoA Recovery	3.21	4.2	76	20 - 150	
13C2_PFTeDA Recovery	1.54	4.2	37	20 - 150	
13C3_PFBS Recovery	9.57	7.83	122	20 - 150	
13C3_PFHxS Recovery	9.12	7.97	115	20 - 150	
13C3_PFPrOPrA Recovery	27.1	33.6	81	20 - 150	
13C4_PFBA Recovery	28.1	33.6	84	20 - 150	
13C4_PFHpA Recovery	10	8.4	119	20 - 150	
13C5_PFHxA Recovery	8.04	8.4	96	20 - 150	
13C5_PFPeA Recovery	15.9	16.8	95	20 - 150	
13C6_PFDA Recovery	3.88	4.2	92	20 - 150	
13C7_PFUdA Recovery	3.79	4.2	90	20 - 150	
13C8_PFOA Recovery	8.9	8.4	106	20 - 150	
13C8_PFOS Recovery	8.06	8.05	100	20 - 150	
13C8_PFOSA Recovery	8.91	8.4	106	20 - 150	
13C9_PFNA Recovery	4.41	4.2	105	20 - 150	
d-N-EtFOSA Recovery	1.55	8.4	18	20 - 150	Q
d-N-MeFOSA Recovery	1.1	8.4	13	20 - 150	Q
d3-N-MeFOSAA Recovery	21.2	16.8	126	20 - 150	
d5-N-EtFOSAA Recovery	15.7	16.8	94	20 - 150	
d7-N-MeFOSE Recovery	5.62	84	7	20 - 150	Q
d9-N-EtFOSE Recovery	9.12	84	11	20 - 150	Q

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *634200003* **Dilution:** *1*
Datafile: *PFC091223080.wiff* **Run Date:** *14-SEP-23 14:00*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	336	134	251	20 - 150	Q
13C2_6:2 FTS Recovery	284	136	209	20 - 150	Q
13C2_8:2 FTS Recovery	326	137	238	20 - 150	Q
13C2_PFDoA Recovery	31.5	35.7	88	20 - 150	
13C2_PFTeDA Recovery	36.2	35.7	101	20 - 150	
13C3_PFBS Recovery	137	66.6	205	20 - 150	Q
13C3_PFHxS Recovery	88.1	67.7	130	20 - 150	
13C3_PFPrOPrA Recovery	212	286	74	20 - 150	
13C4_PFBA Recovery	272	286	95	20 - 150	
13C4_PFHpA Recovery	109	71.4	152	20 - 150	Q
13C5_PFHxA Recovery	62.4	71.4	87	20 - 150	
13C5_PFPeA Recovery	137	143	96	20 - 150	
13C6_PFDA Recovery	34	35.7	95	20 - 150	
13C7_PFUdA Recovery	33.1	35.7	93	20 - 150	
13C8_PFOA Recovery	101	71.4	142	20 - 150	
13C8_PFOS Recovery	69.3	68.4	101	20 - 150	
13C8_PFOSA Recovery	86.3	71.4	121	20 - 150	
13C9_PFNA Recovery	36.1	35.7	101	20 - 150	
d-N-EtFOSA Recovery	31.7	71.4	44	20 - 150	
d-N-MeFOSA Recovery	33.7	71.4	47	20 - 150	
d3-N-MeFOSAA Recovery	243	143	170	20 - 150	Q
d5-N-EtFOSAA Recovery	127	143	89	20 - 150	
d7-N-MeFOSE Recovery	86.1	714	12	20 - 150	Q
d9-N-EtFOSE Recovery	217	714	30	20 - 150	

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2d
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG** *634200*

Lab Code: *GE*
Instrument ID: *LCMSMS11*
Sample ID: *634200004* **Dilution:** *1*
Datafile: *PFC091223081.wiff* **Run Date:** *14-SEP-23 14:16*

Parmname	Result	Nominal	Rec	Limits	Q
13C2_4:2 FTS Recovery	278	117	237	20 - 150	Q
13C2_6:2 FTS Recovery	257	119	216	20 - 150	Q
13C2_8:2 FTS Recovery	225	120	187	20 - 150	Q
13C2_PFDoA Recovery	29.6	31.3	95	20 - 150	
13C2_PFTeDA Recovery	32.5	31.3	104	20 - 150	
13C3_PFBS Recovery	110	58.3	189	20 - 150	Q
13C3_PFHxS Recovery	68.5	59.3	116	20 - 150	
13C3_PFPrOPrA Recovery	208	250	83	20 - 150	
13C4_PFBA Recovery	247	250	99	20 - 150	
13C4_PFHpA Recovery	99.3	62.5	159	20 - 150	Q
13C5_PFHxA Recovery	53.7	62.5	86	20 - 150	
13C5_PFPeA Recovery	135	125	108	20 - 150	
13C6_PFDA Recovery	30.2	31.3	97	20 - 150	
13C7_PFUdA Recovery	27.7	31.3	89	20 - 150	
13C8_PFOA Recovery	71.3	62.5	114	20 - 150	
13C8_PFOS Recovery	60.1	59.9	100	20 - 150	
13C8_PFOSA Recovery	74.3	62.5	119	20 - 150	
13C9_PFNA Recovery	34.7	31.3	111	20 - 150	
d-N-EtFOSA Recovery	26	62.5	42	20 - 150	
d-N-MeFOSA Recovery	28.8	62.5	46	20 - 150	
d3-N-MeFOSAA Recovery	160	125	128	20 - 150	
d5-N-EtFOSAA Recovery	110	125	88	20 - 150	
d7-N-MeFOSE Recovery	65	625	10	20 - 150	Q
d9-N-EtFOSE Recovery	217	625	35	20 - 150	

Extracted Internal Standard recoveries are compared to the nominal EIS concentrations added prior to extraction.

2a
Initial Calibration Area Summary

Lab Name: GEL Laboratories LLC **GEL Job No (SDG):** 634200

Lab Code: GEL **Column:** PFC091223

Instrument ID: LCMSMS11

Level	Calibration Run	Run Date	Data File
1	WPF230911-01(ICAL)	12-SEP-23 11:20	PFC091223003.wiff
2	WPF230911-02(ICAL)	12-SEP-23 11:36	PFC091223004.wiff
3	WPF230911-03(ICAL)	12-SEP-23 11:52	PFC091223005.wiff
4	WPF230911-04(ICAL)	12-SEP-23 12:24	PFC091223007.wiff
5	WPF230911-05(ICAL)	12-SEP-23 12:40	PFC091223008.wiff
6	WPF230911-06(ICAL)	12-SEP-23 12:56	PFC091223009.wiff
7	WPF230911-07(ICAL)	12-SEP-23 13:12	PFC091223010.wiff
8	WPF230911-08(ICAL)	12-SEP-23 13:28	PFC091223011.wiff

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *1205514626* **Run Date:** *14-SEP-23 11:20*

Datafile: *PFC091223070.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	381411.066	357736.66	106.6	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	129019.458	131666.38	98	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	327922.121	316738.29	103.5	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	392284.136	445444.42	88.1	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	671069.349	695018.34	96.6	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	573613.025	477475.68	120.1	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	417475.719	466159.93	89.6	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *1205514628* **Run Date:** *14-SEP-23 11:52*

Datafile: *PFC091223072.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	246412.242	357736.66	68.9	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	85534.566	131666.38	65	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	213779.335	316738.29	67.5	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	169806.472	445444.42	38.1	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	407609.232	695018.34	58.6	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	370631.302	477475.68	77.6	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	250225.451	466159.93	53.7	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *1205514630* **Run Date:** *14-SEP-23 12:24*

Datafile: *PFC091223074.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	257503.879	357736.66	72	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	73590.843	131666.38	55.9	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	211810.332	316738.29	66.9	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	161103.243	445444.42	36.2	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	377132.817	695018.34	54.3	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	355159.69	477475.68	74.4	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	239069.756	466159.93	51.3	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *1205514632* **Run Date:** *14-SEP-23 13:12*

Datafile: *PFC091223077.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	208100.661	357736.66	58.2	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	60103.053	131666.38	45.6	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	194052.731	316738.29	61.3	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	184728.055	445444.42	41.5	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	323747.036	695018.34	46.6	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	289376.818	477475.68	60.6	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	201364.786	466159.93	43.2	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *1205514633* **Run Date:** *14-SEP-23 13:28*

Datafile: *PFC091223078.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	213440.544	357736.66	59.7	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	62109.933	131666.38	47.2	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	192289.985	316738.29	60.7	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	180502.108	445444.42	40.5	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	300193.183	695018.34	43.2	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	277034.063	477475.68	58	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	209990.87	466159.93	45	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *634200001* **Run Date:** *14-SEP-23 12:56*

Datafile: *PFC091223076.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	217706.525	357736.66	60.9	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	71481.821	131666.38	54.3	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	207666.527	316738.29	65.6	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	200917.013	445444.42	45.1	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	340718.77	695018.34	49	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	300974.662	477475.68	63	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	227448.495	466159.93	48.8	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*

Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *634200002* **Run Date:** *14-SEP-23 13:44*

Datafile: *PFC091223079.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	186691.19	357736.66	52.2	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	58721.293	131666.38	44.6	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	174856.101	316738.29	55.2	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	192206.267	445444.42	43.1	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	284669.371	695018.34	41	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	270672.288	477475.68	56.7	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	194663.403	466159.93	41.8	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC*

GEL Job No(SDG): *634200*

Lab Code: *GEL*

Instrument ID: *LCMSMS11*

Dilution: *1*

Sample ID: *634200003*

Run Date: *14-SEP-23 14:00*

Datafile: *PFC091223080.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	220108.615	357736.66	61.5	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	46381.578	131666.38	35.2	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	188348.939	316738.29	59.5	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	197312.888	445444.42	44.3	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	313026.827	695018.34	45	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	296134.472	477475.68	62	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	185892.552	466159.93	39.9	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2b
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC*

GEL Job No(SDG): *634200*

Lab Code: *GEL*

Instrument ID: *LCMSMS11*

Dilution: *1*

Sample ID: *634200004*

Run Date: *14-SEP-23 14:16*

Datafile: *PFC091223081.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	211696.703	357736.66	59.2	30 - 200	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	58526.806	131666.38	44.5	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	189716.459	316738.29	59.9	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	195175.255	445444.42	43.8	30 - 200	
Perfluoro-n-[2,3,4-13C3] butanoic acid	326543.038	695018.34	47	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	298011.598	477475.68	62.4	30 - 200	
Sodium perfluoro-1-hexane[18O2]sulfonate	208353.9	466159.93	44.7	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2c
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *WPFICV* **Run Date:** *12-SEP-23 14:48*

Datafile: *PFC091223016.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
1,2-13C2 Fluorotelomer sulfonate 4:2	182037.077	276910.73	65.7	50 - 150	
1,2-13C2 Fluorotelomer sulfonate 6:2	109670.792	173802.31	63.1	50 - 150	
1,2-13C2 Fluorotelomer sulfonate 8:2	83222.017	118923.14	70	50 - 150	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoi	1387253.969	2099189.45	66.1	50 - 150	
2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)-ethan-d4-ol	3605778.413	5438030.65	66.3	50 - 150	
2-(N-methyl-d3-perfluoro-1-octanesulfonamido)-ethan-d4-ol	2812898.16	4186699.25	67.2	50 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamide	250409.282	362958.66	69	50 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	302620.616	445754.51	67.9	50 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamide	210128.793	310522.42	67.7	50 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	338611.803	519996.53	65.1	50 - 150	
Perfluoro-1-[13C8] octanesulfonamide	550325.236	828411.52	66.4	50 - 150	
Perfluoro-n-[1,2,3,4,5,6,7-13C7] undecanoic acid	170694.392	271292.18	62.9	50 - 150	
Perfluoro-n-[1,2,3,4,5,6-13C6] decanoic acid	207123.634	305477.31	67.8	50 - 150	
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	233315.442	357736.66	65.2	50 - 150	
Perfluoro-n-[1,2,3,4,6-13C5] hexanoic acid	488554.467	737567.81	66.2	50 - 150	
Perfluoro-n-[1,2,3,4-13C4] heptanoic acid	325699.456	504181.45	64.6	50 - 150	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	98929.488	131666.38	75.1	50 - 150	
Perfluoro-n-[1,2-13C2] decanoic acid	209990.715	316738.29	66.3	50 - 150	
Perfluoro-n-[1,2-13C2] hexanoic acid	291446.149	445444.42	65.4	50 - 150	
Perfluoro-n-[1,2-13C2] tetradecanoic acid	236339.048	338395.78	69.8	50 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid	283360.748	420984.05	67.3	50 - 150	
Perfluoro-n-[13C4]butanoic acid	430671.677	649816.67	66.3	50 - 150	
Perfluoro-n-[13C5] pentanoic acid	435871.291	673179.93	64.7	50 - 150	
Perfluoro-n-[13C8] octanoic acid	487431.314	701262.2	69.5	50 - 150	
Perfluoro-n-[13C9] nonanoic acid	151030.781	233287.68	64.7	50 - 150	
Perfluoro-n-[2,3,4-13C3] butanoic acid	480308.235	695018.34	69.1	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	352193.439	477475.68	73.8	50 - 150	
Sodium perfluoro-1-[1,2,3-13C3] hexanesulfonate	399241.567	611567.37	65.3	50 - 150	
Sodium perfluoro-1-[13C8] octanesulfonate	112194.496	164427.27	68.2	50 - 150	
Sodium perfluoro-1-[2,3,4-13C3] butanesulfonate	448226.429	672072.67	66.7	50 - 150	
Sodium perfluoro-1-hexane[18O2]sulfonate	322186.774	466159.93	69.1	50 - 150	

Internal Standards are compared to the average area from the initial calibration.

2c
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *WPFISC* **Run Date:** *12-SEP-23 15:04*

Datafile: *PFC091223017.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
1,2-13C2 Fluorotelomer sulfonate 4:2	288084.804	276910.73	104	20 - 150	
1,2-13C2 Fluorotelomer sulfonate 6:2	174638.598	173802.31	100.5	20 - 150	
1,2-13C2 Fluorotelomer sulfonate 8:2	105904.76	118923.14	89.1	20 - 150	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoi	2126098.083	2099189.45	101.3	20 - 150	
2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)-ethan-d4-ol	5399076.531	5438030.65	99.3	20 - 150	
2-(N-methyl-d3-perfluoro-1-octanesulfonamido)-ethan-d4-ol	4134232.488	4186699.25	98.7	20 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamide	349302.071	362958.66	96.2	20 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	438177.916	445754.51	98.3	20 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamide	289684.889	310522.42	93.3	20 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	514330.583	519996.53	98.9	20 - 150	
Perfluoro-1-[13C8] octanesulfonamide	775430.317	828411.52	93.6	20 - 150	
Perfluoro-n-[1,2,3,4,5,6,7-13C7] undecanoic acid	275737.702	271292.18	101.6	20 - 150	
Perfluoro-n-[1,2,3,4,5,6-13C6] decanoic acid	277122.189	305477.31	90.7	20 - 150	
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	269844.49	357736.66	75.4	30 - 200	
Perfluoro-n-[1,2,3,4,6-13C5] hexanoic acid	736684.456	737567.81	99.9	20 - 150	
Perfluoro-n-[1,2,3,4-13C4] heptanoic acid	477262.052	504181.45	94.7	20 - 150	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	118420.491	131666.38	89.9	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	277885.607	316738.29	87.7	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	449162.176	445444.42	100.8	30 - 200	
Perfluoro-n-[1,2-13C2] tetradecanoic acid	330952.548	338395.78	97.8	20 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid	420236.929	420984.05	99.8	20 - 150	
Perfluoro-n-[13C4]butanoic acid	615669.624	649816.67	94.7	20 - 150	
Perfluoro-n-[13C5] pentanoic acid	612014.789	673179.93	90.9	20 - 150	
Perfluoro-n-[13C8] octanoic acid	671614.533	701262.2	95.8	20 - 150	
Perfluoro-n-[13C9] nonanoic acid	212695.014	233287.68	91.2	20 - 150	
Perfluoro-n-[2,3,4-13C3] butanoic acid	627043.875	695018.34	90.2	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	418017.382	477475.68	87.5	30 - 200	
Sodium perfluoro-1-[1,2,3-13C3] hexanesulfonate	602157.059	611567.37	98.5	20 - 150	
Sodium perfluoro-1-[13C8] octanesulfonate	156879.816	164427.27	95.4	20 - 150	
Sodium perfluoro-1-[2,3,4-13C3] butanesulfonate	574905.994	672072.67	85.5	20 - 150	
Sodium perfluoro-1-hexane[18O2]sulfonate	449125.496	466159.93	96.3	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2c
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *WPFDISC* **Run Date:** *14-SEP-23 09:44*

Datafile: *PFC091223064.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
1,2-13C2 Fluorotelomer sulfonate 4:2	263400.189	276910.73	95.1	50 - 150	
1,2-13C2 Fluorotelomer sulfonate 6:2	168048.234	173802.31	96.7	50 - 150	
1,2-13C2 Fluorotelomer sulfonate 8:2	114234.131	118923.14	96.1	50 - 150	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoi	2300751.479	2099189.45	109.6	50 - 150	
2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)-ethan-d4-ol	5972238.023	5438030.65	109.8	50 - 150	
2-(N-methyl-d3-perfluoro-1-octanesulfonamido)-ethan-d4-ol	4445858.924	4186699.25	106.2	50 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamide	371067.104	362958.66	102.2	50 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	452450.226	445754.51	101.5	50 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamide	312352.901	310522.42	100.6	50 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	529833.895	519996.53	101.9	50 - 150	
Perfluoro-1-[13C8] octanesulfonamide	812943.231	828411.52	98.1	50 - 150	
Perfluoro-n-[1,2,3,4,5,6,7-13C7] undecanoic acid	275554.119	271292.18	101.6	50 - 150	
Perfluoro-n-[1,2,3,4,5,6-13C6] decanoic acid	296744.663	305477.31	97.1	50 - 150	
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	301294.031	357736.66	84.2	50 - 150	
Perfluoro-n-[1,2,3,4,6-13C5] hexanoic acid	775366.871	737567.81	105.1	50 - 150	
Perfluoro-n-[1,2,3,4-13C4] heptanoic acid	539219.855	504181.45	106.9	50 - 150	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	134736.98	131666.38	102.3	50 - 150	
Perfluoro-n-[1,2-13C2] decanoic acid	289641.203	316738.29	91.4	50 - 150	
Perfluoro-n-[1,2-13C2] hexanoic acid	503719.693	445444.42	113.1	50 - 150	
Perfluoro-n-[1,2-13C2] tetradecanoic acid	340977.401	338395.78	100.8	50 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid	440765.979	420984.05	104.7	50 - 150	
Perfluoro-n-[13C4]butanoic acid	654949.754	649816.67	100.8	50 - 150	
Perfluoro-n-[13C5] pentanoic acid	653242.423	673179.93	97	50 - 150	
Perfluoro-n-[13C8] octanoic acid	683416.464	701262.2	97.5	50 - 150	
Perfluoro-n-[13C9] nonanoic acid	233618.21	233287.68	100.1	50 - 150	
Perfluoro-n-[2,3,4-13C3] butanoic acid	671744.746	695018.34	96.7	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	452599.928	477475.68	94.8	50 - 150	
Sodium perfluoro-1-[1,2,3-13C3] hexanesulfonate	652912.344	611567.37	106.8	50 - 150	
Sodium perfluoro-1-[13C8] octanesulfonate	151664.14	164427.27	92.2	50 - 150	
Sodium perfluoro-1-[2,3,4-13C3] butanesulfonate	587747.475	672072.67	87.5	50 - 150	
Sodium perfluoro-1-hexane[18O2]sulfonate	455111.044	466159.93	97.6	50 - 150	

Internal Standards are compared to the average area from the initial calibration.

2c
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *WPFCCV* **Run Date:** *14-SEP-23 10:48*

Datafile: *PFC091223068.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
1,2-13C2 Fluorotelomer sulfonate 4:2	236998.816	276910.73	85.6	20 - 150	
1,2-13C2 Fluorotelomer sulfonate 6:2	155031.955	173802.31	89.2	20 - 150	
1,2-13C2 Fluorotelomer sulfonate 8:2	122617.159	118923.14	103.1	20 - 150	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoi	2101653.141	2099189.45	100.1	20 - 150	
2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)-ethan-d4-ol	5505598.022	5438030.65	101.2	20 - 150	
2-(N-methyl-d3-perfluoro-1-octanesulfonamido)-ethan-d4-ol	4031569.104	4186699.25	96.3	20 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamide	356009.057	362958.66	98.1	20 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	417385.944	445754.51	93.6	20 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamide	310262.888	310522.42	99.9	20 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	498319.654	519996.53	95.8	20 - 150	
Perfluoro-1-[13C8] octanesulfonamide	788442.598	828411.52	95.2	20 - 150	
Perfluoro-n-[1,2,3,4,5,6,7-13C7] undecanoic acid	261187.068	271292.18	96.3	20 - 150	
Perfluoro-n-[1,2,3,4,5,6-13C6] decanoic acid	274341.939	305477.31	89.8	20 - 150	
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	308744.285	357736.66	86.3	30 - 200	
Perfluoro-n-[1,2,3,4,6-13C5] hexanoic acid	711360.424	737567.81	96.4	20 - 150	
Perfluoro-n-[1,2,3,4-13C4] heptanoic acid	469751.342	504181.45	93.2	20 - 150	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	137659.45	131666.38	104.6	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	286119.12	316738.29	90.3	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	430906.279	445444.42	96.7	30 - 200	
Perfluoro-n-[1,2-13C2] tetradecanoic acid	317131.12	338395.78	93.7	20 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid	421350.726	420984.05	100.1	20 - 150	
Perfluoro-n-[13C4]butanoic acid	602582.121	649816.67	92.7	20 - 150	
Perfluoro-n-[13C5] pentanoic acid	629810.985	673179.93	93.6	20 - 150	
Perfluoro-n-[13C8] octanoic acid	657695.865	701262.2	93.8	20 - 150	
Perfluoro-n-[13C9] nonanoic acid	221363.188	233287.68	94.9	20 - 150	
Perfluoro-n-[2,3,4-13C3] butanoic acid	652992.853	695018.34	94	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	460699.609	477475.68	96.5	30 - 200	
Sodium perfluoro-1-[1,2,3-13C3] hexanesulfonate	585566.903	611567.37	95.7	20 - 150	
Sodium perfluoro-1-[13C8] octanesulfonate	141251.265	164427.27	85.9	20 - 150	
Sodium perfluoro-1-[2,3,4-13C3] butanesulfonate	629185.15	672072.67	93.6	20 - 150	
Sodium perfluoro-1-hexane[18O2]sulfonate	465020.454	466159.93	99.8	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

2c
Internal Standard Area Summary

Lab Name : *GEL Laboratories LLC* **GEL Job No(SDG):** *634200*

Lab Code: *GEL*
Instrument ID: *LCMSMS11* **Dilution:** *1*

Sample ID: *WPFCCV* **Run Date:** *14-SEP-23 14:32*

Datafile: *PFC091223082.wiff*

Parmname	Area	Reference Area	Rec	Limits	Q
1,2-13C2 Fluorotelomer sulfonate 4:2	155688.835	276910.73	56.2	20 - 150	
1,2-13C2 Fluorotelomer sulfonate 6:2	94502.324	173802.31	54.4	20 - 150	
1,2-13C2 Fluorotelomer sulfonate 8:2	68387.988	118923.14	57.5	20 - 150	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoi	1148037.826	2099189.45	54.7	20 - 150	
2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)-ethan-d4-ol	3624667.254	5438030.65	66.7	20 - 150	
2-(N-methyl-d3-perfluoro-1-octanesulfonamido)-ethan-d4-ol	2640162.216	4186699.25	63.1	20 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamide	256687.511	362958.66	70.7	20 - 150	
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	248654.752	445754.51	55.8	20 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamide	230526.496	310522.42	74.2	20 - 150	
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	290909.313	519996.53	55.9	20 - 150	
Perfluoro-1-[13C8] octanesulfonamide	593281.034	828411.52	71.6	20 - 150	
Perfluoro-n-[1,2,3,4,5,6,7-13C7] undecanoic acid	156841.886	271292.18	57.8	20 - 150	
Perfluoro-n-[1,2,3,4,5,6-13C6] decanoic acid	182171.807	305477.31	59.6	20 - 150	
Perfluoro-n-[1,2,3,4,5-13C5] nonanoic acid	198085.11	357736.66	55.4	30 - 200	
Perfluoro-n-[1,2,3,4,6-13C5] hexanoic acid	427672.663	737567.81	58	20 - 150	
Perfluoro-n-[1,2,3,4-13C4] heptanoic acid	287666.804	504181.45	57.1	20 - 150	
Perfluoro-n-[1,2,3,4-13C4] octanoic acid	72684.537	131666.38	55.2	30 - 200	
Perfluoro-n-[1,2-13C2] decanoic acid	202907.141	316738.29	64.1	30 - 200	
Perfluoro-n-[1,2-13C2] hexanoic acid	215525.767	445444.42	48.4	30 - 200	
Perfluoro-n-[1,2-13C2] tetradecanoic acid	238900.899	338395.78	70.6	20 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid	258896.516	420984.05	61.5	20 - 150	
Perfluoro-n-[13C4]butanoic acid	311529.526	649816.67	47.9	20 - 150	
Perfluoro-n-[13C5] pentanoic acid	352530.332	673179.93	52.4	20 - 150	
Perfluoro-n-[13C8] octanoic acid	413055.103	701262.2	58.9	20 - 150	
Perfluoro-n-[13C9] nonanoic acid	141150.296	233287.68	60.5	20 - 150	
Perfluoro-n-[2,3,4-13C3] butanoic acid	338928.745	695018.34	48.8	30 - 200	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	300131.311	477475.68	62.9	30 - 200	
Sodium perfluoro-1-[1,2,3-13C3] hexanesulfonate	341204.598	611567.37	55.8	20 - 150	
Sodium perfluoro-1-[13C8] octanesulfonate	114183.989	164427.27	69.4	20 - 150	
Sodium perfluoro-1-[2,3,4-13C3] butanesulfonate	403033.422	672072.67	60	20 - 150	
Sodium perfluoro-1-hexane[18O2]sulfonate	241343.19	466159.93	51.8	30 - 200	

Internal Standards are compared to the average area from the initial calibration.

Sample Data

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-MEAT #1
Sample ID: 634200001
Matrix: Tissue
Collect Date: 04-AUG-23 10:00
Receive Date: 22-AUG-23
Collector: Client

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result	LOQ	Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Extract PFCs											
LCMSMS PFCs *Combined Composite "As Received"*											
PFAS by EC-MS/MS EPA 1633, Tissue "As Received"											
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	ND	3.47	ng/g				RR3	09/14/23	1256	2491242	2
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	3.52	ng/g								
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	3.44	ng/g								
Fluorotelomer sulfonate 6:2 (6:2 FTS)	ND	3.49	ng/g								
3-Perfluoroheptyl propanoic acid (FHpPA)	ND	18.3	ng/g								
3-Perfluoropentyl propanoic acid (FPePA)	ND	18.3	ng/g								
3-Perfluoropropyl propanoic acid (FPrPA)	ND	3.67	ng/g								
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	ND	3.47	ng/g								
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	ND	3.43	ng/g								
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	ND	3.67	ng/g								
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	ND	0.917	ng/g								
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	0.917	ng/g								
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	ND	9.17	ng/g								
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	ND	0.917	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-MEAT #1 Proiect: FWSE00100
Sample ID: 634200001 Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	0.917	ng/g								
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	ND	9.17	ng/g								
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.83	ng/g								
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.63	ng/g								
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	ND	1.83	ng/g								
Perfluoro-4-methoxybutanic acid (PFMOBA)	ND	1.83	ng/g								
Perfluorobutanesulfonate (PFBS)	ND	0.814	ng/g								
Perfluorobutyric acid (PFBA)	ND	3.67	ng/g								
Perfluorodecanesulfonate (PFDS)	ND	0.885	ng/g								
Perfluorodecanoic acid (PFDA)	ND	0.917	ng/g								
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	0.890	ng/g								
Perfluorododecanoic acid (PFDoA)	ND	0.917	ng/g								
Perfluoroheptanesulfonate (PFHpS)	ND	0.874	ng/g								
Perfluoroheptanoic acid (PFHpA)	ND	0.917	ng/g								
Perfluorohexanesulfonate (PFHxS)	ND	0.839	ng/g								
Perfluorohexanoic acid (PFHxA)	ND	0.917	ng/g								
Perfluorononanesulfonate (PFNS)	ND	0.883	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-MEAT #1
Sample ID: 634200001

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Perfluorononanoic acid (PFNA)	ND	0.917	ng/g								
Perfluorooctanesulfonamide (PFOSA)	ND	0.917	ng/g								
Perfluorooctanesulfonate (PFOS)	ND	0.851	ng/g								
Perfluorooctanoic acid (PFOA)	ND	0.917	ng/g								
Perfluoropentanesulfonate (PFPeS)	ND	0.863	ng/g								
Perfluoropentanoic acid (PFPeA)	ND	1.83	ng/g								
Perfluorotetradecanoic acid (PFTeDA)	ND	0.917	ng/g								
Perfluorotridecanoic acid (PFTrDA)	ND	0.917	ng/g								
Perfluoroundecanoic acid (PFUdA)	ND	0.917	ng/g								

* Denotes analyte both >= LOQ and outside of range.
Range calculated as =/- 50% of mid-leevel ICAL Ion Ra

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-MEAT #2
Sample ID: 634200002
Matrix: Tissue
Collect Date: 04-AUG-23 10:00
Receive Date: 22-AUG-23
Collector: Client

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result	LOQ	Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Extract PFCs											
LCMSMS PFCs *Laboratory Composite "As Received"*											
PFAS by EC-MS/MS EPA 1633, Tissue "As Received"											
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	ND	3.18	ng/g				RR3	09/14/23	1344	2491242	2
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	3.23	ng/g								
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	3.15	ng/g								
Fluorotelomer sulfonate 6:2 (6:2 FTS)	ND	3.19	ng/g								
3-Perfluoroheptyl propanoic acid (FHpPA)	ND	16.8	ng/g								
3-Perfluoropentyl propanoic acid (FPePA)	ND	16.8	ng/g								
3-Perfluoropropyl propanoic acid (FPrPA)	ND	3.36	ng/g								
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	ND	3.18	ng/g								
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	ND	3.14	ng/g								
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	ND	3.36	ng/g								
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	ND	0.840	ng/g								
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	0.840	ng/g								
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	ND	8.40	ng/g								
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	ND	0.840	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-MEAT #2 Proiect: FWSE00100
Sample ID: 634200002 Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	0.840	ng/g								
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	ND	8.40	ng/g								
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.68	ng/g								
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.50	ng/g								
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	ND	1.68	ng/g								
Perfluoro-4-methoxybutanic acid (PFMOBA)	ND	1.68	ng/g								
Perfluorobutanesulfonate (PFBS)	ND	0.745	ng/g								
Perfluorobutyric acid (PFBA)	ND	3.36	ng/g								
Perfluorodecanesulfonate (PFDS)	ND	0.811	ng/g								
Perfluorodecanoic acid (PFDA)	ND	0.840	ng/g								
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	0.815	ng/g								
Perfluorododecanoic acid (PFDoA)	ND	0.840	ng/g								
Perfluoroheptanesulfonate (PFHpS)	ND	0.801	ng/g								
Perfluoroheptanoic acid (PFHpA)	ND	0.840	ng/g								
Perfluorohexanesulfonate (PFHxS)	ND	0.768	ng/g								
Perfluorohexanoic acid (PFHxA)	ND	0.840	ng/g								
Perfluorononanesulfonate (PFNS)	ND	0.808	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-MEAT #2
Sample ID: 634200002

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Perfluorononanoic acid (PFNA)	ND	0.840	ng/g								
Perfluorooctanesulfonamide (PFOSA)	ND	0.840	ng/g								
Perfluorooctanesulfonate (PFOS)	ND	0.780	ng/g								
Perfluorooctanoic acid (PFOA)	ND	0.840	ng/g								
Perfluoropentanesulfonate (PFPeS)	ND	0.791	ng/g								
Perfluoropentanoic acid (PFPeA)	ND	1.68	ng/g								
Perfluorotetradecanoic acid (PFTeDA)	ND	0.840	ng/g								
Perfluorotridecanoic acid (PFTrDA)	ND	0.840	ng/g								
Perfluoroundecanoic acid (PFUdA)	ND	0.840	ng/g								

* Denotes analyte both >= LOQ and outside of range.
Range calculated as =/- 50% of mid-leevel ICAL Ion Ra

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-LIVER #1
Sample ID: 634200003
Matrix: Tissue
Collect Date: 04-AUG-23 10:00
Receive Date: 22-AUG-23
Collector: Client

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result	LOQ	Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Extract PFCs											
LCMSMS PFCs *Liver Tissue Composite "As Received"*											
PFAS by EC-MS/MS EPA 1633, Tissue "As Received"											
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	ND	27.0	ng/g				RR3	09/14/23	1400	2491242	2
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	27.4	ng/g								
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	26.8	ng/g								
Fluorotelomer sulfonate 6:2 (6:2 FTS)	ND	27.1	ng/g								
3-Perfluoroheptyl propanoic acid (FHpPA)	ND	143	ng/g								
3-Perfluoropentyl propanoic acid (FPePA)	ND	143	ng/g								
3-Perfluoropropyl propanoic acid (FPrPA)	ND	28.6	ng/g								
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	ND	27.0	ng/g								
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	ND	26.7	ng/g								
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	ND	28.6	ng/g								
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	ND	7.14	ng/g								
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	7.14	ng/g								
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	ND	71.4	ng/g								
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	ND	7.14	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-LIVER #1 Proiect: FWSE00100
Sample ID: 634200003 Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	7.14	ng/g								
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	ND	71.4	ng/g								
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	14.3	ng/g								
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	12.7	ng/g								
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	ND	14.3	ng/g								
Perfluoro-4-methoxybutanic acid (PFMOBA)	ND	14.3	ng/g								
Perfluorobutanesulfonate (PFBS)	ND	6.34	ng/g								
Perfluorobutyric acid (PFBA)	ND	28.6	ng/g								
Perfluorodecanesulfonate (PFDS)	ND	6.89	ng/g								
Perfluorodecanoic acid (PFDA)	ND	7.14	ng/g								
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	6.93	ng/g								
Perfluorododecanoic acid (PFDoA)	ND	7.14	ng/g								
Perfluoroheptanesulfonate (PFHpS)	ND	6.81	ng/g								
Perfluoroheptanoic acid (PFHpA)	ND	7.14	ng/g								
Perfluorohexanesulfonate (PFHxS)	ND	6.53	ng/g								
Perfluorohexanoic acid (PFHxA)	ND	7.14	ng/g								
Perfluorononanesulfonate (PFNS)	ND	6.87	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-LIVER #1
Sample ID: 634200003

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Perfluorononanoic acid (PFNA)	ND	7.14	ng/g								
Perfluorooctanesulfonamide (PFOSA)	ND	7.14	ng/g								
Perfluorooctanesulfonate (PFOS)	8.17	6.63	ng/g	689	5.92	3.515 - 10.545					
Perfluorooctanoic acid (PFOA)	ND	7.14	ng/g								
Perfluoropentanesulfonate (PFPeS)	ND	6.72	ng/g								
Perfluoropentanoic acid (PFPeA)	ND	14.3	ng/g								
Perfluorotetradecanoic acid (PFTeDA)	ND	7.14	ng/g								
Perfluorotridecanoic acid (PFTrDA)	ND	7.14	ng/g								
Perfluoroundecanoic acid (PFUdA)	ND	7.14	ng/g								

* Denotes analyte both >= LOQ and outside of range.
Range calculated as =/- 50% of mid-leevel ICAL Ion Ra

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Contact: David Lucas
Project: RFNWR Site

Report Date: September 18, 2023

Client Sample ID: EL23-2833-LIVER #2
Sample ID: 634200004
Matrix: Tissue
Collect Date: 04-AUG-23 10:00
Receive Date: 22-AUG-23
Collector: Client

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result	LOQ	Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Extract PFCs											
LCMSMS PFCs *Laboratory Composite "As Received" PFAS by EC-MS/MS EPA 1633, Tissue "As Received"*											
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	ND	22.6	ng/g				RR3	09/14/23	1416	2491242	2
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	24.0	ng/g								
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	23.4	ng/g								
Fluorotelomer sulfonate 6:2 (6:2 FTS)	ND	23.8	ng/g								
3-Perfluoroheptyl propanoic acid (FHpPA)	ND	125	ng/g								
3-Perfluoropentyl propanoic acid (FPePA)	ND	125	ng/g								
3-Perfluoropropyl propanoic acid (FPrPA)	ND	25.0	ng/g								
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	ND	23.6	ng/g								
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	ND	23.4	ng/g								
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	ND	25.0	ng/g								
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	ND	6.25	ng/g								
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	6.25	ng/g								
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	ND	62.5	ng/g								
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	ND	6.25	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-LIVER #2 Proiect: FWSE00100
Sample ID: 634200004 Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	6.25	ng/g								
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	ND	62.5	ng/g								
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	12.5	ng/g								
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	11.1	ng/g								
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	ND	12.5	ng/g								
Perfluoro-4-methoxybutanic acid (PFMOBA)	ND	12.5	ng/g								
Perfluorobutanesulfonate (PFBS)	ND	5.54	ng/g								
Perfluorobutyric acid (PFBA)	ND	25.0	ng/g								
Perfluorodecanesulfonate (PFDS)	ND	6.03	ng/g								
Perfluorodecanoic acid (PFDA)	ND	6.25	ng/g								
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	6.06	ng/g								
Perfluorododecanoic acid (PFDoA)	ND	6.25	ng/g								
Perfluoroheptanesulfonate (PFHpS)	ND	5.96	ng/g								
Perfluoroheptanoic acid (PFHpA)	ND	6.25	ng/g								
Perfluorohexanesulfonate (PFHxS)	ND	5.71	ng/g								
Perfluorohexanoic acid (PFHxA)	ND	6.25	ng/g								
Perfluorononanesulfonate (PFNS)	ND	6.01	ng/g								

Ion Ratio Report

Company : US Fish and Wildlife Service
Address : 6550 GATEWAY ROAD, HEADQUARTERS
COMMERCE CITY, Colorado 80022

Report Date: September 18, 2023

Contact: David Lucas
Project: RFNWR Site

Client Sample ID: EL23-2833-LIVER #2
Sample ID: 634200004

Proiect: FWSE00100
Client ID: FWSE001

Parameter	Result		Units	Signal-to-Noise	Ion Ratio	Range	Analyst	Date	Time	Batch	Method
Perfluorononanoic acid (PFNA)	ND	6.25	ng/g								
Perfluorooctanesulfonamide (PFOSA)	ND	6.25	ng/g								
Perfluorooctanesulfonate (PFOS)	7.32	5.80	ng/g	669	5.86	3.515 - 10.545					
Perfluorooctanoic acid (PFOA)	ND	6.25	ng/g								
Perfluoropentanesulfonate (PFPeS)	ND	5.88	ng/g								
Perfluoropentanoic acid (PFPeA)	ND	12.5	ng/g								
Perfluorotetradecanoic acid (PFTeDA)	ND	6.25	ng/g								
Perfluorotridecanoic acid (PFTrDA)	ND	6.25	ng/g								
Perfluoroundecanoic acid (PFUdA)	ND	6.25	ng/g								

* Denotes analyte both >= LOQ and outside of range.
Range calculated as =/- 50% of mid-leevel ICAL Ion Ra

Standards

PFC Initial Calibration

Lab Name : *GEL Laboratories, LLC*

Method *draft EPA 1633*

GEL Job No. *634200*

Lab Code: *GEL*

Column: *Gemini 3u C-18*

Instrument: *LCMSMS11*

Calibration Files	Run Dates
PFC091223003	12-SEP-23 11:20
PFC091223004	12-SEP-23 11:36
PFC091223005	12-SEP-23 11:52
PFC091223007	12-SEP-23 12:24
PFC091223008	12-SEP-23 12:40
PFC091223009	12-SEP-23 12:56
PFC091223010	12-SEP-23 13:12
PFC091223011	12-SEP-23 13:28

Curve Type: 2nd Order Null

2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)

107092.939	175763.577	429800.873	1148453.785	2329505.712	4599640.003	13029738.73	26715791.032

X	.01069	**Intercept**	.000267845
X^2	.11372	**CC**	.9991

N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)

12863.889	26134.237	58647.644	153810.07	290463.554	562353.588	1366428.044	2640519.609

X	.0000903668	**Intercept**	-.000661213
X^2	.90702	**CC**	.9996

Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)

33485.824	53505.181	144479.1	363734.945	686676.064	1229029.619	2567314.602

X	.00266	**Intercept**	-.00578
X^2	.36974	**CC**	.9992

Perfluorobutane sulfonic acid (PFBS)

39777.416	66670.128	172392.973	419509.147	757969.277	1370960.163	2842892.269

X	.01668	**Intercept**	-.06138
X^2	1.00457	**CC**	.999

Perfluorohexanoic acid (PFHxA)

69374.247	173589.21	407600.193	726301.995	1348407.865	2772066.021	4940242.463

X	.01226	**Intercept**	-.01477
X^2	.80329	**CC**	.9959

Perfluoropentane sulfonic acid (PFPeS)

34017.198	55654.233	172068.449	405727.208	864600.541	1851456.274	4574340.794	7916147.292

X	-.00909	**Intercept**	.01776
X^2	1.10685	**CC**	.9957

Quadradic Fit: y = Ax^2 + Bx + C
where X^2 column above is coefficient A, X column above is coefficient B and intercept is C

CC is Correlation Coefficient

Q column used to flag CC values outside of Limit (<0.995)
* Values outside of QC Limit

PFC Initial Calibration

Lab Name : *GEL Laboratories, LLC*

Method *draft EPA 1633*

GEL Job No.

Lab Code: *GEL*

Column: *Gemini 3u C-18*

Instrument: *LCMSMS11*

Curve Type: Linear Null

4,8-Dioxa-3H-perfluorononanoic acid (DONA)

184222.168	333547.129	886270.379	2085014.614	4114122.194	7667686.464	18655188.46	35191758.981

Slope 1.71904
Intercept -.01167 **CC** .996

9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)

202422.089	361917.626	983248.98	2510755.859	5281132.563	9955301.567	24329551.018	46049072.253

Slope 2.1973
Intercept -.03094 **CC** .9924

Perfluorononanoic acid (PFNA)

42380.695	72940.852	181560.009	450342.639	895711.98	1747213.144	4444971.808	9501919.84

Slope 1.56586
Intercept .00794 **CC** .9982

Perfluorooctane sulfonic acid (PFOS)

41875.411	65412.013	172808.146	424767.334	899987.543	1722908.023	4203116.962	8534560.993

Slope 4.45333
Intercept -.00724 **CC** .9987

Perfluoroundecanoic acid (PFUnDA)

22280.249	39794.314	103060.738	236431.762	504704.136	943213.134	2426041.146	5136446.45

Slope .79956
Intercept -.02461 **CC** .9985

Linear Notes: Linear fit : Y=mx +b where b is Intercept and m is slope

CC is Correlation Coefficient
Intercept of 0 means Calibration is forced through zero

Q column used to flag CC values outside of Limit (<0.995)
* Values outside of QC Limit

Curve Type: RF

11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUdS)

.0276100759860	.0248224613079	.0260259708095	.0250431768792	.0252816921711	.0230171563558	.0214753469327	.0216689960595

Ave RF .02436810956272
RSD 8.08132

1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)

.0061012981558	.0051037675667	.0052991962900	.0053433629785	.0055742428731	.0044686076992	.0048312175138	.0042744565174

Ave RF .00512451869931
RSD 11.60115

1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)

.0000325840554	.0000390287521	.0000409837205	.0000436868563	.0000433222853	.0000314587537	.0000323613007	.0000296256824

Ave RF .00003663142581
RSD 15.63747

Lab Name : *GEL Laboratories, LLC*

Method *draft EPA 1633*

GEL Job No.

Lab Code: *GEL*

Column: *Gemini 3u C-18*

Instrument: *LCMSMS11*

Curve Type: RF

1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)

.0050060993203	.0044108813604	.0049688509682	.0046866623547	.0049085295648	.0042276370305	.0045028408387	.0047288731825

Ave RF .00468004682752
RSD 6.00503

2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)

.0002936495444	.0003179666514	.0003259294970	.0003527801547	.0003409870218	.0003091041961	.0003030532636	.0003155876511

Ave RF .00031988224751
RSD 9.64392

4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)

.0001214321476	.0001158611756	.0001146933169	.0001125949377	.0001167289440	.0001064963638	.0001104679394	.0001112726527

Ave RF .00011369343473
RSD 5.28331

Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPrA)

.0009823750483	.0009459238461	.0009479569442	.0010097306882	.0010373851268	.0010666081639	.0011334810539	.0012801310562

Ave RF .00105044899096
RSD 10.66175

N-Ethylperfluorooctane sulfonamide (EtFOSAm)

.0046410829372	.0042853159170	.0047691493023	.0050253090876	.0049570881365	.0044607353184	.0047583012053	.0050117950656

Ave RF .00473859712125
RSD 5.62926

N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)

.0021528342140	.0021613264234	.0023020772487	.0024984170627	.0024691082659	.0023065070117	.0023074652256	.0023139367823

Ave RF .00231395902929
RSD 5.35781

N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)

.0005394412006	.0004574718210	.0005052155551	.0005156296315	.0005169945634	.0004855215590	.0005294314185	.0005557625884

Ave RF .00051318354216
RSD 6.03732

N-Methylperfluorooctane sulfonamide (NMeFOSA)

.0047574681304	.0041328393813	.0047214177959	.0047820674058	.0048128109775	.0044809235251	.0046654155025	.0048421396911

Ave RF .00464938530121
RSD 5.1014

N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)

.0005312478178	.0004949005114	.0005469113255	.0005514770470	.0005689497158	.0005375132658	.0005800643655	.0006037595923

Ave RF .00055185295514
RSD 6.00249

PFC Initial Calibration

Lab Name : *GEL Laboratories, LLC*

Method *draft EPA 1633*

GEL Job No.

Lab Code: *GEL*

Column: *Gemini 3u C-18*

Instrument: *LCMSMS11*

Curve Type: RF

Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)

.0051950145875	.0043707275333	.0049960912043	.0049304937238	.0055985560464	.0046802038731	.0040738625678	.0038972609986

Ave RF .00471777631685
RSD 15.99816

Perfluoro-3-methoxypropanoic acid (PFMPA)

.0001694330737	.0001551418665	.0001897931334	.0001823172499	.0002085645172	.0001872338025	.0001933420129	.0002399055669

Ave RF .00019071640287
RSD 8.3381

Perfluoro-4-methoxybutanoic acid (PFMBA)

.0013206323168	.0011688353591	.0011958475589	.0012247120148	.0011650549299	.0012678658772	.0011737181051	.0013048197359

Ave RF .00122768573722
RSD 10.77955

Perfluorobutanoic acid (PFBA)

.0026862230060	.0022927596215	.0024669799133	.0025809805660	.0025895630765	.0024469628487	.0025331608802	.0025680064726

Ave RF .00252057954811
RSD 4.70491

Perfluorodecane sulfonic acid (PFDS)

.0227863602709	.0191503140286	.0203310489892	.0198824345375	.0201570413581	.0187901096021	.0170719050937	.0181699000107

Ave RF .01954238923636
RSD 8.72382

Perfluorodecanoic acid (PFDA)

.0081468244282	.0062408570109	.0065815113161	.0064741073305	.0067223050545	.0063898586947	.0071216535756	.0068216401473

Ave RF .00681234469474
RSD 8.8728

Perfluorododecane sulfonic acid (PFDoS)

.0185611754734	.0165509497877	.0173795639714	.0172318827641	.0181575005770	.0166412179644	.0157161197986	.0166865679402

Ave RF .01711562228462
RSD 5.38433

Perfluorododecanoic acid (PFDOA)

.0068922907641	.0059639299871	.0064614780308	.0064942243891	.0066008982238	.0060986503407	.0062990098787	.0063823108008

Ave RF .00639909905189
RSD 4.52473

Perfluoroheptane sulfonic acid (PFHpS)

.0214731377105	.0205314494401	.0206555310163	.0215088010725	.0214379102246	.0198792443120	.0183561034499	.0184578641580

Ave RF .02028750517299
RSD 6.36174

PFC Initial Calibration

Lab Name : *GEL Laboratories, LLC*

Method *draft EPA 1633*

GEL Job No.

Lab Code: *GEL*

Column: *Gemini 3u C-18*

Instrument: *LCMSMS11*

Curve Type: RF

Perfluoroheptanoic acid (PFHpA)

.0072216384587	.0052544682584	.0070420606367	.0065230536609	.0069790710689	.0061124268746	.0066153202218	.0055764836122

Ave RF .00641556534902
RSD 12.09915

Perfluorohexane sulfonic acid (PFHxS)

.0018036564751	.0014682587485	.0014654907465	.0014777847929	.0016813640075	.0013703798339	.0015354555946	.0015928008093

Ave RF .00154939887603
RSD 8.96105

Perfluorononane sulfonic acid (PFNS)

.0203300242352	.0179358108905	.0184768162547	.0183945146325	.0189125883704	.0175701292198	.0175428593674	.0179907006702

Ave RF .01839418045508
RSD 4.94853

Perfluorooctane sulfonamide (PFOSAm)

.0042737519383	.0035656176902	.0039536600774	.0040096024825	.0039977921677	.0036655166262	.0036107652132	.0036424168656

Ave RF .00383989038264
RSD 6.61791

Perfluorooctanoic acid (PFOA)

.0056132033560	.0052680664749	.0052532629049	.0050171887106	.0052647194034	.0044600838877	.0042464734122	.0040110170971

Ave RF .00489175190583
RSD 11.78409

Perfluoropentanoic acid (PFPeA)

.0019449027634	.0016892115993	.0017740855400	.0018045125680	.0017452175499	.0016382949599	.0016853408440	.0017216260997

Ave RF .00175039899052
RSD 5.82024

Perfluorotetradecanoic acid (PFTDA)

.0096008411371	.0083327581956	.0089123248079	.0096004277499	.0094203588201	.0088846089244	.0089197303010	.0091781469307

Ave RF .00910614960834
RSD 4.75513

Perfluorotridecanoic acid (PFTrDA)

.0093191883194	.0078981672710	.0085450737885	.0089270824371	.0086831667782	.0081010945267	.0080051349969	.0076722856626

Ave RF .00839389922253
RSD 6.75475

Ave RF Notes: Q column used to flag RSD value outside of Limit : (>20%)

* Value Outside of QC Limits

Q column used to flag CC values outside of Limit (<0.995)
* Values outside of QC Limit

Initial Calibration Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 14:48

Data File: PFC091223016.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID: WPFICV

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ISTD

Units: ng/L

Compound	True Value	Result	Recovery	Q
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	5000	3560.945	71.2	
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	5000	3576.814	71.5	
Perfluoropentanesulfonate (PFPeS)	4705	4080.135	86.7	
Perfluorooctanesulfonate (PFOS)	4640	4146.076	89.4	
Perfluorobutanesulfonate (PFBS)	4435	4147.844	93.5	
Perfluoroheptanoic acid (PFHpA)	5000	4225.607	84.5	
Perfluorohexanesulfonate (PFHxS)	4570	4227.961	92.5	
Perfluorononanesulfonate (PFNS)	4810	4309.654	89.6	
Perfluorodecanoic acid (PFDA)	5000	4310.173	86.2	
Perfluorooctanoic acid (PFOA)	5000	4367.843	87.4	
Perfluorodecanesulfonate (PFDS)	4825	4423.963	91.7	
Perfluorononanoic acid (PFNA)	5000	4433.968	88.7	
Perfluoroundecanoic acid (PFUdA)	5000	4489.51	89.8	
Perfluoroheptanesulfonate (PFHpS)	4765	4510.796	94.7	
Perfluorododecanoic acid (PFDoA)	5000	4549.61	91	
Perfluorotridecanoic acid (PFTrDA)	5000	4560.157	91.2	
Perfluorooctanesulfonamide (PFOSA)	5000	4562.389	91.3	
Perfluoro-1-dodecanesulfonate (PFDoS)	4850	4620.106	95.3	
Perfluorohexanoic acid (PFHxA)	5000	4689.976	93.8	
Perfluorotetradecanoic acid (PFTeDA)	5000	4726.471	94.5	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	5000	4788.972	95.8	
N-methylperfluoro-1-octanesulfonamidoacetic acid	5000	4952.419	99.1	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	8900	7089.748	79.7	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10000	7324.234	73.2	
Perfluoro-4-methoxybutanic acid (PFMOBA)	10000	7429.053	74.3	
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	10000	7557.741	75.6	
Perfluoropentanoic acid (PFPeA)	10000	8266.193	82.7	
3-Perfluoropropyl propanoic acid (FPrPA)	20000	15267.013	76.3	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	19200	16461.928	85.7	
Fluorotelomer sulfonate 4:2 (4:2 FTS)	18750	17349.783	92.5	
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	18900	17763.451	94	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	18700	18478.417	98.8	
Perfluorobutyric acid (PFBA)	20000	18544.264	92.7	
Fluorotelomer sulfonate 6:2 (6:2 FTS)	19000	19196.743	101	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	18900	20112.702	106.4	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	20000	21504.67	107.5	

Initial Calibration Summary

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 14:48

Data File: PFC091223016.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID: WPFICV

Method: draft EPA 1633

Compound	True Value	Result	Recovery	Q
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	50000	35874.261	71.8	
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	50000	36053.856	72.1	
3-Perfluoroheptyl propanoic acid (FHpPA)	100000	74017.659	74	
3-Perfluoropentyl propanoic acid (FPePA)	100000	77168.694	77.2	

Recovery criteria is 70%-130%

Continuing Calibration Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 15:04

Data File: PFC091223017.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID: WPFISC

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ISTD

Units: ng/L

Compound	True Value	Result	Recovery	Q
Perfluoroheptanoic acid (PFHpA)	200	142.119	71.1	
Perfluorohexanoic acid (PFHxA)	200	156.894	78.5	
Perfluorobutanesulfonate (PFBS)	177.4	162.284	91.5	
Perfluoropentanesulfonate (PFPeS)	188.2	168.741	89.7	
Perfluorooctanesulfonate (PFOS)	185.6	176.942	95.3	
Perfluorononanesulfonate (PFNS)	192.4	179.087	93.1	
Perfluorononanoic acid (PFNA)	200	180.245	90.1	
Perfluoroundecanoic acid (PFUdA)	200	181.701	90.9	
Perfluorotridecanoic acid (PFTrDA)	200	182.855	91.4	
Perfluorooctanesulfonamide (PFOSA)	200	182.891	91.5	
Perfluorododecanoic acid (PFDoA)	200	186.503	93.3	
Perfluorotetradecanoic acid (PFTeDA)	200	187.158	93.6	
Perfluoro-1-dodecanesulfonate (PFDoS)	194	190.117	98	
Perfluorodecanesulfonate (PFDS)	193	190.804	98.9	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	200	190.823	95.4	
Perfluorodecanoic acid (PFDA)	200	190.999	95.5	
Perfluoroheptanesulfonate (PFHpS)	190.6	191.85	100.7	
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	200	194.817	97.4	
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	200	198.273	99.1	
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	200.559	100.3	
Perfluorohexanesulfonate (PFHxS)	182.8	208.754	114.2	
Perfluorooctanoic acid (PFOA)	200	210.264	105.1	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	400	328.613	82.2	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	356	335.281	94.2	
Perfluoropentanoic acid (PFPeA)	400	342.437	85.6	
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	400	403.308	100.8	
Perfluoro-4-methoxybutanic acid (PFMOBA)	400	455.211	113.8	
Fluorotelomer sulfonate 6:2 (6:2 FTS)	760	609.487	80.2	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	800	641.576	80.2	
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	756	674.866	89.3	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	748	687.173	91.9	
3-Perfluoropropyl propanoic acid (FPrPA)	800	718.124	89.8	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	756	719.079	95.1	
Perfluorobutyric acid (PFBA)	800	736.39	92.1	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	768	762.509	99.3	
Fluorotelomer sulfonate 4:2 (4:2 FTS)	750	931.099	124.2	

Continuing Calibration Summary

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 15:04

Data File: PFC091223017.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID: WPFISC

Method: draft EPA 1633

Compound	True Value	Result	Recovery	Q
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	2000	1904.839	95.2	
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	2000	1949.41	97.5	
3-Perfluoroheptyl propanoic acid (FHpPA)	4000	3431.392	85.8	
3-Perfluoropentyl propanoic acid (FPePA)	4000	3522.292	88.1	

Recovery criteria is 50% - 150%

Initial Calibration Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 09:44

Data File: PFC091223064.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID: WPFDISC

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ISTD

Units: ng/L

Compound	True Value	Result	Recovery	Q
Perfluorohexanesulfonate (PFHxS)	182.8	132.108	72.3	
Perfluoroheptanoic acid (PFHpA)	200	145.091	72.6	
Perfluorobutanesulfonate (PFBS)	177.4	158.742	89.5	
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	163.296	81.7	
Perfluoropentanesulfonate (PFPeS)	188.2	168.307	89.4	
Perfluorohexanoic acid (PFHxA)	200	173.625	86.8	
Perfluorononanoic acid (PFNA)	200	174.642	87.3	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	200	175.512	87.8	
Perfluorotetradecanoic acid (PFTeDA)	200	177.86	88.9	
Perfluorononanesulfonate (PFNS)	192.4	179.061	93.1	
Perfluoroundecanoic acid (PFUdA)	200	182.245	91.1	
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	200	185.359	92.7	
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	200	187.128	93.6	
Perfluorooctanesulfonamide (PFOSA)	200	188.624	94.3	
Perfluorododecanoic acid (PFDoA)	200	190.757	95.4	
Perfluoro-1-dodecanesulfonate (PFDoS)	194	190.923	98.4	
Perfluorotridecanoic acid (PFTrDA)	200	191.114	95.6	
Perfluorooctanesulfonate (PFOS)	185.6	192.184	103.6	
Perfluorodecanoic acid (PFDA)	200	196.163	98.1	
Perfluoroheptanesulfonate (PFHpS)	190.6	199.997	104.9	
Perfluorodecanesulfonate (PFDS)	193	205.395	106.4	
Perfluorooctanoic acid (PFOA)	200	210.189	105.1	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	356	322.157	90.5	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	400	322.501	80.6	
Perfluoropentanoic acid (PFPeA)	400	372.476	93.1	
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	400	372.8	93.2	
Perfluoro-4-methoxybutanic acid (PFMOBA)	400	426.307	106.6	
Fluorotelomer sulfonate 4:2 (4:2 FTS)	750	503.269	67.1	
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	756	657.316	87	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	748	664.989	88.9	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	756	677.59	89.6	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	768	708.523	92.3	
Fluorotelomer sulfonate 6:2 (6:2 FTS)	760	715.212	94.1	
3-Perfluoropropyl propanoic acid (FPrPA)	800	720.679	90.1	
Perfluorobutyric acid (PFBA)	800	722.491	90.3	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	800	759.893	95	

Initial Calibration Summary

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 09:44

Data File: PFC091223064.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID: WPFDISC

Method: draft EPA 1633

Compound	True Value	Result	Recovery	Q
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	2000	1739.328	87	
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	2000	1820.358	91	
3-Perfluoroheptyl propanoic acid (FHpPA)	4000	3437.287	85.9	
3-Perfluoropentyl propanoic acid (FPePA)	4000	3533.634	88.3	

Recovery criteria is 50% - 150%

Continuing Calibration Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 10:48

Data File: PFC091223068.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID: WPFCCV

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ISTD

Units: ng/L

Compound	True Value	Result	Recovery	Q
Perfluoroundecanoic acid (PFUdA)	2500	2253.316	90.1	
Perfluoropentanesulfonate (PFPeS)	2352.5	2376.704	101	
Perfluorodecanoic acid (PFDA)	2500	2393.466	95.7	
Perfluorononanoic acid (PFNA)	2500	2434.137	97.4	
Perfluorohexanesulfonate (PFHxS)	2285	2448.024	107.1	
Perfluoroheptanoic acid (PFHpA)	2500	2448.407	97.9	
Perfluorobutanesulfonate (PFBS)	2217.5	2450.492	110.5	
Perfluorooctanoic acid (PFOA)	2500	2469.715	98.8	
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	2500	2490.996	99.6	
N-methylperfluoro-1-octanesulfonamidoacetic acid	2500	2504.61	100.2	
Perfluorododecanoic acid (PFDoA)	2500	2535.113	101.4	
Perfluorooctanesulfonate (PFOS)	2320	2567.496	110.7	
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	2500	2569.605	102.8	
Perfluorooctanesulfonamide (PFOSA)	2500	2590.939	103.6	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	2500	2692.862	107.7	
Perfluorotetradecanoic acid (PFTeDA)	2500	2701.877	108.1	
Perfluorotridecanoic acid (PFTrDA)	2500	2727.817	109.1	
Perfluorononanesulfonate (PFNS)	2405	2768.211	115.1	
Perfluorohexanoic acid (PFHxA)	2500	2794.593	111.8	
Perfluoro-1-dodecanesulfonate (PFDoS)	2425	2815.431	116.1	
Perfluoroheptanesulfonate (PFHpS)	2382.5	2833.496	118.9	
Perfluorodecanesulfonate (PFDS)	2412.5	2836.957	117.6	
Perfluoropentanoic acid (PFPeA)	5000	4460.736	89.2	
Perfluoro-4-methoxybutanic acid (PFMOBA)	5000	4688.82	93.8	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	4450	4851.194	109	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	5000	5093.384	101.9	
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	5000	5128.064	102.6	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	9600	8105.131	84.4	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	9350	8799.823	94.1	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	9450	9533.913	100.9	
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	9450	9553.417	101.1	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	10000	9797.629	98	
Fluorotelomer sulfonate 6:2 (6:2 FTS)	9500	10156.225	106.9	
3-Perfluoropropyl propanoic acid (FPrPA)	10000	10338.65	103.4	
Perfluorobutyric acid (PFBA)	10000	10504.594	105.1	
Fluorotelomer sulfonate 4:2 (4:2 FTS)	9375	10884.876	116.1	

Continuing Calibration Summary

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 10:48

Data File: PFC091223068.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID: WPFCCV

Method: draft EPA 1633

Compound	True Value	Result	Recovery	Q
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	25000	24995.659	100	
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	25000	25723.453	102.9	
3-Perfluoroheptyl propanoic acid (FHpPA)	50000	51591.93	103.2	
3-Perfluoropentyl propanoic acid (FPePA)	50000	55293.792	110.6	

Recovery criteria is 70%-130%

Continuing Calibration Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 14:32

Data File: PFC091223082.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID: WPFCCV

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ISTD

Units: ng/L

Compound	True Value	Result	Recovery	Q
Perfluorobutanesulfonate (PFBS)	2217.5	1886.404	85.1	
Perfluorooctanesulfonate (PFOS)	2320	2160.668	93.1	
Perfluoroheptanesulfonate (PFHpS)	2382.5	2161.313	90.7	
Perfluorodecanesulfonate (PFDS)	2412.5	2161.724	89.6	
Perfluorononanesulfonate (PFNS)	2405	2259.006	93.9	
Perfluorooctanoic acid (PFOA)	2500	2271.647	90.9	
Perfluorohexanesulfonate (PFHxS)	2285	2274.058	99.5	
Perfluoroundecanoic acid (PFUdA)	2500	2277.404	91.1	
Perfluorooctanesulfonamide (PFOSA)	2500	2340.339	93.6	
Perfluorotridecanoic acid (PFTrDA)	2500	2410.397	96.4	
Perfluorodecanoic acid (PFDA)	2500	2413.551	96.5	
Perfluoroheptanoic acid (PFHpA)	2500	2440.497	97.6	
Perfluorododecanoic acid (PFDoA)	2500	2465.676	98.6	
Perfluorononanoic acid (PFNA)	2500	2479.056	99.2	
Perfluorohexanoic acid (PFHxA)	2500	2535.439	101.4	
Perfluorotetradecanoic acid (PFTeDA)	2500	2588.857	103.6	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	2500	2656.003	106.2	
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	2500	2656.793	106.3	
Perfluoro-1-dodecanesulfonate (PFDoS)	2425	2667.044	110	
N-methylperfluoro-1-octanesulfonamidoacetic acid	2500	2746.29	109.9	
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	2500	2768.177	110.7	
Perfluoropentanesulfonate (PFPeS)	2352.5	3749.803	159.4	*
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	4450	4546.232	102.2	
Perfluoropentanoic acid (PFPeA)	5000	4683.54	93.7	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	5000	4754.709	95.1	
Perfluoro-4-methoxybutanic acid (PFMOBA)	5000	5012.979	100.3	
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	5000	5333.184	106.7	
Fluorotelomer sulfonate 4:2 (4:2 FTS)	9375	7563.796	80.7	
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	9450	8931.67	94.5	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	9600	9268.944	96.6	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	10000	10004.816	100.1	
Fluorotelomer sulfonate 6:2 (6:2 FTS)	9500	10019.227	105.5	
3-Perfluoropropyl propanoic acid (FPrPA)	10000	10579.266	105.8	
Perfluorobutyric acid (PFBA)	10000	10822.029	108.2	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	9350	10974.507	117.4	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	9450	12767.392	135.1	*

Continuing Calibration Summary

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 14:32

Data File: PFC091223082.wiff

Init. Cal. Date(s): 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID: WPFCCV

Method: draft EPA 1633

Compound	True Value	Result	Recovery	Q
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	25000	25395.125	101.6	
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	25000	25883.662	103.5	
3-Perfluoroheptyl propanoic acid (FHpPA)	50000	50724.009	101.5	
3-Perfluoropentyl propanoic acid (FPePA)	50000	55712.224	111.4	

Recovery criteria is 70%-130%

Quality Control Data

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**			**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514626**				
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**MB for batch 2491241**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 11:20**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.07 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223070.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	0.935	ng/g	0.312	0.935
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	0.935	ng/g	0.312	0.935
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)	U	3.50	ng/g	1.17	3.50
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)	U	3.55	ng/g	1.18	3.55
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)	U	3.59	ng/g	1.20	3.59
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	0.829	ng/g	0.276	0.829
375-22-4	Perfluorobutanoic acid (PFBA)	U	3.74	ng/g	1.25	3.74
335-77-3	Perfluorodecane sulfonic acid (PFDS)	U	0.902	ng/g	0.301	0.902
335-76-2	Perfluorodecanoic acid (PFDA)	U	0.935	ng/g	0.312	0.935
307-55-1	Perfluorododecanoic acid (PFDOA)	U	0.935	ng/g	0.312	0.935
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)	U	0.891	ng/g	0.297	0.891
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	0.935	ng/g	0.312	0.935
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	0.854	ng/g	0.285	0.854
307-24-4	Perfluorohexanoic acid (PFHxA)	U	0.935	ng/g	0.312	0.935
68259-12-1	Perfluorononane sulfonic acid (PFNS)	U	0.899	ng/g	0.299	0.899
375-95-1	Perfluorononanoic acid (PFNA)	U	0.935	ng/g	0.312	0.935
754-91-6	Perfluorooctane sulfonamide (PFOSAm)	U	0.935	ng/g	0.312	0.935
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	U	0.867	ng/g	0.289	0.867
335-67-1	Perfluorooctanoic acid (PFOA)	U	0.935	ng/g	0.312	0.935
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)	U	0.879	ng/g	0.293	0.879
2706-90-3	Perfluoropentanoic acid (PFPeA)	U	1.87	ng/g	0.623	1.87
376-06-7	Perfluorotetradecanoic acid (PFTDA)	U	0.935	ng/g	0.312	0.935
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	0.935	ng/g	0.312	0.935
2058-94-8	Perfluoroundecanoic acid (PFUnDA)	U	0.935	ng/g	0.312	0.935
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr	U	3.74	ng/g	1.25	3.74
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)	U	1.87	ng/g	0.623	1.87
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	U	3.53	ng/g	1.18	3.53
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)	U	0.935	ng/g	0.312	0.935
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)	U	9.35	ng/g	3.12	9.35
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)	U	0.935	ng/g	0.312	0.935
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)	U	9.35	ng/g	3.12	9.35
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O	U	3.50	ng/g	1.17	3.50
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3	U	3.53	ng/g	1.18	3.53
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)	U	0.907	ng/g	0.302	0.907
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)	U	3.74	ng/g	1.25	3.74
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)	U	18.7	ng/g	0.623	18.7
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)	U	18.7	ng/g	6.23	18.7
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	U	1.66	ng/g	0.555	1.66

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**			**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514626**				
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**MB for batch 2491241**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 11:20**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.07 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223070.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	U	1.87	ng/g	0.623	1.87
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)	U	1.87	ng/g	0.623	1.87

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**			**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514628**				
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**LCS for batch 2491241**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 11:52**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.06 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223072.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		10.9	ng/g	0.314	0.943
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		10.3	ng/g	0.314	0.943
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)		23.9	ng/g	1.18	3.54
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)		34.5	ng/g	1.19	3.58
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)		43.8	ng/g	1.21	3.62
375-73-5	Perfluorobutane sulfonic acid (PFBS)		6.63	ng/g	0.279	0.837
375-22-4	Perfluorobutanoic acid (PFBA)		42.8	ng/g	1.26	3.77
335-77-3	Perfluorodecane sulfonic acid (PFDS)		9.32	ng/g	0.303	0.910
335-76-2	Perfluorodecanoic acid (PFDA)		10.4	ng/g	0.314	0.943
307-55-1	Perfluorododecanoic acid (PFDOA)		10.8	ng/g	0.314	0.943
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)		9.41	ng/g	0.300	0.899
375-85-9	Perfluoroheptanoic acid (PFHpA)		8.67	ng/g	0.314	0.943
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		10.7	ng/g	0.287	0.862
307-24-4	Perfluorohexanoic acid (PFHxA)		12.8	ng/g	0.314	0.943
68259-12-1	Perfluorononane sulfonic acid (PFNS)		10.7	ng/g	0.302	0.908
375-95-1	Perfluorononanoic acid (PFNA)		9.96	ng/g	0.314	0.943
754-91-6	Perfluorooctane sulfonamide (PFOSAm)		9.59	ng/g	0.314	0.943
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		10.3	ng/g	0.292	0.875
335-67-1	Perfluorooctanoic acid (PFOA)		8.83	ng/g	0.314	0.943
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)		11.7	ng/g	0.296	0.888
2706-90-3	Perfluoropentanoic acid (PFPeA)		17.2	ng/g	0.629	1.89
376-06-7	Perfluorotetradecanoic acid (PFTDA)		10.7	ng/g	0.314	0.943
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		8.07	ng/g	0.314	0.943
2058-94-8	Perfluoroundecanoic acid (PFUnDA)		10.7	ng/g	0.314	0.943
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr		52.0	ng/g	1.26	3.77
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)		18.5	ng/g	0.629	1.89
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)		65.1	ng/g	1.19	3.57
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)		9.52	ng/g	0.314	0.943
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)		94.1	ng/g	3.14	9.43
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)		9.85	ng/g	0.314	0.943
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)		88.8	ng/g	3.14	9.43
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O		85.9	ng/g	1.18	3.53
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3		86.5	ng/g	1.19	3.57
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)		10.2	ng/g	0.305	0.915
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)		36.4	ng/g	1.26	3.77
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)		683	ng/g	0.629	18.9
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)		428	ng/g	6.29	18.9
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)		26.8	ng/g	0.560	1.68

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**			**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514628**				
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**LCS for batch 2491241**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 11:52**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.06 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223072.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		11.6	ng/g	0.629	1.89
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)		12.3	ng/g	0.629	1.89

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**			**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514630**				
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**LCS for batch 2491241**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 12:24**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.09 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223074.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	J	0.563	ng/g	0.306	0.917
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	J	0.706	ng/g	0.306	0.917
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)	U	3.44	ng/g	1.15	3.44
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)	J	2.55	ng/g	1.16	3.49
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)	J	2.19	ng/g	1.17	3.52
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	0.814	ng/g	0.271	0.814
375-22-4	Perfluorobutanoic acid (PFBA)	J	2.51	ng/g	1.22	3.67
335-77-3	Perfluorodecane sulfonic acid (PFDS)	J	0.494	ng/g	0.295	0.885
335-76-2	Perfluorodecanoic acid (PFDA)	J	0.646	ng/g	0.306	0.917
307-55-1	Perfluorododecanoic acid (PFDOA)	J	0.629	ng/g	0.306	0.917
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)	J	0.442	ng/g	0.291	0.874
375-85-9	Perfluoroheptanoic acid (PFHpA)	J	0.503	ng/g	0.306	0.917
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	J	0.591	ng/g	0.279	0.839
307-24-4	Perfluorohexanoic acid (PFHxA)	J	0.811	ng/g	0.306	0.917
68259-12-1	Perfluorononane sulfonic acid (PFNS)	J	0.592	ng/g	0.294	0.883
375-95-1	Perfluorononanoic acid (PFNA)	J	0.657	ng/g	0.306	0.917
754-91-6	Perfluorooctane sulfonamide (PFOSAm)	J	0.545	ng/g	0.306	0.917
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	J	0.688	ng/g	0.284	0.851
335-67-1	Perfluorooctanoic acid (PFOA)	J	0.646	ng/g	0.306	0.917
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)		0.882	ng/g	0.288	0.863
2706-90-3	Perfluoropentanoic acid (PFPeA)	J	1.09	ng/g	0.611	1.83
376-06-7	Perfluorotetradecanoic acid (PFTDA)	J	0.605	ng/g	0.306	0.917
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	J	0.526	ng/g	0.306	0.917
2058-94-8	Perfluoroundecanoic acid (PFUnDA)	J	0.782	ng/g	0.306	0.917
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr	J	2.87	ng/g	1.22	3.67
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)	J	1.10	ng/g	0.612	1.83
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)		4.18	ng/g	1.16	3.47
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)	J	0.642	ng/g	0.306	0.917
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)	J	5.82	ng/g	3.06	9.17
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)	J	0.585	ng/g	0.306	0.917
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)	J	5.52	ng/g	3.06	9.17
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O		5.27	ng/g	1.14	3.43
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3		4.88	ng/g	1.16	3.47
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)	J	0.484	ng/g	0.297	0.890
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)	J	2.39	ng/g	1.22	3.67
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)		43.1	ng/g	0.612	18.3
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)		23.8	ng/g	6.12	18.3
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	J	1.49	ng/g	0.544	1.63

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**			**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514630**				
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**LCS for batch 2491241**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 12:24**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.09 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223074.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	J	0.621	ng/g	0.612	1.83
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)	J	0.717	ng/g	0.612	1.83

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514632**	**Date Received:**	**08/22/2023 09:05**		
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #1MS**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 13:12**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.05 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223077.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		11.2	ng/g	0.317	0.952
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		10.4	ng/g	0.317	0.952
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)		24.4	ng/g	1.19	3.57
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)		32.8	ng/g	1.21	3.62
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)		41.7	ng/g	1.22	3.66
375-73-5	Perfluorobutane sulfonic acid (PFBS)		6.49	ng/g	0.282	0.845
375-22-4	Perfluorobutanoic acid (PFBA)		45.7	ng/g	1.27	3.81
335-77-3	Perfluorodecane sulfonic acid (PFDS)		8.41	ng/g	0.306	0.919
335-76-2	Perfluorodecanoic acid (PFDA)		10.2	ng/g	0.317	0.952
307-55-1	Perfluorododecanoic acid (PFDOA)		10.4	ng/g	0.317	0.952
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)		8.57	ng/g	0.303	0.908
375-85-9	Perfluoroheptanoic acid (PFHpA)		10.2	ng/g	0.317	0.952
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		9.30	ng/g	0.290	0.870
307-24-4	Perfluorohexanoic acid (PFHxA)		9.18	ng/g	0.317	0.952
68259-12-1	Perfluorononane sulfonic acid (PFNS)		10.8	ng/g	0.305	0.916
375-95-1	Perfluorononanoic acid (PFNA)		9.31	ng/g	0.317	0.952
754-91-6	Perfluorooctane sulfonamide (PFOSAm)		9.94	ng/g	0.317	0.952
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		10.0	ng/g	0.295	0.884
335-67-1	Perfluorooctanoic acid (PFOA)		9.59	ng/g	0.317	0.952
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)		13.5	ng/g	0.299	0.896
2706-90-3	Perfluoropentanoic acid (PFPeA)		19.0	ng/g	0.635	1.90
376-06-7	Perfluorotetradecanoic acid (PFTDA)		10.7	ng/g	0.317	0.952
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		23.2	ng/g	0.317	0.952
2058-94-8	Perfluoroundecanoic acid (PFUnDA)		10.3	ng/g	0.317	0.952
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr		47.2	ng/g	1.27	3.81
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)		17.1	ng/g	0.635	1.90
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)		47.5	ng/g	1.20	3.60
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)		10.7	ng/g	0.317	0.952
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)		77.1	ng/g	3.17	9.52
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)		8.22	ng/g	0.317	0.952
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)		107	ng/g	3.17	9.52
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O		62.9	ng/g	1.19	3.56
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3		64.7	ng/g	1.20	3.60
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)		3.95	ng/g	0.308	0.924
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)		29.9	ng/g	1.27	3.81
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)		294	ng/g	0.635	19.0
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)		236	ng/g	6.35	19.0
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)		15.8	ng/g	0.565	1.70

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514632**	**Date Received:**	**08/22/2023 09:05**		
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #1MS**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 13:12**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.05 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223077.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		12.7	ng/g	0.635	1.90
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)		11.4	ng/g	0.635	1.90

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514633**	**Date Received:**	**08/22/2023 09:05**		
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #1MSD**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 13:28**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.06 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223078.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		10.7	ng/g	0.314	0.943
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		10.5	ng/g	0.314	0.943
757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2 FTS)		25.6	ng/g	1.18	3.54
27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS)		40.2	ng/g	1.19	3.58
39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2 FTS)		39.3	ng/g	1.21	3.62
375-73-5	Perfluorobutane sulfonic acid (PFBS)		5.87	ng/g	0.279	0.837
375-22-4	Perfluorobutanoic acid (PFBA)		43.7	ng/g	1.26	3.77
335-77-3	Perfluorodecane sulfonic acid (PFDS)		8.55	ng/g	0.303	0.910
335-76-2	Perfluorodecanoic acid (PFDA)		10.3	ng/g	0.314	0.943
307-55-1	Perfluorododecanoic acid (PFDOA)		10.1	ng/g	0.314	0.943
375-92-8	Perfluoroheptane sulfonic acid (PFHpS)		8.37	ng/g	0.300	0.899
375-85-9	Perfluoroheptanoic acid (PFHpA)		9.12	ng/g	0.314	0.943
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		9.03	ng/g	0.287	0.862
307-24-4	Perfluorohexanoic acid (PFHxA)		10.9	ng/g	0.314	0.943
68259-12-1	Perfluorononane sulfonic acid (PFNS)		10.9	ng/g	0.302	0.908
375-95-1	Perfluorononanoic acid (PFNA)		10.0	ng/g	0.314	0.943
754-91-6	Perfluorooctane sulfonamide (PFOSAm)		9.79	ng/g	0.314	0.943
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		10.0	ng/g	0.292	0.875
335-67-1	Perfluorooctanoic acid (PFOA)		8.82	ng/g	0.314	0.943
2706-91-4	Perfluoropentane sulfonic acid (PFPeS)		12.3	ng/g	0.296	0.888
2706-90-3	Perfluoropentanoic acid (PFPeA)		17.0	ng/g	0.629	1.89
376-06-7	Perfluorotetradecanoic acid (PFTDA)		10.2	ng/g	0.314	0.943
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		23.7	ng/g	0.314	0.943
2058-94-8	Perfluoroundecanoic acid (PFUnDA)		10.5	ng/g	0.314	0.943
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-X)(PFPrOPr		48.7	ng/g	1.26	3.77
377-73-1	Perfluoro-3-methoxypropanoic acid (PFMPA)		16.2	ng/g	0.629	1.89
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (DONA)		53.7	ng/g	1.19	3.57
4151-50-2	N-Ethylperfluorooctane sulfonamide (EtFOSAm)		10.3	ng/g	0.314	0.943
24448-09-7	N-Methylperfluorooctane sulfonamido ethanol (NMeFOSE)		77.1	ng/g	3.14	9.43
31506-32-8	N-Methylperfluorooctane sulfonamide (NMeFOSA)		8.23	ng/g	0.314	0.943
1691-99-2	N-Ethylperfluorooctane sulfonamido ethanol (NEtFOSE)		108	ng/g	3.14	9.43
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3O		65.7	ng/g	1.18	3.53
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3		69.9	ng/g	1.19	3.57
79780-39-5	Perfluorododecane sulfonic acid (PFDoS)		4.14	ng/g	0.305	0.915
356-02-5	4,4,5,5,6,6-Heptafluorohexanoic acid (3:3 FTCA)(FPrPA)		30.9	ng/g	1.26	3.77
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)(FPePA)		337	ng/g	0.629	18.9
812-70-4	2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)(FHpPA)		263	ng/g	6.29	18.9
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)		16.8	ng/g	0.560	1.68

LC-MS/MS
Certificate of Analysis
Sample Summary

SDG Number:	**634200**	**Date Collected:**	**08/04/2023 10:00**	**Matrix:**	**TISSUE**
Lab Sample ID:	**1205514633**	**Date Received:**	**08/22/2023 09:05**		
Client Sample:	**QC for batch 2491241**	**Client:**	**FWSE001**	**Project:**	**FWSE00100**
Client ID:	**EL23-2833-MEAT #1MSD**	**Method:**	**draft EPA 1633**	**SOP Ref:**	**GL-OA-E-076D**
Batch ID:	**2491242**	**Inst:**	**LCMSMS11**	**Dilution:**	**1**
Run Date:	**09/14/2023 13:28**	**Analyst:**	**RR3**		
Prep Date:	**09/12/2023 19:17**	**Aliquot:**	**1.06 g**	**Final Volume:**	**5 mL**
Data File:	**PFC091223078.wiff**	**Column:**	**Gemini 3u C-18**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		14.6	ng/g	0.629	1.89
863090-89-5	Perfluoro-4-methoxybutanoic acid (PFMBA)		10.4	ng/g	0.629	1.89

Initial Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 11:04

Data File: PFC091223002.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID ICB01

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD **Units:** ng/L

Compound	True Value	Result
Perfluorodecanoic acid (PFDA)	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
Perfluorobutyric acid (PFBA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorooctanesulfonamide (PFOSA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0
Perfluorodecanesulfonate (PFDS)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0
Perfluorononanesulfonate (PFNS)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0

Initial Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 11:04

Data File: PFC091223002.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID ICB01

Method: draft EPA 1633

Compound	True Value	Result
Perfluorotridecanoic acid (PFTrDA)	0	0
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0
3-Perfluoropentyl propanoic acid (FPePA)	0	0
Perfluorododecanoic acid (PFDoA)	0	0

Continuing Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 13:44

Data File: PFC091223012.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID CCB01

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD **Units:** ng/L

Compound	True Value	Result
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0
Perfluorobutyric acid (PFBA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	748.887
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
Perfluorodecanesulfonate (PFDS)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorooctanesulfonamide (PFOSA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	58.556
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	806.189
3-Perfluoropentyl propanoic acid (FPePA)	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorodecanoic acid (PFDA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 13:44

Data File: PFC091223012.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID CCB01

Method: draft EPA 1633

Compound	True Value	Result
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0
Perfluorononanesulfonate (PFNS)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
Perfluorooctanesulfonate (PFOS)	0	0

Continuing Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 14:16

Data File: PFC091223014.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID CCB01

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD **Units:** ng/L

Compound	True Value	Result
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	0
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0
Perfluorodecanesulfonate (PFDS)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorononanesulfonate (PFNS)	0	0
Perfluorooctanesulfonamide (PFOSA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
3-Perfluoropentyl propanoic acid (FPePA)	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 14:16

Data File: PFC091223014.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID CCB01

Method: draft EPA 1633

Compound	True Value	Result
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorobutyric acid (PFBA)	0	0

Continuing Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 15:20

Data File: PFC091223018.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID CCB02

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD

Units: ng/L

Compound	True Value	Result
Perfluorononanesulfonate (PFNS)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorononanoic acid (PFNA)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
3-Perfluoropentyl propanoic acid (FPePA)	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutyric acid (PFBA)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0
Perfluorodecanesulfonate (PFDS)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluorooctanesulfonamide (PFOSA)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 12-SEP-23 15:20

Data File: PFC091223018.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID CCB02

Method: draft EPA 1633

Compound	True Value	Result
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0

Continuing Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 08:56

Data File: PFC091223061.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID CCB03

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD

Units: ng/L

Compound	True Value	Result
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
Perfluorobutyric acid (PFBA)	0	0
Perfluorodecanesulfonate (PFDS)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluorooctanesulfonamide (PFOSA)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
3-Perfluoropentyl propanoic acid (FPePA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	0
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 08:56

Data File: PFC091223061.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID CCB03

Method: draft EPA 1633

Compound	True Value	Result
Perfluorononanesulfonate (PFNS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0

Continuing Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 09:28

Data File: PFC091223063.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID CCB04

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD **Units:** ng/L

Compound	True Value	Result
Perfluorooctanoic acid (PFOA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0
3-Perfluoropentyl propanoic acid (FPePA)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
Perfluorobutyric acid (PFBA)	0	0
Perfluorodecanesulfonate (PFDS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanesulfonate (PFNS)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	0
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 09:28

Data File: PFC091223063.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID CCB04

Method: draft EPA 1633

Compound	True Value	Result
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorooctanesulfonamide (PFOSA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0

Continuing Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 11:04

Data File: PFC091223069.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID CCB05

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD **Units:** ng/L

Compound	True Value	Result
Perfluorodecanesulfonate (PFDS)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorobutyric acid (PFBA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanesulfonate (PFNS)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
Perfluorobutanesulfonate (PFBS)	0	0
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	0
3-Perfluoropentyl propanoic acid (FPePA)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorooctanesulfonamide (PFOSA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 11:04

Data File: PFC091223069.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID CCB05

Method: draft EPA 1633

Compound	True Value	Result
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0

Continuing Calibration Blank Summary

Client SDG: 634200

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 14:48

Data File: PFC091223083.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 - 12-SEP-23 13:28

Lab Sample ID CCB06

Method: draft EPA 1633

Column ID: Gemini 3u C-18

Quant Type: ESTD **Units:** ng/L

Compound	True Value	Result
Fluorotelomer sulfonate 4:2 (4:2 FTS)	0	0
3-Perfluoropentyl propanoic acid (FPePA)	0	0
Perfluoropentanoic acid (PFPeA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
3-Perfluoroheptyl propanoic acid (FHpPA)	0	0
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0	0
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	0	0
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	0	0
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0	0
Fluorotelomer sulfonate 6:2 (6:2 FTS)	0	0
Perfluoroheptanesulfonate (PFHpS)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorononanesulfonate (PFNS)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Fluorotelomer sulfonate 8:2 (8:2 FTS)	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluoro-4-methoxybutanic acid (PFMOBA)	0	0
Perfluorobutyric acid (PFBA)	0	0
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	0	0
Perfluoro-1-dodecanesulfonate (PFDoS)	0	0
3-Perfluoropropyl propanoic acid (FPrPA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluoropentanesulfonate (PFPeS)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	0	0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
Perfluorododecanoic acid (PFDoA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS11

Injection Date: 14-SEP-23 14:48

Data File: PFC091223083.wiff

Init. Cal. Date(s) 12-SEP-23 11:20 12-SEP-23 13:28

Lab Sample ID CCB06

Method: draft EPA 1633

Compound	True Value	Result
Perfluorooctanesulfonamide (PFOSA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0
Perfluorodecanesulfonate (PFDS)	0	0

Miscellaneous

Prep Logbook

The Extraction and Analysis of Per- and Polyfluoroalkyl Substances Using LCMSMS

Batch ID: **2491238**
Analyst:
Method: GEL Prep Method
Lab SOP: GL-OA-E-076 REV# 14
Instrument:

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units

Reagent/Solvent Lot ID	Description	Amount

Comments:

Prep Logbook

Extraction and Analysis of Per- and Polyfluoroalkyl (PFAS) Substances using LCMSMS by Method 1633

Batch ID: 2491241 **Verified by:** _____
Analyst: Brooke Potgieter
Method: draft EPA 1633

Lab SOP: GL-OA-E-076D REV# 1
Instrument: LCMSMSBAL-001

Sample ID	Prep Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1205514626 MB	12-SEP-2023 19:17:00	1.07	5	4.6729
1205514627 MB	12-SEP-2023 19:17:00	1.08	5	4.62963
1205514628 LCS	12-SEP-2023 19:17:00	1.06	5	4.71698
1205514629 LCS	12-SEP-2023 19:17:00	1.05	5	4.7619
1205514630 LCS	12-SEP-2023 19:17:00	1.09	5	4.58716
1205514631 LCS	12-SEP-2023 19:17:00	1.03	5	4.85437
634200001	12-SEP-2023 19:17:00	1.09	5	4.58716
1205514632 MS (634200001)	12-SEP-2023 19:17:00	1.05	5	4.7619
1205514633 MSD (634200001)	12-SEP-2023 19:17:00	1.06	5	4.71698
634200002	12-SEP-2023 19:17:00	1.19	5	4.20168
634200003	12-SEP-2023 19:17:00	0.14	5	35.71429
634200004	12-SEP-2023 19:17:00	0.16	5	31.25

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1205514628	PFAS 1633 STD	IPF230911-01	.2	mL
LCS	1205514629	PFAS 1633 STD	IPF230911-01	.2	mL
LCS	1205514630	PFAS 1633 MDL Spike	IPF230823-04	.128	mL
LCS	1205514631	PFAS 1633 MDL Spike	IPF230823-04	.128	mL
MS	1205514632	PFAS 1633 STD	IPF230911-01	.2	mL
MSD	1205514633	PFAS 1633 STD	IPF230911-01	.2	mL
RGNT	All	Tissue Blank (fish) PFAS	UPF220202-01	1	g
RGNT	All	Tissue Blank (fish) PFAS	UPF3967910-01	1	g
SURR	All	EPA 1633 ES	IPF230829-02	.05	mL
SURR	All	EPA 1633 IS	IPF230829-06	.05	mL
REGNT	All	Water, Screened PFAS-Free	3943180	56	mL
REGNT	All	H-Acetic Acid	3948401	25	uL
REGNT	All	1:1 Formic Acid in Methanol	3960056	5	mL
REGNT	All	ENVI Carb bulk	3960870	.01	g
REGNT	All	EPA1633 - Methanolic kOH (0.05M)	3961303	15	mL
REGNT	All	Methanolic NH4OH (1%)	3963674	20	mL
REGNT	All	0.3M Formic Acid in H2O	3963677	5	mL
REGNT	All	ACN Optima LC/MS Grade 4L	3967019	10	mL

Comments:

Vial Lot: 3941664
Strata: 3961982
Falcon Tube Lot: 3942968
Reservior SPE tubes: 3963288
Balance: LCMSMSBAL-001
Tissue screen sample IDs: MB-1205514627 / LCS-1205514629 / LLLCS-1205514631
Serial# UPF396791010-01

GEL ORGANIC RUN LOG

INSTRUMENT ID: lcmsms11

Date: 9/12/2023
Extr. Injection Volume: 5uL
Sequence Number: 09122023
Initial Calibration Date(s): 9/12/2023

Method: EPA 1633
Int. Std.
Mobile Phase Lot#: 3960461
Acetonitrile Lot#: 222720
Instrument Cal 7/26/2023

SOP: GL-OA-E-076D Rev.0

DataFile	Sample	Analyst	Injection Date	Batch	SDG	Dilution	Client	Comments	QC Flag	REFMAT
PFC091223001.wiff	PFCIBLK	RR3	9/12/2023 10:48			1			B	
PFC091223002.wiff	PFCIBLK01	RR3	9/12/2023 11:04			1			B	
PFC091223003.wiff	WPFICAL-01	RR3	9/12/2023 11:20			1			I	WPF230911-01
PFC091223004.wiff	WPFICAL-02	RR3	9/12/2023 11:36			1			I	WPF230911-02
PFC091223005.wiff	WPFICAL-03	RR3	9/12/2023 11:52			1			I	WPF230911-03
PFC091223006.wiff	WPF230911-02-DUSE	RR3	9/12/2023 12:08			1			I	
PFC091223007.wiff	WPFICAL-04	RR3	9/12/2023 12:24			1			I	WPF230911-04
PFC091223008.wiff	WPFICAL-05	RR3	9/12/2023 12:40			1			I	WPF230911-05
PFC091223009.wiff	WPFICAL-06	RR3	9/12/2023 12:56			1			I	WPF230911-06
PFC091223010.wiff	WPFICAL-07	RR3	9/12/2023 13:12			1			I	WPF230911-07
PFC091223011.wiff	WPFICAL-08	RR3	9/12/2023 13:28			1			I	WPF230911-08
PFC091223012.wiff	PFCIBLK02	RR3	9/12/2023 13:44			1			B	
PFC091223013.wiff	WPFISOM	RR3	9/12/2023 14:00			1			L	
PFC091223014.wiff	PFCIBLK	RR3	9/12/2023 14:16			1			B	
PFC091223015.wiff	WPFISC-DUSE	RR3	9/12/2023 14:32			1			C	
PFC091223016.wiff	WPFICV	RR3	9/12/2023 14:48			1			C	WPF230911-09
PFC091223017.wiff	WPFISC	RR3	9/12/2023 15:04			1			C	WPF230829-02
PFC091223018.wiff	PFCIBLK	RR3	9/12/2023 15:20			1			B	
PFC091223019.wiff	PFCIBLK	RR3	9/13/2023 08:32			1			B	
PFC091223020.wiff	WPFISOM	RR3	9/13/2023 08:49			1			L	
PFC091223021.wiff	PFCIBLK	RR3	9/13/2023 09:05			1			B	
PFC091223022.wiff	WPFDISC	RR3	9/13/2023 09:21			1			C	WPF230911-02
PFC091223023.wiff	WPFCCV	RR3	9/13/2023 10:14			1			C	WPF230911-05
PFC091223024.wiff	PFCIBLK	RR3	9/13/2023 10:30			1			B	
PFC091223025.wiff	1205513623	RR3	9/13/2023 10:46	2490550	VARIOUS	1	MB		L	
PFC091223026.wiff	1205513624	RR3	9/13/2023 11:02	2490550	VARIOUS	1	LCS		L	
PFC091223027.wiff	1205513625	RR3	9/13/2023 11:18	2490550	VARIOUS	1	LCS		L	
PFC091223028.wiff	1205513626	RR3	9/13/2023 11:34	2490550	VARIOUS	1	LCSD		L	
PFC091223029.wiff	633879010	RR3	9/13/2023 11:50	2490550	45485	1	BRKL		L	
PFC091223030.wiff	PFCIBLK	RR3	9/13/2023 12:06			1			B	
PFC091223031.wiff	633879011-DUSE	RR3	9/13/2023 12:22	2490550	45485	1	BRKL		L	
PFC091223032.wiff	633879012	RR3	9/13/2023 12:38	2490550	45485	1	BRKL		L	
PFC091223033.wiff	PFCIBLK	RR3	9/13/2023 12:54			1			B	
PFC091223034.wiff	633879013	RR3	9/13/2023 13:10	2490550	45485	1	BRKL		L	
PFC091223035.wiff	633879014	RR3	9/13/2023 13:26	2490550	45485	1	BRKL		L	
PFC091223036.wiff	PFCIBLK	RR3	9/13/2023 13:42			1			B	
PFC091223037.wiff	633879015	RR3	9/13/2023 13:58	2490550	45485	1	BRKL		L	
PFC091223038.wiff	633879016	RR3	9/13/2023 14:14	2490550	45485	1	BRKL		L	

PFC091223039.wiff	PFCIBLK	RR3	9/13/2023 14:30			1		B	
PFC091223040.wiff	633879017-DUSE	RR3	9/13/2023 14:46	2490550	45485	1	BRKL	L	
PFC091223041.wiff	633879011	RR3	9/13/2023 15:02	2490550	45485	1	BRKL	L	
PFC091223042.wiff	633879017	RR3	9/13/2023 15:18	2490550	45485	1	BRKL	L	
PFC091223043.wiff	WPFCCV	RR3	9/13/2023 15:34			1		C	WPF230911-05
PFC091223044.wiff	PFCIBLK	RR3	9/13/2023 15:50			1		B	
PFC091223045.wiff	1205513616	RR3	9/13/2023 16:06	2490546	VARIOUS	1	MB	L	
PFC091223046.wiff	1205513620	RR3	9/13/2023 16:22	2490546	VARIOUS	1	LCS	L	
PFC091223047.wiff	1205513621	RR3	9/13/2023 16:38	2490546	VARIOUS	1	LCS	L	
PFC091223048.wiff	1205513622	RR3	9/13/2023 16:54	2490546	VARIOUS	1	LCSD	L	
PFC091223049.wiff	633879001	RR3	9/13/2023 17:10	2490546	45485	1	BRKL	L	
PFC091223050.wiff	633879002	RR3	9/13/2023 17:26	2490546	45485	1	BRKL	L	
PFC091223051.wiff	633879003	RR3	9/13/2023 17:42	2490546	45485	1	BRKL	L	
PFC091223052.wiff	633879004	RR3	9/13/2023 17:58	2490546	45485	1	BRKL	L	
PFC091223053.wiff	633879005	RR3	9/13/2023 18:14	2490546	45485	1	BRKL	L	
PFC091223054.wiff	PFCIBLK	RR3	9/13/2023 18:30			1		B	
PFC091223055.wiff	633879006	RR3	9/13/2023 18:46	2490546	45485	1	BRKL	L	
PFC091223056.wiff	633879007-DUSE	RR3	9/13/2023 19:02	2490546	45485	1	BRKL	L	
PFC091223057.wiff	633879008	RR3	9/13/2023 19:18	2490546	45485	1	BRKL	L	
PFC091223058.wiff	633879009	RR3	9/13/2023 19:34	2490546	45485	1	BRKL	L	
PFC091223059.wiff	WPFCCV	RR3	9/13/2023 19:50			1		C	WPF230911-05
PFC091223060.wiff	PFCIBLK	RR3	9/13/2023 20:06			1		B	
PFC091223061.wiff	PFCIBLK	RR3	9/14/2023 08:56			1		B	
PFC091223062.wiff	WPFISOM	RR3	9/14/2023 09:12			1		L	
PFC091223063.wiff	PFCIBLK	RR3	9/14/2023 09:28			1		B	
PFC091223064.wiff	WPFDISC	RR3	9/14/2023 09:44			1		C	WPF230911-02
PFC091223065.wiff	WPFCCV	RR3	9/14/2023 10:00			1		C	WPF230911-05
PFC091223067.wiff	633879007	RR3	9/14/2023 10:32	2490546	45485	1	BRKL	L	
PFC091223068.wiff	WPFCCV	RR3	9/14/2023 10:48			1		C	WPF230911-05
PFC091223069.wiff	PFCIBLK	RR3	9/14/2023 11:04			1		B	
PFC091223070.wiff	1205514626	RR3	9/14/2023 11:20	2491242	VARIOUS	1	MB	T	
PFC091223071.wiff	1205514627	RR3	9/14/2023 11:36	2491242	VARIOUS	1	MB	T	
PFC091223072.wiff	1205514628	RR3	9/14/2023 11:52	2491242	VARIOUS	1	LCS	T	
PFC091223073.wiff	1205514629	RR3	9/14/2023 12:08	2491242	VARIOUS	1	LCS	T	
PFC091223074.wiff	1205514630	RR3	9/14/2023 12:24	2491242	VARIOUS	1	LCS	T	
PFC091223075.wiff	1205514631	RR3	9/14/2023 12:40	2491242	VARIOUS	1	LCS	T	
PFC091223076.wiff	634200001	RR3	9/14/2023 12:56	2491242	634200	1	FWSE	T	
PFC091223077.wiff	1205514632	RR3	9/14/2023 13:12	2491242	VARIOUS	1	MS	T	
PFC091223078.wiff	1205514633	RR3	9/14/2023 13:28	2491242	VARIOUS	1	MSD	T	
PFC091223079.wiff	634200002	RR3	9/14/2023 13:44	2491242	634200	1	FWSE	T	
PFC091223080.wiff	634200003	RR3	9/14/2023 14:00	2491242	634200	1	FWSE	T	
PFC091223081.wiff	634200004	RR3	9/14/2023 14:16	2491242	634200	1	FWSE	T	
PFC091223082.wiff	WPFCCV	RR3	9/14/2023 14:32			1		C	WPF230911-05
PFC091223083.wiff	PFCIBLK	RR3	9/14/2023 14:48			1		B	
PFC091223084.wiff	1205513619		9/14/2023 15:05	Syringe Screen (B-D)		1			
PFC091223085.wiff	1205513619		9/14/2023 15:21	Syringe Screen (Braun)		1			
PFC091223086.wiff	PFCIBLK	RR3	9/15/2023 09:35			1		B	

PFC091223087.wiff	WPFISOM	RR3	9/15/2023 09:51			1		L	
PFC091223088.wiff	PFCIBLK	RR3	9/15/2023 10:07			1		B	
PFC091223089.wiff	WPFDISC	RR3	9/15/2023 10:23			1		C	WPF230911-02
PFC091223090.wiff	WPFCCV	RR3	9/15/2023 10:39			1		C	WPF230911-05
PFC091223091.wiff	PFCIBLK	RR3	9/15/2023 10:55			1		B	
PFC091223092.wiff	1205516868	RR3	9/15/2023 11:11	2492515	VARIOUS	1	MB	L	
PFC091223093.wiff	1205516869	RR3	9/15/2023 11:27	2492515	VARIOUS	1	LCS	L	
PFC091223094.wiff	1205516870	RR3	9/15/2023 11:43	2492515	VARIOUS	1	LCSD	L	
PFC091223095.wiff	635708007	RR3	9/15/2023 11:59	2492515	635708	1	PNTX	L	
PFC091223096.wiff	635708008	RR3	9/15/2023 12:15	2492515	635708	1	PNTX	L	
PFC091223097.wiff	1205516871	RR3	9/15/2023 12:31	2492515	VARIOUS	1	MS	L	
PFC091223098.wiff	1205516872	RR3	9/15/2023 12:47	2492515	VARIOUS	1	MSD	L	
PFC091223099.wiff	635708009	RR3	9/15/2023 13:03	2492515	635708	1	PNTX	L	
PFC091223100.wiff	635708010	RR3	9/15/2023 13:19	2492515	635708	1	PNTX	L	
PFC091223101.wiff	636424001	RR3	9/15/2023 13:35	2492515	636424	1	ENGL	L	
PFC091223102.wiff	WPFCCV	RR3	9/15/2023 13:51			1		C	WPF230911-05
PFC091223103.wiff	PFCIBLK	RR3	9/15/2023 14:07			1		B	