

March 26, 2021

M.F. Hatte
Massachusetts Department of Environmental Protection
201 Ag Engineering
250 Natural Resources Rd
Amherst, Massachusetts 01003

Re: PFAS Testing of Drinking Water
Work Order: 537551

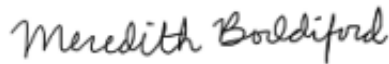
Dear M.F. Hatte:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 12, 2021. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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 (843) 556-8171, ext. 4487.

Sincerely,



Meredith Boddiford for
Brielle Luthman
Project Manager

Purchase Order: 1279000-1
Enclosures

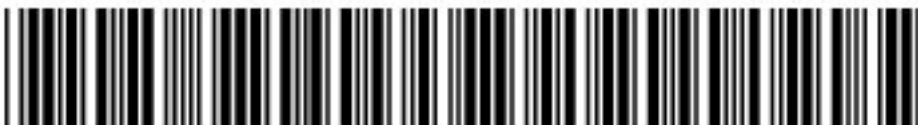


Table of Contents

Case Narrative.....	3
Chain of Custody and Supporting Documentation.....	6
Laboratory Certifications.....	9
LC-MS/MS Analysis.....	11
Case Narrative.....	12
Sample Data Summary.....	15
Quality Control Summary.....	21
Standards.....	43
Quality Control Data.....	52
Miscellaneous.....	64

Case Narrative

**Receipt Narrative
for
Massachusetts Department of Public Health
SDG: 537551**

March 26, 2021

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 March 12, 2021 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. There are no additional comments concerning sample receipt.

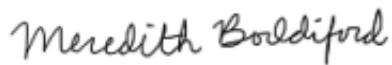
Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
537551001	10000
537551002	FRB-10000
537551003	10006
537551004	FRB-10006
537551005	RW2

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-Misc.



Meredith Boddiford for
Brielle Luthman
Project Manager

Chain of Custody and Supporting Documentation

CEL Laboratories LLC
 Chemistry / Radiochemistry / Radiobiology / Specialty Analytics
 Chain of Custody and Analytical Request

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

537551

Client Name: MDEP
 Project Name: Southwick Water Dept.
 Project Number: 10000

GEL Work Order Number: 413569 6772
 Phone # 413569 6772
 Fax #

GEL Project Manager: Brielle Lulman
 Sample Analysis Requested (6) (Fill in the number of containers for each test)

Collect'd By: Tin Veeland Send Results to: KSoper@SouthwickMA.net

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hh:mm)	QC Code (a)	Field Filtered (b)	Sample Matrix (c)	Radioactive (If Yes, please supply isotopic info.)	Possible Hazards (7) Known or	Should this sample be considered:	Total number of containers	Sample Analysis Requested (6)	Comments
10000	3-9-21	1137							6		Note: extra sample is required for sample specific QC
FRB - 10000		1135	FRB						2		POINT OF ENTRY
10006		1011							2		POINT OF ENTRY POST TREATMENT
FRB - 10006		1010	FRB						2		
RW2		1012							2		GREAT - 300K WELL #2 RAW WATER

Chain of Custody Signatures

Relinquished By (Signed)	Date	Received by (signed)	Date	Time
<u>[Signature]</u>	3-9-21	<u>[Signature]</u>	3/12/21	10:00

For sample shipping and delivery details, see Sample Receipt

1) Chain of custody Number = Client's (10000)

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

3) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste 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

4) 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).

5) 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

6) KNOWN OR POSSIBLE HAZARDS

Characteristics Hazards	Listed Waste	Other
FL = Flammable/Ignitable CO = Corrosive RE = Reactive	LW = Listed Waste (F,K,P and U-listed wastes.) Waste code(s):	OT = Other / Unknown (i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.) Description:

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

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

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

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

Additional Remarks:

SAMPLE RECEIPT & REVIEW FORM

Client: WDEP		SDG/AR/COC/Work Order: 537551	
Received By: Tye		Date Received: 3/12/21	
Carrier and Tracking Number		Circle Applicable: ☒ FedEx Express ☐ FedEx Ground ☐ UPS ☐ Field Services ☐ Courier ☐ Other	
		9381 7258 8609	
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?	Yes ☐ No ☒	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?	Yes ☐ No ☒	COC notation or radioactive stickers on containers equal client designation.	
C) Did the RSO classify the samples as radioactive?	Yes ☐ No ☒	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM/mR/hr Classified as: Rad 1 Rad 2 Rad 3	
D) Did the client designate samples are hazardous?	Yes ☐ No ☒	COC notation or hazard labels on containers equal client designation.	
E) Did the RSO identify possible hazards?	Yes ☐ No ☒	If D or E is yes, select Hazards below: PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____	
Sample Receipt Criteria		Yes	No
1 Shipping containers received intact and sealed?	☒	☒	Comments/Qualifiers (Required for Non-Conforming Items) 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: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius
4 Daily check performed and passed on IR temperature gun?	☒	☒	Temperature Device Serial #: <u>IR3-19</u> 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: _____
7 Do any samples require Volatile Analysis?	☒	☒	If Preservation added, Lot#: _____ 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?	☒	☒	
13 COC form is properly signed in relinquished/received sections?	☒	☒	Circle Applicable: Not relinquished Other (describe)
Comments (Use Continuation Form if needed):			

PM (or PMA) review: Initials **MB** Date **3/15/21** Page **1** of **1**

Laboratory Certifications

List of current GEL Certifications as of 26 March 2021

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	SC000122021-1
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	2019-165
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	T104704235-21-19
Utah NELAP	SC000122020-34
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

LC-MS/MS Analysis

Case Narrative

**LCMSMS-Misc
Technical Case Narrative
Massachusetts Department of Public Health
SDG #: 537551**

Product: The Extraction and Analysis of Per and Polyfluoroalkyl Substances Using LCMSMS

Analytical Method: EPA 537.1

Analytical Procedure: GL-OA-E-076 REV# 10

Analytical Batches: 2105090 and 2105089

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
537551001	10000
537551002	FRB-10000
537551003	10006
537551004	FRB-10006
537551005	RW2
1204777708	Method Blank (MB)
1204777709	Laboratory Control Sample (LCS)
1204777710	537551001(10000) Matrix Spike (MS)
1204777711	537551001(10000) Matrix Spike Duplicate (MSD)
1204777712	538040001(10000) Matrix Spike (MS)
1204777713	538040001(10000) Matrix Spike Duplicate (MSD)

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

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. 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.

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

MDEP001 Massachusetts Department of Public Health

Client SDG: 537551 GEL Work Order: 537551

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: 

Name: Nik-Cole Elmore

Date: 26 MAR 2021

Title: Analyst II

Sample Data Summary

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551	Date Collected: 03/09/2021 11:37	Matrix: DRINKING WATER (POTABI
Lab Sample ID: 537551001	Date Received: 03/12/2021 10:00	
Client Sample: POINT OF ENTRY	Client: MDEP001	Project: MDEP00120
Client ID: 10000	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 17:28	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 289.12 mL	Final Volume: 5 mL
Data File: PFC032321027.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O	U	3.46	ng/L	0.865	3.46
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)	U	1.73	ng/L	0.571	1.73
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON	U	3.46	ng/L	1.14	3.46
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	3.46	ng/L	1.14	3.46
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	3.46	ng/L	1.14	3.46
375-73-5	Perfluorobutane sulfonic acid (PFBS)	J	1.29	ng/L	0.502	1.54
335-76-2	Perfluorodecanoic acid (PFDA)	U	1.73	ng/L	0.571	1.73
307-55-1	Perfluorododecanoic acid (PFDoA)	U	1.73	ng/L	0.571	1.73
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)	J	1.12	ng/L	0.571	1.73
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	J	1.04	ng/L	0.519	1.57
307-24-4	Perfluorohexanoic acid (PFHxA)		1.83	ng/L	0.571	1.73
375-95-1	Perfluorononanoic acid (PFNA)	U	1.73	ng/L	0.571	1.73
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		2.13	ng/L	0.571	1.73
335-67-1	Perfluorooctanoic acid (PFOA)		2.80	ng/L	0.571	1.73
376-06-7	Perfluorotetradecanoic acid (PFTA)	U	1.73	ng/L	0.571	1.73
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	1.73	ng/L	0.571	1.73
2058-94-8	Perfluoroundecanoic acid (PFUnA)	U	1.73	ng/L	0.571	1.73
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	U	1.73	ng/L	0.571	1.73
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551
Lab Sample ID: 537551002

Date Collected: 03/09/2021 11:35
Date Received: 03/12/2021 10:00

Matrix: WATER

Client ID: FRB-10000
Batch ID: 2105090

Client: MDEP001
Method: EPA 537.1
Inst: LCMSMS9

Project: MDEP00120
SOP Ref: GL-OA-E-076
Dilution: 1

Run Date: 03/23/2021 17:53

Analyst: MB2

Prep Date: 03/22/2021 07:37

Aliquot: 270.91 mL

Final Volume: 5 mL

Data File: PFC032321030.wiff

Column:

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O	U	3.69	ng/L	0.923	3.69
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)	U	1.85	ng/L	0.609	1.85
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON	U	3.69	ng/L	1.22	3.69
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	3.69	ng/L	1.22	3.69
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	3.69	ng/L	1.22	3.69
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	1.64	ng/L	0.535	1.64
335-76-2	Perfluorodecanoic acid (PFDA)	U	1.85	ng/L	0.609	1.85
307-55-1	Perfluorododecanoic acid (PFDoA)	U	1.85	ng/L	0.609	1.85
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	1.85	ng/L	0.609	1.85
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	1.68	ng/L	0.554	1.68
307-24-4	Perfluorohexanoic acid (PFHxA)	U	1.85	ng/L	0.609	1.85
375-95-1	Perfluorononanoic acid (PFNA)	U	1.85	ng/L	0.609	1.85
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	U	1.85	ng/L	0.609	1.85
335-67-1	Perfluorooctanoic acid (PFOA)	U	1.85	ng/L	0.609	1.85
376-06-7	Perfluorotetradecanoic acid (PFTA)	U	1.85	ng/L	0.609	1.85
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	1.85	ng/L	0.609	1.85
2058-94-8	Perfluoroundecanoic acid (PFUnA)	U	1.85	ng/L	0.609	1.85
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	U	1.85	ng/L	0.609	1.85
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551	Date Collected: 03/09/2021 10:11	Matrix: DRINKING WATER (POTABI
Lab Sample ID: 537551003	Date Received: 03/12/2021 10:00	
Client Sample: POINT OF ENTRY POST TREATMENT	Client: MDEP001	Project: MDEP00120
Client ID: 10006	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 18:02	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 283.15 mL	Final Volume: 5 mL
Data File: PFC032321031.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O	U	3.53	ng/L	0.883	3.53
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)	U	1.77	ng/L	0.583	1.77
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON	U	3.53	ng/L	1.17	3.53
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	3.53	ng/L	1.17	3.53
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	3.53	ng/L	1.17	3.53
375-73-5	Perfluorobutane sulfonic acid (PFBS)	J	0.807	ng/L	0.512	1.57
335-76-2	Perfluorodecanoic acid (PFDA)	U	1.77	ng/L	0.583	1.77
307-55-1	Perfluorododecanoic acid (PFDoA)	U	1.77	ng/L	0.583	1.77
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)	J	0.634	ng/L	0.583	1.77
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	J	1.28	ng/L	0.530	1.61
307-24-4	Perfluorohexanoic acid (PFHxA)	J	1.10	ng/L	0.583	1.77
375-95-1	Perfluorononanoic acid (PFNA)	U	1.77	ng/L	0.583	1.77
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	J	1.30	ng/L	0.583	1.77
335-67-1	Perfluorooctanoic acid (PFOA)	J	1.67	ng/L	0.583	1.77
376-06-7	Perfluorotetradecanoic acid (PFTA)	U	1.77	ng/L	0.583	1.77
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	1.77	ng/L	0.583	1.77
2058-94-8	Perfluoroundecanoic acid (PFUnA)	U	1.77	ng/L	0.583	1.77
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	U	1.77	ng/L	0.583	1.77
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551
Lab Sample ID: 537551004

Date Collected: 03/09/2021 10:10
Date Received: 03/12/2021 10:00

Matrix: WATER

Client ID: FRB-10006
Batch ID: 2105090

Client: MDEP001
Method: EPA 537.1
Inst: LCMSMS9

Project: MDEP00120
SOP Ref: GL-OA-E-076
Dilution: 1

Run Date: 03/23/2021 18:10

Analyst: MB2

Prep Date: 03/22/2021 07:37

Aliquot: 281.08 mL

Final Volume: 5 mL

Data File: PFC032321032.wiff

Column:

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O	U	3.56	ng/L	0.889	3.56
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)	U	1.78	ng/L	0.587	1.78
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON	U	3.56	ng/L	1.17	3.56
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	3.56	ng/L	1.17	3.56
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	3.56	ng/L	1.17	3.56
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	1.58	ng/L	0.516	1.58
335-76-2	Perfluorodecanoic acid (PFDA)	U	1.78	ng/L	0.587	1.78
307-55-1	Perfluorododecanoic acid (PFDoA)	U	1.78	ng/L	0.587	1.78
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	1.78	ng/L	0.587	1.78
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	1.62	ng/L	0.534	1.62
307-24-4	Perfluorohexanoic acid (PFHxA)	U	1.78	ng/L	0.587	1.78
375-95-1	Perfluorononanoic acid (PFNA)	U	1.78	ng/L	0.587	1.78
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	U	1.78	ng/L	0.587	1.78
335-67-1	Perfluorooctanoic acid (PFOA)	U	1.78	ng/L	0.587	1.78
376-06-7	Perfluorotetradecanoic acid (PFTA)	U	1.78	ng/L	0.587	1.78
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	1.78	ng/L	0.587	1.78
2058-94-8	Perfluoroundecanoic acid (PFUnA)	U	1.78	ng/L	0.587	1.78
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	U	1.78	ng/L	0.587	1.78
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551	Date Collected: 03/09/2021 10:12	Matrix: DRINKING WATER (POTABI
Lab Sample ID: 537551005	Date Received: 03/12/2021 10:00	
Client Sample: GREAT BROOK WELL #2 RAW WATER	Client: MDEP001	Project: MDEP00120
Client ID: RW2	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 18:19	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 283.77 mL	Final Volume: 5 mL
Data File: PFC032321033.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O	U	3.52	ng/L	0.881	3.52
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)	U	1.76	ng/L	0.581	1.76
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON	U	3.52	ng/L	1.16	3.52
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	3.52	ng/L	1.16	3.52
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	3.52	ng/L	1.16	3.52
375-73-5	Perfluorobutane sulfonic acid (PFBS)	J	0.764	ng/L	0.511	1.57
335-76-2	Perfluorodecanoic acid (PFDA)	U	1.76	ng/L	0.581	1.76
307-55-1	Perfluorododecanoic acid (PFDoA)	U	1.76	ng/L	0.581	1.76
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)	J	0.870	ng/L	0.581	1.76
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	J	1.16	ng/L	0.529	1.60
307-24-4	Perfluorohexanoic acid (PFHxA)	J	1.02	ng/L	0.581	1.76
375-95-1	Perfluorononanoic acid (PFNA)	U	1.76	ng/L	0.581	1.76
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	J	1.13	ng/L	0.581	1.76
335-67-1	Perfluorooctanoic acid (PFOA)	J	1.39	ng/L	0.581	1.76
376-06-7	Perfluorotetradecanoic acid (PFTA)	U	1.76	ng/L	0.581	1.76
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	1.76	ng/L	0.581	1.76
2058-94-8	Perfluoroundecanoic acid (PFUnA)	U	1.76	ng/L	0.581	1.76
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	U	1.76	ng/L	0.581	1.76
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

Quality Control Summary

LC-MS/MS

Page 1

of 2

Surrogate Recovery Report

SDG Number: 537551

Matrix Type: DRINKING WATER

Sample ID	Client ID	13C2PFD A %REC	13C2_P F HxA %REC	13C3_P F PrOPrA %REC	d5-N-Et FOSAA %REC
1204777708	MB for batch 2105089	90	98	88	87
1204777709	LCS for batch 2105089	83	85	84	86
537551001	10000	82	94	83	97
1204777710	10000MS	97	100	93	109
1204777711	10000MSD	90	89	89	91
537551002	FRB-10000	86	90	81	101
537551003	10006	81	89	83	98
537551004	FRB-10006	93	98	89	99
537551005	RW2	83	83	84	98
1204777712	10000MS	92	93	90	90
1204777713	10000MSD	92	98	93	100

Surrogate	Parmname	Acceptance Limits
13C2PFDA	= Perfluoro-n-[1,2-13C2] decanoic acid	(70%-130%)
13C2_PFHxA	= Perfluoro-n-[1,2-13C2] hexanoic acid	(70%-130%)
13C3_PFPPrOPrA	= 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrOPrA)	(70%-130%)
d5-N-EtFOSAA	= N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	(70%-130%)

* Recovery outside Acceptance Limits (Not applicable to diluted samples)

Column to be used to flag recovery values

D Sample Diluted

LC-MS/MS

Page 2 of 2

Surrogate Recovery Report

SDG Number: 537551

Matrix Type: LIQUID

Sample ID	Client ID	13C2PFD A %REC	13C2_Pf HxA %REC	13C3_Pf PrOPrA %REC	d5-N-Et FOSAA %REC
1204777708	MB for batch 2105089	90	98	88	87
1204777709	LCS for batch 2105089	83	85	84	86
537551001	10000	82	94	83	97
1204777710	10000MS	97	100	93	109
1204777711	10000MSD	90	89	89	91
537551002	FRB-10000	86	90	81	101
537551003	10006	81	89	83	98
537551004	FRB-10006	93	98	89	99
537551005	RW2	83	83	84	98
1204777712	10000MS	92	93	90	90
1204777713	10000MSD	92	98	93	100

Surrogate	Parmname	Acceptance Limits
13C2PFDA	= Perfluoro-n-[1,2-13C2] decanoic acid	(70%-130%)
13C2_PFHxA	= Perfluoro-n-[1,2-13C2] hexanoic acid	(70%-130%)
13C3_PFPPrOPrA	= 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrOPrA)	(70%-130%)
d5-N-EtFOSAA	= N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	(70%-130%)

* Recovery outside Acceptance Limits (Not applicable to diluted samples)

Column to be used to flag recovery values

D Sample Diluted

Quality Control Summary Spike Recovery Report

SDG Number: 537551

Client ID: LCS for batch 2105089

Lab Sample ID 1204777709

Instrument: LCMSMS9

Analyst: MB2

Sample Type: Laboratory Control Sample

Matrix: DRINKING WATER (POTABLE)

Analysis Date: 03/23/2021 17:19

Dilution: 1

Prep Batch ID:2105089

Batch ID: 2105090

CAS No	Parmname	Amount Added ng/L	Sample Conc. ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits
13252-13-6	LCS Hexafluoropropyleneoxide dimer acid (HFPO-DA) <i>2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop</i>	18.3	0.0	15.2	83	70-130
1763-23-1	LCS Perfluorooctane sulfonic acid (PFOS) <i>Perfluorooctanesulfonate (PFOS)</i>	18.3	0.0	15.0	82	70-130
2058-94-8	LCS Perfluoroundecanoic acid (PFUnA) <i>Perfluoroundecanoic acid (PFUdA)</i>	18.3	0.0	16.7	91	70-130
2355-31-9	LCS N-Methylperfluorooctane sulfonamido acetic acid (N <i>N-methylperfluoro-1-octanesulfonamidoacetic acid</i>	18.3	0.0	14.4	79	70-130
2991-50-6	LCS N-Ethylperfluorooctane sulfonamido acetic acid (NE <i>N-ethylperfluoro-1-octanesulfonamidoacetic acid</i>	18.3	0.0	15.1	82	70-130
307-24-4	LCS Perfluorohexanoic acid (PFHxA)	18.3	0.0	15.7	86	70-130
307-55-1	LCS Perfluorododecanoic acid (PFDoA)	18.3	0.0	17.5	96	70-130
335-67-1	LCS Perfluorooctanoic acid (PFOA)	18.3	0.0	16.9	93	70-130
335-76-2	LCS Perfluorodecanoic acid (PFDA)	18.3	0.0	15.1	83	70-130
355-46-4	LCS Perfluorohexane sulfonic acid (PFHxS) <i>Perfluorohexanesulfonate (PFHxS)</i>	16.6	0.0	13.8	83	70-130
375-73-5	LCS Perfluorobutane sulfonic acid (PFBS) <i>Perfluorobutanesulfonate (PFBS)</i>	16.2	0.0	11.6	72	70-130
375-85-9	LCS Perfluoroheptanoic acid (PFHpA)	18.3	0.0	16.7	91	70-130
375-95-1	LCS Perfluorononanoic acid (PFNA)	18.3	0.0	15.6	85	70-130
376-06-7	LCS Perfluorotetradecanoic acid (PFTA) <i>Perfluorotetradecanoic acid (PFTeDA)</i>	18.3	0.0	16.5	90	70-130
72629-94-8	LCS Perfluorotridecanoic acid (PFTTrDA)	18.3	0.0	15.3	84	70-130
756426-58-1	LCS 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic <i>9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (</i>	17.0	0.0	14.6	86	70-130
763051-92-9	LCS 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic <i>11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (</i>	17.2	0.0	14.5	84	70-130
919005-14-4	LCS 4,8-Dioxa-3H-perfluorononanoic acid (ADONA) <i>Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON</i>	18.3	0.0	15.9	87	70-130

Quality Control Summary Spike Recovery Report

SDG Number: 537551

Client ID: 10000MS

Lab Sample ID 1204777710

Instrument: LCMSMS9

Analyst: MB2

Sample Type: Matrix Spike

Matrix: DRINKING WATER (POTABLE)

Analysis Date: 03/23/2021 17:36

Dilution: 1

Prep Batch ID: 2105089

Batch ID: 2105090

CAS No		Parmname	Amount Added ng/L	Sample Conc. ng/L		Spike Conc. ng/L	Recovery %	Acceptance Limits
355-46-4	MS	Perfluorohexane sulfonic acid (PFHxS) <i>Perfluorohexanesulfonate (PFHxS)</i>	15.9	1.04	J	16.4	97	70-130
375-73-5	MS	Perfluorobutane sulfonic acid (PFBS) <i>Perfluorobutanesulfonate (PFBS)</i>	15.5	1.29	J	15.4	91	70-130
375-85-9	MS	Perfluoroheptanoic acid (PFHpA)	17.5	1.12	J	20.6	112	70-130
13252-13-6	MS	Hexafluoropropyleneoxide dimer acid (HFPO-DA) <i>2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop</i>	17.5	0.000	U	17.7	101	70-130
2058-94-8	MS	Perfluoroundecanoic acid (PFUnA) <i>Perfluoroundecanoic acid (PFUdA)</i>	17.5	0.000	U	17.7	101	70-130
2355-31-9	MS	N-Methylperfluorooctane sulfonamido acetic acid (N <i>N-methylperfluoro-1-octanesulfonamidoacetic acid</i>	17.5	0.000	U	14.8	85	70-130
2991-50-6	MS	N-Ethylperfluorooctane sulfonamido acetic acid (NE <i>N-ethylperfluoro-1-octanesulfonamidoacetic acid</i>	17.5	0.000	U	18.6	107	70-130
307-55-1	MS	Perfluorododecanoic acid (PFDoA)	17.5	0.000	U	16.7	96	70-130
335-76-2	MS	Perfluorodecanoic acid (PFDA)	17.5	0.000	U	16.5	95	70-130
375-95-1	MS	Perfluorononanoic acid (PFNA)	17.5	0.376	U	17.3	97	70-130
376-06-7	MS	Perfluorotetradecanoic acid (PFTA) <i>Perfluorotetradecanoic acid (PFTeDA)</i>	17.5	0.000	U	17.0	97	70-130
72629-94-8	MS	Perfluorotridecanoic acid (PFTTrDA)	17.5	0.000	U	16.0	92	70-130
756426-58-1	MS	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic <i>9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (</i>	16.3	0.000	U	14.8	91	70-130
763051-92-9	MS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic <i>11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (</i>	16.4	0.000	U	15.8	96	70-130
919005-14-4	MS	4,8-Dioxa-3H-perfluorononanoic acid (ADONA) <i>Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON</i>	17.5	0.000	U	18.0	103	70-130
1763-23-1	MS	Perfluorooctane sulfonic acid (PFOS) <i>Perfluorooctanesulfonate (PFOS)</i>	17.5	2.13		17.2	86	70-130
307-24-4	MS	Perfluorohexanoic acid (PFHxA)	17.5	1.83		19.8	103	70-130
335-67-1	MS	Perfluorooctanoic acid (PFOA)	17.5	2.80		22.0	110	70-130

Quality Control Summary Spike Recovery Report

SDG Number: 537551

Client ID: 10000MSD

Lab Sample ID 1204777711

Instrument: LCMSMS9

Analyst: MB2

Sample Type: Matrix Spike Duplicate

Matrix: DRINKING WATER (POTABLE)

Analysis Date: 03/23/2021 17:45

Dilution: 1

Prep Batch ID: 2105089

Batch ID: 2105090

CAS No	Parmname	Amount Added ng/L	Sample Conc. ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
355-46-4	MSD Perfluorohexane sulfonic acid (PFHxS) <i>Perfluorohexanesulfonate (PFHxS)</i>	16.1	1.04	J	14.8	86	70-130	10 0-30
375-73-5	MSD Perfluorobutane sulfonic acid (PFBS) <i>Perfluorobutanesulfonate (PFBS)</i>	15.6	1.29	J	16.0	94	70-130	4 0-30
375-85-9	MSD Perfluoroheptanoic acid (PFHpA)	17.6	1.12	J	17.4	93	70-130	17 0-30
13252-13-6	MSD Hexafluoropropyleneoxide dimer acid (HFPO-DA) <i>2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop</i>	17.6	0.000	U	16.0	91	70-130	10 0-30
2058-94-8	MSD Perfluoroundecanoic acid (PFUnA) <i>Perfluoroundecanoic acid (PFUdA)</i>	17.6	0.000	U	16.4	93	70-130	8 0-30
2355-31-9	MSD N-Methylperfluorooctane sulfonamido acetic acid (N <i>N-methylperfluoro-1-octanesulfonamidoacetic acid</i>	17.6	0.000	U	14.2	81	70-130	4 0-30
2991-50-6	MSD N-Ethylperfluorooctane sulfonamido acetic acid (NE <i>N-ethylperfluoro-1-octanesulfonamidoacetic acid</i>	17.6	0.000	U	15.4	88	70-130	19 0-30
307-55-1	MSD Perfluorododecanoic acid (PFDoA)	17.6	0.000	U	14.9	85	70-130	12 0-30
335-76-2	MSD Perfluorodecanoic acid (PFDA)	17.6	0.000	U	15.6	89	70-130	5 0-30
375-95-1	MSD Perfluorononanoic acid (PFNA)	17.6	0.376	U	15.7	87	70-130	10 0-30
376-06-7	MSD Perfluorotetradecanoic acid (PFTA) <i>Perfluorotetradecanoic acid (PFTeDA)</i>	17.6	0.000	U	15.5	88	70-130	9 0-30
72629-94-8	MSD Perfluorotridecanoic acid (PFTTrDA)	17.6	0.000	U	14.0	79	70-130	14 0-30
756426-58-1	MSD 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic <i>9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (</i>	16.4	0.000	U	14.7	89	70-130	1 0-30
763051-92-9	MSD 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic <i>11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (</i>	16.6	0.000	U	14.9	90	70-130	6 0-30
919005-14-4	MSD 4,8-Dioxa-3H-perfluorononanoic acid (ADONA) <i>Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON</i>	17.6	0.000	U	15.7	89	70-130	14 0-30
1763-23-1	MSD Perfluorooctane sulfonic acid (PFOS) <i>Perfluorooctanesulfonate (PFOS)</i>	17.6	2.13		16.8	83	70-130	2 0-30
307-24-4	MSD Perfluorohexanoic acid (PFHxA)	17.6	1.83		17.3	88	70-130	14 0-30
335-67-1	MSD Perfluorooctanoic acid (PFOA)	17.6	2.80		19.6	95	70-130	11 0-30

Quality Control Summary Spike Recovery Report

SDG Number: 537551

Client ID: 10000MS

Lab Sample ID 1204777712

Instrument: LCMSMS9

Analyst: MB2

Sample Type: Matrix Spike

Matrix: DRINKING WATER (POTABLE)

Analysis Date: 03/23/2021 18:53

Dilution: 1

Prep Batch ID: 2105089

Batch ID: 2105090

CAS No		Parmname	Amount Added ng/L	Sample Conc. ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits	
13252-13-6	MS	Hexafluoropropyleneoxide dimer acid (HFPO-DA) 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop	18.1	0.000	U	16.3	90	70-130
1763-23-1	MS	Perfluorooctane sulfonic acid (PFOS) Perfluorooctanesulfonate (PFOS)	18.1	0.000	U	14.0	77	70-130
2058-94-8	MS	Perfluoroundecanoic acid (PFUnA) Perfluoroundecanoic acid (PFUdA)	18.1	0.000	U	17.1	95	70-130
2355-31-9	MS	N-Methylperfluorooctane sulfonamido acetic acid (NPFOS) N-methylperfluoro-1-octanesulfonamidoacetic acid	18.1	0.000	U	14.3	79	70-130
2991-50-6	MS	N-Ethylperfluorooctane sulfonamido acetic acid (NPFOS) N-ethylperfluoro-1-octanesulfonamidoacetic acid	18.1	0.000	U	15.5	86	70-130
307-24-4	MS	Perfluorohexanoic acid (PFHxA)	18.1	0.000	U	16.2	90	70-130
307-55-1	MS	Perfluorododecanoic acid (PFDoA)	18.1	0.000	U	17.5	97	70-130
335-67-1	MS	Perfluorooctanoic acid (PFOA)	18.1	0.000	U	17.3	95	70-130
335-76-2	MS	Perfluorodecanoic acid (PFDA)	18.1	0.000	U	15.8	87	70-130
355-46-4	MS	Perfluorohexane sulfonic acid (PFHxS) Perfluorohexanesulfonate (PFHxS)	16.5	0.000	U	13.6	82	70-130
375-73-5	MS	Perfluorobutane sulfonic acid (PFBS) Perfluorobutanesulfonate (PFBS)	16.0	0.000	U	14.2	89	70-130
375-85-9	MS	Perfluoroheptanoic acid (PFHpA)	18.1	0.000	U	16.6	92	70-130
375-95-1	MS	Perfluorononanoic acid (PFNA)	18.1	0.000	U	15.8	88	70-130
376-06-7	MS	Perfluorotetradecanoic acid (PFTA) Perfluorotetradecanoic acid (PFTeDA)	18.1	0.000	U	16.2	89	70-130
72629-94-8	MS	Perfluorotridecanoic acid (PFTTrDA)	18.1	0.000	U	15.3	85	70-130
756426-58-1	MS	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (	16.9	0.000	U	14.5	86	70-130
763051-92-9	MS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (	17.0	0.000	U	14.3	84	70-130
919005-14-4	MS	4,8-Dioxa-3H-perfluorononanoic acid (ADONA) Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON	18.1	0.000	U	15.9	88	70-130

Quality Control Summary Spike Recovery Report

SDG Number: 537551

Client ID: 10000MSD

Lab Sample ID 1204777713

Instrument: LCMSMS9

Analyst: MB2

Sample Type: Matrix Spike Duplicate

Matrix: DRINKING WATER (POTABLE)

Analysis Date: 03/23/2021 19:02

Dilution: 1

Prep Batch ID: 2105089

Batch ID: 2105090

CAS No	Parmname	Amount Added ng/L	Sample Conc. ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits	
13252-13-6	MSD Hexafluoropropyleneoxide dimer acid (HFPO-DA) 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoroprop	17.9	0.000	U	16.4	91	70-130	0	0-30
1763-23-1	MSD Perfluorooctane sulfonic acid (PFOS) Perfluorooctanesulfonate (PFOS)	17.9	0.000	U	15.5	86	70-130	10	0-30
2058-94-8	MSD Perfluoroundecanoic acid (PFUnA) Perfluoroundecanoic acid (PFUdA)	17.9	0.000	U	17.1	95	70-130	0	0-30
2355-31-9	MSD N-Methylperfluorooctane sulfonamido acetic acid (N N-methylperfluoro-1-octanesulfonamidoacetic acid	17.9	0.000	U	16.1	90	70-130	12	0-30
2991-50-6	MSD N-Ethylperfluorooctane sulfonamido acetic acid (NE N-ethylperfluoro-1-octanesulfonamidoacetic acid	17.9	0.000	U	18.4	102	70-130	17	0-30
307-24-4	MSD Perfluorohexanoic acid (PFHxA)	17.9	0.000	U	17.1	96	70-130	6	0-30
307-55-1	MSD Perfluorododecanoic acid (PFDoA)	17.9	0.000	U	16.9	94	70-130	4	0-30
335-67-1	MSD Perfluorooctanoic acid (PFOA)	17.9	0.000	U	17.4	97	70-130	1	0-30
335-76-2	MSD Perfluorodecanoic acid (PFDA)	17.9	0.000	U	15.3	85	70-130	3	0-30
355-46-4	MSD Perfluorohexane sulfonic acid (PFHxS) Perfluorohexanesulfonate (PFHxS)	16.4	0.000	U	14.2	87	70-130	5	0-30
375-73-5	MSD Perfluorobutane sulfonic acid (PFBS) Perfluorobutanesulfonate (PFBS)	15.9	0.000	U	14.4	91	70-130	2	0-30
375-85-9	MSD Perfluoroheptanoic acid (PFHpA)	17.9	0.000	U	18.5	103	70-130	11	0-30
375-95-1	MSD Perfluorononanoic acid (PFNA)	17.9	0.000	U	17.2	96	70-130	8	0-30
376-06-7	MSD Perfluorotetradecanoic acid (PFTA) Perfluorotetradecanoic acid (PFTeDA)	17.9	0.000	U	16.7	93	70-130	3	0-30
72629-94-8	MSD Perfluorotridecanoic acid (PFTrDA)	17.9	0.000	U	15.0	84	70-130	2	0-30
756426-58-1	MSD 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (	16.7	0.000	U	16.6	100	70-130	13	0-30
763051-92-9	MSD 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (	16.9	0.000	U	14.8	87	70-130	3	0-30
919005-14-4	MSD 4,8-Dioxa-3H-perfluorononanoic acid (ADONA) Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADON	17.9	0.000	U	17.0	95	70-130	7	0-30

Method Blank Summary

Page 1 of 1

SDG Number:	537551	Client:	MDEP001	Matrix:	DRINKING WATER (POTABI
Client ID:	MB for batch 2105089	Instrument ID:	LCMSMS9	Data File:	PFC032321025.wiff
Lab Sample ID:	1204777708	Prep Date:	03/22/2021 07:37	Analyzed:	03/23/21 17:11

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 2105089	1204777709	PFC032321026.wiff	03/23/21	1719
02 10000	537551001	PFC032321027.wiff	03/23/21	1728
03 10000MS	1204777710	PFC032321028.wiff	03/23/21	1736
04 10000MSD	1204777711	PFC032321029.wiff	03/23/21	1745
05 FRB-10000	537551002	PFC032321030.wiff	03/23/21	1753
06 10006	537551003	PFC032321031.wiff	03/23/21	1802
07 FRB-10006	537551004	PFC032321032.wiff	03/23/21	1810
08 RW2	537551005	PFC032321033.wiff	03/23/21	1819
09 10000MS	1204777712	PFC032321037.wiff	03/23/21	1853
10 10000MSD	1204777713	PFC032321038.wiff	03/23/21	1902

2a
Initial Calibration Area Summary

Lab Name: GEL Laboratories LLC

GEL Job No (SDG): 537551

Lab Code: GEL

Column: PFC032321

Instrument ID: LCMSMS9

Level	Calibration Run	Run Date	Data File
1	WPF210322-01(ICAL)	23-MAR-21 10:14	PFC032321003.wiff
2	WPF210322-02(ICAL)	23-MAR-21 10:22	PFC032321004.wiff
3	WPF210322-03(ICAL)	23-MAR-21 10:31	PFC032321005.wiff
5	WPF210322-05(ICAL)	23-MAR-21 10:39	PFC032321006.wiff
7	WPF210322-07(ICAL)	23-MAR-21 10:48	PFC032321007.wiff
10	WPF210322-10(ICAL)	23-MAR-21 10:56	PFC032321008.wiff
11	WPF210322-11(ICAL)	23-MAR-21 11:05	PFC032321009.wiff

2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrOPrA)

1502000	1723000	1573000	1685000	1519000	1665000	1714000
---------	---------	---------	---------	---------	---------	---------

Ave. 1625857.1

N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

5108000	5475000	5606000	5351000	5116000	5159000	4857000
---------	---------	---------	---------	---------	---------	---------

Ave. 5238857.1

N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

10810000	11010000	10570000	11240000	11020000	11170000	10190000
----------	----------	----------	----------	----------	----------	----------

Ave. 10858571.

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 1204777708

Dilution: 1

Datafile: PFC032321025.wiff

Run Date: 23-MAR-21 17:11

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	11370000	10858571.43	104.7	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5670000	5201285.71	109	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	19710000	18440000	106.9	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 1204777709

Dilution: 1

Datafile: PFC032321026.wiff

Run Date: 23-MAR-21 17:19

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	11430000	10858571.43	105.3	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5369000	5201285.71	103.2	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	19130000	18440000	103.7	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 1204777710

Dilution: 1

Datafile: PFC032321028.wiff

Run Date: 23-MAR-21 17:36

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	10030000	10858571.43	92.4	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	4995000	5201285.71	96	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	18420000	18440000	99.9	50 - 150	

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

2 Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 1204777711

Dilution: 1

Datafile: PFC032321029.wiff

Run Date: 23-MAR-21 17:45

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	11200000	10858571.43	103.1	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5580000	5201285.71	107.3	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	18880000	18440000	102.4	50 - 150	

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

2 Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 1204777712

Dilution: 1

Datafile: PFC032321037.wiff

Run Date: 23-MAR-21 18:53

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	10940000	10858571.43	100.7	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5130000	5201285.71	98.6	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	18910000	18440000	102.5	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 1204777713

Dilution: 1

Datafile: PFC032321038.wiff

Run Date: 23-MAR-21 19:02

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	9936000	10858571.43	91.5	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5115000	5201285.71	98.3	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	17930000	18440000	97.2	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 537551001

Dilution: 1

Datafile: PFC032321027.wiff

Run Date: 23-MAR-21 17:28

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	10880000	10858571.43	100.2	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5651000	5201285.71	108.6	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	19110000	18440000	103.6	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 537551002

Dilution: 1

Datafile: PFC032321030.wiff

Run Date: 23-MAR-21 17:53

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	10750000	10858571.43	99	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5792000	5201285.71	111.4	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	19330000	18440000	104.8	50 - 150	

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

2 Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 537551003

Dilution: 1

Datafile: PFC032321031.wiff

Run Date: 23-MAR-21 18:02

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	11030000	10858571.43	101.6	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5449000	5201285.71	104.8	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	18880000	18440000	102.4	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 537551004

Dilution: 1

Datafile: PFC032321032.wiff

Run Date: 23-MAR-21 18:10

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	11180000	10858571.43	103	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5494000	5201285.71	105.6	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	19360000	18440000	105	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 537551005

Dilution: 1

Datafile: PFC032321033.wiff

Run Date: 23-MAR-21 18:19

Parmname	Area	Reference Area	Rec	Limits	Q
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	10820000	10858571.43	99.6	50 - 150	
Perfluoro-n-[1,2-13C2] octanoic acid	5760000	5201285.71	110.7	50 - 150	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	18400000	18440000	99.8	50 - 150	

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

2
Internal Standard Area Summary

Lab Name : GEL Laboratories LLC

GEL Job No(SDG 537551

Lab Code:

Instrument ID: LCMSMS9

Injected IS Reference ICAL PFC032321006.wiff 23-MAR-2

Sample ID: 1103

Dilution: 1

Datafile: PFC032321011.wiff

Run Date: 23-MAR-21 11:22

Parmname	Area	Reference Area	Rec	Limits	Q
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoi	1585000	1625857.14	97.5	70 - 130	
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	5904000	5238857.14	112.7	70 - 130	
N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid	11450000	10858571.43	105.4	70 - 130	
Perfluoro-n-[1,2-13C2] octanoic acid	5506000	5201285.71	105.9	70 - 130	
Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate	19530000	18440000	105.9	70 - 130	

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

Standards

PFC Initial Calibration

Lab Name : GEL Laboratories, LLC

Method EPA 537.1

GEL Job No. 537551

Lab Code: GEL

Column: Gemini 3u C-18

Instrument: LCMSMS9

Calibration Files

Run Dates

PFC032321003	23-MAR-21 10:14
PFC032321004	23-MAR-21 10:22
PFC032321005	23-MAR-21 10:31
PFC032321006	23-MAR-21 10:39
PFC032321007	23-MAR-21 10:48
PFC032321008	23-MAR-21 10:56
PFC032321009	23-MAR-21 11:05

Curve Type: Linear Null

11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)

165400	375200	909700	1842000	3447000	9265000	17200000
--------	--------	--------	---------	---------	---------	----------

Slope .62931
Intercept 0 COD .9994

2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrOPrA)

1502000	1723000	1573000	1685000	1519000	1665000	1714000
---------	---------	---------	---------	---------	---------	---------

Slope .31312
Intercept 0 COD 1

2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPPrOPrA)

69350	157800	463800	840800	2000000	5010000	9817000
-------	--------	--------	--------	---------	---------	---------

Slope .34283
Intercept 0 COD .998

9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)

213000	519300	1287000	2699000	5339000	13650000	23460000
--------	--------	---------	---------	---------	----------	----------

Slope .902
Intercept 0 COD .9989

N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

5108000	5475000	5606000	5351000	5116000	5159000	4857000
---------	---------	---------	---------	---------	---------	---------

Slope .48266
Intercept 0 COD 1

N-ethylperfluoro-1-octanesulfonamidoacetic acid

52100	106200	273900	533700	1123000	2693000	5445000
-------	--------	--------	--------	---------	---------	---------

Slope .4106
Intercept 0 COD .9988

N-methylperfluoro-1-octanesulfonamidoacetic acid

41650	103800	281400	563900	1138000	3009000	5681000
-------	--------	--------	--------	---------	---------	---------

Slope .43399
Intercept 0 COD .9996

PFC Initial Calibration

Lab Name : GEL Laboratories, LLC

Method EPA 537.1

GEL Job No.

Lab Code: GEL

Column: Gemini 3u C-18

Instrument: LCMSMS9

Curve Type: Linear Null

Perfluorobutanesulfonate (PFBS)

173300	409500	958900	1999000	3648000	9541000	16890000
--------	--------	--------	---------	---------	---------	----------

Slope .67743
Intercept 0 COD .9991

Perfluorodecanoic acid (PFDA)

128000	314200	791200	1525000	3047000	7879000	14180000
--------	--------	--------	---------	---------	---------	----------

Slope .57759
Intercept 0 COD .9994

Perfluorododecanoic acid (PFDoA)

143400	370300	936200	1804000	3700000	8779000	15250000
--------	--------	--------	---------	---------	---------	----------

Slope .64203
Intercept 0 COD .9974

Perfluoroheptanoic acid (PFHpA)

143100	373200	849500	1616000	3241000	7854000	14190000
--------	--------	--------	---------	---------	---------	----------

Slope .58586
Intercept 0 COD .9986

Perfluorohexanesulfonate (PFHxS)

116500	288400	715400	1492000	2763000	7471000	13800000
--------	--------	--------	---------	---------	---------	----------

Slope .52151
Intercept 0 COD .9994

Perfluorohexanoic acid (PFHxA)

129900	297000	803700	1616000	3159000	8274000	14750000
--------	--------	--------	---------	---------	---------	----------

Slope .60172
Intercept 0 COD .9993

Perfluorononanoic acid (PFNA)

131700	291200	733000	1328000	2785000	7033000	13590000
--------	--------	--------	---------	---------	---------	----------

Slope .53709
Intercept 0 COD .9998

Perfluorooctanesulfonate (PFOS)

163000	367500	857000	1780000	3679000	9074000	17900000
--------	--------	--------	---------	---------	---------	----------

Slope .60399
Intercept 0 COD .9995

Perfluorooctanoic acid (PFOA)

148500	340800	820300	1639000	3128000	7797000	14500000
--------	--------	--------	---------	---------	---------	----------

Slope .58838
Intercept 0 COD .9995

Lab Name : GEL Laboratories, LLC

Method EPA 537.1

GEL Job No.

Lab Code: GEL

Column: Gemini 3u C-18

Instrument: LCMSMS9

Curve Type: Linear Null

Perfluorotetradecanoic acid (PFTeDA)

121300	283300	759200	1505000	3042000	7188000	13690000
--------	--------	--------	---------	---------	---------	----------

Slope .55146
Intercept 0 COD .9993

Perfluorotridecanoic acid (PFTrDA)

156200	368800	949600	1898000	3569000	9532000	16890000
--------	--------	--------	---------	---------	---------	----------

Slope .6916
Intercept 0 COD .9991

Perfluoroundecanoic acid (PFUdA)

138800	273700	756700	1465000	2894000	7727000	12830000
--------	--------	--------	---------	---------	---------	----------

Slope .54031
Intercept 0 COD .9976

Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)

232900	582200	1533000	2984000	5854000	13800000	23480000
--------	--------	---------	---------	---------	----------	----------

Slope 1.06186
Intercept 0 COD .9939

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

COD is Coefficient of Determination
Intercept of 0 means Calibration is forced through zero

Q column used to flag COD values outside of Limit (<0.990)
* Values outside of QC Limit

Curve Type: RF

Perfluoro-n-[1,2-13C2] decanoic acid

.27864534337	.30376719155	.27645768598	.30379256966	.28699551570	.28135078733	.28146089718
--------------	--------------	--------------	--------------	--------------	--------------	--------------

Ave RF .28749571297
RSD 4.03362

Perfluoro-n-[1,2-13C2] hexanoic acid

.25550329257	.27705800279	.24922317675	.26876934985	.25053616689	.27300322519	.26677252878
--------------	--------------	--------------	--------------	--------------	--------------	--------------

Ave RF .26298082040
RSD 4.23623

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

* Value Outside of QC Limits

Q column used to flag COD values outside of Limit (<0.990)
* Values outside of QC Limit

Continuing Calibration Summary

Instrument ID: LCMSMS9
Data File: PFC032321010.wiff
Lab Sample ID WPF210322-08
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 11:13
Init. Cal. Date(s) 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ISTD

Compound	True Value	Result	Recovery	Q
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	100	101.02	101.02	
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	191.81	95.91	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	200	234.54	117.27	
Perfluorodecanoic acid (PFDA)	100	90.14	90.14	
Perfluorononanoic acid (PFNA)	100	98.68	98.68	
Perfluoroundecanoic acid (PFUdA)	100	103.91	103.91	
Perfluorohexanesulfonate (PFHxS)	91.2	89.25	97.86	
Perfluorohexanoic acid (PFHxA)	100	95.81	95.81	
Perfluorotetradecanoic acid (PFTeDA)	100	106.08	106.08	
Perfluoroheptanoic acid (PFHpA)	100	105.04	105.04	
Perfluorododecanoic acid (PFDoA)	100	102	102	
Perfluorooctanoic acid (PFOA)	100	112.34	112.34	
Perfluorotridecanoic acid (PFTrDA)	100	99.1	99.1	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	94.2	89.32	94.82	
Perfluorobutanesulfonate (PFBS)	88.5	83.56	94.42	
Perfluorooctanesulfonate (PFOS)	100	95.43	95.43	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	93.2	91.43	98.1	
Sodium dodecafluoro-3H-4,8-dioxanonoate (ADONA)	100	98.05	98.05	
Perfluoro-n-[1,2- ¹³ C ₂] hexanoic acid	2000	1928.5	96.43	
Perfluoro-n-[1,2- ¹³ C ₂] decanoic acid	2000	1959.33	97.97	

Recovery criteria is 50% - 150%

Initial Calibration Summary

Instrument ID: LCMSMS9
Data File: PFC032321011.wiff
Lab Sample ID WPF210322-09
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 11:22
Init. Cal. Date(s) 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ISTD

Compound	True Value	Result	Recovery	Q
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	972.18	97.22	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	1000	1030.07	103.01	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	1000	1077.63	107.76	
Perfluorononanoic acid (PFNA)	1000	994.19	99.42	
Perfluorohexanesulfonate (PFHxS)	912	894	98.03	
Perfluorotetradecanoic acid (PFTeDA)	1000	1010.83	101.08	
Perfluorooctanoic acid (PFOA)	1000	978.13	97.81	
Perfluorodecanoic acid (PFDA)	1000	999.46	99.95	
Perfluoroundecanoic acid (PFUdA)	1000	1077.54	107.75	
Perfluorohexanoic acid (PFHxA)	1000	976.7	97.67	
Perfluoroheptanoic acid (PFHpA)	1000	1051.95	105.2	
Perfluorotridecanoic acid (PFTrDA)	1000	946.55	94.66	
Perfluorododecanoic acid (PFDoA)	1000	1086.07	108.61	
Perfluorooctanesulfonate (PFOS)	1000	977.53	97.75	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	942	972.07	103.19	
Perfluorobutanesulfonate (PFBS)	885	906.94	102.48	
Perfluoro-n-[1,2-13C2] decanoic acid	2000	1788.42	89.42	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	932	976.16	104.74	
Perfluoro-n-[1,2-13C2] hexanoic acid	2000	1995.38	99.77	
Sodium dodecafluoro-3H-4,8-dioxananoate (ADONA)	1000	1102.41	110.24	

Recovery criteria is 70% - 130%

Continuing Calibration Summary

Instrument ID: LCMSMS9
Data File: PFC032321023.wiff
Lab Sample ID WPF210304-10
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 16:54
Init. Cal. Date(s) 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ISTD

Compound	True Value	Result	Recovery	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	2000	1867.55	93.38	
Perfluoro-n-[1,2-13C2] decanoic acid	2000	1767	88.35	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	5000	5239.47	104.79	
N-methylperfluoro-1-octanesulfonamidoacetic acid	5000	5324.13	106.48	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	5000	4849.89	97	
Perfluoroundecanoic acid (PFUdA)	5000	4746.31	94.93	
Perfluorononanoic acid (PFNA)	5000	4806.26	96.13	
Perfluorohexanesulfonate (PFHxS)	4560	4543.76	99.64	
Perfluorotetradecanoic acid (PFTeDA)	5000	5069.74	101.39	
Perfluorodecanoic acid (PFDA)	5000	4877.87	97.56	
Perfluorohexanoic acid (PFHxA)	5000	4897.69	97.95	
Perfluoroheptanoic acid (PFHpA)	5000	5030.78	100.62	
Perfluorooctanoic acid (PFOA)	5000	5045.61	100.91	
Perfluorotridecanoic acid (PFTrDA)	5000	4726.51	94.53	
Perfluorooctanesulfonate (PFOS)	5000	4885.29	97.71	
Perfluorododecanoic acid (PFDoA)	5000	5155.45	103.11	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	4710	4811.92	102.16	
Perfluorobutanesulfonate (PFBS)	4425	4889.54	110.5	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	4660	4779.49	102.56	
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	5000	4970.8	99.42	

Recovery criteria is 70% - 130%

Continuing Calibration Summary

Instrument ID: LCMSMS9
Data File: PFC032321034.wiff
Lab Sample ID WPF210304-09
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 18:28
Init. Cal. Date(s) 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ISTD

Compound	True Value	Result	Recovery	Q
N-ethylperfluoro-1-octanesulfonamidoacetic acid	1000	1061.26	106.13	
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	1014.68	101.47	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	1000	1125.51	112.55	
Perfluorohexanesulfonate (PFHxS)	912	908.1	99.57	
Perfluorotetradecanoic acid (PFTeDA)	1000	1060.68	106.07	
Perfluorononanoic acid (PFNA)	1000	1094.79	109.48	
Perfluoroundecanoic acid (PFUdA)	1000	1099.78	109.98	
Perfluorodecanoic acid (PFDA)	1000	1034.28	103.43	
Perfluorooctanoic acid (PFOA)	1000	1046.36	104.64	
Perfluoroheptanoic acid (PFHpA)	1000	1083.05	108.31	
Perfluorohexanoic acid (PFHxA)	1000	1104.64	110.46	
Perfluorododecanoic acid (PFDoA)	1000	1089.58	108.96	
Perfluorooctanesulfonate (PFOS)	1000	974.48	97.45	
Perfluorotridecanoic acid (PFTrDA)	1000	1035.67	103.57	
Perfluorobutanesulfonate (PFBS)	885	943.38	106.6	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	942	1022.98	108.6	
Perfluoro-n-[1,2-13C2] hexanoic acid	2000	1982.62	99.13	
Perfluoro-n-[1,2-13C2] decanoic acid	2000	1849.01	92.45	
Sodium dodecafluoro-3H-4,8-dioxanonanoate (ADONA)	1000	1046.82	104.68	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	932	1107.56	118.84	

Recovery criteria is 70% - 130%

Continuing Calibration Summary

Instrument ID: LCMSMS9
Data File: PFC032321042.wiff
Lab Sample ID WPF210304-10
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 19:36
Init. Cal. Date(s) 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ISTD

Compound	True Value	Result	Recovery	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	2000	1921.83	96.09	
Perfluoro-n-[1,2-13C2] decanoic acid	2000	1759.45	87.97	
N-ethylperfluoro-1-octanesulfonamidoacetic acid	5000	4884.29	97.69	
N-methylperfluoro-1-octanesulfonamidoacetic acid	5000	4894.92	97.9	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	5000	5519.95	110.4	
Perfluorotetradecanoic acid (PFTeDA)	5000	4776.25	95.52	
Perfluorononanoic acid (PFNA)	5000	4918.97	98.38	
Perfluoroundecanoic acid (PFUdA)	5000	4972.56	99.45	
Perfluorohexanesulfonate (PFHxS)	4560	4731.55	103.76	
Perfluorodecanoic acid (PFDA)	5000	4864.64	97.29	
Perfluoroheptanoic acid (PFHpA)	5000	4823.31	96.47	
Perfluorooctanoic acid (PFOA)	5000	4860.4	97.21	
Perfluorohexanoic acid (PFHxA)	5000	4843.61	96.87	
Perfluorododecanoic acid (PFDoA)	5000	4878.85	97.58	
Perfluorotridecanoic acid (PFTrDA)	5000	4618.34	92.37	
Perfluorooctanesulfonate (PFOS)	5000	4954.67	99.09	
Perfluorobutanesulfonate (PFBS)	4425	4527.33	102.31	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	4710	5108.28	108.46	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	4660	5086.56	109.15	
Sodium dodecafluoro-3H-4,8-dioxanonoate (ADONA)	5000	4891.48	97.83	

Recovery criteria is 70% - 130%

Quality Control Data

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551		Matrix: DRINKING WATER (POTABI
Lab Sample ID: 1204777708		
Client Sample: QC for batch 2105089	Client: MDEP001	Project: MDEP00120
Client ID: MB for batch 2105089	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 17:11	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 259.38 mL	Final Volume: 5 mL
Data File: PFC032321025.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O	U	3.86	ng/L	0.964	3.86
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)	U	1.93	ng/L	0.636	1.93
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON	U	3.86	ng/L	1.27	3.86
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	U	3.86	ng/L	1.27	3.86
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	U	3.86	ng/L	1.27	3.86
375-73-5	Perfluorobutane sulfonic acid (PFBS)	U	1.72	ng/L	0.559	1.72
335-76-2	Perfluorodecanoic acid (PFDA)	U	1.93	ng/L	0.636	1.93
307-55-1	Perfluorododecanoic acid (PFDoA)	U	1.93	ng/L	0.636	1.93
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)	U	1.93	ng/L	0.636	1.93
355-46-4	Perfluorohexane sulfonic acid (PFHxS)	U	1.75	ng/L	0.578	1.75
307-24-4	Perfluorohexanoic acid (PFHxA)	U	1.93	ng/L	0.636	1.93
375-95-1	Perfluorononanoic acid (PFNA)	U	1.93	ng/L	0.636	1.93
1763-23-1	Perfluorooctane sulfonic acid (PFOS)	U	1.93	ng/L	0.636	1.93
335-67-1	Perfluorooctanoic acid (PFOA)	U	1.93	ng/L	0.636	1.93
376-06-7	Perfluorotetradecanoic acid (PFTA)	U	1.93	ng/L	0.636	1.93
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	U	1.93	ng/L	0.636	1.93
2058-94-8	Perfluoroundecanoic acid (PFUnA)	U	1.93	ng/L	0.636	1.93
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	U	1.93	ng/L	0.636	1.93
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551		Matrix: DRINKING WATER (POTABI
Lab Sample ID: 1204777709		
Client Sample: QC for batch 2105089	Client: MDEP001	Project: MDEP00120
Client ID: LCS for batch 2105089	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 17:19	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 273.89 mL	Final Volume: 5 mL
Data File: PFC032321026.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O		14.5	ng/L	0.913	3.65
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)		15.2	ng/L	0.602	1.83
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON		14.6	ng/L	1.20	3.65
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		15.1	ng/L	1.20	3.65
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		14.4	ng/L	1.20	3.65
375-73-5	Perfluorobutane sulfonic acid (PFBS)		11.6	ng/L	0.529	1.62
335-76-2	Perfluorodecanoic acid (PFDA)		15.1	ng/L	0.602	1.83
307-55-1	Perfluorododecanoic acid (PFDoA)		17.5	ng/L	0.602	1.83
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)		16.7	ng/L	0.602	1.83
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		13.8	ng/L	0.548	1.66
307-24-4	Perfluorohexanoic acid (PFHxA)		15.7	ng/L	0.602	1.83
375-95-1	Perfluorononanoic acid (PFNA)		15.6	ng/L	0.602	1.83
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		15.0	ng/L	0.602	1.83
335-67-1	Perfluorooctanoic acid (PFOA)		16.9	ng/L	0.602	1.83
376-06-7	Perfluorotetradecanoic acid (PFTA)		16.5	ng/L	0.602	1.83
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		15.3	ng/L	0.602	1.83
2058-94-8	Perfluoroundecanoic acid (PFUnA)		16.7	ng/L	0.602	1.83
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		15.9	ng/L	0.602	1.83
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551	Date Collected: 03/09/2021 11:37	Matrix: DRINKING WATER (POTABI
Lab Sample ID: 1204777710	Date Received: 03/12/2021 10:00	
Client Sample: QC for batch 2105089	Client: MDEP001	Project: MDEP00120
Client ID: 10000MS	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 17:36	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 286.38 mL	Final Volume: 5 mL
Data File: PFC032321028.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O		15.8	ng/L	0.873	3.49
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)		17.7	ng/L	0.576	1.75
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON		14.8	ng/L	1.15	3.49
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		18.6	ng/L	1.15	3.49
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		14.8	ng/L	1.15	3.49
375-73-5	Perfluorobutane sulfonic acid (PFBS)		15.4	ng/L	0.506	1.55
335-76-2	Perfluorodecanoic acid (PFDA)		16.5	ng/L	0.576	1.75
307-55-1	Perfluorododecanoic acid (PFDoA)		16.7	ng/L	0.576	1.75
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)		20.6	ng/L	0.576	1.75
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		16.4	ng/L	0.524	1.59
307-24-4	Perfluorohexanoic acid (PFHxA)		19.8	ng/L	0.576	1.75
375-95-1	Perfluorononanoic acid (PFNA)		17.3	ng/L	0.576	1.75
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		17.2	ng/L	0.576	1.75
335-67-1	Perfluorooctanoic acid (PFOA)		22.0	ng/L	0.576	1.75
376-06-7	Perfluorotetradecanoic acid (PFTA)		17.0	ng/L	0.576	1.75
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		16.0	ng/L	0.576	1.75
2058-94-8	Perfluoroundecanoic acid (PFUnA)		17.7	ng/L	0.576	1.75
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		18.0	ng/L	0.576	1.75
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551	Date Collected: 03/09/2021 11:37	Matrix: DRINKING WATER (POTABI
Lab Sample ID: 1204777711	Date Received: 03/12/2021 10:00	
Client Sample: QC for batch 2105089	Client: MDEP001	Project: MDEP00120
Client ID: 10000MSD	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 17:45	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 283.6 mL	Final Volume: 5 mL
Data File: PFC032321029.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O		14.9	ng/L	0.882	3.53
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)		16.0	ng/L	0.582	1.76
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON		14.7	ng/L	1.16	3.53
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		15.4	ng/L	1.16	3.53
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		14.2	ng/L	1.16	3.53
375-73-5	Perfluorobutane sulfonic acid (PFBS)		16.0	ng/L	0.511	1.57
335-76-2	Perfluorodecanoic acid (PFDA)		15.6	ng/L	0.582	1.76
307-55-1	Perfluorododecanoic acid (PFDoA)		14.9	ng/L	0.582	1.76
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)		17.4	ng/L	0.582	1.76
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		14.8	ng/L	0.529	1.60
307-24-4	Perfluorohexanoic acid (PFHxA)		17.3	ng/L	0.582	1.76
375-95-1	Perfluorononanoic acid (PFNA)		15.7	ng/L	0.582	1.76
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		16.8	ng/L	0.582	1.76
335-67-1	Perfluorooctanoic acid (PFOA)		19.6	ng/L	0.582	1.76
376-06-7	Perfluorotetradecanoic acid (PFTA)		15.5	ng/L	0.582	1.76
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		14.0	ng/L	0.582	1.76
2058-94-8	Perfluoroundecanoic acid (PFUnA)		16.4	ng/L	0.582	1.76
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		15.7	ng/L	0.582	1.76
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551	Date Collected: 03/15/2021 09:43	Matrix: DRINKING WATER (POTABI
Lab Sample ID: 1204777712	Date Received: 03/17/2021 10:20	
Client Sample: QC for batch 2105089	Client: MDEP001	Project: MDEP00120
Client ID: 10000MS	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 18:53	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 276.5 mL	Final Volume: 5 mL
Data File: PFC032321037.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O		14.3	ng/L	0.904	3.62
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)		16.3	ng/L	0.597	1.81
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON		14.5	ng/L	1.19	3.62
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		15.5	ng/L	1.19	3.62
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		14.3	ng/L	1.19	3.62
375-73-5	Perfluorobutane sulfonic acid (PFBS)		14.2	ng/L	0.524	1.61
335-76-2	Perfluorodecanoic acid (PFDA)		15.8	ng/L	0.597	1.81
307-55-1	Perfluorododecanoic acid (PFDoA)		17.5	ng/L	0.597	1.81
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)		16.6	ng/L	0.597	1.81
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		13.6	ng/L	0.542	1.65
307-24-4	Perfluorohexanoic acid (PFHxA)		16.2	ng/L	0.597	1.81
375-95-1	Perfluorononanoic acid (PFNA)		15.8	ng/L	0.597	1.81
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		14.0	ng/L	0.597	1.81
335-67-1	Perfluorooctanoic acid (PFOA)		17.3	ng/L	0.597	1.81
376-06-7	Perfluorotetradecanoic acid (PFTA)		16.2	ng/L	0.597	1.81
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		15.3	ng/L	0.597	1.81
2058-94-8	Perfluoroundecanoic acid (PFUnA)		17.1	ng/L	0.597	1.81
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		15.9	ng/L	0.597	1.81
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

LC-MS/MS
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 537551	Date Collected: 03/15/2021 09:43	Matrix: DRINKING WATER (POTABI
Lab Sample ID: 1204777713	Date Received: 03/17/2021 10:20	
Client Sample: QC for batch 2105089	Client: MDEP001	Project: MDEP00120
Client ID: 10000MSD	Method: EPA 537.1	SOP Ref: GL-OA-E-076
Batch ID: 2105090	Inst: LCMSMS9	Dilution: 1
Run Date: 03/23/2021 19:02	Analyst: MB2	
Prep Date: 03/22/2021 07:37	Aliquot: 278.75 mL	Final Volume: 5 mL
Data File: PFC032321038.wiff	Column:	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3O		14.8	ng/L	0.897	3.59
	<i>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</i>					
13252-13-6	Hexafluoropropyleneoxide dimer acid (HFPO-DA)		16.4	ng/L	0.592	1.79
	<i>Hexafluoropropyleneoxide dimer acid (HFPO-DA)(Gen-</i>					
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ON		16.6	ng/L	1.18	3.59
	<i>9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid</i>					
2991-50-6	N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)		18.4	ng/L	1.18	3.59
2355-31-9	N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)		16.1	ng/L	1.18	3.59
375-73-5	Perfluorobutane sulfonic acid (PFBS)		14.4	ng/L	0.520	1.60
335-76-2	Perfluorodecanoic acid (PFDA)		15.3	ng/L	0.592	1.79
307-55-1	Perfluorododecanoic acid (PFDoA)		16.9	ng/L	0.592	1.79
	<i>Perfluorododecanoic acid (PFDOA)</i>					
375-85-9	Perfluoroheptanoic acid (PFHpA)		18.5	ng/L	0.592	1.79
355-46-4	Perfluorohexane sulfonic acid (PFHxS)		14.2	ng/L	0.538	1.63
307-24-4	Perfluorohexanoic acid (PFHxA)		17.1	ng/L	0.592	1.79
375-95-1	Perfluorononanoic acid (PFNA)		17.2	ng/L	0.592	1.79
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		15.5	ng/L	0.592	1.79
335-67-1	Perfluorooctanoic acid (PFOA)		17.4	ng/L	0.592	1.79
376-06-7	Perfluorotetradecanoic acid (PFTA)		16.7	ng/L	0.592	1.79
	<i>Perfluorotetradecanoic acid (PFTDA)</i>					
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		15.0	ng/L	0.592	1.79
2058-94-8	Perfluoroundecanoic acid (PFUnA)		17.1	ng/L	0.592	1.79
	<i>Perfluoroundecanoic acid (PFUnDA)</i>					
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		17.0	ng/L	0.592	1.79
	<i>4,8-Dioxa-3H-perfluorononanoic acid (DONA)</i>					

Initial Calibration Blank Summary

Instrument ID: LCMSMS9
Data File: PFC032321002.wiff
Lab Sample ID ICB01
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 10:05
Init. Cal. Date(s) 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ESTD

Compound	True Value	Result
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	0	7918.56
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Perfluoro-n-[1,2- ¹³ C ₂] hexanoic acid	0	1964.83
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrO)	0	1805.79
Sodium dodecafluoro-3H-4,8-dioxananoate (ADONA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS9
Data File: PFC032321013.wiff
Lab Sample ID: CCB01
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 11:39
Init. Cal. Date(s): 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ESTD

Compound	True Value	Result
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	0	8927.76
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Perfluoro-n-[1,2- ¹³ C ₂] hexanoic acid	0	1950.58
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrO)	0	2073.57
Sodium dodecafluoro-3H-4,8-dioxananoate (ADONA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS9
Data File: PFC032321024.wiff
Lab Sample ID: CCB01
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 17:02
Init. Cal. Date(s): 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ESTD

Compound	True Value	Result
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	0	8570.65
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Perfluoro-n-[1,2- ¹³ C ₂] hexanoic acid	0	2004.39
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrO)	0	2133.32
Sodium dodecafluoro-3H-4,8-dioxananoate (ADONA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS9
Data File: PFC032321035.wiff
Lab Sample ID: CCB01
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 18:36
Init. Cal. Date(s): 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ESTD

Compound	True Value	Result
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	0	7901.35
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Perfluoro-n-[1,2- ¹³ C ₂] hexanoic acid	0	1912.22
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrO)	0	2030.22
Sodium dodecafluoro-3H-4,8-dioxananoate (ADONA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0

Continuing Calibration Blank Summary

Instrument ID: LCMSMS9
Data File: PFC032321043.wiff
Lab Sample ID: CCB01
Column ID: Gemini 3u C-18

Client SDG: 537551
Injection Date: 23-MAR-21 19:44
Init. Cal. Date(s): 23-MAR-21 10:14 - 23-MAR-21 11:05
Method: EPA 537.1
Quant Type: ESTD

Compound	True Value	Result
N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid	0	8526.21
N-methylperfluoro-1-octanesulfonamidoacetic acid	0	0
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0	0
Perfluorobutanesulfonate (PFBS)	0	0
Perfluorodecanoic acid (PFDA)	0	0
Perfluorododecanoic acid (PFDoA)	0	0
Perfluoroheptanoic acid (PFHpA)	0	0
Perfluorohexanesulfonate (PFHxS)	0	0
Perfluorohexanoic acid (PFHxA)	0	0
Perfluorononanoic acid (PFNA)	0	0
Perfluorooctanesulfonate (PFOS)	0	0
Perfluorooctanoic acid (PFOA)	0	0
Perfluorotetradecanoic acid (PFTeDA)	0	0
Perfluorotridecanoic acid (PFTrDA)	0	0
Perfluoroundecanoic acid (PFUdA)	0	0
Perfluoro-n-[1,2- ¹³ C ₂] hexanoic acid	0	2167.19
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF3ONS)	0	0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (PF3OUdS)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-13C3-propanoic acid (13C3_PFPPrO)	0	2091.22
Sodium dodecafluoro-3H-4,8-dioxananoate (ADONA)	0	0
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	0	0

Miscellaneous

Prep Logbook

The Extraction and Analysis of Per and Polyfluroalkyl Substances Using LCMSMS

Batch ID: 2105089
Analyst: Taliya Campbell
Method: EPA 537.1

Verified by: _____

Lab SOP: GL-OA-E-076 REV# 10
Instrument: LCMSMS Manual Instrument

Sample ID	Prep Date	Initial Wt (g)	Final Wt (g)	Initial Volume (mL)	Final Volume (mL)	Prepped Factor (mL/mL)	Residual ClPh 1	
1204777708 MB	22-MAR-2021 07:37:00	292.13	32.75	259.38	5	0.01928	<0.5	7
1204777709 LCS	22-MAR-2021 07:37:00	306.57	32.68	273.89	5	0.01826	<0.5	7
537551001	22-MAR-2021 07:37:00	322.53	33.41	289.12	5	0.01729	<0.5	7
1204777710 MS (537551001)	22-MAR-2021 07:37:00	319.74	33.36	286.38	5	0.01746	<0.5	7
1204777711 MSD (537551001)	22-MAR-2021 07:37:00	317.15	33.55	283.6	5	0.01763	<0.5	7
537551002	22-MAR-2021 07:37:00	304.29	33.38	270.91	5	0.01846	<0.5	7
537551003	22-MAR-2021 07:37:00	316.7	33.55	283.15	5	0.01766	<0.5	7
537551004	22-MAR-2021 07:37:00	314.43	33.35	281.08	5	0.01779	<0.5	7
537551005	22-MAR-2021 07:37:00	317.3	33.53	283.77	5	0.01762	<0.5	7
538040001	22-MAR-2021 07:37:00	314.33	33.3	281.03	5	0.01779	<0.5	7
1204777712 MS (538040001)	22-MAR-2021 07:37:00	309.91	33.41	276.5	5	0.01808	<0.5	7
1204777713 MSD (538040001)	22-MAR-2021 07:37:00	312.19	33.44	278.75	5	0.01794	<0.5	7
538040002	22-MAR-2021 07:37:00	312.24	33.31	278.93	5	0.01793	<0.5	7
538040003	22-MAR-2021 07:37:00	311.84	33.56	278.28	5	0.01797	<0.5	7
538040004	22-MAR-2021 07:37:00	315.3	33.32	281.98	5	0.01773	<0.5	7
538468001	22-MAR-2021 07:37:00	309.39	33.49	275.9	5	0.01812	<0.5	7
538468002	22-MAR-2021 07:37:00	310.61	33.48	277.13	5	0.01804	<0.5	7

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1204777709	PFAS 20 ug/L 537 Std	IPF210304-07	.25	mL	Thermometer ID: 8125
MS	1204777710	PFAS 20 ug/L 537 Std	IPF210304-07	.25	mL	Temperature 1: 60 C
MS	1204777712	PFAS 20 ug/L 537 Std	IPF210304-07	.25	mL	Vial Lot: 3144344
MSD	1204777711	PFAS 20 ug/L 537 Std	IPF210304-07	.25	mL	Strata: 3269028
MSD	1204777713	PFAS 20 ug/L 537 Std	IPF210304-07	.25	mL	Verified by LD
RGNT	All	TYPE I Water for PFAS	3126459	250	mL	
SURR	All	Surrogate Standard	IPF210115-02	.1	mL	
SURR	All	IS PDS SURR 1-4 ug/mL	IPF210208-25	.01	mL	
INTER	All	Surrogate Standard	IPF210115-02	.1	mL	
REGNT	All	TYPE I Water for PFAS	3126459	15	mL	
REGNT	All	96:4 Methanol/Water (v:v)	3137321	5	mL	
REGNT	All	Trizma Pre--set Crystals pH 7.0	3254461	1.25	g	
REGNT	All	Methanol HPLC Optima	3266119	8	mL	

GEL ORGANIC RUN LOG

INSTRUMENT ID: lcmsms9

Date: 3/23/2021

Int. Std. IPF200729-20

Extr. Injection Volume: 15uL

Method: EPA 537.1

Sequence Number: 3232021

Mobile Phase Lot#: 3273114 MEOH: 3255479

SOP: GL-OA-E-076 Rev.9

Initial Calibration Date(s): 3/23/2021

DataFile	Sample	Analyst	Injection Date	Batch	SDG	Dilution	Client	Comments	QC Flag	REFMAT
PFC032321001.wiff	PFCIBLK01	MB2	3/23/2021 9:56			1			B	
PFC032321002.wiff	PFCIBLK01	MB2	3/23/2021 10:05			1			B	
PFC032321003.wiff	WPFICAL-01	MB2	3/23/2021 10:14			1			I	WPF21032
PFC032321004.wiff	WPFICAL-02	MB2	3/23/2021 10:22			1			I	WPF21032
PFC032321005.wiff	WPFICAL-03	MB2	3/23/2021 10:31			1			I	WPF21032
PFC032321006.wiff	WPFICAL-05	MB2	3/23/2021 10:39			1			I	WPF21032
PFC032321007.wiff	WPFICAL-07	MB2	3/23/2021 10:48			1			I	WPF21032
PFC032321008.wiff	WPFICAL-10	MB2	3/23/2021 10:56			1			I	WPF21032
PFC032321009.wiff	WPFICAL-11	MB2	3/23/2021 11:05			1			I	WPF21032
PFC032321010.wiff	WPFISC	MB2	3/23/2021 11:13			1			C	WPF21032
PFC032321011.wiff	WPFICV	MB2	3/23/2021 11:22			1			C	WPF21032
PFC032321012.wiff	Technical PFOA	MB2	3/23/2021 11:30			1			L	
PFC032321013.wiff	PFCIBLK02	MB2	3/23/2021 11:39			1			B	
PFC032321014.wiff	1204776053-DUSE	MB2	3/23/2021 12:27	2104183		1		DUSE	D	
PFC032321015.wiff	1204776054-DUSE	MB2	3/23/2021 12:35	2104183		1		DUSE	D	
PFC032321016.wiff	537925001-DUSE	MB2	3/23/2021 12:44	2104183		1		DUSE	D	
PFC032321017.wiff	1204776057-DUSE	MB2	3/23/2021 12:52	2104183		1		DUSE	D	
PFC032321018.wiff	1204776058-DUSE	MB2	3/23/2021 13:01	2104183		1		DUSE	D	
PFC032321021.wiff	WPFCCV	MB2	3/23/2021 13:11			1			C	
PFC032321022.wiff	PFCIBLK03	MB2	3/23/2021 13:19			1			B	
PFC032321023.wiff	WPFCCV	MB2	3/23/2021 16:54			1			C	WPF21030
PFC032321024.wiff	PFCIBLK04	MB2	3/23/2021 17:02			1			B	
PFC032321025.wiff	1204777708	MB2	3/23/2021 17:11	2105090	VARIOUS	1	MDEP		D	
PFC032321026.wiff	1204777709	MB2	3/23/2021 17:19	2105090	VARIOUS	1	MDEP		D	
PFC032321027.wiff	537551001	MB2	3/23/2021 17:28	2105090	537551	1	MDEP		D	
PFC032321028.wiff	1204777710	MB2	3/23/2021 17:36	2105090	537551	1	MDEP		D	
PFC032321029.wiff	1204777711	MB2	3/23/2021 17:45	2105090	537551	1	MDEP		D	
PFC032321030.wiff	537551002	MB2	3/23/2021 17:53	2105090	537551	1	MDEP		D	
PFC032321031.wiff	537551003	MB2	3/23/2021 18:02	2105090	537551	1	MDEP		D	
PFC032321032.wiff	537551004	MB2	3/23/2021 18:10	2105090	537551	1	MDEP		D	
PFC032321033.wiff	537551005	MB2	3/23/2021 18:19	2105090	537551	1	MDEP		D	
PFC032321034.wiff	WPFCCV	MB2	3/23/2021 18:28			1			C	WPF21030
PFC032321035.wiff	PFCIBLK05	MB2	3/23/2021 18:36			1			B	
PFC032321036.wiff	538040001	MB2	3/23/2021 18:45	2105090	538040	1	MDEP		D	
PFC032321037.wiff	1204777712	MB2	3/23/2021 18:53	2105090	538040	1	MDEP		D	
PFC032321038.wiff	1204777713	MB2	3/23/2021 19:02	2105090	538040	1	MDEP		D	
PFC032321039.wiff	538040002	MB2	3/23/2021 19:10	2105090	538040	1	MDEP		D	
PFC032321040.wiff	538040003	MB2	3/23/2021 19:19	2105090	538040	1	MDEP		D	
PFC032321041.wiff	538040004	MB2	3/23/2021 19:27	2105090	538040	1	MDEP		D	

PFC032321042.wiff	WPFCVV	MB2	3/23/2021 19:36			1		C	WPF21030
PFC032321043.wiff	PFCIBLK06	MB2	3/23/2021 19:44			1		B	
PFC032321044.wiff	PFCIBLK07	MB2	3/24/2021 9:15			1		B	
PFC032321045.wiff	PFCIBLK08	MB2	3/24/2021 9:23			1		B	
PFC032321046.wiff	WPFDISC	MB2	3/24/2021 9:32			1		C	WPF21032
PFC032321047.wiff	PFCIBLK09	MB2	3/24/2021 9:40			1		B	
PFC032321048.wiff	538468001	MB2	3/24/2021 9:49	2105090	538468	1	MDEP	D	
PFC032321049.wiff	538468002	MB2	3/24/2021 9:58	2105090	538468	1	MDEP	D	
PFC032321050.wiff	WPFCVV	MB2	3/24/2021 10:06			1		C	WPF21030
PFC032321051.wiff	PFCIBLK10	MB2	3/24/2021 10:15			1		B	
PFC032321052.wiff	PFCIBLK11	MB2	3/25/2021 9:33			1		B	
PFC032321053.wiff	PFCIBLK12	MB2	3/25/2021 9:41			1		B	
PFC032321054.wiff	WPFDISC	MB2	3/25/2021 9:50			1		C	WPF21032
PFC032321055.wiff	PFCIBLK13	MB2	3/25/2021 9:58			1		B	
PFC032321056.wiff	1204779680	MB2	3/25/2021 10:07	2106097	VARIOUS	1	MDEP	D	
PFC032321057.wiff	1204779681	MB2	3/25/2021 10:16	2106097	VARIOUS	1	MDEP	D	
PFC032321058.wiff	538047001	MB2	3/25/2021 10:24	2106097	538047	1	MDEP	D	
PFC032321059.wiff	1204779682	MB2	3/25/2021 10:33	2106097	538047	1	MDEP	D	
PFC032321060.wiff	1204779683	MB2	3/25/2021 10:41	2106097	538047	1	MDEP	D	
PFC032321061.wiff	538047002	MB2	3/25/2021 10:50	2106097	538047	1	MDEP	D	
PFC032321062.wiff	538047003	MB2	3/25/2021 10:58	2106097	538047	1	MDEP	D	
PFC032321063.wiff	538047004	MB2	3/25/2021 11:07	2106097	538047	1	MDEP	D	
PFC032321064.wiff	WPFCVV	MB2	3/25/2021 11:15			1		C	WPF21030
PFC032321065.wiff	PFCIBLK14	MB2	3/25/2021 11:24			1		B	
PFC032321066.wiff	538053001	MB2	3/25/2021 11:32	2106097	538053	1	MDEP	D	
PFC032321067.wiff	1204779684	MB2	3/25/2021 11:41	2106097	538053	1	MDEP	D	
PFC032321068.wiff	1204779685	MB2	3/25/2021 11:49	2106097	538053	1	MDEP	D	
PFC032321069.wiff	538053002	MB2	3/25/2021 11:58	2106097	538053	1	MDEP	D	
PFC032321070.wiff	538053003	MB2	3/25/2021 12:06	2106097	538053	1	MDEP	D	
PFC032321071.wiff	538053004	MB2	3/25/2021 12:15	2106097	538053	1	MDEP	D	
PFC032321072.wiff	538467001	MB2	3/25/2021 12:23	2106097	538467	1	MDEP	D	
PFC032321073.wiff	538467002	MB2	3/25/2021 12:32	2106097	538467	1	MDEP	D	
PFC032321074.wiff	538467003	MB2	3/25/2021 12:41	2106097	538467	1	MDEP	D	
PFC032321075.wiff	538467004	MB2	3/25/2021 12:49	2106097	538467	1	MDEP	D	
PFC032321076.wiff	WPFCVV	MB2	3/25/2021 12:58			1		C	WPF21030
PFC032321077.wiff	PFCIBLK15	MB2	3/25/2021 13:06			1		B	

2-01
2-02
2-03
2-05
2-07
2-10
2-11
2-08
2-09

4-10

4-09

4-10

2-08

4-09

2-08

4-09

4-10



Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**
Per- and Polyfluoroalkyl Substances (PFAS) Report

Page 1 of 2

I. PWS INFORMATION: Please refer to your MassDEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 1279000 City / Town: SOUTHWICK
PWS Name: Southwick Water Dept. PWS Class: COM ☒ NTNC ☐ TNC ☐

MassDEP Location (LOC) ID#	MassDEP Location Name	Sample Information	Date Collected	Collected By	
10000	POINT OF ENTRY	☐ (M)ultiple ☒ (S)ingle	☐ (R)aw ☒ (F)inished	09-MAR-21 11:37	Tim Viceland
Routine or Special Sample		If Resubmitted Report, list below:			
Original, Resubmitted or Confirmation Report		(1) Reason for Resubmission		(2) Collection Date of Original Sample	
☐ RS ☒ SS ☒ Original ☐ Resubmitted ☐ Confirmation		☐ Resample ☐ Reanalysis ☐ Report Correction			
SAMPLE COMMENTS - Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection or if this is a field reagent blank					

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: M-SC012 Primary Lab Name: GEL Laboratories LLC Subcontracted? (Y/N) N

Analysis Lab Cert. #: Analysis Lab Name:

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Dilution Factor	Lab Sample IDs#	
EPA 537.1	22-MAR-21 07:37	23-MAR-21 17:28	1	Primary Lab:	537551001
				Subcontracted Lab:	

CAS#	REGULATED PFAS CONTAMINANTS	Result ¹ ng/L	Result ² Qualifier	MCL* ng/L	MDL ng/L	MRL ng/L
1763-23-1	Perfluorooctane Sulfonic Acid (PFOS)	2.13		-	0.571	1.73
335-67-1	Perfluorooctanoic Acid (PFOA)	2.8			0.571	1.73
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)	1.04	J		0.519	1.57
375-95-1	Perfluorononanoic Acid (PFNA)	ND			0.571	1.73
375-85-9	Perfluorohexadecanoic Acid (PFHpA)	1.12	J		0.571	1.73
335-76-2	Perfluorodecanoic acid (PFDA)	ND			0.571	1.73
PFAS6 (sum of PFOS, PFOA, PFHxS, PFNA, PFHpA and PFDA; only include Results at or above the MRL; do not include estimated Results as described by a Result Qualifier in the next column)		= 4.93	--	20	-	-
UNREGULATED PFAS CONTAMINANTS						
375-73-5	Perfluorobutane sulfonic acid (PFBS)	1.29	J	-	0.502	1.54
307-55-1	Perfluorododecanoic acid (PFDoA)	ND			0.571	1.73
307-24-4	Perfluorohexanoic acid (PFHxA)	1.83			0.571	1.73
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND			0.571	1.73
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND			0.571	1.73
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND			0.571	1.73
2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NtFOSAA)	ND			1.14	3.46
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NmFOSAA)	ND			1.14	3.46
763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND			0.865	3.46
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	ND			1.14	3.46
919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND			0.571	1.73
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND			0.571	1.73

¹ A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

² All qualifiers must be described under Lab Analysis Comments on page 2.



Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**
Per- and Polyfluoroalkyl Substances (PFAS) Report

Page 1 of 2

I. PWS INFORMATION: Please refer to your MassDEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 1279000 City / Town: SOUTHWICK
PWS Name: Southwick Water Dept. PWS Class: COM ☒ NTNC ☐ TNC ☐

MassDEP Location (LOC) ID#	MassDEP Location Name	Sample Information	Date Collected	Collected By	
10006	POINT OF ENTRY POST TREATMENT	☐ (M)ultiple ☒ (S)ingle	☐ (R)aw ☒ (F)inished	09-MAR-21 10:11	Tim Viceland
Routine or Special Sample		If Resubmitted Report, list below:			
Original, Resubmitted or Confirmation Report		(1) Reason for Resubmission		(2) Collection Date of Original Sample	
☐ RS ☒ SS ☒ Original ☐ Resubmitted ☐ Confirmation		☐ Resample ☐ Reanalysis ☐ Report Correction			
SAMPLE COMMENTS - Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection or if this is a field reagent blank					

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: M-SC012 Primary Lab Name: GEL Laboratories LLC Subcontracted? (Y/N) N

Analysis Lab Cert. #: Analysis Lab Name:

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Dilution Factor	Lab Sample IDs#	
EPA 537.1	22-MAR-21 07:37	23-MAR-21 18:02	1	Primary Lab:	537551003
				Subcontracted Lab:	

CAS#	REGULATED PFAS CONTAMINANTS	Result ¹ ng/L	Result ² Qualifier	MCL* ng/L	MDL ng/L	MRL ng/L
1763-23-1	Perfluorooctane Sulfonic Acid (PFOS)	1.3	J	-	0.583	1.77
335-67-1	Perfluorooctanoic Acid (PFOA)	1.67	J		0.583	1.77
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)	1.28	J		0.53	1.61
375-95-1	Perfluorononanoic Acid (PFNA)	ND			0.583	1.77
375-85-9	Perfluorohexadecanoic Acid (PFHpA)	0.634	J		0.583	1.77
335-76-2	Perfluorodecanoic acid (PFDA)	ND			0.583	1.77
PFAS6 (sum of PFOS, PFOA, PFHxS, PFNA, PFHpA and PFDA; only include Results at or above the MRL; do not include estimated Results as described by a Result Qualifier in the next column)		= 0.00	--	20	-	-
UNREGULATED PFAS CONTAMINANTS						
375-73-5	Perfluorobutane sulfonic acid (PFBS)	0.807	J	-	0.512	1.57
307-55-1	Perfluorododecanoic acid (PFDoA)	ND			0.583	1.77
307-24-4	Perfluorohexanoic acid (PFHxA)	1.1	J		0.583	1.77
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND			0.583	1.77
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND			0.583	1.77
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND			0.583	1.77
2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NtFOSAA)	ND			1.17	3.53
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NmFOSAA)	ND			1.17	3.53
763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND			0.883	3.53
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	ND			1.17	3.53
919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND			0.583	1.77
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND			0.583	1.77

¹ A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

² All qualifiers must be described under Lab Analysis Comments on page 2.



Per- and Polyfluoroalkyl Substances (PFAS) Report

Page 2 of 2

PWS ID#: 1279000

Lab Sample ID#:

Primary Lab:	GEL Laboratories LLC
Subcontracted Lab:	

CAS#	UNREGULATED PFAS CONTAMINANTS	Result ¹ ng/L	Result ² Qualifier	MCL * ng/L	MDL ng/L	MRL ng/L
				-		

Surrogate Name	% Recovery (70 – 130%)	Alternate Surrogate (must document reason for change)
¹³ C ₂ -PFHxA	98	
¹³ C ₂ -PFDA	93	
d ₅ -NEtFOSAA	99	
¹³ C ₃ -HFPO-DA	89	

Note: ¹³C₃-HFPO-DA is not required for EPA Method 537 v1.1

In addition to the SUR above you must attach the results of the ongoing QC results as specified by the method for the sample's extraction batch.

☒ Laboratory analytical report with QC attached (check one item below).

☒ All associated QC criteria reported within control limits including Lab Reagent/Method Blank (LRB), Field Reagent Blank (FRB), Surrogate Standards (SUR), Laboratory Fortified Blank (LFB), Matrix Spike/Duplicate (LFSD/LFSMD or FD) and RPD.

☐ All associated sample and/or QC batch criteria not met. See Lab Analysis Comments below and narrative in attached report.

Lab Analysis Comments: (include sample/method parameters outside of or affecting QC controls/limits and result qualifiers)

Result Qualifier	Qualifier Description
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
Other Analysis Comments:	

* MCL or proposed MCL

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Lab Director Signature:

Meredith Boddiford

Date: 3/26/2021

If not submitting these results electronically, mail TWO copies of this report to your MassDEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner. Note that during the Massachusetts COVID-19 state of emergency, in addition to submitting by mail reports may be emailed to program.director-dwp@mass.gov.

MassDEP REVIEW STATUS (Initial & Date)	Review Comments	☐ WQTS Data Entered
☐ Accepted _____ ☐ Disapproved		



Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**
Per- and Polyfluoroalkyl Substances (PFAS) Report

Page 1 of 2

I. PWS INFORMATION: Please refer to your MassDEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 1279000 City / Town: SOUTHWICK
PWS Name: Southwick Water Dept. PWS Class: COM ☒ NTNC ☐ TNC ☐

MassDEP Location (LOC) ID#	MassDEP Location Name	Sample Information		Date Collected	Collected By
RW2	GREAT BROOK WELL #2 RAW WATER	☐ (M)ultiple ☒ (S)ingle	☒ (R)aw ☐ (F)inished	09-MAR-21 10:12	Tim Viceland
Routine or Special Sample		If Resubmitted Report, list below:			
Original, Resubmitted or Confirmation Report		(1) Reason for Resubmission		(2) Collection Date of Original Sample	
☐ RS ☒ SS ☒ Original ☐ Resubmitted ☐ Confirmation		☐ Resample ☐ Reanalysis ☐ Report Correction			
SAMPLE COMMENTS - Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection or if this is a field reagent blank					

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: M-SC012 Primary Lab Name: GEL Laboratories LLC Subcontracted? (Y/N) N

Analysis Lab Cert. #: Analysis Lab Name:

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Dilution Factor	Lab Sample IDs#	
EPA 537.1	22-MAR-21 07:37	23-MAR-21 18:19	1	Primary Lab:	537551005
				Subcontracted Lab:	

CAS#	REGULATED PFAS CONTAMINANTS	Result ¹ ng/L	Result ² Qualifier	MCL* ng/L	MDL ng/L	MRL ng/L
1763-23-1	Perfluorooctane Sulfonic Acid (PFOS)	1.13	J	-	0.581	1.76
335-67-1	Perfluorooctanoic Acid (PFOA)	1.39	J		0.581	1.76
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)	1.16	J		0.529	1.6
375-95-1	Perfluorononanoic Acid (PFNA)	ND			0.581	1.76
375-85-9	Perfluorohexadecanoic Acid (PFHpA)	0.87	J		0.581	1.76
335-76-2	Perfluorodecanoic acid (PFDA)	ND			0.581	1.76
PFAS6 (sum of PFOS, PFOA, PFHxS, PFNA, PFHpA and PFDA; only include Results at or above the MRL; do not include estimated Results as described by a Result Qualifier in the next column)		0.00	--	20	-	-
UNREGULATED PFAS CONTAMINANTS						
375-73-5	Perfluorobutane sulfonic acid (PFBS)	0.764	J	-	0.511	1.57
307-55-1	Perfluorododecanoic acid (PFDoA)	ND			0.581	1.76
307-24-4	Perfluorohexanoic acid (PFHxA)	1.02	J		0.581	1.76
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND			0.581	1.76
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND			0.581	1.76
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND			0.581	1.76
2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NtFOSAA)	ND			1.16	3.52
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NmFOSAA)	ND			1.16	3.52
763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND			0.881	3.52
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	ND			1.16	3.52
919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND			0.581	1.76
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND			0.581	1.76

¹ A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

² All qualifiers must be described under Lab Analysis Comments on page 2.



Per- and Polyfluoroalkyl Substances (PFAS) Report

Page 2 of 2

PWS ID#: 1279000

Lab Sample ID#:

Primary Lab:	GEL Laboratories LLC
Subcontracted Lab:	

CAS#	UNREGULATED PFAS CONTAMINANTS	Result ¹ ng/L	Result ² Qualifier	MCL * ng/L	MDL ng/L	MRL ng/L
				-		

Surrogate Name	% Recovery (70 – 130%)	Alternate Surrogate (must document reason for change)
¹³ C ₂ -PFHxA	83	
¹³ C ₂ -PFDA	83	
d ₅ -NEtFOSAA	98	
¹³ C ₃ -HFPO-DA	84	

Note: ¹³C₃-HFPO-DA is not required for EPA Method 537 v1.1

In addition to the SUR above you must attach the results of the ongoing QC results as specified by the method for the sample's extraction batch.

☒ **Laboratory analytical report with QC attached (check one item below).**

- ☒ All associated QC criteria reported within control limits including Lab Reagent/Method Blank (LRB), Field Reagent Blank (FRB), Surrogate Standards (SUR), Laboratory Fortified Blank (LFB), Matrix Spike/Duplicate (LFSD/LFSMD or FD) and RPD.
- ☐ All associated sample and/or QC batch criteria not met. See Lab Analysis Comments below and narrative in attached report.

Lab Analysis Comments: (include sample/method parameters outside of or affecting QC controls/limits and result qualifiers)

Result Qualifier	Qualifier Description
J	Value is estimated
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
Other Analysis Comments:	

* MCL or proposed MCL

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Lab Director Signature:

Meredith Bouldiford

Date: 3/26/2021

If not submitting these results electronically, mail TWO copies of this report to your MassDEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner. Note that during the Massachusetts COVID-19 state of emergency, in addition to submitting by mail reports may be emailed to program.director-dwp@mass.gov.

MassDEP REVIEW STATUS (Initial & Date)	Review Comments	☐ WQTS Data Entered
☐ Accepted _____ ☐ Disapproved		