



LELAP Certificate Number: 01955  
A2LA Accredited (DoD ELAP-QSM 5.4) Certificate Number: 6429.01

# ANALYTICAL RESULTS

## PERFORMED BY

**Pace Analytical Gulf Coast**  
7979 Innovation Park Dr.  
Baton Rouge, LA 70820  
(225) 769-4900

**Report Date** 10/03/2022

**Report #** 222082589



**Project** Benner Soil

**Samples Collected** 8/22/22

***Deliver To***

Erin Peeling  
Benner Soil  
4900 Ritter Rd  
Suite 101  
Mechanicsburg, PA 17055  
715906308

***Additional Recipients***

Mathew Blanchard, HDR Engineering



## Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

### Common Abbreviations that may be Utilized in this Report

<b>ND</b>	Indicates the result was Not Detected at the specified reporting limit
<b>NO</b>	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
<b>DO</b>	Indicates the result was Diluted Out
<b>MI</b>	Indicates the result was subject to Matrix Interference
<b>TNTC</b>	Indicates the result was Too Numerous To Count
<b>SUBC</b>	Indicates the analysis was Sub-Contracted
<b>FLD</b>	Indicates the analysis was performed in the Field
<b>DL</b>	Detection Limit
<b>LOD</b>	Limit of Detection
<b>LOQ</b>	Limit of Quantitation
<b>RE</b>	Re-analysis
<b>CF</b>	HPLC or GC Confirmation
<b>00:01</b>	Reported as a time equivalent to 12:00 AM

### Reporting Flags that may be Utilized in this Report

<b>J or I</b>	Indicates the result is between the MDL and LOQ
<b>J</b>	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
<b>U</b>	Indicates the compound was analyzed for but not detected
<b>B or V</b>	Indicates the analyte was detected in the associated Method Blank
<b>Q</b>	Indicates a non-compliant QC Result (See Q Flag Application Report)
<b>*</b>	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
<b>E</b>	Organics - The result is estimated because it exceeded the instrument calibration range
<b>E</b>	Metals - % difference for the serial dilution is > 10%
<b>L</b>	Reporting Limits adjusted to meet risk-based limit.
<b>P</b>	RPD between primary and confirmation result is greater than 40
<b>DL</b>	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature  
Pace Gulf Coast Report 222082589

## Certifications

<b>Certification</b>	<b>Certification Number</b>
A2LA Accredited (DoD ELAP-QSM 5.4)	6429.01
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

## Case Narrative

**Client:** HDR Engineering      **Report:** 222082589

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

### **SEMI-VOLATILES MASS SPECTROMETRY**

In the EPA 537 Mod Isotope Dilution analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA, d7-NMeFOSE and d9-NEtFOSE is outside the control limits for sample 2390559 (MB for HBN 748780 [LCMS/6469]) .

In the EPA 537 Mod Isotope Dilution analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2390561 (LCSD for HBN 748780 [LCMS/6469]) . The recovery of the associated compounds is within control limits.

In the EPA 537 Mod Isotope Dilution analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2390561 (LCSD for HBN 748780 [LCMS/6469]) . The recovery of the associated compounds is within control limits.

In the EPA 537 Mod Isotope Dilution analysis for prep batch 748780, the LCS and/or LCSD recoveries are outside control limits for PFODA.

In the EPA 537 Mod Isotope Dilution analysis for prep batch 750105, the LCS and/or LCSD recoveries are above the upper control limits for NMeFOSA. This analyte was not detected in the associated samples.

In the EPA 537 Mod Isotope Dilution analysis for prep batch 748780, the LCS/LCSD RPD is above the control limit for PFODA.

In the EPA 537 Mod Isotope Dilution analysis for prep batch 750105, PFOS was detected at an estimated concentration in the method blank. This compound was not detected in any of the associated samples.

## Sample Summary

Lab ID	Client ID	Matrix	Collect Date	Receive Date
22208258901	UPA RUNWAY DC02:0.5-2	Solid	8/22/22 09:30	8/25/22 10:17
22208258902	UPA RUNWAY DC01:0.5-2	Solid	8/22/22 09:50	8/25/22 10:17
22208258903	UPASW AREA02:0.5-2	Solid	8/22/22 10:50	8/25/22 10:17
22208258904	UPASW AREA01:0.5-2	Solid	8/22/22 11:30	8/25/22 10:17
22208258905	UPASW AREA03:0.5-2	Solid	8/22/22 12:15	8/25/22 10:17
22208258906	UPANE HUNGER:0.5-2	Solid	8/22/22 13:10	8/25/22 10:17
22208258907	EQRB-03	Water	8/22/22 13:25	8/25/22 10:17
22208258908	BD-03	Solid	8/22/22 12:00	8/25/22 10:17

## Detect Summary

Results and Detection Limits are adjusted for dilution and moisture when applicable

EPA 537 Mod Isotope Dil.						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22208258901	UPA RUNWAY DC02:0.5-2	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	0.143J	1	14.33
22208258902	UPA RUNWAY DC01:0.5-2	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	0.186J	1	15.36
22208258903	UPASW AREA02:0.5-2	Perfluorohexanoic acid (PFHxA)	ug/Kg	0.029J	1	9.43
22208258903	UPASW AREA02:0.5-2	Perfluorononanoic acid (PFNA)	ug/Kg	0.028J	1	9.43
22208258903	UPASW AREA02:0.5-2	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	0.214J	1	9.43
22208258903	UPASW AREA02:0.5-2	Perfluorooctanoic acid (PFOA)	ug/Kg	0.109J	1	9.43
22208258904	UPASW AREA01:0.5-2	Perfluorobutanesulfonic acid (PFBS)	ug/Kg	0.035J	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorodecanoic acid (PFDA)	ug/Kg	0.388J	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorododecanoic acid (PFDoA)	ug/Kg	0.080J	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.761J	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorohexanoic acid (PFHxA)	ug/Kg	0.399J	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorononanoic acid (PFNA)	ug/Kg	0.294J	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	6.25	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorooctanoic acid (PFOA)	ug/Kg	2.17	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluorotetradecanoic acid (PFTA)	ug/Kg	0.031J	1	24.69
22208258904	UPASW AREA01:0.5-2	Perfluoroundecanoic acid (PFUnA)	ug/Kg	0.063J	1	24.69
22208258905	UPASW AREA03:0.5-2	Perfluorodecanoic acid (PFDA)	ug/Kg	0.096J	1	12.99
22208258905	UPASW AREA03:0.5-2	Perfluorododecanoic acid (PFDoA)	ug/Kg	0.032J	1	12.99
22208258905	UPASW AREA03:0.5-2	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.034J	1	12.99
22208258905	UPASW AREA03:0.5-2	Perfluorohexanoic acid (PFHxA)	ug/Kg	0.096J	1	12.99
22208258905	UPASW AREA03:0.5-2	Perfluorononanoic acid (PFNA)	ug/Kg	0.084J	1	12.99
22208258905	UPASW AREA03:0.5-2	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	1.37	1	12.99
22208258905	UPASW AREA03:0.5-2	Perfluorooctanoic acid (PFOA)	ug/Kg	0.502J	1	12.99
22208258905	UPASW AREA03:0.5-2	Perfluoroundecanoic acid (PFUnA)	ug/Kg	0.025J	1	12.99
22208258906	UPANE HUNGER:0.5-2	Perfluorobutanesulfonic acid (PFBS)	ug/Kg	0.075J	1	14.2
22208258906	UPANE HUNGER:0.5-2	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	1.49	1	14.2
22208258906	UPANE HUNGER:0.5-2	Perfluorohexanoic acid (PFHxA)	ug/Kg	0.149J	1	14.2
22208258906	UPANE HUNGER:0.5-2	Perfluorononanoic acid (PFNA)	ug/Kg	0.037J	1	14.2
22208258906	UPANE HUNGER:0.5-2	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	4.26	1	14.2
22208258906	UPANE HUNGER:0.5-2	Perfluorooctanoic acid (PFOA)	ug/Kg	0.096J	1	14.2
22208258907	EQRB-03	Perfluorooctanesulfonic acid (PFOS)	ng/L	0.472J	1	NA
22208258908	BD-03	Perfluorohexanoic acid (PFHxA)	ug/Kg	0.041J	1	9.61
22208258908	BD-03	Perfluorononanoic acid (PFNA)	ug/Kg	0.029J	1	9.61
22208258908	BD-03	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	0.220J	1	9.61
22208258908	BD-03	Perfluorooctanoic acid (PFOA)	ug/Kg	0.114J	1	9.61

## Sample Results

<b>UPA RUNWAY DC02:0.5-2</b>	<b>Collect Date</b> 08/22/2022 09:30	<b>Lab ID</b> 22208258901
	<b>Receive Date</b> 08/25/2022 10:17	<b>Matrix</b> Solid

### EPA 537 Mod Isotope Dilution

\*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/26/22 10:00	748439	EPA 537 Mod Isotope Dilution	1	08/30/22 16:28	748598	ADA	14.33

CAS#	Parameter	Result	DL	LOQ	Units	
763051-92-9	11CI-PF3OUdS	ND	0.021	1.06	ug/Kg	
756426-58-1	9CI-PF3ONS	ND	0.032	1.06	ug/Kg	
919005-14-4	ADONA	ND	0.011	1.06	ug/Kg	
2991-50-6	NEtFOSAA	ND	0.032	1.06	ug/Kg	
2355-31-9	NMeFOSAA	ND	0.021	1.06	ug/Kg	
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	0.149	2.12	ug/Kg	
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND	0.021	1.06	ug/Kg	
335-76-2	Perfluorodecanoic acid (PFDA)	ND	0.042	1.06	ug/Kg	
307-55-1	Perfluorododecanoic acid (PFDoA)	ND	0.021	1.06	ug/Kg	
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND	0.032	1.06	ug/Kg	
307-24-4	Perfluorohexanoic acid (PFHxA)	ND	0.021	1.06	ug/Kg	
375-95-1	Perfluorononanoic acid (PFNA)	ND	0.021	1.06	ug/Kg	
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND	0.021	1.06	ug/Kg	
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.143J</b>	0.053	1.06	ug/Kg	
335-67-1	Perfluorooctanoic acid (PFOA)	ND	0.085	1.06	ug/Kg	
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	0.021	1.06	ug/Kg	
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND	0.032	1.06	ug/Kg	
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND	0.021	1.06	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
2355-31-9-EIS	d3-NMeFOSAA	90.9	68.6	ug/Kg	75	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	90.9	72.5	ug/Kg	80	50 - 150
757124-72-4-EIS	M2 4:2 FTS	90.9	68.5	ug/Kg	75	50 - 150
27619-97-2-EIS	M2 6:2 FTS	90.9	72.3	ug/Kg	80	50 - 150
39108-34-4-EIS	M2 8:2 FTS	90.9	76.4	ug/Kg	84	50 - 150
376-06-7-EIS	M2PFTA	90.9	85.1	ug/Kg	94	50 - 150
13252-13-6-EIS	M3HFPODA	90.9	81.5	ug/Kg	90	50 - 150
375-73-5-EIS	M3PFBS	90.9	68.2	ug/Kg	75	50 - 150
355-46-4-EIS	M3PFHxS	90.9	75	ug/Kg	83	50 - 150
375-85-9-EIS	M4PFHpA	90.9	73.5	ug/Kg	81	50 - 150
307-24-4-EIS	M5PFHxA	90.9	71.9	ug/Kg	79	50 - 150
2706-90-3-EIS	M5PFPeA	90.9	71.6	ug/Kg	79	50 - 150
335-76-2-EIS	M6PFDA	90.9	79.2	ug/Kg	87	50 - 150
2058-94-8-EIS	M7PFUnA	90.9	78.4	ug/Kg	86	50 - 150
754-91-6-EIS	M8FOSA	90.9	75.6	ug/Kg	83	50 - 150
335-67-1-EIS	M8PFOA	90.9	75.3	ug/Kg	83	50 - 150
1763-23-1-EIS	M8PFOS	90.9	79.8	ug/Kg	88	50 - 150
375-95-1-EIS	M9PFNA	90.9	78.5	ug/Kg	86	50 - 150
375-22-4-EIS	MPFBA	90.9	69.3	ug/Kg	76	50 - 150
307-55-1-EIS	MPFDoA	90.9	74.8	ug/Kg	82	50 - 150

## Sample Results

<b>UPA RUNWAY DC01:0.5-2</b>	<b>Collect Date</b> 08/22/2022 09:50	<b>Lab ID</b> 22208258902
	<b>Receive Date</b> 08/25/2022 10:17	<b>Matrix</b> Solid

### EPA 537 Mod Isotope Dilution

\*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/26/22 10:00	748439	EPA 537 Mod Isotope Dilution	1	08/30/22 16:43	748598	ADA	15.36

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	ND	0.022	1.10	ug/Kg
756426-58-1	9CI-PF3ONS	ND	0.033	1.10	ug/Kg
919005-14-4	ADONA	ND	0.011	1.10	ug/Kg
2991-50-6	NEtFOSAA	ND	0.033	1.10	ug/Kg
2355-31-9	NMeFOSAA	ND	0.022	1.10	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	0.154	2.20	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND	0.022	1.10	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	ND	0.044	1.10	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	ND	0.022	1.10	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND	0.033	1.10	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	ND	0.022	1.10	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	ND	0.022	1.10	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND	0.022	1.10	ug/Kg
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.186J</b>	0.055	1.10	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	ND	0.088	1.10	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	0.022	1.10	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND	0.033	1.10	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND	0.022	1.10	ug/Kg

CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
2355-31-9-EIS	d3-NMeFOSAA	92.9	65.8	ug/Kg	71	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	92.9	66	ug/Kg	71	50 - 150
757124-72-4-EIS	M2 4:2 FTS	92.9	55.3	ug/Kg	60	50 - 150
27619-97-2-EIS	M2 6:2 FTS	92.9	56.6	ug/Kg	61	50 - 150
39108-34-4-EIS	M2 8:2 FTS	92.9	68.7	ug/Kg	74	50 - 150
376-06-7-EIS	M2PFTA	92.9	68.9	ug/Kg	74	50 - 150
13252-13-6-EIS	M3HFPODA	92.9	60.7	ug/Kg	65	50 - 150
375-73-5-EIS	M3PFBS	92.9	50.6	ug/Kg	54	50 - 150
355-46-4-EIS	M3PFHxS	92.9	59.5	ug/Kg	64	50 - 150
375-85-9-EIS	M4PFHpA	92.9	58.3	ug/Kg	63	50 - 150
307-24-4-EIS	M5PFHxA	92.9	56.2	ug/Kg	60	50 - 150
2706-90-3-EIS	M5PFPeA	92.9	54.5	ug/Kg	59	50 - 150
335-76-2-EIS	M6PFDA	92.9	71.8	ug/Kg	77	50 - 150
2058-94-8-EIS	M7PFUnA	92.9	70.9	ug/Kg	76	50 - 150
754-91-6-EIS	M8FOSA	92.9	72.8	ug/Kg	78	50 - 150
335-67-1-EIS	M8PFOA	92.9	62.2	ug/Kg	67	50 - 150
1763-23-1-EIS	M8PFOS	92.9	67.9	ug/Kg	73	50 - 150
375-95-1-EIS	M9PFNA	92.9	67.8	ug/Kg	73	50 - 150
375-22-4-EIS	MPFBA	92.9	52.1	ug/Kg	56	50 - 150
307-55-1-EIS	MPFDoA	92.9	68	ug/Kg	73	50 - 150



## Sample Results

<b>UPASW AREA02:0.5-2</b>	<b>Collect Date</b> 08/22/2022 10:50	<b>Lab ID</b> 22208258903
	<b>Receive Date</b> 08/25/2022 10:17	<b>Matrix</b> Solid

**EPA 537 Mod Isotope Dilution**

\*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/26/22 10:00	748439	EPA 537 Mod Isotope Dilution	1	08/30/22 16:57	748598	ADA	9.43

CAS#	Parameter	Result	DL	LOQ	Units	
763051-92-9	11Cl-PF3OUdS	ND	0.020	1.01	ug/Kg	
756426-58-1	9Cl-PF3ONS	ND	0.030	1.01	ug/Kg	
919005-14-4	ADONA	ND	0.010	1.01	ug/Kg	
2991-50-6	NEtFOSAA	ND	0.030	1.01	ug/Kg	
2355-31-9	NMeFOSAA	ND	0.020	1.01	ug/Kg	
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	0.141	2.02	ug/Kg	
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND	0.020	1.01	ug/Kg	
335-76-2	Perfluorodecanoic acid (PFDA)	ND	0.040	1.01	ug/Kg	
307-55-1	Perfluorododecanoic acid (PFDoA)	ND	0.020	1.01	ug/Kg	
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND	0.030	1.01	ug/Kg	
307-24-4	<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.029J</b>	0.020	1.01	ug/Kg	
375-95-1	<b>Perfluorononanoic acid (PFNA)</b>	<b>0.028J</b>	0.020	1.01	ug/Kg	
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND	0.020	1.01	ug/Kg	
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.214J</b>	0.050	1.01	ug/Kg	
335-67-1	<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.109J</b>	0.081	1.01	ug/Kg	
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	0.020	1.01	ug/Kg	
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND	0.030	1.01	ug/Kg	
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND	0.020	1.01	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
2355-31-9-EIS	d3-NMeFOSAA	91.4	66.8	ug/Kg	73	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	91.4	75.7	ug/Kg	83	50 - 150
757124-72-4-EIS	M2 4:2 FTS	91.4	77	ug/Kg	84	50 - 150
27619-97-2-EIS	M2 6:2 FTS	91.4	79.6	ug/Kg	87	50 - 150
39108-34-4-EIS	M2 8:2 FTS	91.4	82.6	ug/Kg	90	50 - 150
376-06-7-EIS	M2PFTA	91.4	101	ug/Kg	111	50 - 150
13252-13-6-EIS	M3HFPODA	91.4	90.8	ug/Kg	99	50 - 150
375-73-5-EIS	M3PFBS	91.4	74.3	ug/Kg	81	50 - 150
355-46-4-EIS	M3PFHxS	91.4	80.6	ug/Kg	88	50 - 150
375-85-9-EIS	M4PFHpA	91.4	82.4	ug/Kg	90	50 - 150
307-24-4-EIS	M5PFHxA	91.4	83.3	ug/Kg	91	50 - 150
2706-90-3-EIS	M5PFPeA	91.4	82.1	ug/Kg	90	50 - 150
335-76-2-EIS	M6PFDA	91.4	82.9	ug/Kg	91	50 - 150
2058-94-8-EIS	M7PFUnA	91.4	82	ug/Kg	90	50 - 150
754-91-6-EIS	M8FOSA	91.4	73.9	ug/Kg	81	50 - 150
335-67-1-EIS	M8PFOA	91.4	81.1	ug/Kg	89	50 - 150
1763-23-1-EIS	M8PFOS	91.4	82.4	ug/Kg	90	50 - 150
375-95-1-EIS	M9PFNA	91.4	83.6	ug/Kg	91	50 - 150
375-22-4-EIS	MPFBA	91.4	81.6	ug/Kg	89	50 - 150
307-55-1-EIS	MPFDoA	91.4	79.3	ug/Kg	87	50 - 150

## Sample Results

<b>UPASW AREA01:0.5-2</b>	<b>Collect Date</b> 08/22/2022 11:30	<b>Lab ID</b> 22208258904
	<b>Receive Date</b> 08/25/2022 10:17	<b>Matrix</b> Solid

**EPA 537 Mod Isotope Dilution**

\*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/26/22 10:00	748439	EPA 537 Mod Isotope Dilution	1	08/30/22 17:12	748598	ADA	24.69

CAS#	Parameter	Result	DL	LOQ	Units	
763051-92-9	11Cl-PF3OUdS	ND	0.024	1.21	ug/Kg	
756426-58-1	9Cl-PF3ONS	ND	0.036	1.21	ug/Kg	
919005-14-4	ADONA	ND	0.012	1.21	ug/Kg	
2991-50-6	NEtFOSAA	ND	0.036	1.21	ug/Kg	
2355-31-9	NMeFOSAA	ND	0.024	1.21	ug/Kg	
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	0.169	2.42	ug/Kg	
375-73-5	<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.035J</b>	0.024	1.21	ug/Kg	
335-76-2	<b>Perfluorodecanoic acid (PFDA)</b>	<b>0.388J</b>	0.048	1.21	ug/Kg	
307-55-1	<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.080J</b>	0.024	1.21	ug/Kg	
355-46-4	<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.761J</b>	0.036	1.21	ug/Kg	
307-24-4	<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.399J</b>	0.024	1.21	ug/Kg	
375-95-1	<b>Perfluorononanoic acid (PFNA)</b>	<b>0.294J</b>	0.024	1.21	ug/Kg	
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND	0.024	1.21	ug/Kg	
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>6.25</b>	0.060	1.21	ug/Kg	
335-67-1	<b>Perfluorooctanoic acid (PFOA)</b>	<b>2.17</b>	0.097	1.21	ug/Kg	
376-06-7	<b>Perfluorotetradecanoic acid (PFTA)</b>	<b>0.031J</b>	0.024	1.21	ug/Kg	
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND	0.036	1.21	ug/Kg	
2058-94-8	<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.063J</b>	0.024	1.21	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
2355-31-9-EIS	d3-NMeFOSAA	91.1	59.4	ug/Kg	65	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	91.1	61.5	ug/Kg	68	50 - 150
757124-72-4-EIS	M2 4:2 FTS	91.1	73.6	ug/Kg	81	50 - 150
27619-97-2-EIS	M2 6:2 FTS	91.1	78.5	ug/Kg	86	50 - 150
39108-34-4-EIS	M2 8:2 FTS	91.1	86.7	ug/Kg	95	50 - 150
376-06-7-EIS	M2PFTA	91.1	80.7	ug/Kg	89	50 - 150
13252-13-6-EIS	M3HFPODA	91.1	69.8	ug/Kg	77	50 - 150
375-73-5-EIS	M3PFBS	91.1	65.6	ug/Kg	72	50 - 150
355-46-4-EIS	M3PFHxS	91.1	70.4	ug/Kg	77	50 - 150
375-85-9-EIS	M4PFHpA	91.1	66.5	ug/Kg	73	50 - 150
307-24-4-EIS	M5PFHxA	91.1	66.8	ug/Kg	73	50 - 150
2706-90-3-EIS	M5PFPeA	91.1	66	ug/Kg	72	50 - 150
335-76-2-EIS	M6PFDA	91.1	72.1	ug/Kg	79	50 - 150
2058-94-8-EIS	M7PFUnA	91.1	71.3	ug/Kg	78	50 - 150
754-91-6-EIS	M8FOSA	91.1	70.7	ug/Kg	78	50 - 150
335-67-1-EIS	M8PFOA	91.1	66.6	ug/Kg	73	50 - 150
1763-23-1-EIS	M8PFOS	91.1	72.6	ug/Kg	80	50 - 150
375-95-1-EIS	M9PFNA	91.1	69.9	ug/Kg	77	50 - 150
375-22-4-EIS	MPFBA	91.1	64	ug/Kg	70	50 - 150
307-55-1-EIS	MPFDoA	91.1	72.8	ug/Kg	80	50 - 150

## Sample Results

<b>UPASW AREA03:0.5-2</b>	<b>Collect Date</b> 08/22/2022 12:15	<b>Lab ID</b> 22208258905
	<b>Receive Date</b> 08/25/2022 10:17	<b>Matrix</b> Solid

### EPA 537 Mod Isotope Dilution

\*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/26/22 10:00	748439	EPA 537 Mod Isotope Dilution	1	08/30/22 17:42	748598	ADA	12.99

CAS#	Parameter	Result	DL	LOQ	Units	
763051-92-9	11Cl-PF3OUdS	ND	0.021	1.06	ug/Kg	
756426-58-1	9Cl-PF3ONS	ND	0.032	1.06	ug/Kg	
919005-14-4	ADONA	ND	0.011	1.06	ug/Kg	
2991-50-6	NEtFOSAA	ND	0.032	1.06	ug/Kg	
2355-31-9	NMeFOSAA	ND	0.021	1.06	ug/Kg	
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	0.148	2.12	ug/Kg	
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND	0.021	1.06	ug/Kg	
335-76-2	<b>Perfluorodecanoic acid (PFDA)</b>	<b>0.096J</b>	0.042	1.06	ug/Kg	
307-55-1	<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.032J</b>	0.021	1.06	ug/Kg	
355-46-4	<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.034J</b>	0.032	1.06	ug/Kg	
307-24-4	<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.096J</b>	0.021	1.06	ug/Kg	
375-95-1	<b>Perfluorononanoic acid (PFNA)</b>	<b>0.084J</b>	0.021	1.06	ug/Kg	
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND	0.021	1.06	ug/Kg	
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.37</b>	0.053	1.06	ug/Kg	
335-67-1	<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.502J</b>	0.085	1.06	ug/Kg	
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	0.021	1.06	ug/Kg	
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND	0.032	1.06	ug/Kg	
2058-94-8	<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.025J</b>	0.021	1.06	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
2355-31-9-EIS	d3-NMeFOSAA	92.3	65.7	ug/Kg	71	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	92.3	70	ug/Kg	76	50 - 150
757124-72-4-EIS	M2 4:2 FTS	92.3	78.2	ug/Kg	85	50 - 150
27619-97-2-EIS	M2 6:2 FTS	92.3	77.3	ug/Kg	84	50 - 150
39108-34-4-EIS	M2 8:2 FTS	92.3	85.9	ug/Kg	93	50 - 150
376-06-7-EIS	M2PFTA	92.3	72.3	ug/Kg	78	50 - 150
13252-13-6-EIS	M3HFPODA	92.3	84.2	ug/Kg	91	50 - 150
375-73-5-EIS	M3PFBS	92.3	72.1	ug/Kg	78	50 - 150
355-46-4-EIS	M3PFHxS	92.3	74.8	ug/Kg	81	50 - 150
375-85-9-EIS	M4PFHpA	92.3	77.8	ug/Kg	84	50 - 150
307-24-4-EIS	M5PFHxA	92.3	78.9	ug/Kg	86	50 - 150
2706-90-3-EIS	M5PFPeA	92.3	78.8	ug/Kg	85	50 - 150
335-76-2-EIS	M6PFDA	92.3	78.3	ug/Kg	85	50 - 150
2058-94-8-EIS	M7PFUnA	92.3	77.4	ug/Kg	84	50 - 150
754-91-6-EIS	M8FOSA	92.3	69	ug/Kg	75	50 - 150
335-67-1-EIS	M8PFOA	92.3	77.1	ug/Kg	84	50 - 150
1763-23-1-EIS	M8PFOS	92.3	74.8	ug/Kg	81	50 - 150
375-95-1-EIS	M9PFNA	92.3	78.6	ug/Kg	85	50 - 150
375-22-4-EIS	MPFBA	92.3	77.9	ug/Kg	84	50 - 150
307-55-1-EIS	MPFDoA	92.3	74.1	ug/Kg	80	50 - 150

## Sample Results

<b>UPANE HUNGER:0.5-2</b>	<b>Collect Date</b>	08/22/2022 13:10	<b>Lab ID</b>	22208258906
	<b>Receive Date</b>	08/25/2022 10:17	<b>Matrix</b>	Solid

**EPA 537 Mod Isotope Dilution**

\*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/26/22 10:00	748439	EPA 537 Mod Isotope Dilution	1	08/30/22 17:57	748598	ADA	14.2

CAS#	Parameter	Result	DL	LOQ	Units	
763051-92-9	11CI-PF3OUdS	ND	0.022	1.11	ug/Kg	
756426-58-1	9CI-PF3ONS	ND	0.033	1.11	ug/Kg	
919005-14-4	ADONA	ND	0.011	1.11	ug/Kg	
2991-50-6	NEtFOSAA	ND	0.033	1.11	ug/Kg	
2355-31-9	NMeFOSAA	ND	0.022	1.11	ug/Kg	
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	0.155	2.21	ug/Kg	
375-73-5	<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.075J</b>	0.022	1.11	ug/Kg	
335-76-2	Perfluorodecanoic acid (PFDA)	ND	0.044	1.11	ug/Kg	
307-55-1	Perfluorododecanoic acid (PFDoA)	ND	0.022	1.11	ug/Kg	
355-46-4	<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.49</b>	0.033	1.11	ug/Kg	
307-24-4	<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.149J</b>	0.022	1.11	ug/Kg	
375-95-1	<b>Perfluorononanoic acid (PFNA)</b>	<b>0.037J</b>	0.022	1.11	ug/Kg	
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND	0.022	1.11	ug/Kg	
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>4.26</b>	0.055	1.11	ug/Kg	
335-67-1	<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.096J</b>	0.088	1.11	ug/Kg	
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	0.022	1.11	ug/Kg	
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND	0.033	1.11	ug/Kg	
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND	0.022	1.11	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
2355-31-9-EIS	d3-NMeFOSAA	94.9	93.8	ug/Kg	99	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	94.9	97	ug/Kg	102	50 - 150
757124-72-4-EIS	M2 4:2 FTS	94.9	92.4	ug/Kg	97	50 - 150
27619-97-2-EIS	M2 6:2 FTS	94.9	97.4	ug/Kg	103	50 - 150
39108-34-4-EIS	M2 8:2 FTS	94.9	107	ug/Kg	113	50 - 150
376-06-7-EIS	M2PFTA	94.9	120	ug/Kg	126	50 - 150
13252-13-6-EIS	M3HFPODA	94.9	105	ug/Kg	111	50 - 150
375-73-5-EIS	M3PFBS	94.9	96.4	ug/Kg	102	50 - 150
355-46-4-EIS	M3PFHxS	94.9	100	ug/Kg	105	50 - 150
375-85-9-EIS	M4PFHpA	94.9	102	ug/Kg	108	50 - 150
307-24-4-EIS	M5PFHxA	94.9	105	ug/Kg	110	50 - 150
2706-90-3-EIS	M5PFPeA	94.9	106	ug/Kg	111	50 - 150
335-76-2-EIS	M6PFDA	94.9	101	ug/Kg	106	50 - 150
2058-94-8-EIS	M7PFUnA	94.9	102	ug/Kg	107	50 - 150
754-91-6-EIS	M8FOSA	94.9	94.1	ug/Kg	99	50 - 150
335-67-1-EIS	M8PFOA	94.9	101	ug/Kg	107	50 - 150
1763-23-1-EIS	M8PFOS	94.9	97.2	ug/Kg	102	50 - 150
375-95-1-EIS	M9PFNA	94.9	101	ug/Kg	107	50 - 150
375-22-4-EIS	MPFBA	94.9	104	ug/Kg	110	50 - 150
307-55-1-EIS	MPFDoA	94.9	96	ug/Kg	101	50 - 150

## Sample Results

<b>EQRB-03</b>	Collect Date	08/22/2022 13:25	Lab ID	22208258907
	Receive Date	08/25/2022 10:17	Matrix	Water

### EPA 537 Mod Isotope Dilution

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/31/22 14:00	748780	EPA 537 Mod Isotope Dilution	1	09/07/22 21:03	749256	ADA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
763051-92-9	11Cl-PF3OUdS	ND	0.448	1.99	ng/L	
756426-58-1	9Cl-PF3ONS	ND	0.448	1.99	ng/L	
919005-14-4	ADONA	ND	0.428	1.99	ng/L	
2991-50-6	NEtFOSAA	ND	0.787	3.98	ng/L	
2355-31-9	NMeFOSAA	ND	0.448	3.98	ng/L	
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	3.32	9.96	ng/L	
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND	0.309	1.99	ng/L	
335-76-2	Perfluorodecanoic acid (PFDA)	ND	0.717	1.99	ng/L	
307-55-1	Perfluorododecanoic acid (PFDoA)	ND	0.647	1.99	ng/L	
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND	0.578	1.99	ng/L	
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND	0.618	1.99	ng/L	
307-24-4	Perfluorohexanoic acid (PFHxA)	ND	0.468	1.99	ng/L	
375-95-1	Perfluorononanoic acid (PFNA)	ND	0.488	1.99	ng/L	
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.472J</b>	0.378	1.99	ng/L	
335-67-1	Perfluorooctanoic acid (PFOA)	ND	0.418	1.99	ng/L	
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	0.568	1.99	ng/L	
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND	0.613	1.99	ng/L	
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND	0.618	1.99	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	49.8	26	ng/L	52	50 - 150
31506-32-8-EIS	d-NMeFOSA	49.8	25.7	ng/L	52	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	49.8	33.1	ng/L	66	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	49.8	35.9	ng/L	72	50 - 150
24448-09-7-EIS	d7-NMeFOSE	49.8	30.1	ng/L	61	50 - 150
1691-99-2-EIS	d9-NEtFOSE	49.8	30.7	ng/L	62	50 - 150
757124-72-4-EIS	M2 4:2 FTS	49.8	34.5	ng/L	69	50 - 150
27619-97-2-EIS	M2 6:2 FTS	49.8	32.3	ng/L	65	50 - 150
39108-34-4-EIS	M2 8:2 FTS	49.8	37.6	ng/L	76	50 - 150
67905-19-5-EIS	M2PFHxDA	49.8	39	ng/L	78	50 - 150
376-06-7-EIS	M2PFTA	49.8	35.2	ng/L	71	50 - 150
13252-13-6-EIS	M3HFPODA	49.8	42.1	ng/L	85	50 - 150
375-73-5-EIS	M3PFBS	49.8	38.4	ng/L	77	50 - 150
355-46-4-EIS	M3PFHxS	49.8	38.5	ng/L	77	50 - 150
375-85-9-EIS	M4PFHpA	49.8	38.4	ng/L	77	50 - 150
307-24-4-EIS	M5PFHxA	49.8	39.2	ng/L	79	50 - 150
2706-90-3-EIS	M5PFPeA	49.8	40.6	ng/L	82	50 - 150
335-76-2-EIS	M6PFDA	49.8	38.6	ng/L	78	50 - 150
2058-94-8-EIS	M7PFUnA	49.8	38.9	ng/L	78	50 - 150
754-91-6-EIS	M8FOSA	49.8	33.1	ng/L	66	50 - 150
335-67-1-EIS	M8PFOA	49.8	39.7	ng/L	80	50 - 150
1763-23-1-EIS	M8PFOS	49.8	39.7	ng/L	80	50 - 150
375-95-1-EIS	M9PFNA	49.8	39.7	ng/L	80	50 - 150
375-22-4-EIS	MPFBA	49.8	37.7	ng/L	76	50 - 150
307-55-1-EIS	MPFDoA	49.8	35.5	ng/L	71	50 - 150

# Sample Results

<b>BD-03</b>	<b>Collect Date</b>	08/22/2022 12:00	<b>Lab ID</b>	22208258908
	<b>Receive Date</b>	08/25/2022 10:17	<b>Matrix</b>	Solid

## EPA 537 Mod Isotope Dilution

\*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
08/26/22 10:00	748439	EPA 537 Mod Isotope Dilution	1	08/30/22 18:12	748598	ADA	9.61

CAS#	Parameter	Result	DL	LOQ	Units	
763051-92-9	11Cl-PF3OUdS	ND	0.021	1.03	ug/Kg	
756426-58-1	9Cl-PF3ONS	ND	0.031	1.03	ug/Kg	
919005-14-4	ADONA	ND	0.010	1.03	ug/Kg	
2991-50-6	NEtFOSAA	ND	0.031	1.03	ug/Kg	
2355-31-9	NMeFOSAA	ND	0.021	1.03	ug/Kg	
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	ND	0.144	2.06	ug/Kg	
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND	0.021	1.03	ug/Kg	
335-76-2	Perfluorodecanoic acid (PFDA)	ND	0.041	1.03	ug/Kg	
307-55-1	Perfluorododecanoic acid (PFDoA)	ND	0.021	1.03	ug/Kg	
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND	0.031	1.03	ug/Kg	
307-24-4	<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.041J</b>	0.021	1.03	ug/Kg	
375-95-1	<b>Perfluorononanoic acid (PFNA)</b>	<b>0.029J</b>	0.021	1.03	ug/Kg	
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND	0.021	1.03	ug/Kg	
1763-23-1	<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.220J</b>	0.052	1.03	ug/Kg	
335-67-1	<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.114J</b>	0.083	1.03	ug/Kg	
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	0.021	1.03	ug/Kg	
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	ND	0.031	1.03	ug/Kg	
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND	0.021	1.03	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
2355-31-9-EIS	d3-NMeFOSAA	93.3	66.8	ug/Kg	72	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	93.3	72.2	ug/Kg	77	50 - 150
757124-72-4-EIS	M2 4:2 FTS	93.3	73.6	ug/Kg	79	50 - 150
27619-97-2-EIS	M2 6:2 FTS	93.3	77.7	ug/Kg	83	50 - 150
39108-34-4-EIS	M2 8:2 FTS	93.3	80.1	ug/Kg	86	50 - 150
376-06-7-EIS	M2PFTA	93.3	100	ug/Kg	107	50 - 150
13252-13-6-EIS	M3HFPODA	93.3	82.1	ug/Kg	88	50 - 150
375-73-5-EIS	M3PFBS	93.3	74.3	ug/Kg	80	50 - 150
355-46-4-EIS	M3PFHxS	93.3	80.2	ug/Kg	86	50 - 150
375-85-9-EIS	M4PFHpA	93.3	78.9	ug/Kg	85	50 - 150
307-24-4-EIS	M5PFHxA	93.3	75.8	ug/Kg	81	50 - 150
2706-90-3-EIS	M5PFPeA	93.3	76.2	ug/Kg	82	50 - 150
335-76-2-EIS	M6PFDA	93.3	80.4	ug/Kg	86	50 - 150
2058-94-8-EIS	M7PFUnA	93.3	81.2	ug/Kg	87	50 - 150
754-91-6-EIS	M8FOSA	93.3	75.5	ug/Kg	81	50 - 150
335-67-1-EIS	M8PFOA	93.3	81.2	ug/Kg	87	50 - 150
1763-23-1-EIS	M8PFOS	93.3	82	ug/Kg	88	50 - 150
375-95-1-EIS	M9PFNA	93.3	82.3	ug/Kg	88	50 - 150
375-22-4-EIS	MPFBA	93.3	74.9	ug/Kg	80	50 - 150
307-55-1-EIS	MPFDoA	93.3	79.6	ug/Kg	85	50 - 150

# LC-MS/MS PFAS QC Summary

Analytical Batch		Client ID	LCS748439			LCSD748439						
748598		MB748439	2388601			2388602						
Prep Batch		Lab ID	2388601			2388602						
748439		Sample Type	LCS			LCSD						
Prep Method		Prep Date	08/25/22 10:00			08/25/22 10:00						
EPA 537 Mod Isotope Dilution		Analysis Date	08/30/22 12:57			08/30/22 13:27						
		Matrix	Solid			Solid						
EPA 537 Mod Isotope Dilution		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits	Spike Added	Result	%R	RPD	RPD Limit
11CI-PF3OUdS	763051-92-9	ND	0.020	1.89	1.80	95	70 - 130	1.89	1.69	89	6	30
9CI-PF3ONS	756426-58-1	ND	0.030	1.87	1.75	94	70 - 130	1.87	1.66	89	5	30
ADONA	919005-14-4	ND	0.010	1.89	1.85	98	70 - 130	1.89	1.71	90	8	30
NEtFOSAA	2991-50-6	ND	0.030	2.00	1.90	95	70 - 130	2.00	1.77	89	7	30
NMeFOSAA	2355-31-9	ND	0.020	2.00	2.11	105	70 - 130	2.00	2.07	103	2	30
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	ND	0.140	4.00	3.88	97	70 - 130	4.00	3.65	91	6	30
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ND	0.020	1.77	1.77	100	70 - 130	1.77	1.66	93	7	30
Perfluorodecanoic acid (PFDA)	335-76-2	ND	0.040	2.00	1.96	98	70 - 130	2.00	1.81	90	8	30
Perfluorododecanoic acid (PFDoA)	307-55-1	ND	0.020	2.00	2.02	101	70 - 130	2.00	1.93	97	4	30
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ND	0.030	1.83	1.77	97	70 - 130	1.83	1.62	89	9	30
Perfluorohexanoic acid (PFHxA)	307-24-4	ND	0.020	2.00	1.95	97	70 - 130	2.00	1.85	93	5	30
Perfluorononanoic acid (PFNA)	375-95-1	ND	0.020	2.00	1.98	99	70 - 130	2.00	1.85	93	7	30
Perfluorooctane Sulfonamide (FOSA)	754-91-6	ND	0.020	2.00	2.01	101	70 - 130	2.00	1.91	96	5	30
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ND	0.050	1.86	1.74	93	70 - 130	1.86	1.64	88	6	30
Perfluorooctanoic acid (PFOA)	335-67-1	ND	0.080	2.00	1.96	98	70 - 130	2.00	1.78	89	10	30
Perfluorotetradecanoic acid (PFTA)	376-06-7	ND	0.020	2.00	2.03	101	70 - 130	2.00	1.83	92	10	30
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	ND	0.030	2.00	2.11	105	70 - 130	2.00	1.89	94	11	30
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ND	0.020	2.00	1.97	99	70 - 130	2.00	1.83	91	8	30
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%R	Limits	CalArea	Area	%	RPD	Limit
d3-NMeFOSAA	2355-31-9-EIS	94	94	100	92.1	92	50 - 150	100	85.9	86	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	104	104	100	96.5	97	50 - 150	100	95	95	NA	NA
M2 4:2 FTS	757124-72-4-EIS	108	108	100	109	109	50 - 150	100	98	98	NA	NA
M2 6:2 FTS	27619-97-2-EIS	108	108	100	106	106	50 - 150	100	101	101	NA	NA
M2 8:2 FTS	39108-34-4-EIS	112	112	100	106	106	50 - 150	100	98.3	98	NA	NA
M2PFTA	376-06-7-EIS	100	100	100	95.7	96	50 - 150	100	92.9	93	NA	NA
M3HFPODA	13252-13-6-EIS	113	113	100	106	106	50 - 150	100	103	103	NA	NA
M3PFBS	375-73-5-EIS	102	102	100	95.9	96	50 - 150	100	94.2	94	NA	NA
M3PFHxS	355-46-4-EIS	105	105	100	99.7	100	50 - 150	100	98.3	98	NA	NA
M4PFHpA	375-85-9-EIS	108	108	100	103	103	50 - 150	100	100	100	NA	NA
M5PFHxA	307-24-4-EIS	110	110	100	104	104	50 - 150	100	101	101	NA	NA
M5PFPeA	2706-90-3-EIS	110	110	100	105	105	50 - 150	100	104	104	NA	NA
M6PFDA	335-76-2-EIS	107	107	100	100	100	50 - 150	100	98	98	NA	NA
M7PFUnA	2058-94-8-EIS	106	106	100	100	100	50 - 150	100	99.1	99	NA	NA
M8FOSA	754-91-6-EIS	95.9	96	100	93.7	94	50 - 150	100	88.9	89	NA	NA
M8PFOA	335-67-1-EIS	108	108	100	101	101	50 - 150	100	101	101	NA	NA
M8PFOS	1763-23-1-EIS	105	105	100	98.9	99	50 - 150	100	95.4	95	NA	NA
M9PFNA	375-95-1-EIS	106	106	100	102	102	50 - 150	100	99	99	NA	NA
MPFBA	375-22-4-EIS	112	112	100	106	106	50 - 150	100	103	103	NA	NA
MPFDoA	307-55-1-EIS	100	100	100	95	95	50 - 150	100	93.5	93	NA	NA



# LC-MS/MS PFAS QC Summary

Analytical Batch		Client ID	LCS748780		LCS748780		LCS748780		LCS748780		LCS748780	
749256		MB748780	2390560		2390560		2390560		2390560		2390560	
Prep Batch		Lab ID	LCS		LCS		LCS		LCS		LCS	
748780		2390559	08/31/22 14:00		08/31/22 14:00		08/31/22 14:00		08/31/22 14:00		08/31/22 14:00	
Prep Method		Sample Type	09/07/22 16:51		09/07/22 17:06		09/07/22 17:06		09/07/22 17:06		09/07/22 17:21	
EPA 537 Mod Isotope Dilution		MB	Water		Water		Water		Water		Water	
EPA 537 Mod Isotope Dilution		Units	ng/L	Spike	Result	%R	Control	Spike	Result	%R	RPD	RPD
		Result	DL	Added			Limits	Added				Limit
							%R					
11Cl-PF3OUdS	763051-92-9	ND	0.900	75.4	74.1	98	70 - 130	75.4	80.6	107	8	30
9Cl-PF3ONS	756426-58-1	ND	0.900	74.6	76.7	103	70 - 130	74.6	81.1	109	5	30
ADONA	919005-14-4	ND	0.860	75.6	79.8	106	70 - 130	75.6	83.0	110	4	30
NEtFOSAA	2991-50-6	ND	1.58	80.0	85.7	107	70 - 130	80.0	87.6	110	2	30
NMeFOSAA	2355-31-9	ND	0.900	80.0	83.8	105	70 - 130	80.0	94.2	118	12	30
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	ND	6.67	160	171	107	70 - 130	160	174	109	2	30
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ND	0.620	71.0	76.4	108	70 - 130	71.0	81.1	114	6	30
Perfluorodecanoic acid (PFDA)	335-76-2	ND	1.44	80.0	84.3	105	70 - 130	80.0	87.4	109	4	30
Perfluorododecanoic acid (PFDoA)	307-55-1	ND	1.30	80.0	86.1	108	70 - 130	80.0	92.2	115	7	30
Perfluoroheptanoic acid (PFHpA)	375-85-9	ND	1.16	80.0	84.8	106	70 - 130	80.0	87.8	110	3	30
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ND	1.24	73.1	76.8	105	70 - 130	73.1	80.2	110	4	30
Perfluorohexanoic acid (PFHxA)	307-24-4	ND	0.940	80.0	84.0	105	70 - 130	80.0	88.6	111	5	30
Perfluorononanoic acid (PFNA)	375-95-1	ND	0.980	80.0	85.0	106	70 - 130	80.0	89.2	112	5	30
Perfluorooctane Sulfonamide (FOSA)	754-91-6	ND	0.740	80.0	88.0	110	70 - 130	80.0	90.5	113	3	30
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ND	0.760	74.2	76.5	103	70 - 130	74.2	81.7	110	7	30
Perfluorooctanoic acid (PFOA)	335-67-1	ND	0.840	80.0	84.0	105	70 - 130	80.0	87.6	109	4	30
Perfluorotetradecanoic acid (PFTA)	376-06-7	ND	1.14	80.0	85.3	107	70 - 130	80.0	90.0	112	5	30
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ND	1.23	80.0	87.0	109	70 - 130	80.0	90.4	113	4	30
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ND	1.24	80.0	86.5	108	70 - 130	80.0	89.6	112	4	30
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%R	Limits	CalArea	Area	%	RPD	Limit
d3-NMeFOSAA	2355-31-9-EIS	85.6	86	100	85.4	85	50 - 150	100	83.7	84	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	87.7	88	100	82.7	83	50 - 150	100	87.9	88	NA	NA
d7-NMeFOSE	24448-09-7-EIS	17.1	17*	100	72.3	72	50 - 150	100	69	69	NA	NA
d9-NEtFOSE	1691-99-2-EIS	11.3	11*	100	73.8	74	50 - 150	100	68.3	68	NA	NA
d-NEtFOSA	4151-50-2-EIS	1.5	2*	100	56	56	50 - 150	100	28.6	29*	NA	NA
d-NMeFOSA	31506-32-8-EIS	1.52	2*	100	49.8	50	50 - 150	100	29.9	30*	NA	NA
M2 4:2 FTS	757124-72-4-EIS	88.9	89	100	77.6	78	50 - 150	100	75.1	75	NA	NA
M2 6:2 FTS	27619-97-2-EIS	91	91	100	73.8	74	50 - 150	100	73.9	74	NA	NA
M2 8:2 FTS	39108-34-4-EIS	92.5	93	100	81	81	50 - 150	100	78.7	79	NA	NA
M2PFHxDA	67905-19-5-EIS	96.3	96	100	79.7	80	50 - 150	100	84.4	84	NA	NA
M2PFTA	376-06-7-EIS	91.8	92	100	76.5	76	50 - 150	100	79.6	80	NA	NA
M3HFPODA	13252-13-6-EIS	90.5	90	100	94.3	94	50 - 150	100	98.3	98	NA	NA
M3PFBS	375-73-5-EIS	81.9	82	100	86.8	87	50 - 150	100	87.5	88	NA	NA
M3PFHxS	355-46-4-EIS	86.6	87	100	87.9	88	50 - 150	100	90.3	90	NA	NA
M4PFHpA	375-85-9-EIS	88.1	88	100	89.1	89	50 - 150	100	92.5	92	NA	NA
M5PFHxA	307-24-4-EIS	86.7	87	100	90.6	91	50 - 150	100	93	93	NA	NA
M5PFPeA	2706-90-3-EIS	86.5	87	100	90.9	91	50 - 150	100	92	92	NA	NA
M6PFDA	335-76-2-EIS	92.5	93	100	88.1	88	50 - 150	100	90.8	91	NA	NA
M7PFUnA	2058-94-8-EIS	91.7	92	100	86.2	86	50 - 150	100	88.8	89	NA	NA
M8FOSA	754-91-6-EIS	74.7	75	100	75.5	75	50 - 150	100	76.4	76	NA	NA
M8PFOA	335-67-1-EIS	88.4	88	100	89.6	90	50 - 150	100	92.3	92	NA	NA
M8PFOS	1763-23-1-EIS	88.9	89	100	89.6	90	50 - 150	100	91.1	91	NA	NA
M9PFNA	375-95-1-EIS	91.6	92	100	89.4	89	50 - 150	100	90.7	91	NA	NA
MPFBA	375-22-4-EIS	82.2	82	100	90.5	90	50 - 150	100	90.8	91	NA	NA
MPFDoA	307-55-1-EIS	87.4	87	100	79.1	79	50 - 150	100	82.8	83	NA	NA



1 of 1

**CHAIN-OF-CUSTODY Analytical Request Document**

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: **HDR** Billing Information: \_\_\_\_\_

Address: **4900 Bitter Rd Suite 101** Container Preservative: \_\_\_\_\_

Report To: **Matt Blanchard** Email To: **MB - on file**

Copy To: **Erin Peeling** Site Collection Info/Address: \_\_\_\_\_

Customer Project Name/Number: **GTAC - Benner Township** State: **PA** County/City: \_\_\_\_\_ Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET

Phone: \_\_\_\_\_ Site/Facility ID #: \_\_\_\_\_ Compliance Monitoring? [ ] Yes [ ] No

Collected By (print): **HDR** Purchase Order #: \_\_\_\_\_ DW PWS ID #: \_\_\_\_\_

Collected By (signature): \_\_\_\_\_ Turnaround Date Required: **Standard** DW Location Code: \_\_\_\_\_

Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: \_\_\_\_\_ Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day [ ] Hold: \_\_\_\_\_ (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis: \_\_\_\_\_

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
UPA Runway 02:05-2	S	G	8/22/22	0930	8/22/22	0930	1	X
UPA Runway 01:05-2	S	G		0950		0950	1	X
UPASWA rec 02:05-2	S	G		1050		1050	1	X
UPASWA rec 01:05-2	S	G		1130		1130	1	X
UPASWA rec 03:05-2	S	G		1215		1215	1	X
UPA W/Hanger: 05-2	S	G		1310		1310	1	X
EQRB-03	W	G		1325		1325	2	X
BD-03	S	G		1200		1200	1	X

Customer Remarks / Special Conditions / Possible Hazards: \_\_\_\_\_

Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used: **5344 4102 6810** Lab Tracking #: **2812282**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: FEDEX UPS Client Courier Pace Courier

Relinquished by/Company: (Signature) **[Signature] / HDR** Date/Time: **08/22/22 152** Received by/Company: (Signature) **[Signature] RDS + ACS** Date/Time: **8/25/2017**

Relinquished by/Company: (Signature) **Fed Ex** Date/Time: **8/24/22 1017** Received by/Company: (Signature) **[Signature]** Date/Time: **8/25/2017**

Relinquished by/Company: (Signature) **[Signature]** Date/Time: **8/22 2150** Received by/Company: (Signature) **[Signature]** Date/Time: \_\_\_\_\_

Lab Sample Temperature Info: Temp Blank Received: Y N NA Therm ID#: \_\_\_\_\_ Cooler 1 Temp Upon Receipt: \_\_\_\_\_ °C Cooler 1 Therm Corr. Factor: \_\_\_\_\_ °C Cooler 1 Corrected Temp: \_\_\_\_\_ °C Comments: **E420.1**


Trip Blank Received: Y N NA HCL MeOH TSP Other

Non Conformance(s): YES / NO Page: **1** of: **1**

Client ID: 5240 - HDR Engineering

SDG: 222082589

PM: KAN



PTAS-18 Parameters (See Q10)



# SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP <b>222082589</b>		CHECKLIST		YES	NO
<b>Client</b> PM KAN 5240 - HDR Engineering	<b>Transport Method</b> FEDEX	Samples received with proper thermal preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Profile Number</b> 300134		<b>Received By</b> Roberts, George S.	COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Line Item(s)</b> 1 - 001 Solids 2 - 001 Water		<b>Receive Date(s)</b> 08/25/22	All containers received in good condition and within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			All sample labels and containers received match the chain of custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Preservative added to any containers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			If received, was headspace for VOC water containers < 6mm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Samples collected in containers provided by Pace Gulf Coast?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COOLERS		DISCREPANCIES	LAB PRESERVATIONS		
<b>Airbill</b>	<b>Thermometer ID:</b> E42	<b>Temp °C</b>	None		
5344 4102 6810		0.1			
<b>NOTES</b>					