

August 12, 2021

Project No. 20141048

Mr. Erik Booth, P.E.

Grand Haven Board of Light and Power
1700 Eaton Drive
Grand Haven, Michigan 49417

RE: PRELIMINARY REVIEW OF PFAS SAMPLING CONDUCTED FOR STORMWATER COLLECTION AREAS AND ADDITIONAL SURFACE WATER SAMPLES ON JULY 16, 2021

As requested, Golder Associates Inc. reviewed the analytical data for the stormwater collection areas and additional surface water samples reported by Trace Analytical Laboratories, Inc. (Trace) on July 27, 2021. Trace conducted the sampling on July 16, 2021 at two (2) new surface water sampling locations, two (2) samples from stormwater collection within the remaining clay basin (formerly Unit 3 A/B Impoundments) as well as three (3) samples from within the former coal pile stormwater runoff collection area at the JB Sims Generating Station (JB Sims). The analysis of poly- and per-fluoroalkyl substances (PFAS) analysis was conducted by Trident Environmental (Trident). Laboratory reports from Trace and Trident are included as an attachment. Figure 1, Stormwater Collection Area Analytical Map depicts the locations of sampling from within the areas that have accumulated stormwater. Figure 2, Surface Water Analytical Map depicts the locations of the additional surface water sample collection points.

A summary of the July 16, 2021 sampling event is provided below.

- **Stormwater** (Table 1, Summary of Stormwater PFAS Analytical Results and Figure 1)
 - Regulatory criteria
 - Since this water is primarily stormwater collection that may require disposal following treatment (such as discharge to a surface water location), the EGLE Water Quality Standards (Drinking Water Source) were used as groundwater surface water interface (GSI) criteria for preliminary evaluation
 - Perfluorooctanoic Acid (PFOA)
 - Each of the five (5) sampling locations were detected above the laboratory reporting limit.
 - No detections above the EGLE Water Quality Standards (Drinking Water Source).
 - Perfluorooctane Sulfonic Acid (PFOS)
 - Each of the five (5) sampling locations were detected above the laboratory reporting limit.
 - Five (5) locations were detected above EGLE Water Quality Standards (Drinking Water Source).
- **Additional Surface Water Samples** (Table 2, Summary of Additional Surface Water Sample PFAS Analytical Results and Figure 2)
 - Regulatory criteria
 - EGLE Water Quality Standards (Drinking Water Source) were used as GSI criteria

- PFOA
 - Each of the two (2) sampling locations was detected above the laboratory reporting limit.
 - No detections above the EGLE Water Quality Standards (Drinking Water Source).
- PFOS
 - Each of the two (2) sampling locations was detected above the laboratory reporting limit.
 - One (1) location was detected above EGLE Water quality Standards (Drinking Water Source).

If you have any questions regarding the enclosed information, please contact the undersigned at your earliest convenience.

Sincerely,

Golder Associates Inc.



Carolyn E. Powrozek, C.P.G.
Senior Geologist



Tiffany D. Johnson, P.E.
Senior Consultant

CEP/TDJ

CC: Paul Cederquist – GHBLP
Arthur Siegal – Jaffe, Raitt Heuer & Weiss, P.C.

Attachments: Figure 1 – Stormwater Collection Area Analytical Map
Figure 2 – Surface Water Analytical Map
Table 1 – Summary of Stormwater Collection Area PFAS Analytical Results
Table 2 – Summary of Surface Water PFAS Analytical Results
Attachment – Laboratory Report

[https://golderassociates.sharepoint.com/sites/27317g/deliverables/100 communication/correspondence/july 16, 2021 supplemental data/final rp-ghblp 07-16-2021 sampling.docx](https://golderassociates.sharepoint.com/sites/27317g/deliverables/100%20communication/correspondence/july%2016,%202021%20supplemental%20data/final%20rp-ghblp%2007-16-2021%20sampling.docx)

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Former Sims Site

July 16, 2021

Regulated PFAS Sampling Results

Stormwater Collection Area Location

Non-Detect

Detection

Exceedance

Stormwater Collection Areas			
Sample ID	Sample Date	PFOA	PFOS
Unit 3 North	7/16/2021	8.10	23.96
Unit 3 South	7/16/2021	7.51	20.66
CPR 01	7/16/2021	9.36	73.20
CPR 02	7/16/2021	6.85	11.04
CPR 03	7/16/2021	9.49	39.24
EGLE Water Quality Standard - Drinking Water Source		420	11

REFERENCE
AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2021-03-18.

NOTES
1. HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.

LEGEND

PARCEL BOUNDARY

STORMWATER COLLECTION AREA LOCATION

CLIENT

GRAND HAVEN BOARD OF LIGHT AND POWER

GRAND HAVEN, MICHIGAN

CONSULTANT

GOLDER

MEMBER OF WSP

YYYY-MM-DD

2021-08-11

DESIGNED

CEP

PREPARED

DJC

REVIEWED

CEP

APPROVED

TDJ

PROJECT

JB SIMS GENERATING STATION

PFAS SAMPLING EVENT

TITLE

STORMWATER COLLECTION AREA ANALYTICAL MAP

PROJECT NO.

20141048

CONTROL

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FIGURE

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Former Sims Site
July 16, 2021
Regulated PFAS Sampling Results

	Surface Water Sample Location
	Non-Detect
	Detection
	Exceedance

Surface Water			
Sample ID	Sample Date	PFOA	PFOS
SW_N MW-8	7/16/2021	3.12	11.83
SW_SW MW-8	7/16/2021	2.28	9.58
EGLE Water Quality Standard - Drinking Water Source		420	11

REFERENCE
AERIAL PHOTOGRAPH COURTESY OF GOOGLE EARTH PRO; IMAGE DATE: 2021-03-18.

LEGEND	
	PARCEL BOUNDARY
	SURFACE WATER SAMPLE LOCATION

NOTES
1. HORIZONTAL COORDINATE SYSTEM BASED ON MICHIGAN STATE PLANE SOUTH, INTERNATIONAL FEET. VERTICAL DATUM IS NAVD 1988.

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

PROJECT
JB SIMS GENERATING STATION
PFAS SAMPLING EVENT

CONSULTANT	YYYY-MM-DD	2021-08-11
DESIGNED	CEP	
PREPARED	DJC	
REVIEWED	CEP	
APPROVED	TDJ	



TITLE
SURFACE WATER ANALYTICAL MAP

PROJECT NO.	CONTROL	REV.	FIGURE
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TABLE 1.
JB SIMS GENERATING STATION
SUMMARY OF STORMWATER COLLECTION AREA PFAS ANALYTICAL RESULTS

EGLE's PFAS Minimum Laboratory Analyte List	Analyte	Abbreviation	Regulatory Criteria		Laboratory Reporting Limit	Sample ID	Unit 3 North	Unit 3 South	CPR 01 East	CPR 02 North	CPR 03 South (west of Coal Pile Runoff Point)
			EGLE Water Quality Standard = GSI Criteria								
			Non-Drinking Water Source	Drinking Water Source		Date	7/16/2021	7/16/2021	7/16/2021	7/16/2021	7/16/2021
	1H, 1H, 2H, 2H-perfluorohexane sulfonic acid	4:2 FTS	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	1H, 1H, 2H, 2H-perfluorooctane sulfonic acid	6:2FTS	NC	NC	20	ng/L	72.04	59.72	20.40	<20	<20
	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid	8:2FTS	NC	NC	2	ng/L	12.21	9.22	<2	<2	<2
	4,8-dioxa-3H-perfluorononanoic acid	ADONA	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorooctane Sulfonamide	FOSA	NC	NC	10	ng/L	<10	<10	<10	<10	<10
	Hexafluoropropylene oxide dimer acid	HFPO-DA or GenX	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	N-ethyl perf sulf acid	NEtFOSAA	NC	NC	10	ng/L	<10	<10	<10	<10	<10
	N-methyl perf sulf acid	NMeFOSAA	NC	NC	10	ng/L	<10	<10	<10	<10	<10
	Perfluorobutanoic acid	PFBA	NC	NC	2	ng/L	10.15	9.39	10.60	13.98	11.86
	Perfluorobutanesulfonic acid	PFBS	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorodecanoic acid	PFDA	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorododecanoic acid	PFDoA	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorodecanesulfonic acid	PFDS	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluoroheptanoic acid	PFHpA	NC	NC	2	ng/L	7.69	8.12	12.34	12.12	12.73
	Perfluoroheptanesulfonic Acid	PFHpS	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorohexanoic acid	PFHxA	NC	NC	2	ng/L	27.93	23.85	25.86	27.09	28.12
	Perfluorohexanesulfonic acid	PFHxS	NC	NC	2	ng/L	4.91	4.89	7.22	6.66	7.81
	Perfluorononanoic acid	PFNA	NC	NC	2	ng/L	<2	<2	7.51	<2	4.40
	Perfluorooctanoic acid	PFOA	12,000	420	2	ng/L	8.10	7.51	9.36	6.85	9.49
	Perfluorononanesulfonic acid	PFNS	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorooctanesulfonic acid	PFOS	12	11	2	ng/L	23.96	20.66	73.20	11.04	39.24
	Perfluoropentanoic acid	PFPeA	NC	NC	2	ng/L	35.36	34.92	44.68	48.82	47.14
	Perfluoropentanesulfonic acid	PFPeS	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorotetradecanoic acid	PFTeA	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	11-chloroeicosafluoro-3-oxaundecane-1sulfonic acid	11Cl-PF3OUdS	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluorotridecanoic Acid	PFTriA	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	Perfluoroundecanoic acid	PFUnA	NC	NC	2	ng/L	<2	<2	<2	<2	<2
	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	NC	NC	2	ng/L	<2	<2	<2	<2	<2

Notes:
ng/L = nanograms per liter (parts per trillion)
EGLE = Michigan Department of Environment, Great Lakes, and Energy
PFAS = per- and polyfluoroalkyl substances
GSI = Groundwater Surface Water Interface
Italics = above EGLE water quality standard for non drinking water source
Bold = above EGLE water quality standard for drinking water source

TABLE 2.
JB SIMS GENERATING STATION
SUMMARY OF SURFACE WATER PFAS ANALYTICAL RESULTS

EGLE's PFAS Minimum Laboratory Analyte List	Analyte	Abbreviation	Regulatory Criteria		Laboratory Reporting Limit	Sample ID	SW_N MW-8	SW_SW MW-8
			EGLE Water Quality Standard = GSI Criteria			Date	7/16/2021	7/16/2021
			Non-Drinking Water Source	Drinking Water Source				
	1H, 1H, 2H, 2H-perfluorohexane sulfonic acid	4:2 FTS	NC	NC	2	ng/L	<2	<8.7
	1H, 1H, 2H, 2H-perfluorooctane sulfonic acid	6:2FTS	NC	NC	20	ng/L	<20	<86.96
	1H, 1H, 2H, 2H-perfluorodecane sulfonic acid	8:2FTS	NC	NC	2	ng/L	<2	<8.7
	4,8-dioxa-3H-perfluorononanoic acid	ADONA	NC	NC	2	ng/L	<2	<8.7
	Perfluorooctane Sulfonamide	FOSA	NC	NC	10	ng/L	<10	<43.48
	Hexafluoropropylene oxide dimer acid	HFPO-DA or GenX	NC	NC	2	ng/L	<2	<8.7
	N-ethyl perf sulf acid	NEtFOSAA	NC	NC	10	ng/L	<10	<43.48
	N-methyl perf sulf acid	NMeFOSAA	NC	NC	10	ng/L	<10	<43.48
	Perfluorobutanoic acid	PFBA	NC	NC	2	ng/L	<2	6.36 J
	Perfluorobutanesulfonic acid	PFBS	NC	NC	2	ng/L	<2	<8.7
	Perfluorodecanoic acid	PFDA	NC	NC	2	ng/L	<2	<8.7
	Perfluorododecanoic acid	PFDoA	NC	NC	2	ng/L	<2	<8.7
	Perfluorodecanesulfonic acid	PFDS	NC	NC	2	ng/L	<2	<8.7
	Perfluoroheptanoic acid	PFHpA	NC	NC	2	ng/L	3.67	3.92 J
	Perfluoroheptanesulfonic Acid	PFHpS	NC	NC	2	ng/L	<2	<8.7
	Perfluorohexanoic acid	PFHxA	NC	NC	2	ng/L	3.97	4.03 J
	Perfluorohexanesulfonic acid	PFHxS	NC	NC	2	ng/L	<2	<8.7
	Perfluorononanoic acid	PFNA	NC	NC	2	ng/L	<2	<8.7
	Perfluorooctanoic acid	PFOA	12,000	420	2	ng/L	3.12	2.28 J
	Perfluorononanesulfonic acid	PFNS	NC	NC	2	ng/L	<2	<8.7
	Perfluorooctanesulfonic acid	PFOS	12	11	2	ng/L	11.83	9.58
	Perfluoropentanoic acid	PFPeA	NC	NC	2	ng/L	<2	3.33 J
	Perfluoropentanesulfonic acid	PFPeS	NC	NC	2	ng/L	<2	<8.7
	Perfluorotetradecanoic acid	PFTeA	NC	NC	2	ng/L	<2	<8.7
	11-chloroeicosafuoro-3-oxaundecane-1sulfonic acid	11CI-PF3OUdS	NC	NC	2	ng/L	<2	<8.7
	Perfluorotridecanoic Acid	PFTriA	NC	NC	2	ng/L	<2	<8.7
	Perfluoroundecanoic acid	PFUnA	NC	NC	2	ng/L	<2	<8.7
	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9CI-PF3ONS	NC	NC	2	ng/L	<2	<8.7

Notes:
ng/L = nanograms per liter (parts per trillion)
J = value is less than the reporting limit by greater than or equal to the method detection limit and the concentration is an estimated value.
NC = No criteria established
EGLE = Michigan Department of Environment, Great Lakes, and Energy
PFAS = per- and polyfluoroalkyl substances
GSI = Groundwater Surface Water Interface
Italics = above EGLE water quality standard for non drinking water source
Bold = above EGLE water quality standard for drinking water source

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

July 27, 2021

Mr. Paul Cederquist
Grand Haven Board of Light and Power-Monthly MWs
1700 Eaton Drive
Grand Haven, MI 49417

Phone: 616-607-1292
Fax: (616) 842-3511

RE: Trace ID: 21G0652

Dear Mr. Cederquist:

Enclosed are your analytical results associated with your project for PFAS Sampling. The results of this report relate only to the samples listed in the body of this report.

The results were obtained from Trident Environmental

Thank you for working with Trace. If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Jon Mink". The signature is stylized with a large, looping "J" and a cursive "Mink".

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008

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July 27, 2021

Trace Analytical Laboratories, Inc.

ATTN: Jon Mink

2241 Black Creek Road

Muskegon, MI. 49444

(231)-773-5998

Subject: Water Samples for project number PFAS071921B

Dear Jon Mink:

Enclosed are your analytical results for the samples submitted and listed below. All reported results were obtained in accordance with the EPA Method 537M unless otherwise stated.

If you have any questions concerning this report, please contact us at (855) 875-2532 or by email at PFAS@TridentBiometrics.com

Sincerely,

Trident Laboratories, Inc.

Case Narrative

Sample Condition on Receipt:

Samples were received in good condition within the method temperature requirements. The samples were received and stored in accordance to EPA methodology.

Analytical Notes:

Samples were processed according to 537M methodology. Sample 402712A failed the first extraction due to clogging of instrumentation, but we were able to extract 57.5 mL upon re-extraction. Sample values are estimates for this sample due to using a partial sample.

Holding Times:

The samples were extracted and analyzed within the method hold times.

Definition of Terms

Acronym	Definition
EPA Method 537M - ID	A modified version of the EPA Method 537 to test for water using isotope dilution
PFAS	Poly and Perfluoroalkyl Substances
ppt	Parts per trillion
**	Recovery and/or RPD was outside laboratory acceptable limits
%	Instrument readout is outside of dynamic range of the calibration curve so value shown is an estimate
#	Smaller aliquot of sample was extracted to attempt to quantify high values, concentrations still exceed upper limit
@	Sample result is an estimate due to low internal standard recovery
B	Sample result is an estimate due to contamination in the Blank
Q	Sample result is an estimate due to failure of Quality Controls
!	Contamination of analyte throughout entire analytical run
L	Spiked concentration is lower than acceptable recovery
H	Spiked concentration is higher than acceptable recovery
F	Analyte also positive in associated field blank
J	Analyte detected below reporting limit but above detection limit

Certificate of Analysis

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Sample Information Summary

Lab ID	Sample Description	Volume Tested	Matrix	Batch ID	Date Collected	Date Received
402711A	N-Near MW8 21G0652-01	284.15 mL	Aqueous	MEM071921B	7/16/2021 13:00:00	7/19/2021 9:05:00
402712B	SW-Near MW8 21G0652-02	57.50 mL	Aqueous	HMP072121A	7/16/2021 13:10:00	7/19/2021 9:05:00
402713A	Unit 3 Impoundment South 21G0652-03	283.88 mL	Aqueous	MEM071921B	7/16/2021 13:20:00	7/19/2021 9:05:00
402714A	Unit 3 Impoundment North 21G0652-04	282.27 mL	Aqueous	MEM071921B	7/16/2021 13:30:00	7/19/2021 9:05:00
402715A	CPR-03 21G0652-05	277.83 mL	Aqueous	MEM071921B	7/16/2021 13:40:00	7/19/2021 9:05:00
402716A	CPR-02 21G0652-06	283.39 mL	Aqueous	MEM071921B	7/16/2021 13:50:00	7/19/2021 9:05:00
402717A	CPR-01 21G0652-07	286.55 mL	Aqueous	MEM071921B	7/16/2021 14:00:00	7/19/2021 9:05:00

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Analytical Results

Lab ID:	402711A	Date Collected:	7/16/2021
Sample Description:	N-Near MW8 21G0652-01	Date Received:	7/19/2021
Batch Number:	MEM071921B	Date Processed:	7/19/2021
Matrix:	Aqueous	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Results	Reporting Limit	Dilution	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	Not Detected	20.00 ppt	1.0	MEM	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
ADONA	4,8-dioxa-3H-perfluorononanoic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	1.0	MEM	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
PFBA	Perfluorobutanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHpA	Perfluoroheptanoic Acid	3.67 ppt	2.00 ppt	1.0	MEM	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHxA	Perfluorohexanoic Acid	3.97 ppt	2.00 ppt	1.0	MEM	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFNA	Perfluorononanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFOA	Perfluorooctanoic Acid	3.12 ppt	2.00 ppt	1.0	MEM	MNM	
PFOS	Perfluorooctane Sulfonic Acid	11.83 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeA	Perfluoropentanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	

Certificate of Analysis

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Analytical Results

Lab ID:	402712B	Date Collected:	7/16/2021
Sample Description:	SW-Near MW8 21G0652-02	Date Received:	7/19/2021
Batch Number:	HMP072121A	Date Processed:	7/21/2021
Matrix:	Aqueous	Date Analyzed:	7/22/2021

Acronym	Analyte Name	Results	Reporting Limit	Dilution	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	Not Detected	86.96 ppt	1.0	HMP	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	43.48 ppt	1.0	HMP	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	43.48 ppt	1.0	HMP	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	43.48 ppt	1.0	HMP	MNM	
PFBA	Perfluorobutanoic Acid	6.36 ppt	8.70 ppt	1.0	HMP	MNM	J
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFHpA	Perfluoroheptanoic Acid	3.92 ppt	8.70 ppt	1.0	HMP	MNM	J
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFHxA	Perfluorohexanoic Acid	4.03 ppt	8.70 ppt	1.0	HMP	MNM	J
PFHxS	Perfluorohexane Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFNA	Perfluorononanoic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFOA	Perfluorooctanoic Acid	2.28 ppt	8.70 ppt	1.0	HMP	MNM	J
PFOS	Perfluorooctane Sulfonic Acid	9.58 ppt	8.70 ppt	1.0	HMP	MNM	
PFPeA	Perfluoropentanoic Acid	3.33 ppt	8.70 ppt	1.0	HMP	MNM	J
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	8.70 ppt	1.0	HMP	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	8.70 ppt	1.0	HMP	MNM	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Analytical Results

Lab ID:	402713A	Date Collected:	7/16/2021
Sample Description:	Unit 3 Impoundment South 21G0652-03	Date Received:	7/19/2021
Batch Number:	MEM071921B	Date Processed:	7/19/2021
Matrix:	Aqueous	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Results	Reporting Limit	Dilution	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	59.72 ppt	20.00 ppt	1.0	MEM	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	9.22 ppt	2.00 ppt	1.0	MEM	MNM	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	1.0	MEM	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
PFBA	Perfluorobutanoic Acid	9.39 ppt	2.00 ppt	1.0	MEM	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHpA	Perfluoroheptanoic Acid	8.12 ppt	2.00 ppt	1.0	MEM	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHxA	Perfluorohexanoic Acid	23.85 ppt	2.00 ppt	1.0	MEM	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	4.89 ppt	2.00 ppt	1.0	MEM	MNM	
PFNA	Perfluorononanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFOA	Perfluorooctanoic Acid	7.51 ppt	2.00 ppt	1.0	MEM	MNM	
PFOS	Perfluorooctane Sulfonic Acid	20.66 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeA	Perfluoropentanoic Acid	34.92 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Analytical Results

Lab ID:	402714A	Date Collected:	7/16/2021
Sample Description:	Unit 3 Impoundment North 21G0652-04	Date Received:	7/19/2021
Batch Number:	MEM071921B	Date Processed:	7/19/2021
Matrix:	Aqueous	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Results	Reporting Limit	Dilution	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	72.04 ppt	20.00 ppt	1.0	MEM	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	12.21 ppt	2.00 ppt	1.0	MEM	MNM	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	1.0	MEM	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
PFBA	Perfluorobutanoic Acid	10.15 ppt	2.00 ppt	1.0	MEM	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHpA	Perfluoroheptanoic Acid	7.69 ppt	2.00 ppt	1.0	MEM	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHxA	Perfluorohexanoic Acid	27.93 ppt	2.00 ppt	1.0	MEM	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	4.91 ppt	2.00 ppt	1.0	MEM	MNM	
PFNA	Perfluorononanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFOA	Perfluorooctanoic Acid	8.10 ppt	2.00 ppt	1.0	MEM	MNM	
PFOS	Perfluorooctane Sulfonic Acid	23.96 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeA	Perfluoropentanoic Acid	35.36 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Analytical Results

Lab ID:	402715A	Date Collected:	7/16/2021
Sample Description:	CPR-03 21G0652-05	Date Received:	7/19/2021
Batch Number:	MEM071921B	Date Processed:	7/19/2021
Matrix:	Aqueous	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Results	Reporting Limit	Dilution	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	Not Detected	20.00 ppt	1.0	MEM	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	1.0	MEM	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
PFBA	Perfluorobutanoic Acid	11.86 ppt	2.00 ppt	1.0	MEM	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHpA	Perfluoroheptanoic Acid	12.73 ppt	2.00 ppt	1.0	MEM	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHxA	Perfluorohexanoic Acid	28.12 ppt	2.00 ppt	1.0	MEM	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	7.81 ppt	2.00 ppt	1.0	MEM	MNM	
PFNA	Perfluorononanoic Acid	4.40 ppt	2.00 ppt	1.0	MEM	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFOA	Perfluorooctanoic Acid	9.49 ppt	2.00 ppt	1.0	MEM	MNM	
PFOS	Perfluorooctane Sulfonic Acid	39.24 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeA	Perfluoropentanoic Acid	47.14 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Analytical Results

Lab ID:	402716A	Date Collected:	7/16/2021
Sample Description:	CPR-02 21G0652-06	Date Received:	7/19/2021
Batch Number:	MEM071921B	Date Processed:	7/19/2021
Matrix:	Aqueous	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Results	Reporting Limit	Dilution	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	Not Detected	20.00 ppt	1.0	MEM	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	1.0	MEM	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
PFBA	Perfluorobutanoic Acid	13.98 ppt	2.00 ppt	1.0	MEM	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHpA	Perfluoroheptanoic Acid	12.12 ppt	2.00 ppt	1.0	MEM	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHxA	Perfluorohexanoic Acid	27.09 ppt	2.00 ppt	1.0	MEM	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	6.66 ppt	2.00 ppt	1.0	MEM	MNM	
PFNA	Perfluorononanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFOA	Perfluorooctanoic Acid	6.85 ppt	2.00 ppt	1.0	MEM	MNM	
PFOS	Perfluorooctane Sulfonic Acid	11.04 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeA	Perfluoropentanoic Acid	48.82 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Analytical Results

Lab ID:	402717A	Date Collected:	7/16/2021
Sample Description:	CPR-01 21G0652-07	Date Received:	7/19/2021
Batch Number:	MEM071921B	Date Processed:	7/19/2021
Matrix:	Aqueous	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Results	Reporting Limit	Dilution	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	20.40 ppt	20.00 ppt	1.0	MEM	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	1.0	MEM	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	1.0	MEM	MNM	
PFBA	Perfluorobutanoic Acid	10.60 ppt	2.00 ppt	1.0	MEM	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHpA	Perfluoroheptanoic Acid	12.34 ppt	2.00 ppt	1.0	MEM	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFHxA	Perfluorohexanoic Acid	25.86 ppt	2.00 ppt	1.0	MEM	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	7.22 ppt	2.00 ppt	1.0	MEM	MNM	
PFNA	Perfluorononanoic Acid	7.51 ppt	2.00 ppt	1.0	MEM	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFOA	Perfluorooctanoic Acid	9.36 ppt	2.00 ppt	1.0	MEM	MNM	
PFOS	Perfluorooctane Sulfonic Acid	73.20 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeA	Perfluoropentanoic Acid	44.68 ppt	2.00 ppt	1.0	MEM	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	1.0	MEM	MNM	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Quality Control Results

Sample Description:	Blank	Date Processed:	7/19/2021
Batch Number:	MEM071921B	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Results	Reporting Limit	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	Not Detected	20.00 ppt	MEM	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	Not Detected	2.00 ppt	MEM	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	MEM	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	MEM	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	MEM	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	MEM	MNM	
PFBA	Perfluorobutanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFHpA	Perfluoroheptanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFHxA	Perfluorohexanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFNA	Perfluorononanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFOA	Perfluorooctanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFOS	Perfluorooctane Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFPeA	Perfluoropentanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	MEM	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	MEM	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	MEM	MNM	

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Quality Control Results

Sample Description:	Low Laboratory Control Sample	Date Processed:	7/19/2021
Batch Number:	MEM071921B	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Spiked Conc.	Results	% Rec	% Rec Limit	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	4.00 ppt	4.67 ppt	116.69%	50% - 150%	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	20.00 ppt	25.51 ppt	127.54%	50% - 150%	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	4.00 ppt	5.48 ppt	136.92%	50% - 150%	
ADONA	4,8-dioxa-3H-perfluorononanoic acid	4.00 ppt	4.32 ppt	108.12%	50% - 150%	
FOSA	Perfluorooctane Sulfonamide	20.00 ppt	25.11 ppt	125.53%	50% - 150%	
HFPO-DA	Hexafluoropropylene oxide dimer acid	4.00 ppt	4.27 ppt	106.77%	50% - 150%	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	20.00 ppt	21.85 ppt	109.24%	50% - 150%	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	20.00 ppt	29.83 ppt	149.15%	50% - 150%	
PFBA	Perfluorobutanoic Acid	4.00 ppt	4.03 ppt	100.73%	50% - 150%	
PFBS	Perfluorobutane Sulfonic Acid	4.00 ppt	4.35 ppt	108.79%	50% - 150%	
PFDA	Perfluorodecanoic Acid	4.00 ppt	4.33 ppt	108.22%	50% - 150%	
PFDoA	Perfluorododecanoic Acid	4.00 ppt	5.13 ppt	128.21%	50% - 150%	
PFDS	Perfluorodecane Sulfonic Acid	4.00 ppt	2.82 ppt	70.50%	50% - 150%	
PFHpA	Perfluoroheptanoic Acid	4.00 ppt	5.23 ppt	130.66%	50% - 150%	
PFHpS	Perfluoroheptane Sulfonic Acid	4.00 ppt	3.07 ppt	76.75%	50% - 150%	
PFHxA	Perfluorohexanoic Acid	4.00 ppt	4.04 ppt	101.00%	50% - 150%	
PFHxS	Perfluorohexane Sulfonic Acid	4.00 ppt	4.09 ppt	102.20%	50% - 150%	
PFNA	Perfluorononanoic Acid	4.00 ppt	4.70 ppt	117.47%	50% - 150%	
PFNS	Perfluorononane Sulfonic Acid	4.00 ppt	3.97 ppt	99.33%	50% - 150%	
PFOA	Perfluorooctanoic Acid	4.00 ppt	5.26 ppt	131.53%	50% - 150%	
PFOS	Perfluorooctane Sulfonic Acid	4.00 ppt	3.81 ppt	95.20%	50% - 150%	
PFPeA	Perfluoropentanoic Acid	4.00 ppt	4.62 ppt	115.45%	50% - 150%	
PFPeS	Perfluoropentane Sulfonic Acid	4.00 ppt	4.10 ppt	102.45%	50% - 150%	
PFTeDA	Perfluorotetradecanoic Acid	4.00 ppt	2.94 ppt	73.58%	50% - 150%	
PFTrDA	Perfluorotridecanoic Acid	4.00 ppt	4.21 ppt	105.32%	50% - 150%	
PFUnDA	Perfluoroundecanoic Acid	4.00 ppt	4.99 ppt	124.70%	50% - 150%	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	4.00 ppt	4.22 ppt	105.57%	50% - 150%	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	4.00 ppt	5.20 ppt	130.10%	50% - 150%	

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Quality Control Results

Sample Description:	High Laboratory Control Sample	Date Processed:	7/19/2021
Batch Number:	MEM071921B	Date Analyzed:	7/21/2021

Acronym	Analyte Name	Spiked Conc.	Results	% Rec	% Rec Limit	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	240.00 ppt	307.16 ppt	127.98%	50% - 150%	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	240.00 ppt	297.71 ppt	124.05%	50% - 150%	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	240.00 ppt	274.70 ppt	114.46%	50% - 150%	
ADONA	4,8-dioxa-3H-perfluorononanoic acid	240.00 ppt	279.38 ppt	116.41%	50% - 150%	
FOSA	Perfluorooctane Sulfonamide	240.00 ppt	281.19 ppt	117.16%	50% - 150%	
HFPO-DA	Hexafluoropropylene oxide dimer acid	240.00 ppt	283.75 ppt	118.23%	50% - 150%	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	240.00 ppt	299.44 ppt	124.76%	50% - 150%	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	240.00 ppt	351.63 ppt	146.51%	50% - 150%	
PFBA	Perfluorobutanoic Acid	240.00 ppt	270.74 ppt	112.81%	50% - 150%	
PFBS	Perfluorobutane Sulfonic Acid	240.00 ppt	270.88 ppt	112.87%	50% - 150%	
PFDA	Perfluorodecanoic Acid	240.00 ppt	254.66 ppt	106.11%	50% - 150%	
PFDoA	Perfluorododecanoic Acid	240.00 ppt	282.99 ppt	117.91%	50% - 150%	
PFDS	Perfluorodecane Sulfonic Acid	240.00 ppt	244.88 ppt	102.03%	50% - 150%	
PFHpA	Perfluoroheptanoic Acid	240.00 ppt	263.56 ppt	109.82%	50% - 150%	
PFHpS	Perfluoroheptane Sulfonic Acid	240.00 ppt	277.12 ppt	115.47%	50% - 150%	
PFHxA	Perfluorohexanoic Acid	240.00 ppt	235.87 ppt	98.28%	50% - 150%	
PFHxS	Perfluorohexane Sulfonic Acid	240.00 ppt	274.25 ppt	114.27%	50% - 150%	
PFNA	Perfluorononanoic Acid	240.00 ppt	267.02 ppt	111.26%	50% - 150%	
PFNS	Perfluorononane Sulfonic Acid	240.00 ppt	289.69 ppt	120.71%	50% - 150%	
PFOA	Perfluorooctanoic Acid	240.00 ppt	249.94 ppt	104.14%	50% - 150%	
PFOS	Perfluorooctane Sulfonic Acid	240.00 ppt	220.96 ppt	92.07%	50% - 150%	
PFPeA	Perfluoropentanoic Acid	240.00 ppt	286.32 ppt	119.30%	50% - 150%	
PFPeS	Perfluoropentane Sulfonic Acid	240.00 ppt	292.96 ppt	122.07%	50% - 150%	
PFTeDA	Perfluorotetradecanoic Acid	240.00 ppt	229.28 ppt	95.53%	50% - 150%	
PFTTrDA	Perfluorotridecanoic Acid	240.00 ppt	297.19 ppt	123.83%	50% - 150%	
PFUnDA	Perfluoroundecanoic Acid	240.00 ppt	340.72 ppt	141.96%	50% - 150%	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	240.00 ppt	319.58 ppt	133.16%	50% - 150%	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	240.00 ppt	320.80 ppt	133.67%	50% - 150%	

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Quality Control Results

Sample Description:	Blank	Date Processed:	7/21/2021
Batch Number:	HMP072121A	Date Analyzed:	7/22/2021

Acronym	Analyte Name	Results	Reporting Limit	Prepared By	Analyzed By	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	Not Detected	20.00 ppt	HMP	MNM	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
ADONA	4,8-dioxa-3H-perfluorononanoic acid	Not Detected	2.00 ppt	HMP	MNM	
FOSA	Perfluorooctane Sulfonamide	Not Detected	10.00 ppt	HMP	MNM	
HFPO-DA	Hexafluoropropylene oxide dimer acid	Not Detected	2.00 ppt	HMP	MNM	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	HMP	MNM	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	Not Detected	10.00 ppt	HMP	MNM	
PFBA	Perfluorobutanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFBS	Perfluorobutane Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFDA	Perfluorodecanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFDoA	Perfluorododecanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFDS	Perfluorodecane Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFHpA	Perfluoroheptanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFHpS	Perfluoroheptane Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFHxA	Perfluorohexanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFHxS	Perfluorohexane Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFNA	Perfluorononanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFNS	Perfluorononane Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFOA	Perfluorooctanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFOS	Perfluorooctane Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFPeA	Perfluoropentanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFPeS	Perfluoropentane Sulfonic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFTeDA	Perfluorotetradecanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFTTrDA	Perfluorotridecanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
PFUnDA	Perfluoroundecanoic Acid	Not Detected	2.00 ppt	HMP	MNM	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Not Detected	2.00 ppt	HMP	MNM	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	Not Detected	2.00 ppt	HMP	MNM	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Quality Control Results

Sample Description:	Low Laboratory Control Sample	Date Processed:	7/21/2021
Batch Number:	HMP072121A	Date Analyzed:	7/22/2021

Acronym	Analyte Name	Spiked Conc.	Results	% Rec	% Rec Limit	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	4.00 ppt	3.29 ppt	82.28%	50% - 150%	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	20.00 ppt	18.60 ppt	92.98%	50% - 150%	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	4.00 ppt	3.22 ppt	80.60%	50% - 150%	
ADONA	4,8-dioxa-3H-perfluorononanoic acid	4.00 ppt	3.03 ppt	75.63%	50% - 150%	
FOSA	Perfluorooctane Sulfonamide	20.00 ppt	17.66 ppt	88.32%	50% - 150%	
HFPO-DA	Hexafluoropropylene oxide dimer acid	4.00 ppt	3.31 ppt	82.67%	50% - 150%	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	20.00 ppt	20.76 ppt	103.80%	50% - 150%	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	20.00 ppt	23.64 ppt	118.21%	50% - 150%	
PFBA	Perfluorobutanoic Acid	4.00 ppt	2.83 ppt	70.79%	50% - 150%	
PFBS	Perfluorobutane Sulfonic Acid	4.00 ppt	3.09 ppt	77.24%	50% - 150%	
PFDA	Perfluorodecanoic Acid	4.00 ppt	2.61 ppt	65.21%	50% - 150%	
PFDoA	Perfluorododecanoic Acid	4.00 ppt	4.20 ppt	105.11%	50% - 150%	
PFDS	Perfluorodecane Sulfonic Acid	4.00 ppt	2.78 ppt	69.61%	50% - 150%	
PFHpA	Perfluoroheptanoic Acid	4.00 ppt	3.36 ppt	84.05%	50% - 150%	
PFHpS	Perfluoroheptane Sulfonic Acid	4.00 ppt	3.13 ppt	78.34%	50% - 150%	
PFHxA	Perfluorohexanoic Acid	4.00 ppt	2.87 ppt	71.82%	50% - 150%	
PFHxS	Perfluorohexane Sulfonic Acid	4.00 ppt	3.58 ppt	89.62%	50% - 150%	
PFNA	Perfluorononanoic Acid	4.00 ppt	3.25 ppt	81.20%	50% - 150%	
PFNS	Perfluorononane Sulfonic Acid	4.00 ppt	3.03 ppt	75.77%	50% - 150%	
PFOA	Perfluorooctanoic Acid	4.00 ppt	3.19 ppt	79.80%	50% - 150%	
PFOS	Perfluorooctane Sulfonic Acid	4.00 ppt	3.27 ppt	81.86%	50% - 150%	
PFPeA	Perfluoropentanoic Acid	4.00 ppt	3.27 ppt	81.65%	50% - 150%	
PFPeS	Perfluoropentane Sulfonic Acid	4.00 ppt	3.52 ppt	87.92%	50% - 150%	
PFTeDA	Perfluorotetradecanoic Acid	4.00 ppt	3.03 ppt	75.80%	50% - 150%	
PFTTrDA	Perfluorotridecanoic Acid	4.00 ppt	3.99 ppt	99.85%	50% - 150%	
PFUnDA	Perfluoroundecanoic Acid	4.00 ppt	3.65 ppt	91.26%	50% - 150%	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	4.00 ppt	3.33 ppt	83.26%	50% - 150%	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	4.00 ppt	3.31 ppt	82.83%	50% - 150%	

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Report Date: 7/27/2021

Project Identification Number: PFAS071921B

Quality Control Results

Sample Description:	High Laboratory Control Sample	Date Processed:	7/21/2021
Batch Number:	HMP072121A	Date Analyzed:	7/22/2021

Acronym	Analyte Name	Spiked Conc.	Results	% Rec	% Rec Limit	Note
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	240.00 ppt	255.13 ppt	106.31%	50% - 150%	
6:2 FTS	6:2 Fluorotelomer Sulfonic Acid	240.00 ppt	288.71 ppt	120.29%	50% - 150%	
8:2 FTS	8:2 Fluorotelomer Sulfonic Acid	240.00 ppt	241.01 ppt	100.42%	50% - 150%	
ADONA	4,8-dioxo-3H-perfluorononanoic acid	240.00 ppt	257.09 ppt	107.12%	50% - 150%	
FOSA	Perfluorooctane Sulfonamide	240.00 ppt	238.79 ppt	99.50%	50% - 150%	
HFPO-DA	Hexafluoropropylene oxide dimer acid	240.00 ppt	238.31 ppt	99.30%	50% - 150%	
N-EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	240.00 ppt	269.81 ppt	112.42%	50% - 150%	
N-MeFOSAA	N-Methyl Perfluorooctane Sulfonamidoacetic Acid	240.00 ppt	353.48 ppt	147.28%	50% - 150%	
PFBA	Perfluorobutanoic Acid	240.00 ppt	224.62 ppt	93.59%	50% - 150%	
PFBS	Perfluorobutane Sulfonic Acid	240.00 ppt	252.00 ppt	105.00%	50% - 150%	
PFDA	Perfluorodecanoic Acid	240.00 ppt	251.64 ppt	104.85%	50% - 150%	
PFDoA	Perfluorododecanoic Acid	240.00 ppt	291.21 ppt	121.34%	50% - 150%	
PFDS	Perfluorodecane Sulfonic Acid	240.00 ppt	243.67 ppt	101.53%	50% - 150%	
PFHpA	Perfluoroheptanoic Acid	240.00 ppt	252.60 ppt	105.25%	50% - 150%	
PFHpS	Perfluoroheptane Sulfonic Acid	240.00 ppt	269.40 ppt	112.25%	50% - 150%	
PFHxA	Perfluorohexanoic Acid	240.00 ppt	224.25 ppt	93.44%	50% - 150%	
PFHxS	Perfluorohexane Sulfonic Acid	240.00 ppt	215.93 ppt	89.97%	50% - 150%	
PFNA	Perfluorononanoic Acid	240.00 ppt	232.51 ppt	96.88%	50% - 150%	
PFNS	Perfluorononane Sulfonic Acid	240.00 ppt	296.47 ppt	123.53%	50% - 150%	
PFOA	Perfluorooctanoic Acid	240.00 ppt	238.11 ppt	99.21%	50% - 150%	
PFOS	Perfluorooctane Sulfonic Acid	240.00 ppt	218.59 ppt	91.08%	50% - 150%	
PFPeA	Perfluoropentanoic Acid	240.00 ppt	260.40 ppt	108.50%	50% - 150%	
PFPeS	Perfluoropentane Sulfonic Acid	240.00 ppt	286.52 ppt	119.38%	50% - 150%	
PFTeDA	Perfluorotetradecanoic Acid	240.00 ppt	192.83 ppt	80.35%	50% - 150%	
PFTrDA	Perfluorotridecanoic Acid	240.00 ppt	283.31 ppt	118.04%	50% - 150%	
PFUnDA	Perfluoroundecanoic Acid	240.00 ppt	300.24 ppt	125.10%	50% - 150%	
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	240.00 ppt	310.18 ppt	129.24%	50% - 150%	
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	240.00 ppt	230.75 ppt	96.14%	50% - 150%	

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Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673

TRACE

ANALYTICAL LABORATORIES, INC.

231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

SUBCONTRACT ORDER

21G0652

SENDING LABORATORY:

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444
Phone: 231.773.5998

RECEIVING LABORATORY:

Trident Environmental
242 Howard
Holland, MI 49424
Phone :-

Project Manager: Jon Mink

PO # 21G0652

Matrix: Ground Water Sampled: 07/16/21 13:00
Sample ID: N-Near MW8 21G0652-01

Analysis Needed:

PFAS Ground Water 28 Isotope Dilution-Full Report

July 2021 402711
Date Received: 07/19/2021
Test Type: Ground Water Isotope Dilution
Req Form

21G0652-01 A
N-Near MW8
SAMPLE DATE: 07/16/21 13:00
PFAS Sample Container
Grand Haven Board of Light and Power-Monthly MWS PFAS Sampling
SDGID:

Matrix: Ground Water Sampled: 07/16/21 13:10
Sample ID: SW-Near MW8 21G0652-02

Analysis Needed:

PFAS Ground Water 28 Isotope Dilution-Full Report

July 2021 402712
Date Received: 07/19/2021
Test Type: Ground Water Isotope Dilution
Req Form

21G0652-02 A
SW-Near MW8
SAMPLE DATE: 07/16/21 13:10
PFAS Sample Container
Grand Haven Board of Light and Power-Monthly MWS PFAS Sampling
SDGID:

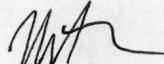

Matrix: Ground Water Sampled: 07/16/21 13:20
Sample ID: Unit 3 Impoundment South 21G0652-03

Analysis Needed:

PFAS Ground Water 28 Isotope Dilution-Full Report

July 2021 402713
Date Received: 07/19/2021
Test Type: Ground Water Isotope Dilution
Req Form

21G0652-03 A
Unit 3 Impoundment South
SAMPLE DATE: 07/16/21 13:20
PFAS Sample Container
Grand Haven Board of Light and Power-Monthly MWS PFAS Sampling
SDGID:

Released By  Date 7/16/21 Received By  Date 7/19/21

Released By _____ Date _____ Received By _____ Date _____

Page 1 of 2

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Muskegon, MI 49444-2673



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www.trace-labs.com

SUBCONTRACT ORDER

21G0652

Matrix: Ground Water Sampled: 07/16/21 13:30
Sample ID: Unit 3 Impoundment North 21G0652-04

Analysis Needed:

PFAS Ground Water 28 Isotope Dilution-Full Report

July 2021 402714
Date Received: 07/19/2021
Test Type: Ground Water Isotope Dilution
Req Form:

21G0652-04 A
Unit 3 Impoundment North
SAMPLE DATE: 07/16/21 13:30
PFAS Sample Container
Grand Haven Board of Light and Power-Monthly MWs PFAS Sampling
SDGID:

Matrix: Ground Water Sampled: 07/16/21 13:40
Sample ID: CPR-03 21G0652-05

Analysis Needed:

PFAS Ground Water 28 Isotope Dilution-Full Report

July 2021 402715
Date Received: 07/19/2021
Test Type: Ground Water Isotope Dilution
Req Form:

21G0652-05 A
CPR-03
SAMPLE DATE: 07/16/21 13:40
PFAS Sample Container
Grand Haven Board of Light and Power-Monthly MWs PFAS Sampling
SDGID:

Matrix: Ground Water Sampled: 07/16/21 13:50
Sample ID: CPR-02 21G0652-06

Analysis Needed:

PFAS Ground Water 28 Isotope Dilution-Full Report

July 2021 402716
Date Received: 07/19/2021
Test Type: Ground Water Isotope Dilution
Req Form:

21G0652-06 A
CPR-02
SAMPLE DATE: 07/16/21 13:50
PFAS Sample Container
Grand Haven Board of Light and Power-Monthly MWs PFAS Sampling
SDGID:

Matrix: Ground Water Sampled: 07/16/21 14:00
Sample ID: CPR-01 21G0652-07

Analysis Needed:

PFAS Ground Water 28 Isotope Dilution-Full Report

July 2021 402717
Date Received: 07/19/2021
Test Type: Ground Water Isotope Dilution
Req Form:

21G0652-07 A
CPR-01
SAMPLE DATE: 07/16/21 14:00
PFAS Sample Container
Grand Haven Board of Light and Power-Monthly MWs PFAS Sampling
SDGID:

Released By

7/16/21
Date

MA
Received By

7/19/21
Date

Released By

Date

Received By

Date

Page 2 of 2

Certificate of Analysis

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Fax 888.979.4469
www.trace-labs.com

Page _____ of _____

Trace ID No.

Trace ID No.
2160652

Report Results To:

Company Name:	Grand Haven Board of Light & Power
---------------	------------------------------------

Report To: Paul Cederquist

Mailing Address:

City, State, Zip Code:

Office Phone:

Email Address:

Bill To:

PO #

Contact Name:

Billing Address (if different):

City, State, Zip Code:

Phone Number:

Billing Email Address:

Turnaround Requirements:

- ☒ Standard, 5-10 Days
☐ 3 Day*
☐ 1 Day*

**Results provided end of business day, requires prior approval.*

Matrix Key:

S = Soil / Solid
W = Water
SL = Sludge
OI = Oil

WI = Wipes
LW = Liquid Waste
A = Air
D = Drinking Water

Analysis Requested

<input checked="" type="checkbox"/> Standard, 5-10 Days		S = Soil / Solid		W = Wipes	
<input type="checkbox"/> 3 Day*		W = Water		LW = Liquid Waste	
<input type="checkbox"/> 1 Day*		SL = Sludge		A = Air	
		OI = Oil		D = Drinking Water	

*Results provided end of business day, requires prior approval.

Project Name: PFAS Sampling				Sampled By: EB										
Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y / N)	Matrix	Number of Containers	Preservation						PFAS	Remarks
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other		
1	7/16/21	13:00	N-Near MW8		W	1						x	X	
2		13:10	SW-Near MW8		W	1						x	X	
3		13:20	Unit 3 Impoundment South		W	1						x	X	
4		13:30	Unit 3 Impoundment North		W	1						x	X	
5		13:40	CPR-03		W	1						x	X	
6		13:50	CPR-02		W	1						x	X	
7		14:00	CPR-01		W	1						x	X	

Please Sign	Released By		Received By		Date	Time	Released By		Received By		Date	Time
					7/16/21	15:24						
	3)											
	4)											

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

☐ Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

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21G0652
Grand Haven Board of Light
Project Manager: Jon Mink

Sample Log In Checklist

Date: 7/16/21	Original Observation	Corrected Temperature	IR-9 (CF: +0.1°C)	IR-10 (CF: +0.1°C)	20812743 (CF: -0.3°C)	Temp Blank	Client Sample
Time: 15:39							
Logged by: JS							
Package Description: Cooler							
Package Temp °C	-0.9	-0.8					
Representative Sample Temp °C	17.1	17.2					

Sample Receipt

Yes No

- ☒ ☐ Received on ice or other coolant
☒ ☐ Ice still present upon receipt
☐ ☒ Custody seals present ☐ Yes ☐ No Custody seals intact (if applicable)
☒ Trace Courier ☐ Client Drop-off ☐ UPS ☐ Fed Ex ☐ US Mail ☐ Other

Sample Condition

Yes No N/A

- ☒ ☐ ☐ All sample containers arrived unbroken and labeled
☒ ☐ ☐ Sufficient sample to run requested analyses
☐ ☐ ☒ Correct chemical preservative added to samples
☐ ☐ ☒ Samples preserved at Trace
☐ ☐ ☒ Chemical preservation verified, check EMD pH test strip used (if applicable)
☐ ☐ ☐ pH 0-2.5 (Lot: HC029115) ☐ pH 11.0-13.0 (Lot: HC022540) ☐ Other
☐ ☐ ☒ Air bubbles absent from VOAs

Chain of Custody (COC)

Yes No

- ☒ ☐ All bottle labels agree with COC
☒ ☐ COC filled out properly
☒ ☐ COC signed by client

Notes:

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