Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

February 22, 2022

CH2M/Jacobs
606 Hannah Ave.
Traverse City, MI 49686

RE: TC & GTSF PFAS

Order No.: 2202042

Dear Mr. Justin Straub:

Guide to reading Lab Result

Prein&Newhof Laboratory received 2 sample(s) on 2/1/2022 on your behalf. Your test results are provided in your Prein&Newhof Laboratory analytical report. Please carefully review your analytical report, noting the following.

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

Any analyte that exceeds the client provided permit level are noted on the report with an "*" in the Qual field. Quality control data is within laboratory defined or method specified acceptance limits except if noted.

When testing for PFHxS, PFOA, PFOS, MeFOSAA, and EtFOSAA results include both branched and linear isotopes. We extract a Method Blank and analyze it with the preparation batch. Method Blank analytes are within the Reporting Limit (RL).

To learn more about interpreting your Lab Report, follow the link above to view our "Guide to Reading Lab Results". If you have any concerns about your test results or need additional help, please call: 616-364-7600 or email me: sbylsma@preinnewhof.com.

We use EPA Approved Methods for all regulated parameters. EPA Lab #: MI000014

Thank you for trusting Prein&Newhof with your testing needs.

Thank you for your business.
Sincerely,

Steve Bylsma
Laboratory Manager

CC:
Mr. Alex Arnold
Mr. Joshua Lycka
Mr. Mark Huggard
Ms. Elizabeth Hart

3260 Evergreen Drive, NE Grand Rapids, MI 49525 t.616-364-7600 f. 616-364-4222 www.preinnewhof.com

CLIENT: CH2M/Jacobs **Lab Order:** 2202042
Project: TC & GTSF PFAS

Lab ID:	2202042-01	**Matrix:**	BIOSOLIDS	**Collection Date:**	1/31/2022 10:49:00 AM
Client ID:	GTSI0131221049	**Sampler:**	JL/JP	**Received Date:**	2/1/2022 11:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed

Lab ID:	2202042-02	**Matrix:**	BIOSOLIDS	**Collection Date:**	1/31/2022 1:15:00 PM
Client ID:	TC 5886- Biosolids Comp	**Sampler:**	JL/JP	**Received Date:**	2/1/2022 11:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed

Qualifiers:

<	Not Detected at the Reporting Limit	H	Holding times for preparation or analysis exceeded
MCL	Maximum Contaminant Level	PL	Permit Limit
RL	Reporting Limit		

3260 Evergreen Drive, NE Grand Rapids, MI 49525 t.616-364-7600 f. 616-364-4222 www.preinnewhof.com

Analytical Laboratory Report

Report ID: S32541.01(01)
Generated on 02/21/2022

Report to

Attention: Stephen Bylsma
Prein & Newhof
3260 Evergreen Drive NE
Grand Rapids, MI 49525

Phone: 616-364-7600 FAX:
Email: SBylsma@preinnewhof.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S32541.01-S32541.02
Project: Monitoring
Collected Date(s): 01/31/2022
Submitted Date/Time: 02/02/2022 12:00
Sampled by: Unknown
P.O. #:

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
ASTM D7968-17M	ASTM Method D7968 - 17 Modified (Isotopic Dilution)
SM2540B	Standard Method 2540 B 2011

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S32541.01	2202042-01A, GTSI0131221049	Biosolids	01/31/22 10:49
S32541.02	2202042-02A, TC 5886-Biosolids Comp	Biosolids	01/31/22 13:15

Lab Sample ID: S32541.01
Sample Tag: 2202042-01A, GTSI0131221049
Collected Date/Time: 01/31/2022 10:49
Matrix: Biosolids
COC Reference: 834

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	6.0	IR
1	250ml Plastic	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.51/7.00/10	ASTM D7968-17M	02/09/22 12:30	KCV	

Inorganics

Method: SM2540B, Run Date: 02/02/22 17:00, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	2.9	1		%	1		

Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 02/10/22 00:15, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	24		ug/kg	62.6	375-22-4	IX
PFPeA*	5.3	0.63		ug/kg	62.6	2706-90-3	
4:2 FTSA*	Not detected	0.63		ug/kg	62.6	757124-72-4	I
PFHxA*	23	0.63		ug/kg	62.6	307-24-4	
PFBS*	17	0.63		ug/kg	62.6	375-73-5	
PFHpA*	7.3	0.63		ug/kg	62.6	375-85-9	
PFPeS*	Not detected	0.63		ug/kg	62.6	2706-91-4	
6:2 FTSA*	2.5	0.63		ug/kg	62.6	27619-97-2	I
PFOA*	37	0.63		ug/kg	62.6	335-67-1	
PFHxS*	4	0.63		ug/kg	62.6	355-46-4	
PFHxS-LN*	3.5	0.63		ug/kg	62.6	355-46-4-LN	
PFHxS-BR*	Not detected	0.63		ug/kg	62.6	355-46-4-BR	
PFNA*	4.4	0.63		ug/kg	62.6	375-95-1	
8:2 FTSA*	6.8	0.63		ug/kg	62.6	39108-34-4	I
PFHpS*	1.1	0.63		ug/kg	62.6	375-92-8	
PFDA*	24	0.63		ug/kg	62.6	335-76-2	
N-MeFOSAA*	37	0.63		ug/kg	62.6	2355-31-9	
EtFOSAA*	17	0.63		ug/kg	62.6	2991-50-6	I
PFOS*	67	0.63		ug/kg	62.6	1763-23-1	
PFOS-LN*	55	0.63		ug/kg	62.6	1763-23-1-LN	
PFOS-BR*	11	0.63		ug/kg	62.6	1763-23-1-BR	
PFUnDA*	2.3	0.63		ug/kg	62.6	2058-94-8	
PFNS*	Not detected	0.63		ug/kg	62.6	68259-12-1	
PFDoDA*	7.8	0.63		ug/kg	62.6	307-55-1	
PFDS*	2.9	0.63		ug/kg	62.6	335-77-3	
PFTrDA*	Not detected	0.63		ug/kg	62.6	72629-94-8	
FOSA*	7.8	0.63		ug/kg	62.6	754-91-6	
PFTeDA*	2.2	0.63		ug/kg	62.6	376-06-7	I1
11Cl-PF3OUdS*	Not detected	0.63		ug/kg	62.6	763051-92-9	

I-Matrix interference with internal standard X-Elevated reporting limit due to matrix interference
1-IS recovery <10%

Lab Sample ID: S32541.01 (continued)

Sample Tag: 2202042-01A, GTSI0131221049

28 PFAs, Method: ASTM D7968-17M, Run Date: 02/10/22 00:15, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
9Cl-PF3ONS*	Not detected	0.63		ug/kg	62.6	756426-58-1	
ADONA*	Not detected	0.63		ug/kg	62.6	919005-14-4	
HFPO-DA*	Not detected	0.63		ug/kg	62.6	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID: S32541
Client: PREINNEWHOF (Prein & Newhof)
Project: Monitoring
Submitted: 02/02/2022 12:00 Login User: MMC

Attention: Stephen Bylsma
Address: Prein & Newhof
3260 Evergreen Drive NE
Grand Rapids, MI 49525

Phone: 616-364-7600 FAX:
Email: SBylsma@preinnewhof.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 6.0
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	UPS
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

CHAIN OF CUSTODY RECORD

Omega COCID 834	PAGE: 1	OF: 1

ADDRESS
Prein&Newhof Laboratory
3260 Evergreen Dr NE
Grand Rapids, MI 49525
TEL: (616) 364-7600
FAX: (616) 364-4222
Website: www.preinnewhof.com

sbylsma@preinnewhof.com

SUB CONTRATOR: Merit COMPANY:
ADDRESS:
CITY, STATE, ZIP:
PHONE: FAX: EMAIL:
ACCOUNT #:

SPECIAL INSTRUCTIONS / COMMENTS:

ITEM #	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	ANALYTICAL PARAMETERS: PFAS-SUB	COMMENTS (Methanol Preserved Weights, HOT Sample Notation, Additional Sample Description, etc.)
1	2202042-01A	GTSI0131221049		Biosolids	1/31/2022 10:49:00 AM	1	√	32541.01
2	2202042-02A	TC 5886- Biosolids Comp		Biosolids	1/31/2022 1:15:00 PM	1	√	.02

Relinquished By: K	Date: 2/1/22	Time: 1515	Received By:	Date:	Time:
Relinquished By: UPS	Date: 2/2/22	Time: 1200	Received By: M Dilcobo	Date: 2/2/22	Time: 1200
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ **RUSH** Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 6.0 °C Attempt to Cool ? ✓
Comments:

Quality Control Report

Report ID: QC-S32541-01
Generated on 02/21/2022

Report to

Attention: Stephen Bylsma
Prein & Newhof
3260 Evergreen Drive NE
Grand Rapids, MI 49525

Phone: 616-364-7600 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S32541.01-S32541.02
Project: Monitoring
Submitted Date/Time: 02/02/2022 12:00
Sampled by: Unknown
P.O. #:

QC Report Sections

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S32541.01
Sample Tag: 2202042-01A
Collected Date/Time: 01/31/2022 10:49
Matrix: Biosolids
COC Reference: 834

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	02/02/22 17:00	TS220202D	TS220202D	No	BLK/LCS/DUP
Organics - Volatiles						
28 PFAs	ASTM D7968-17M	02/10/22 00:15	AK220209	PF220209S1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S32541.02
Sample Tag: 2202042-02A
Collected Date/Time: 01/31/2022 13:15
Matrix: Biosolids
COC Reference: 834

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	02/02/22 17:00	TS220202D	TS220202D	No	BLK/LCS/DUP
Organics - Volatiles						
28 PFAs	ASTM D7968-17M	02/10/22 00:34	AK220209	PF220209S1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS220202D

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S32541.01	Total Solids	SM2540B	02/02/22 17:00	TS220202D
S32541.02	Total Solids	SM2540B	02/02/22 17:00	TS220202D

Organics - Volatiles, Prep Batch ID: PF220209S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S32541.01	28 PFAs	ASTM D7968-17M	02/10/22 00:15	AK220209
S32541.02	28 PFAs	ASTM D7968-17M	02/10/22 00:34	AK220209

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S32541.01

Sample Tag: 2202042-01A

Collected Date/Time: 01/31/2022 10:49

Matrix: Biosolids

COC Reference: 834

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220209, Run Date: 02/10/2022 00:15, Matrix: SO, Dilution: 62.6

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	**338.4**	50.0	150.0
M2-6:2FTSA	*	**428.0**	50.0	150.0
M2-8:2FTSA	*	**462.5**	50.0	150.0
M2PFTeDA	*	**7.6**	12.0	218.0
M3PFBS		**75.1**	50.0	150.0
M3PFHxS		**78.7**	50.0	150.0
M4PFHpA		**67.8**	50.0	150.0
M5PFHxA		**51.5**	50.0	150.0
M5PFPeA		**52.6**	50.0	150.0
M6PFDA		**50.7**	50.0	150.0
M7PFUnDA		**64.0**	50.0	150.0
M8FOSA		**117.3**	50.0	150.0
M8PFOA		**70.4**	50.0	150.0
M8PFOS		**80.5**	50.0	150.0
M9-PFNA		**61.6**	50.0	150.0
MPFBA	*	**26.8**	50.0	150.0
MPFDoDA		**58.8**	50.0	150.0
d3N-MeFOSAA		**110.6**	50.0	150.0
d5EtFOSAA	*	**150.1**	50.0	150.0
MHFPO-DA		**144.6**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S32541.02

Sample Tag: 2202042-02A

Collected Date/Time: 01/31/2022 13:15

Matrix: Biosolids

COC Reference: 834

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220209, Run Date: 02/10/2022 00:34, Matrix: SO, Dilution: 32.3

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	**277.5**	50.0	150.0
M2-6:2FTSA	*	**366.8**	50.0	150.0
M2-8:2FTSA	*	**275.1**	50.0	150.0
M2PFTeDA	*	**0.5**	12.0	218.0
M3PFBS		**78.6**	50.0	150.0
M3PFHxS		**74.7**	50.0	150.0
M4PFHpA		**73.9**	50.0	150.0
M5PFHxA		**57.1**	50.0	150.0
M5PFPeA		**60.6**	50.0	150.0
M6PFDA	*	**18.3**	50.0	150.0
M7PFUnDA	*	**7.1**	50.0	150.0
M8FOSA		**90.8**	50.0	150.0
M8PFOA		**60.7**	50.0	150.0
M8PFOS	*	**44.4**	50.0	150.0
M9-PFNA		**51.2**	50.0	150.0
MPFBA	*	**35.2**	50.0	150.0
MPFDoDA	*	**2.4**	50.0	150.0
d3N-MeFOSAA	*	**24.6**	50.0	150.0
d5EtFOSAA	*	**38.2**	50.0	150.0
MHFPO-DA	*	**158.3**	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF220209S1

QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK220209.BLK220209S

Run in Batch: AK220209, Run Date: 02/09/2022 19:22, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**110.7**	50.0	150.0
M2-6:2FTSA		**99.1**	50.0	150.0
M2-8:2FTSA	*	**187.6**	50.0	150.0
M2PFTeDA		**175.8**	12.0	218.0
M3PFBS		**98.1**	50.0	150.0
M3PFHxS		**104.8**	50.0	150.0
M4PFHpA		**86.8**	50.0	150.0
M5PFHxA		**96.2**	50.0	150.0
M5PFPeA		**104.3**	50.0	150.0
M6PFDA		**94.2**	50.0	150.0
M7PFUnDA		**111.0**	50.0	150.0
M8FOSA		**104.7**	50.0	150.0
M8PFOA		**95.7**	50.0	150.0
M8PFOS		**109.2**	50.0	150.0
M9-PFNA		**92.1**	50.0	150.0
MPFBA		**103.8**	50.0	150.0
MPFDoDA		**124.4**	50.0	150.0
d3N-MeFOSAA	*	**218.6**	50.0	150.0
d5EtFOSAA		**122.7**	50.0	150.0
MHFPO-DA		**100.9**	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK220209.LCS220209S

Run in Batch: AK220209, Run Date: 02/09/2022 18:43, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**107.4**	50.0	150.0
M2-6:2FTSA		**100.5**	50.0	150.0
M2-8:2FTSA		**102.2**	50.0	150.0
M2PFTeDA		**129.3**	12.0	218.0
M3PFBS		**93.7**	50.0	150.0
M3PFHxS		**98.5**	50.0	150.0
M4PFHpA		**92.5**	50.0	150.0
M5PFHxA		**94.8**	50.0	150.0
M5PFPeA		**102.1**	50.0	150.0
M6PFDA		**86.1**	50.0	150.0
M7PFUnDA		**100.2**	50.0	150.0
M8FOSA		**99.3**	50.0	150.0
M8PFOA		**97.0**	50.0	150.0
M8PFOS		**97.6**	50.0	150.0
M9-PFNA		**78.0**	50.0	150.0
MPFBA		**99.1**	50.0	150.0
MPFDoDA		**100.3**	50.0	150.0
d3N-MeFOSAA		**109.0**	50.0	150.0
d5EtFOSAA		**103.5**	50.0	150.0
MHFPO-DA		**93.7**	50.0	150.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220209.LCSD220209S, Parent Sample ID: AK220209.LCS220209S

Run in Batch: AK220209, Run Date: 02/09/2022 19:03, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**100.2**	50.0	150.0
M2-6:2FTSA		**121.0**	50.0	150.0
M2-8:2FTSA		**103.2**	50.0	150.0
M2PFTeDA		**131.2**	12.0	218.0
M3PFBS		**92.3**	50.0	150.0
M3PFHxS		**93.5**	50.0	150.0
M4PFHpA		**96.2**	50.0	150.0
M5PFHxA		**101.5**	50.0	150.0
M5PFPeA		**103.8**	50.0	150.0
M6PFDA		**91.7**	50.0	150.0
M7PFUnDA		**104.5**	50.0	150.0
M8FOSA		**100.1**	50.0	150.0
M8PFOA		**87.9**	50.0	150.0
M8PFOS		**103.6**	50.0	150.0
M9-PFNA		**84.2**	50.0	150.0
MPFBA		**101.1**	50.0	150.0
MPFDoDA		**104.9**	50.0	150.0
d3N-MeFOSAA		**110.2**	50.0	150.0
d5EtFOSAA		**110.3**	50.0	150.0
MHFPO-DA		**97.3**	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK220209.3224307M, Parent Sample ID: S32243.07

Run in Batch: AK220209, Run Date: 02/09/2022 20:21, Prep Date: 02/09/2022, Matrix: SO, Dilution: 13.2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**134.6**	50.0	150.0
M2-6:2FTSA		**135.1**	50.0	150.0
M2-8:2FTSA	*	**160.9**	50.0	150.0
M2PFTeDA		**173.3**	12.0	218.0
M3PFBS		**110.7**	50.0	150.0
M3PFHxS		**108.5**	50.0	150.0
M4PFHpA		**99.1**	50.0	150.0
M5PFHxA		**102.5**	50.0	150.0
M5PFPeA		**111.1**	50.0	150.0
M6PFDA		**99.4**	50.0	150.0
M7PFUnDA		**123.0**	50.0	150.0
M8FOSA		**107.1**	50.0	150.0
M8PFOA		**103.5**	50.0	150.0
M8PFOS		**112.4**	50.0	150.0
M9-PFNA		**88.2**	50.0	150.0
MPFBA		**110.4**	50.0	150.0
MPFDoDA		**142.5**	50.0	150.0
d3N-MeFOSAA		**132.0**	50.0	150.0
d5EtFOSAA		**131.9**	50.0	150.0
MHFPO-DA		**112.9**	50.0	150.0

Duplicate (DUP)

Lab Sample ID: AK220209.3224309D, Parent Sample ID: S32243.09

Run in Batch: AK220209, Run Date: 02/09/2022 21:00, Prep Date: 02/09/2022, Matrix: SO, Dilution: 13.4

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	**199.7**	50.0	150.0
M2-6:2FTSA	*	**222.0**	50.0	150.0
M2-8:2FTSA	*	**239.7**	50.0	150.0
M2PFTeDA		**136.4**	12.0	218.0
M3PFBS		**100.1**	50.0	150.0
M3PFHxS		**99.5**	50.0	150.0
M4PFHpA		**99.2**	50.0	150.0
M5PFHxA		**97.1**	50.0	150.0
M5PFPeA		**105.4**	50.0	150.0
M6PFDA		**100.0**	50.0	150.0
M7PFUnDA		**114.4**	50.0	150.0
M8FOSA		**101.9**	50.0	150.0
M8PFOA		**99.5**	50.0	150.0
M8PFOS		**97.5**	50.0	150.0
M9-PFNA		**96.7**	50.0	150.0
MPFBA		**104.8**	50.0	150.0
MPFDoDA		**123.7**	50.0	150.0
d3N-MeFOSAA		**137.3**	50.0	150.0
d5EtFOSAA	*	**163.0**	50.0	150.0
MHFPO-DA		**101.0**	50.0	150.0

Inorganics, Prep Batch ID: TS220202D

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS220202D.LRB1

Run in Batch: TS220202D, Run Date: 02/02/2022 17:00, Prep Date: 02/02/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS220202D.LCS1

Run in Batch: TS220202D, Run Date: 02/02/2022 17:00, Prep Date: 02/02/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS220202D.DP1, Parent Sample ID: S32522.07

Run in Batch: TS220202D, Run Date: 02/02/2022 17:00, Prep Date: 02/02/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

Duplicate (DUP)

Lab Sample ID: TS220202D.DP2, Parent Sample ID: S32525.01

Run in Batch: TS220202D, Run Date: 02/02/2022 17:00, Prep Date: 02/02/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

Organics - Volatiles, Prep Batch ID: PF220209S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK220209.BLK220209S

Run in Batch: AK220209, Run Date: 02/09/2022 19:22, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	5	ng/kg
PFPeA		ND	2	ng/kg
4:2 FTSA		ND	1	ng/kg
PFHxA		ND	1	ng/kg
PFBS		ND	1	ng/kg
HFPO-DA		ND	1	ng/kg
PFHpA		ND	1	ng/kg
PFPeS		ND	1	ng/kg
ADONA		ND	1	ng/kg
6:2 FTSA		ND	1	ng/kg
PFOA		ND	1	ng/kg
PFHxS-BR		ND	1	ng/kg
PFHxS		ND	1	ng/kg
PFHxS-LN		ND	1	ng/kg
PFNA		ND	1	ng/kg
8:2 FTSA		ND	1	ng/kg
PFHpS		ND	1	ng/kg
N-MeFOSAA		ND	1	ng/kg
PFDA		ND	1	ng/kg
PFOS-BR		ND	1	ng/kg
PFOS		ND	1	ng/kg
EtFOSAA		ND	2	ng/kg
PFOS-LN		ND	1	ng/kg
PFUnDA		ND	1	ng/kg
9CL-PF3ONS		ND	1	ng/kg
PFNS		ND	1	ng/kg
PFDoDA		ND	1	ng/kg
PFDS		ND	1	ng/kg
PFTrDA		ND	1	ng/kg
11CL-PF3OUdS		ND	1	ng/kg
FOSA		ND	1	ng/kg
PFTeDA		ND	2	ng/kg

Laboratory Control Sample (LCS)

Lab Sample ID: AK220209.LCS220209S

Run in Batch: AK220209, Run Date: 02/09/2022 18:43, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		102.2	70.0	130.0
PFPeA		94.6	70.0	130.0
4:2 FTSA		101.0	70.0	130.0
PFHxA		104.4	70.0	130.0
PFBS		111.6	70.0	130.0
HFPO-DA		98.2	70.0	130.0
PFHpA		93.8	70.0	130.0
PFPeS		102.2	70.0	130.0
ADONA		106.0	70.0	130.0

Organics - Volatiles, Prep Batch ID: PF220209S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK220209.LCS220209S

Run in Batch: AK220209, Run Date: 02/09/2022 18:43, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		103.0	70.0	130.0
PFOA		81.8	70.0	130.0
PFHxS		110.2	70.0	130.0
PFNA		112.6	70.0	130.0
8:2 FTSA		95.0	70.0	130.0
PFHpS		121.0	70.0	130.0
N-MeFOSAA		76.0	70.0	130.0
PFDA		98.2	70.0	130.0
PFOS		79.0	70.0	130.0
EtFOSAA		100.6	70.0	130.0
PFUnDA		100.0	70.0	130.0
9CL-PF3ONS		104.2	70.0	130.0
PFNS		102.0	70.0	130.0
PFDoDA		109.6	70.0	130.0
PFDS		111.4	70.0	130.0
PFTrDA		122.4	70.0	130.0
11CL-PF3OUdS	*	136.0	70.0	130.0
FOSA		112.0	70.0	130.0
PFTeDA		86.2	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220209.LCSD220209S, Parent Sample ID: AK220209.LCS220209S

Run in Batch: AK220209, Run Date: 02/09/2022 19:03, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		102.2	70.0	130.0	0.0	30.0
PFPeA		96.8	70.0	130.0	2.3	30.0
4:2 FTSA		116.4	70.0	130.0	14.2	30.0
PFHxA		93.8	70.0	130.0	10.7	30.0
PFBS	*	131.2	70.0	130.0	16.1	30.0
HFPO-DA		101.2	70.0	130.0	3.0	30.0
PFHpA		91.8	70.0	130.0	2.2	30.0
PFPeS		110.8	70.0	130.0	8.1	30.0
ADONA		119.4	70.0	130.0	11.9	30.0
6:2 FTSA		86.8	70.0	130.0	17.1	30.0
PFOA		106.4	70.0	130.0	26.1	30.0
PFHxS		117.8	70.0	130.0	6.7	30.0
PFNA		89.2	70.0	130.0	23.2	30.0
8:2 FTSA		95.0	70.0	130.0	0.0	30.0
PFHpS		116.2	70.0	130.0	4.0	30.0
N-MeFOSAA		73.0	70.0	130.0	4.0	30.0
PFDA		99.0	70.0	130.0	0.8	30.0
PFOS		85.8	70.0	130.0	8.3	30.0
EtFOSAA		101.8	70.0	130.0	1.2	30.0
PFUnDA		88.0	70.0	130.0	12.8	30.0
9CL-PF3ONS		97.4	70.0	130.0	6.7	30.0
PFNS		115.4	70.0	130.0	12.3	30.0

Organics - Volatiles, Prep Batch ID: PF220209S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220209.LCSD220209S, Parent Sample ID: AK220209.LCS220209S

Run in Batch: AK220209, Run Date: 02/09/2022 19:03, Prep Date: 02/09/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		104.0	70.0	130.0	5.2	30.0
PFDS		94.6	70.0	130.0	16.3	30.0
PFTrDA		126.0	70.0	130.0	2.9	30.0
11CL-PF3OUdS	*	131.2	70.0	130.0	3.6	30.0
FOSA		110.0	70.0	130.0	1.8	30.0
PFTeDA		83.8	70.0	130.0	2.8	30.0

Matrix Spike (MS)

Lab Sample ID: AK220209.3224307M, Parent Sample ID: S32243.07

Run in Batch: AK220209, Run Date: 02/09/2022 20:21, Prep Date: 02/09/2022, Matrix: SO, Dilution: 13.2

Analyte	Flags	% Rec	LCL	UCL
PFBA		100.0	70.0	130.0
PFPeA		92.4	70.0	130.0
4:2 FTSA		110.6	70.0	130.0
PFHxA		103.0	70.0	130.0
PFBS		109.1	70.0	130.0
PFHpA		98.5	70.0	130.0
PFPeS		89.4	70.0	130.0
6:2 FTSA		106.1	70.0	130.0
PFOA		87.9	70.0	130.0
PFHxS		115.2	70.0	130.0
PFNA		95.5	70.0	130.0
8:2 FTSA		92.4	70.0	130.0
PFHpS		106.1	70.0	130.0
PFDA		93.9	70.0	130.0
N-MeFOSAA		74.2	70.0	130.0
EtFOSAA		98.5	70.0	130.0
PFOS	*	139.2	70.0	130.0
PFUnDA		90.9	70.0	130.0
PFNS		90.9	70.0	130.0
PFDoDA		93.9	70.0	130.0
PFDS		100.0	70.0	130.0
PFTrDA		106.1	70.0	130.0
FOSA		95.5	70.0	130.0
PFTeDA		78.8	70.0	130.0
11CL-PF3OUdS	*	130.3	70.0	130.0
9CL-PF3ONS		87.9	70.0	130.0
ADONA		106.1	70.0	130.0
HFPO-DA		86.4	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK220209.3224309D, Parent Sample ID: S32243.09

Run in Batch: AK220209, Run Date: 02/09/2022 21:00, Prep Date: 02/09/2022, Matrix: SO, Dilution: 13.4

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

Organics - Volatiles, Prep Batch ID: PF220209S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Duplicate (DUP) (continued)

Lab Sample ID: AK220209.3224309D, Parent Sample ID: S32243.09

Run in Batch: AK220209, Run Date: 02/09/2022 21:00, Prep Date: 02/09/2022, Matrix: SO, Dilution: 13.4

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		22.2	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		28.0	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		21.1	30.0
PFOS-LN		25.0	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

CHAIN OF CUSTODY RECORD

Omega COCID 834	PAGE: 1	OF: 1

ADDRESS
Prein&Newhof Laboratory
3260 Evergreen Dr NE
Grand Rapids, MI 49525
TEL: (616) 364-7600
FAX: (616) 364-4222
Website: www.preinnewhof.com

sbylsma@preinnewhof.com

SUB CONTRATOR: Merit COMPANY:
ADDRESS:
CITY, STATE, ZIP:
PHONE: FAX: EMAIL:
ACCOUNT #:

SPECIAL INSTRUCTIONS / COMMENTS:

ITEM #	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	ANALYTICAL PARAMETERS: PFAS-SUB	COMMENTS (Methanol Preserved Weights, HOT Sample Notation, Additional Sample Description, etc.)
1	2202042-01A	GTSI0131221049		Biosolids	1/31/2022 10:49:00 AM	1	√	32541.01
2	2202042-02A	TC 5886- Biosolids Comp		Biosolids	1/31/2022 1:15:00 PM	1	√	.02

Relinquished By: K	Date: 2/1/22	Time: 1515	Received By:	Date:	Time:
Relinquished By: UPS	Date: 2/2/22	Time: 1200	Received By: M Dilcobo	Date: 2/2/22	Time: 1200
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ **RUSH** Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 6.0 °C Attempt to Cool ? ✓
Comments:

PREIN & NEWHOF

3260 Evergreen Dr NE
Grand Rapids, MI 49525

t: 616-364-7600
f: 616-364-4222

Client Jacobs

Project TC & GTSF PFAS + Biosolids

Send Results to Josh Lynch

Sampler JL/JP

CHAIN OF CUSTODY

Lab Sample ID	Date	Time	Sample Description	Analysis Requested / Preservative							Field	Matrix
20421	1/31/22	10:49a	GTSF013122 1049	PFAS								Sludge *
2	1/31/22	1:15p	TC5886 - Biosolids Comp	PFAS								Sludge *

Relinquished By: Name/Date/Time
Josh Lynch 1/31/22 2:00p

Relinquished By: Name/Date/Time

Received By: Name/Date/Time

Received for Laboratory By: Name/Date/Time
S. Dienn 2/1/22 1130

Temp on Receipt 3°C