Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

June 20, 2022

Ottawa County Road Commission
14110 Lakeshore Dr.
Grand Haven, MI 49417

RE: W.C.O. WWTP Biosolids

Order No.: 2205C38

Guide to reading Lab Result

Dear Mr. Joe Hebert:

Prein&Newhof Laboratory received 1 sample(s) on 5/19/2022 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. Eric Law

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

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Analytical Report

(Biosolid)

WO#: **2205C38**

Date Reported: **6/20/2022**

CLIENT:	Ottawa County Road Commission	**Collection Date:**	5/19/2022 11:30:00 AM
Project:	W.C.O. WWTP Biosolids	**Received Date:**	5/19/2022 1:52:00 PM
Lab ID:	2205C38-01	**Matrix:**	BIOSOLIDS
Client Sample ID:	S-1 East Sludge Tank	**Sampled By:**	JH

Analyses	Result	Units	RL	Qual	Table 3 Limit	Analyst	Date Analyzed	Method
Arsenic	< 4.75	mg/Kg-dry	4.75		41.0	AS	05/25/22 15:59	SW 6020B
Cadmium	< 0.950	mg/Kg-dry	0.950		39.0	AS	05/25/22 15:59	SW 6020B
Calcium	14900	mg/Kg-dry	95.0			AS	05/25/22 15:59	SW 6020B
Chromium	11.4	mg/Kg-dry	4.75			AS	05/25/22 15:59	SW 6020B
Copper	169	mg/Kg-dry	4.75		1500	AS	05/25/22 15:59	SW 6020B
Lead	< 4.75	mg/Kg-dry	4.75		300	AS	05/25/22 15:59	SW 6020B
Magnesium	3610	mg/Kg-dry	95.0			AS	05/25/22 15:59	SW 6020B
Mercury	< 0.303	mg/Kg-dry	0.303		17.0	DV	05/23/22 11:00	SW 7471A
Molybdenum	10.2	mg/Kg-dry	9.50		75.0	AS	05/25/22 15:59	SW 6020B
Nickel	7.36	mg/Kg-dry	4.75		420	AS	05/25/22 15:59	SW 6020B
Potassium	3190	mg/Kg-dry	475			AS	05/25/22 15:59	SW 6020B
Selenium	< 4.75	mg/Kg-dry	4.75		100	AS	05/25/22 15:59	SW 6020B
Zinc	400	mg/Kg-dry	4.75		2800	AS	05/25/22 15:59	SW 6020B
Density	8.67	lb/Gal	1.00			JS	05/23/22 16:07	SM 2710-F
Hydrogen Ion (pH)	6.62	pH Units	1.00			SD	05/19/22 16:45	SW 9045C
Nitrogen, Ammonia	7490	mg/Kg-dry	33.8			TE	05/23/22 15:19	SM4500NH3D-20
Nitrogen, Nitrate	< 33.8	mg/Kg-dry	33.8			DV	05/19/22 22:37	SW 9056A
Nitrogen, Total	76000	mg/Kg-dry	33.8			SB	05/26/22 14:05	
Nitrogen, Total Available	42.4	lb/ton-dry	3.38			SB	05/26/22 14:05	
Nitrogen, Total Kjeldahl	75900	mg/Kg-dry	423			TE	05/26/22 10:14	SM4500-N-2011
Phosphorus, Total (As P)	34100	mg/Kg-dry	169			AB	05/25/22 14:07	SM4500-PE-2011
Total Solids	2.96	%	0.0100			AB	05/20/22 8:47	D2216
Total Volatile Solids	79.8	%	0.100			SJ	05/24/22 15:53	EPA 160.4

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	S	Spike Recovery outside accepted recovery limits

Original

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

Analytical Laboratory Report

Report ID: S36210.01(01)
Generated on 06/17/2022

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): S36210.01
Project: Monitoring
Collected Date(s): 05/19/2022
Submitted Date/Time: 05/20/2022 10:15
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, and 2-chloroethylvinyl ether 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 2015

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

Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36210.01	2205C38-01A S-1 East Sludge Tan	Biosolids	05/19/22 11:30

Lab Sample ID: S36210.01
Sample Tag: 2205C38-01A S-1 East Sludge Tan
Collected Date/Time: 05/19/2022 11:30
Matrix: Biosolids
COC Reference: 940

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.6	IR
1	250ml Plastic	None	Yes	4.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.22/7.01/10	ASTM D7968-17M	06/14/22 17:30	KCV	

Inorganics

Method: SM2540B, Run Date: 05/20/22 15:22, 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: 06/16/22 03:18, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	3.3		ug/kg	66.2	375-22-4	IX
PFPeA*	3.3	0.66		ug/kg	66.2	2706-90-3	I
4:2 FTSA*	Not detected	0.66		ug/kg	66.2	757124-72-4	
PFHxA*	2.7	0.66		ug/kg	66.2	307-24-4	
PFBS*	0.8	0.66		ug/kg	66.2	375-73-5	
PFHpA*	0.86	0.66		ug/kg	66.2	375-85-9	
PFPeS*	Not detected	0.66		ug/kg	66.2	2706-91-4	
6:2 FTSA*	0.97	0.66		ug/kg	66.2	27619-97-2	
PFOA*	4.5	0.66		ug/kg	66.2	335-67-1	
PFHxS*	1.6	0.66		ug/kg	66.2	355-46-4	
PFHxS-LN*	1.2	0.66		ug/kg	66.2	355-46-4-LN	
PFHxS-BR*	Not detected	0.66		ug/kg	66.2	355-46-4-BR	
PFNA*	3.4	0.66		ug/kg	66.2	375-95-1	
8:2 FTSA*	Not detected	0.66		ug/kg	66.2	39108-34-4	I
PFHpS*	Not detected	0.66		ug/kg	66.2	375-92-8	
PFDA*	6.2	0.66		ug/kg	66.2	335-76-2	
N-MeFOSAA*	6.1	0.66		ug/kg	66.2	2355-31-9	
EtFOSAA*	4.7	0.66		ug/kg	66.2	2991-50-6	
PFOS*	8.5	0.66		ug/kg	66.2	1763-23-1	
PFOS-LN*	6.7	0.66		ug/kg	66.2	1763-23-1-LN	
PFOS-BR*	1.7	0.66		ug/kg	66.2	1763-23-1-BR	
PFUnDA*	Not detected	0.66		ug/kg	66.2	2058-94-8	
PFNS*	Not detected	0.66		ug/kg	66.2	68259-12-1	
PFDoDA*	2	0.66		ug/kg	66.2	307-55-1	I
PFDS*	Not detected	0.66		ug/kg	66.2	335-77-3	
PFTrDA*	Not detected	0.66		ug/kg	66.2	72629-94-8	I
FOSA*	1.1	0.66		ug/kg	66.2	754-91-6	
PFTeDA*	Not detected	0.66		ug/kg	66.2	376-06-7	I1
11Cl-PF3OUdS*	Not detected	0.66		ug/kg	66.2	763051-92-9	

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

Lab Sample ID: S36210.01 (continued)

Sample Tag: 2205C38-01A S-1 East Sludge Tan

28 PFAs, Method: ASTM D7968-17M, Run Date: 06/16/22 03:18, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
9Cl-PF3ONS*	Not detected	0.66		ug/kg	66.2	756426-58-1	
ADONA*	Not detected	0.66		ug/kg	66.2	919005-14-4	
HFPO-DA*	Not detected	0.66		ug/kg	66.2	13252-13-6	I

I-Matrix interference with internal standard

Merit Laboratories Login Checklist

Lab Set ID: S36210
Client: PREINNEWHOF (Prein & Newhof)
Project: Monitoring
Submitted: 05/20/2022 10:15 Login User: PFD

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 4.6
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[X] Yes	[ ] No	[ ] N/A	Samples shipped	UPS
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] 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 940	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 Labs** 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	2205C38-01A	S-1 East Sludge Tank	GLASS_WM	Biosolids	5/19/2022 11:30:00 AM	1	√	36210.01

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
	5/19/22	1430	UPS		
Relinquished By: UPS	Date: 5/20/22	Time: 10:15	Received By:	Date: 5/20/22	Time: 10:15
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 4.6 °C Attempt to Cool ? yes

Comments:

Quality Control Report

Report ID: QC-S36210-01
Generated on 06/17/2022

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): S36210.01
Project: Monitoring
Submitted Date/Time: 05/20/2022 10:15
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
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36210.01

Sample Tag: 2205C38-01A S-1 East Sludge Tan

Collected Date/Time: 05/19/2022 11:30

Matrix: Biosolids

COC Reference: 940

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	05/20/22 15:22	TS220520A	TS220520A	No	BLK/LCS/DUP
Organics - Volatiles						
28 PFAs	ASTM D7968-17M	06/16/22 03:18	AK220615	PF220614S1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS220520A

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36210.01	Total Solids	SM2540B	05/20/22 15:22	TS220520A

Organics - Volatiles, Prep Batch ID: PF220614S1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36210.01	28 PFAs	ASTM D7968-17M	06/16/22 03:18	AK220615

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36210.01

Sample Tag: 2205C38-01A S-1 East Sludge Tan

Collected Date/Time: 05/19/2022 11:30

Matrix: Biosolids

COC Reference: 940

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220615, Run Date: 06/16/2022 03:18, Matrix: SO, Dilution: 66.2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**113.7**	50.0	150.0
M2-6:2FTSA		**133.1**	50.0	150.0
M2-8:2FTSA	*	**164.2**	50.0	150.0
M2PFTeDA	*	**7.9**	12.0	218.0
M3PFBS		**60.5**	50.0	150.0
M3PFHxS		**85.6**	50.0	150.0
M4PFHpA		**65.1**	50.0	150.0
M5PFHxA		**50.1**	50.0	150.0
M5PFPeA	*	**38.1**	50.0	150.0
M6PFDA		**80.6**	50.0	150.0
M7PFUnDA		**64.0**	50.0	150.0
M8FOSA		**102.7**	50.0	150.0
M8PFOA		**66.3**	50.0	150.0
M8PFOS		**78.3**	50.0	150.0
M9-PFNA		**68.8**	50.0	150.0
MPFBA	*	**26.5**	50.0	150.0
MPFDoDA	*	**43.8**	50.0	150.0
d3N-MeFOSAA		**89.5**	50.0	150.0
d5EtFOSAA		**83.2**	50.0	150.0
MHFPO-DA	*	**39.8**	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF220614S1

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

Blank (BLK)

Lab Sample ID: AK220615.BLK220614

Run in Batch: AK220615, Run Date: 06/15/2022 20:28, Prep Date: 06/14/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**96.8**	50.0	150.0
M2-6:2FTSA		**100.1**	50.0	150.0
M2-8:2FTSA		**91.4**	50.0	150.0
M2PFTeDA		**148.7**	12.0	218.0
M3PFBS		**90.5**	50.0	150.0
M3PFHxS		**108.5**	50.0	150.0
M4PFHpA		**112.5**	50.0	150.0
M5PFHxA		**106.7**	50.0	150.0
M5PFPeA		**101.8**	50.0	150.0
M6PFDA		**113.9**	50.0	150.0
M7PFUnDA		**112.7**	50.0	150.0
M8FOSA		**96.4**	50.0	150.0
M8PFOA		**98.8**	50.0	150.0
M8PFOS		**108.7**	50.0	150.0
M9-PFNA		**103.9**	50.0	150.0
MPFBA		**93.0**	50.0	150.0
MPFDoDA		**106.9**	50.0	150.0
d3N-MeFOSAA		**94.2**	50.0	150.0
d5EtFOSAA		**93.2**	50.0	150.0
MHFPO-DA		**86.1**	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK220615.LCS220614

Run in Batch: AK220615, Run Date: 06/15/2022 19:49, Prep Date: 06/14/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**94.7**	50.0	150.0
M2-6:2FTSA		**91.2**	50.0	150.0
M2-8:2FTSA		**98.0**	50.0	150.0
M2PFTeDA		**159.5**	12.0	218.0
M3PFBS		**84.6**	50.0	150.0
M3PFHxS		**107.0**	50.0	150.0
M4PFHpA		**121.5**	50.0	150.0
M5PFHxA		**98.0**	50.0	150.0
M5PFPeA		**95.3**	50.0	150.0
M6PFDA		**109.9**	50.0	150.0
M7PFUnDA		**102.1**	50.0	150.0
M8FOSA		**95.4**	50.0	150.0
M8PFOA		**104.3**	50.0	150.0
M8PFOS		**101.8**	50.0	150.0
M9-PFNA		**101.4**	50.0	150.0
MPFBA		**93.4**	50.0	150.0
MPFDoDA		**112.7**	50.0	150.0
d3N-MeFOSAA		**92.1**	50.0	150.0
d5EtFOSAA		**87.8**	50.0	150.0
MHFPO-DA		**90.4**	50.0	150.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220615.LCSD220614, Parent Sample ID: AK220615.LCS220614

Run in Batch: AK220615, Run Date: 06/15/2022 20:09, Prep Date: 06/14/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**104.0**	50.0	150.0
M2-6:2FTSA		**95.1**	50.0	150.0
M2-8:2FTSA		**105.9**	50.0	150.0
M2PFTeDA		**154.0**	12.0	218.0
M3PFBS		**90.2**	50.0	150.0
M3PFHxS		**109.9**	50.0	150.0
M4PFHpA		**121.9**	50.0	150.0
M5PFHxA		**96.0**	50.0	150.0
M5PFPeA		**102.2**	50.0	150.0
M6PFDA		**106.1**	50.0	150.0
M7PFUnDA		**109.1**	50.0	150.0
M8FOSA		**101.7**	50.0	150.0
M8PFOA		**93.9**	50.0	150.0
M8PFOS		**106.6**	50.0	150.0
M9-PFNA		**93.9**	50.0	150.0
MPFBA		**95.2**	50.0	150.0
MPFDoDA		**113.7**	50.0	150.0
d3N-MeFOSAA		**87.7**	50.0	150.0
d5EtFOSAA		**95.8**	50.0	150.0
MHFPO-DA		**92.4**	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK220615.3627807M, Parent Sample ID: S36278.07

Run in Batch: AK220615, Run Date: 06/15/2022 22:25, Prep Date: 06/14/2022, Matrix: SO, Dilution: 11.11

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**92.7**	50.0	150.0
M2-6:2FTSA		**92.0**	50.0	150.0
M2-8:2FTSA		**93.2**	50.0	150.0
M2PFTeDA		**102.4**	12.0	218.0
M3PFBS		**91.0**	50.0	150.0
M3PFHxS		**122.4**	50.0	150.0
M4PFHpA		**120.6**	50.0	150.0
M5PFHxA		**103.0**	50.0	150.0
M5PFPeA		**101.3**	50.0	150.0
M6PFDA		**126.1**	50.0	150.0
M7PFUnDA		**115.8**	50.0	150.0
M8FOSA		**97.4**	50.0	150.0
M8PFOA		**108.6**	50.0	150.0
M8PFOS		**101.4**	50.0	150.0
M9-PFNA		**108.8**	50.0	150.0
MPFBA		**101.9**	50.0	150.0
MPFDoDA		**122.3**	50.0	150.0
d3N-MeFOSAA		**109.3**	50.0	150.0
d5EtFOSAA		**110.9**	50.0	150.0
MHFPO-DA		**81.1**	50.0	150.0

Duplicate (DUP)

Lab Sample ID: AK220615.3627808D, Parent Sample ID: S36278.08

Run in Batch: AK220615, Run Date: 06/15/2022 23:04, Prep Date: 06/14/2022, Matrix: SO, Dilution: 9.94

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**87.1**	50.0	150.0
M2-6:2FTSA		**93.0**	50.0	150.0
M2-8:2FTSA		**86.6**	50.0	150.0
M2PFTeDA		**91.4**	12.0	218.0
M3PFBS		**86.0**	50.0	150.0
M3PFHxS		**122.4**	50.0	150.0
M4PFHpA		**101.6**	50.0	150.0
M5PFHxA		**95.9**	50.0	150.0
M5PFPeA		**96.7**	50.0	150.0
M6PFDA		**112.8**	50.0	150.0
M7PFUnDA		**117.7**	50.0	150.0
M8FOSA		**95.5**	50.0	150.0
M8PFOA		**120.3**	50.0	150.0
M8PFOS		**106.7**	50.0	150.0
M9-PFNA		**109.1**	50.0	150.0
MPFBA		**95.8**	50.0	150.0
MPFDoDA		**105.6**	50.0	150.0
d3N-MeFOSAA		**94.9**	50.0	150.0
d5EtFOSAA		**89.0**	50.0	150.0
MHFPO-DA		**87.4**	50.0	150.0

Inorganics, Prep Batch ID: TS220520A

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

Blank (BLK)

Lab Sample ID: TS220520A.LRB1

Run in Batch: TS220520A, Run Date: 05/20/2022 15:22, Prep Date: 05/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS220520A.LCS1

Run in Batch: TS220520A, Run Date: 05/20/2022 15:22, Prep Date: 05/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS220520A.DP1, Parent Sample ID: S36204.01

Run in Batch: TS220520A, Run Date: 05/20/2022 15:22, Prep Date: 05/20/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		2	5

Duplicate (DUP)

Lab Sample ID: TS220520A.DP2, Parent Sample ID: S36217.05

Run in Batch: TS220520A, Run Date: 05/20/2022 15:22, Prep Date: 05/20/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

Organics - Volatiles, Prep Batch ID: PF220614S1

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

Blank (BLK)

Lab Sample ID: AK220615.BLK220614

Run in Batch: AK220615, Run Date: 06/15/2022 20:28, Prep Date: 06/14/2022, 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
PFHxS-BR		ND	1	ng/kg
PFOA	*	1.15	1	ng/kg
PFHxS		ND	1	ng/kg
PFHxS-LN		ND	1	ng/kg
PFNA	*	1.06	1	ng/kg
PFHpS		ND	1	ng/kg
8:2 FTSA		ND	1	ng/kg
PFOS-BR		ND	1	ng/kg
PFOS		ND	1	ng/kg
PFDA		ND	1	ng/kg
N-MeFOSAA		ND	1	ng/kg
PFOS-LN		ND	1	ng/kg
EtFOSAA		ND	2	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
PFTeDA		ND	2	ng/kg
FOSA		ND	1	ng/kg

Laboratory Control Sample (LCS)

Lab Sample ID: AK220615.LCS220614

Run in Batch: AK220615, Run Date: 06/15/2022 19:49, Prep Date: 06/14/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		94.2	70.0	130.0
PFPeA		95.0	70.0	130.0
4:2 FTSA		102.8	70.0	130.0
PFHxA		95.0	70.0	130.0
PFBS		107.0	70.0	130.0
HFPO-DA		81.2	70.0	130.0
PFHpA		86.6	70.0	130.0
PFPeS		112.6	70.0	130.0
ADONA		87.2	70.0	130.0

Organics - Volatiles, Prep Batch ID: PF220614S1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK220615.LCS220614

Run in Batch: AK220615, Run Date: 06/15/2022 19:49, Prep Date: 06/14/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		106.0	70.0	130.0
PFOA		104.0	70.0	130.0
PFHxS		106.2	70.0	130.0
PFNA		109.8	70.0	130.0
PFHpS		84.0	70.0	130.0
8:2 FTSA		88.2	70.0	130.0
PFOS		90.6	70.0	130.0
PFDA		97.6	70.0	130.0
N-MeFOSAA		101.0	70.0	130.0
EtFOSAA		106.0	70.0	130.0
PFUnDA		100.8	70.0	130.0
9CL-PF3ONS		96.4	70.0	130.0
PFNS		86.8	70.0	130.0
PFDoDA		100.6	70.0	130.0
PFDS		105.8	70.0	130.0
PFTrDA		113.0	70.0	130.0
11CL-PF3OUdS		103.8	70.0	130.0
PFTeDA		100.4	70.0	130.0
FOSA		94.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220615.LCSD220614, Parent Sample ID: AK220615.LCS220614

Run in Batch: AK220615, Run Date: 06/15/2022 20:09, Prep Date: 06/14/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		90.6	70.0	130.0	3.9	30.0
PFPeA		88.6	70.0	130.0	7.0	30.0
4:2 FTSA		85.6	70.0	130.0	18.3	30.0
PFHxA		93.0	70.0	130.0	2.1	30.0
PFBS		99.0	70.0	130.0	7.8	30.0
HFPO-DA		84.6	70.0	130.0	4.1	30.0
PFHpA		76.0	70.0	130.0	13.0	30.0
PFPeS		100.2	70.0	130.0	11.7	30.0
ADONA		99.2	70.0	130.0	12.9	30.0
6:2 FTSA		98.4	70.0	130.0	7.4	30.0
PFOA		118.6	70.0	130.0	13.1	30.0
PFHxS		101.4	70.0	130.0	4.6	30.0
PFNA		113.0	70.0	130.0	2.9	30.0
PFHpS		78.6	70.0	130.0	6.6	30.0
8:2 FTSA	*	68.6	70.0	130.0	25.0	30.0
PFOS		89.6	70.0	130.0	1.1	30.0
PFDA		83.8	70.0	130.0	15.2	30.0
N-MeFOSAA		99.6	70.0	130.0	1.4	30.0
EtFOSAA		100.8	70.0	130.0	5.0	30.0
PFUnDA		93.2	70.0	130.0	7.8	30.0
9CL-PF3ONS		88.8	70.0	130.0	8.2	30.0
PFNS		76.2	70.0	130.0	13.0	30.0

Organics - Volatiles, Prep Batch ID: PF220614S1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220615.LCSD220614, Parent Sample ID: AK220615.LCS220614

Run in Batch: AK220615, Run Date: 06/15/2022 20:09, Prep Date: 06/14/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		95.0	70.0	130.0	5.7	30.0
PFDS		94.4	70.0	130.0	11.4	30.0
PFTrDA		98.6	70.0	130.0	13.6	30.0
11CL-PF3OUdS		102.2	70.0	130.0	1.6	30.0
PFTeDA		94.0	70.0	130.0	6.6	30.0
FOSA		86.8	70.0	130.0	8.4	30.0

Matrix Spike (MS)

Lab Sample ID: AK220615.3627807M, Parent Sample ID: S36278.07

Run in Batch: AK220615, Run Date: 06/15/2022 22:25, Prep Date: 06/14/2022, Matrix: SO, Dilution: 11.11

Analyte	Flags	% Rec	LCL	UCL
PFBA		100.7	70.0	130.0
PFPeA		95.3	70.0	130.0
4:2 FTSA		95.3	70.0	130.0
PFHxA		95.3	70.0	130.0
PFBS		102.5	70.0	130.0
PFHpA		82.7	70.0	130.0
PFPeS		102.5	70.0	130.0
6:2 FTSA		107.9	70.0	130.0
PFOA		80.9	70.0	130.0
PFHxS		89.9	70.0	130.0
PFNA		104.3	70.0	130.0
8:2 FTSA		97.1	70.0	130.0
PFHpS		82.7	70.0	130.0
PFDA		84.5	70.0	130.0
N-MeFOSAA		77.3	70.0	130.0
EtFOSAA		84.5	70.0	130.0
PFOS		73.7	70.0	130.0
PFUnDA		88.1	70.0	130.0
PFNS		95.3	70.0	130.0
PFDoDA		91.7	70.0	130.0
PFDS		118.7	70.0	130.0
PFTrDA		79.1	70.0	130.0
FOSA		86.3	70.0	130.0
PFTeDA		95.3	70.0	130.0
11CL-PF3OUdS		111.5	70.0	130.0
9CL-PF3ONS		84.5	70.0	130.0
ADONA		86.3	70.0	130.0
HFPO-DA		93.5	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK220615.3627808D, Parent Sample ID: S36278.08

Run in Batch: AK220615, Run Date: 06/15/2022 23:04, Prep Date: 06/14/2022, Matrix: SO, Dilution: 9.94

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

Organics - Volatiles, Prep Batch ID: PF220614S1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK220615.3627808D, Parent Sample ID: S36278.08

Run in Batch: AK220615, Run Date: 06/15/2022 23:04, Prep Date: 06/14/2022, Matrix: SO, Dilution: 9.94

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		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	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		NC	30.0
PFOS-LN		NC	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 940	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 Labs** 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	2205C38-01A	S-1 East Sludge Tank	GLASS_WM	Biosolids	5/19/2022 11:30:00 AM	1	√	36210.01

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
	5/19/22	1430	UPS		
Relinquished By: UPS	Date: 5/20/22	Time: 10:15	Received By:	Date: 5/20/22	Time: 10:15
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 4.6 °C Attempt to Cool ? yes

Comments:

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

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

Client: OCRC
Billing Address:
Phone Number:
Project Name: W.C.O. WWTP biosolids
Project Number:
Email Results To: Joe Hebert
Sampling Personnel: JH

CHAIN OF CUSTODY

No. 46356

Wastewater	W
Drinking Water	D
Groundwater	G
Soil	S
Sludge	L
Other	X

Lab Use	Sample Information				Preservative						Analysis Requested																
Lab Sample ID #	Date Collected	Time Collected	Sample Description and Location (e.g. MW-1)	MATRIX	None	H2SO4	HNO3	HCL	NaOH	Other	Nutrients	Fecals	PFAS														
5C38-1	5/19/22	11:30Am	S-1 East Sludge Tank	L							✓	✓	✓														
5C39/1-7																											

Comments:

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
	5/19/22	1:52 Pm			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Received for Laboratory By:	Date	Time	Data Package Relinquished By:	Date	Time
	5/19/22	1352	16.C		