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

May 31, 2022

Accounts Payable
Gogebic-Iron Wastewater Authority
700 W. Cloverland Dr.
Ironwood, MI 49938

RE: Trace Project 22E0758
Client Project Biosolids PFAS Analysis- 5/11/22

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Fibertec Environmental Services.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at tbrewer@trace-labs.com.

Sincerely,

Tim Brewer
Project Manager

Enclosures

NELAP ACCREDITED TNI LABORATORY

NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: 22E0758
Client Project ID: Biosolids PFAS Analysis- 5/11/22

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
22E0758-01	PFOSS	Solid	Client	05/11/22 13:00	05/18/22 12:31

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

Fibertec
environmental
services

Tuesday, May 31, 2022

Fibertec Project Number:	A08607
Project Identification:	PFAS ANALYSIS /
Submittal Date:	05/19/2022

Mr. Tim Brewer
Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444

Dear Mr. Brewer,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

Percent Solids for sample -001 were reported at 35.9%.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Bailey Welch

By Bailey Welch at 1:57 PM, May 31, 2022

For Daryl P. Strandbergh
Laboratory Director

Enclosures

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: A08607
Laboratory Sample Number: A08607-001

Order: A08607
Date: 05/31/22

Client Identification:	**Trace Analytical Laboratories, Inc.**	Sample Description:	**PFOSS 22E0758-01**	Chain of Custody:	**N/A**
Client Project Name:	**PFAS ANALYSIS**	Sample No:		Collect Date:	**05/11/22**
Client Project No:	**NA**	Sample Matrix:	**Biosolids**	Collect Time:	**13:00**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

PFAS **Aliquot ID: A08607-001** **Matrix: Biosolids**
Method: ASTM D7968-17a **Description: PFOSS 22E0758-01**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. ADONA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 2. 9Cl-PF3ONS	U	L+	µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 3. 11Cl-PF3OUdS	U	L+	µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 4. N-EtFOSAA	**8.8**		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 5. FtS 4:2	U	EIS+	µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 6. FtS 6:2	U	EIS+	µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 7. FtS 8:2	U	EIS+	µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 8. HFPO-DA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 9. N-MeFOSAA	**20**		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 10. PFBA	U	EIS-	µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 11. PFBS	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 12. PFDA	**2.9**		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 13. PFDoA	**3.1**		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 14. PFDS	**7.5**		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 15. PFHpA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 16. PFHpS	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 17. PFHxA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 18. PFHxS-Total	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 19. PFNA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 20. PFNS	U	L+	µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 21. PFOA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 22. PFOSA	**2.2**		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 23. PFOS-Total	**12**		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 24. PFPeA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 25. PFPeS	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 26. PFTeA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 27. PFTriA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD
‡ 28. PFUnA	U		µg/kg	2.0	1.0	05/27/22	PS22E27E	05/27/22	SM22E27A	VSD

1914 Holloway Drive, Holt, MI 48842, T: (517) 699-0345, F: (517) 699-0388
11766 E Grand River, Brighton, MI 48116, T: (810) 220-3300, F: (810) 220-3311
8660 S Mackinaw Trail, Cadillac, MI 49601, T: (231) 775-8368, F: (231) 775-8584
lab@fibertec.us

Acronym (Param)	Analyte Name	CAS Number
1. ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
2. 9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	756426-58-1
3. 11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
4. N-EtFOSAA	2-(N-Ethylperfluorooctanesulfonamido) acetic acid	2991-50-6
5. FtS 4:2	Fluorotelomer sulphonic acid 4:2	757124-72-4
6. FtS 6:2	Fluorotelomer sulphonic acid 6:2	27619-97-2
7. FtS 8:2	Fluorotelomer sulphonic acid 8:2	39108-34-4
8. HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6
9. N-MeFOSAA	2-(N-Methylperfluorooctanesulfonamido) acetic acid	2355-31-9
10. PFBA	Perfluorobutanoic acid	375-22-4
11. PFBS	Perfluorobutanesulfonic acid	375-73-5
12. PFDA	Perfluorodecanoic acid	335-76-2
13. PFDoA	Perfluorododecanoic acid	307-55-1
14. PFDS	Perfluorodecanesulfonic acid	335-77-3
15. PFHpA	Perfluoroheptanoic acid	375-85-9
16. PFHpS	Perfluoroheptanesulfonic acid	375-92-8
17. PFHxA	Perfluorohexanoic acid	307-24-4
18. PFHxS-Total	Perfluorohexanesulfonic acid	355-46-4
19. PFNA	Perfluorononanoic acid	375-95-1
20. PFNS	Perfluorononanesulfonic acid	68259-12-1
21. PFOA	Perfluorooctanoic acid	335-67-1
22. PFOSA	Perfluorooctanesulfonamide	754-91-6
23. PFOS-Total	Perfluorooctanesulfonic acid	1763-23-1
24. PFPeA	Perfluoropentanoic acid	2706-90-3
25. PFPeS	Perfluoropentanesulfonic acid	2706-91-4
26. PFTeA	Perfluorotetradecanoic acid	376-06-7
27. PFTriA	Perfluorotridecanoic acid	72629-94-8
28. PFUnA	Perfluoroundecanoic acid	2058-94-8

Definitions/ Qualifiers:

A: Spike recovery or precision unusable due to dilution.
B: The analyte was detected in the associated method blank.
E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
J: The concentration is an estimated value.
M: Modified Method
U: The analyte was not detected at or above the reporting limit.
X: Matrix Interference has resulted in a raised reporting limit or distorted result.
W: Results reported on a wet-weight basis.
***:** Value reported is outside QC limits

Exception Summary:

EIS- : The Isotope Dilution/Extracted Internal Standard area exceeds the lower control limit.
EIS+ : The Isotope Dilution/Extracted Internal Standard area exceeds the upper control limit.
L+ : Recovery in the associated laboratory sample (LCS) exceeds the upper control limit. Results may be biased high.

Analysis Locations:

All analyses performed in Holt.

Accreditation Number(s):

T104704518-19-8 (TX)

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CHAIN-OF-CUSTODY RECORD

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Page ____ of ____

Trace ID No. 22E0758

Report Results To:

Company Name:	Cascade Iron Wastewater	PO #:	
Report To:	Jeff Wasley	Contact Name:	
Mailing Address:	7625 W Crystal Rd	Billing Address (if different):	
City, State, Zip Code:	Twin Lake MI 49457	City, State, Zip Code:	
Office Phone:	906-822-5322	Cell Phone:	
Email Address:		Phone Number:	
		Billing Email Address:	

Bill To:

Trace Use:

Logged By:	BV
Checked By:	KB
Soil Volatiles Preserved (circle if applicable):	MeOH / Low Level / Lab
Sampling Time:	

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

Project Name: ____ Sampled By: ____

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y / N)	Matrix	Number of Containers	Preservation: Cool	HCl	HNO_3	H_2SO_4	NaOH	Other	Analysis Requested	Possible Health Hazards?	Remarks
	5/18/22	1400	PT-25												

	Released By	Received By	Date	Time		Released By	Received By	Date	Time
1)		UPS			2)	UPS	Emily Martin	5/18/22	12:31
3)					4)				

Please Sign

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.

Form 70-Z.1

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22E0758

Gogebic-Iron Wastewater A
Project Manager: Tim Brewer

Sample Log In Checklist

	Original Observation	Corrected Temperature	IR-9 (CF: +0.6°C)	IR-10 (CF: +0.4°C)	20B12743 (CF: -0.2°C)	Temp Blank	Client Sample
Date: 5/18/22							
Time: 12:31							
Logged by: BV							
Package Description: Cooler							
Package Temp °C	-1.0	-0.4	✓				
Representative Sample Temp °C	6.5	7.1	✓				✓

Sample Receipt

Yes / No

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

Sample Condition

Yes / No / N/A

- [x] [ ] [ ] All sample containers arrived unbroken and labeled
- [x] [ ] [ ] Sufficient sample to run requested analyses
- [ ] [ ] [x] Correct chemical preservative added to samples
- [ ] [ ] [x] Samples preserved at Trace _____
- [ ] [ ] [x] Chemical preservation verified, check EMD pH test strip used (if applicable)
  - [ ] pH 0-2.5 (Lot: HC046681) [ ] pH 11.0-13.0 (Lot: HC022540) [ ] Other
- [ ] [ ] [x] Air bubbles absent from VOAs _____

Chain of Custody (COC)

Yes / No

- [x] All bottle labels agree with COC
- [ ] COC filled out properly
- [ ] COC signed by client

Notes:

Form 70-A.42
Effective 5/4/22

TRACE Analytical Laboratories, Inc.