

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



231-773-5998 Phone  
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www.trace-labs.com

April 07, 2022

Ed Carstens  
Croswell, City of  
5580 Lancaster Rd.  
Croswell, MI 48422

RE: Trace Project 22C0855  
Client Project PFAS Biosolids

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](mailto:tbrewer@trace-labs.com).

Sincerely,

A handwritten signature in black ink that reads "Timothy W. Brewer".

Tim Brewer  
Project Manager

Enclosures



NJDEP Accreditation No. MI008

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#### SAMPLE SUMMARY

Trace Project ID: 22C0855  
Client Project ID: PFAS Biosolids

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
22C0855-01	Croswell Biosolids	Sludge	Client	03/21/22 08:00	03/23/22 12:10
22C0855-02	Pond Sludge	Sludge	Client	03/21/22 08:00	03/23/22 12:10

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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.



Thursday, April 07, 2022

Fibertec Project Number: A07566  
Project Identification: 22C0855 /22C0855  
Submittal Date: 03/23/2022

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 18.1% and sample -002 at 36.8%.

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,

A handwritten signature in black ink, appearing to read "Sue Ricketts".

*By Sue Ricketts at 9:33 AM, Apr 07, 2022*

For Daryl P. Strandbergh  
Laboratory Director

Enclosures

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**Analytical Laboratory Report**  
**Laboratory Project Number: A07566**  
**Laboratory Sample Number: A07566-001**

Order: A07566  
Page: 2 of 4  
Date: 04/07/22

Client Identification:	<b>Trace Analytical Laboratories, Inc.</b>	Sample Description:	<b>Croswell Biosolids 22C0855-01</b>	Chain of Custody:	<b>N/A</b>
Client Project Name:	<b>22C0855</b>	Sample No:		Collect Date:	<b>03/21/22</b>
Client Project No:	<b>22C0855</b>	Sample Matrix:	<b>Biosolids</b>	Collect Time:	<b>08:00</b>

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: A07566-001		Matrix: Biosolids				
Method: ASTM D7968-17a				Description: Croswell Biosolids 22C0855-01						
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. ADONA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 2. 9CI-PF3ONS	U	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 3. 11CI-PF3OUdS	U	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 4. N-EtFOSAA	2.2	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 5. FtS 4:2	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 6. FtS 6:2	U	EIS+	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 7. FtS 8:2	U	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 8. HFPO-DA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 9. N-MeFOSAA	2.7	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 10. PFBA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 11. PFBS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 12. PFDA	U	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 13. PFDoA	U	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 14. PFDS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 15. PFHpA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 16. PFHpS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 17. PFHxA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 18. PFHxS-Total	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 19. PFNA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 20. PFNS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 21. PFOA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 22. PFOSA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 23. PFOS-Total	11		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 24. PFPeA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 25. PFPeS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 26. PFTeA	U	L+	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 27. PFTrIA	U	EIS-	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 28. PFUnA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG

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**Analytical Laboratory Report**  
**Laboratory Project Number: A07566**  
**Laboratory Sample Number: A07566-002**

Order: A07566  
Page: 3 of 4  
Date: 04/07/22

Client Identification:	<b>Trace Analytical Laboratories, Inc.</b>	Sample Description:	<b>Pond Sludge 22C0855-02</b>	Chain of Custody:	<b>N/A</b>
Client Project Name:	<b>22C0855</b>	Sample No:		Collect Date:	<b>03/21/22</b>
Client Project No:	<b>22C0855</b>	Sample Matrix:	<b>Biosolids</b>	Collect Time:	<b>08:00</b>

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: A07566-002		Matrix: Biosolids			
Method: ASTM D7968-17a					Description: Pond Sludge 22C0855-02					
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. ADONA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 2. 9CI-PF3ONS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 3. 11CI-PF3OUdS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 4. N-EtFOSAA	13		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 5. FtS 4:2	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 6. FtS 6:2	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 7. FtS 8:2	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 8. HFPO-DA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 9. N-MeFOSAA	4.0		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 10. PFBA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 11. PFBS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 12. PFDA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 13. PFDoA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 14. PFDS	4.8		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 15. PFHpA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 16. PFHpS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 17. PFHxA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 18. PFHxS-Total	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 19. PFNA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 20. PFNS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 21. PFOA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 22. PFOSA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 23. PFOS-Total	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 24. PFPeA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 25. PFPeS	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 26. PFTeA	U	L+	µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 27. PFTrIA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG
‡ 28. PFUnA	U		µg/kg	2.0	1.0	03/29/22	PS22C29F	04/05/22	SM22D05A	SKG

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**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

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**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.

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**Analysis Locations:**

All analyses performed in Holt.

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Accreditation Number(s):

**T104704518-19-8 (TX)**

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**22C0855**

Croswell, City of

Project Manager: Tim Brewer

#### Sample Log In Checklist

Date: 3/28/22	Original Observation	Corrected Temperature	IR-9 (CF: +0.4°C)	IR-10 (CF: +0.4°C)	20812743 (CF: -0.2°C)	Temp Blank	Client Sample
Time: 12:10							
Logged by: BV							
Package Description: Cooler							
Package Temp °C	-0.8	-0.4	✓				
Representative Sample Temp °C	2.2	2.8				✓	✓

#### Sample Receipt

Yes No

☒ ☐ Received on ice or other coolant

☒ ☐ Ice still present upon receipt

☐ ☒ Custody seals present

☐ Trace Courier ☐ Client Drop-off

☐ Yes ☐ No Custody seals intact (if applicable)

☒ 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: HC046681) ☐ 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: