



Analytical Laboratory Report

Report ID: S33993.01(01)
Generated on 03/31/2022

Report to
Attention: PJ McGillis
City of St Louis WWTP
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St Louis, MI 48880

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Report produced by
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Report Summary
Lab Sample ID(s): S33993.01
Project: Biosolids / PFAS
Collected Date(s): 03/16/2022
Submitted Date/Time: 03/18/2022 10:10
Sampled by: Unknown
P.O. #:

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Maya Murshak
Technical Director



Analytical Laboratory Report

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.

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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



Analytical Laboratory 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 |
| PFTTrDA | 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 |



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Sample Summary (1 samples)

| Sample ID | Sample Tag | Matrix | Collected Date/Time |
|-----------|------------------------------|--------|---------------------|
| S33993.01 | WWTP Digested Sludge Storage | Sludge | 03/16/22 14:30 |



Analytical Laboratory Report

Lab Sample ID: S33993.01

Sample Tag: WWTP Digested Sludge Storage

Collected Date/Time: 03/16/2022 14:30

Matrix: Sludge

COC Reference: 140657

Sample Containers

| # | Type | Preservative(s) | Refrigerated? | Arrival Temp. (C) | Thermometer # |
|---|----------------------|-----------------|---------------|-------------------|---------------|
| 1 | 15ml Centrifuge Tube | None | No | RT | IR |
| 1 | 250ml Plastic | None | No | RT | IR |

Extraction / Prep.

| Parameter | Result | Method | Run Date | Analyst | Flags |
|--|---------------|----------------|----------------|---------|-------|
| Initial wt. (g) / Final wt. (g) / Volume (ml)* | 10.85/7.05/10 | ASTM D7968-17M | 03/25/22 10:00 | KCV | |

Inorganics

Method: SM2540B, Run Date: 03/18/22 15:31, Analyst: MAM

| Parameter | Result | RL | MDL | Units | Dilution | CAS# | Flags |
|---------------|--------|----|-----|-------|----------|------|-------|
| Total Solids* | 3.5 | 1 | | % | 1 | | |

Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 03/26/22 22:07, Analyst: KCV

| Parameter | Result | RL | MDL | Units | Dilution | CAS# | Flags |
|------------|--------------|-------|-----|-------|----------|--------------|-------|
| PFBA* | Not detected | 2,600 | | ng/kg | 75.2 | 375-22-4 | X |
| PFPeA* | Not detected | 750 | | ng/kg | 75.2 | 2706-90-3 | |
| 4:2 FTSA* | Not detected | 750 | | ng/kg | 75.2 | 757124-72-4 | I |
| PFHxA* | 3,200 | 750 | | ng/kg | 75.2 | 307-24-4 | |
| PFBS* | Not detected | 750 | | ng/kg | 75.2 | 375-73-5 | |
| PFHpA* | Not detected | 750 | | ng/kg | 75.2 | 375-85-9 | |
| PFPeS* | Not detected | 750 | | ng/kg | 75.2 | 2706-91-4 | |
| 6:2 FTSA* | Not detected | 750 | | ng/kg | 75.2 | 27619-97-2 | I |
| PFOA* | 1,100 | 750 | | ng/kg | 75.2 | 335-67-1 | |
| PFHxS* | Not detected | 750 | | ng/kg | 75.2 | 355-46-4 | |
| PFHxS-LN* | Not detected | 750 | | ng/kg | 75.2 | 355-46-4-LN | |
| PFHxS-BR* | Not detected | 750 | | ng/kg | 75.2 | 355-46-4-BR | |
| PFNA* | Not detected | 750 | | ng/kg | 75.2 | 375-95-1 | |
| 8:2 FTSA* | Not detected | 750 | | ng/kg | 75.2 | 39108-34-4 | I |
| PFHpS* | Not detected | 750 | | ng/kg | 75.2 | 375-92-8 | |
| PFDA* | 2,200 | 750 | | ng/kg | 75.2 | 335-76-2 | I |
| N-MeFOSAA* | 5,000 | 750 | | ng/kg | 75.2 | 2355-31-9 | |
| EtFOSAA* | 3,400 | 750 | | ng/kg | 75.2 | 2991-50-6 | |
| PFOS* | 8,500 | 750 | | ng/kg | 75.2 | 1763-23-1 | |
| PFOS-LN* | 7,400 | 750 | | ng/kg | 75.2 | 1763-23-1-LN | |
| PFOS-BR* | 970 | 750 | | ng/kg | 75.2 | 1763-23-1-BR | |
| PFUnDA* | 760 | 750 | | ng/kg | 75.2 | 2058-94-8 | I |
| PFNS* | Not detected | 750 | | ng/kg | 75.2 | 68259-12-1 | |
| PFDODA* | 1,200 | 750 | | ng/kg | 75.2 | 307-55-1 | I1 |
| PFDS* | 750 | 750 | | ng/kg | 75.2 | 335-77-3 | |
| PFTTrDA* | 810 | 750 | | ng/kg | 75.2 | 72629-94-8 | I1 |
| FOSA* | 1,300 | 750 | | ng/kg | 75.2 | 754-91-6 | |
| PFTeDA* | Not detected | 750 | | ng/kg | 75.2 | 376-06-7 | I1 |

X-Elevated reporting limit due to matrix interference

I-Matrix interference with internal standard

1-IS recovery <10%



Analytical Laboratory Report

Lab Sample ID: S33993.01 (continued)
Sample Tag: WWTP Digested Sludge Storage

28 PFAs, Method: ASTM D7968-17M, Run Date: 03/26/22 22:07, Analyst: KCV (continued)

| Parameter | Result | RL | MDL | Units | Dilution | CAS# | Flags |
|---------------|--------------|-----|-----|-------|----------|-------------|-------|
| 11CI-PF3OUdS* | Not detected | 750 | | ng/kg | 75.2 | 763051-92-9 | |
| 9CI-PF3ONS* | Not detected | 750 | | ng/kg | 75.2 | 756426-58-1 | |
| ADONA* | Not detected | 750 | | ng/kg | 75.2 | 919005-14-4 | |
| HFPO-DA* | Not detected | 750 | | ng/kg | 75.2 | 13252-13-6 | |

Merit Laboratories Login Checklist

Lab Set ID:S33993

Client:MISCPFC (City of St Louis WWTP)

Project: Biosolids / PFAS

Submitted:03/18/2022 10:10 Login User: JRM

Attention: PJ McGillis

Address: City of St Louis WWTP
404 E Prospect St
St Louis, MI 48880

Phone: 989-681-3567

FAX:

Email: wwtp@stlouismi.com

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

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

| | | | |
|--------------------------------------|--|-------------|-------------------|
| CONTACT NAME PJ McGillis | | | |
| COMPANY CITY OF ST LOUIS WWTP | | | |
| ADDRESS 404 E Prospect St | | | |
| CITY ST LOUIS | | STATE MI | ZIP CODE 48380 |
| PHONE NO. 989-681-3567 | | FAX NO. | P.O. NO. |
| E-MAIL ADDRESS wwtp@stlouismi.com | | QUOTE NO. | |

| | | | |
|-----------------------------|--|---------------------------------------|-------------------|
| CONTACT NAME Janie Long | | <input type="checkbox"/> SAME | |
| COMPANY City of St Louis | | | |
| ADDRESS 300 N. Mill St | | | |
| CITY St Louis | | STATE MI | ZIP CODE 48880 |
| PHONE NO 989-681-2137 | | E-MAIL ADDRESS JLong@StLouisMi.com | |

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

| | |
|---|---|
| PROJECT NO./NAME <u>Bio Solids / PFAS</u> | SAMPLER(S) - PLEASE PRINT/SIGN NAME _____ |
| TURNAROUND TIME REQUIRED <input type="checkbox"/> 1 DAY <input type="checkbox"/> 2 DAYS <input type="checkbox"/> 3 DAYS <input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> OTHER _____ | |
| DELIVERABLES REQUIRED <input type="checkbox"/> STD <input type="checkbox"/> LEVEL II <input type="checkbox"/> LEVEL III <input type="checkbox"/> LEVEL IV <input type="checkbox"/> EDD <input type="checkbox"/> OTHER _____ | |

| | | | | | |
|--------|----------------|-------------------|--------|----------|----------|
| MATRIX | GW=GROUNDWATER | WW=WASTEWATER | S=SOIL | L=LIQUID | SD=SOLID |
| CODE: | SL=SLUDGE | DW=DRINKING WATER | O=OIL | WP=WIPE | A=AIR |
| | | | | | W=WASTE |

Containers & Preservatives

[illegible]

Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

| | | | | |
|------------------------|--------------------|-----------------|----------------|----------------|
| RELINQUISHED BY: | <i>St Louis</i> | <i>YSampler</i> | DATE | TIME |
| SIGNATURE/ORGANIZATION | <i>[Signature]</i> | <i>WWR</i> | <i>3-17-22</i> | <i>7:00 AM</i> |
| RECEIVED BY: | | | DATE | TIME |
| SIGNATURE/ORGANIZATION | | | | |

| | | |
|------------------------|------|------|
| RELINQUISHED BY: | DATE | TIME |
| SIGNATURE/ORGANIZATION | | |
| RECEIVED BY: | DATE | TIME |
| SIGNATURE/ORGANIZATION | | |

| | | |
|--|----------------|-------------|
| RELINQUISHED BY: | DATE | TIME |
| SIGNATURE/ORGANIZATION <i>UPS</i> | <i>3/18/22</i> | <i>1010</i> |
| RECEIVED BY: | DATE | TIME |
| SIGNATURE/ORGANIZATION <i>Johnnie Thomas</i> | <i>3/18/20</i> | <i>1010</i> |

| | | | |
|----------|---|----------|---|
| SEAL NO. | SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/> | INITIALS | NOTES: <u>ht</u> TEMP. ON ARRIVAL _____ |
| SEAL NO. | SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/> | INITIALS | |

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE