

Transmitted via email

Ms. Nicole Sanabria and Ms. Christina Hebert

Materials Management Division
Department of Environment, Great Lakes, and Energy
PO Box 30473
Lansing, MI 48909-7973

Mr. Robert Ellis

Department of Public Works Manager
Genesee Township
7244 N. Genesee Road
Genesee, MI 48423

Ms. Melissa Glasgow

Genesee County Water and Waste Services
Anthony Ragnone Treatment Plant
9290 Farrand Road
Montrose, MI, 48457

February 14, 2024

RE: **Stanley Road Sanitary Sewer Update**

RACER Trust – Coldwater Road Facility
FILE: 15388/1940103462/Corres

Ramboll
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Ann Arbor, MI 48105
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Dear **Ms. Sanabria, Ms. Hebert, Mr. Ellis, & Ms. Glasgow**:

Ramboll Americas Engineering Solutions, Inc. (Ramboll), on behalf of the Revitalizing Auto Communities Environmental Response Trust (RACER Trust) is providing this letter to summarize the per- and polyfluoroalkyl substances (PFAS) sanitary sewer sample results collected from the Genesee Township sanitary sewer along the north side of Stanley Road and north of the RACER Trust Coldwater Road Facility (Site) located in Flint, Michigan.

The samples were collected on December 19, 2023, at sample locations SAN-2, SAN-8, SAN-9, SAN-21, and manhole 11-07C016. See **Figure 1** for sample and repair locations. As noted below, repairs to the sewer were completed in September 2020.

Sanitary sewer sampling was performed in accordance with the methods specified in EGLE’s Wastewater PFAS Sampling Guidance.

Analytical Results

The sewer samples were analyzed for PFAS by method ASTM D7979-19 (no preservative). The analytical results for the recent sewer samples and historical samples are summarized in **Table 1**, and the analytical laboratory reports are included in **Appendix A**. The sample locations discussed below are presented upgradient to downgradient.

- SAN-09, which is upgradient of the PFAS-impacted shallow groundwater zone, had a detection of 5.1 nanograms per liter (ng/l) for perfluorooctane sulfonic acid (PFOS) on December 19, 2023, which is near the low end of the range of previously detected concentrations and is a decrease compared to the previous result of 13 ng/l (6/27/2023) for PFOS.
- SAN-2 had a detection of 17 ng/l for PFOS on December 19, 2023, which is near the low end of the range of previously detected concentrations and is the same concentration as the June 26, 2023, sampling event.
- 11-07C016 had a detection of 19 ng/l for PFOS on December 19, 2023, which is near the low end of the range of previously detected concentrations and is a decrease compared to the previous result of 27 ng/l (6/27/2023) for PFOS.
- SAN-08 had a detection of 23 ng/l for PFOS on December 19, 2023, which is near the middle of the range of previously detected concentrations and is a decrease compared to the previous result of 25 ng/l (6/27/2023) for PFOS.
- SAN-21, which is downgradient of the PFAS-impacted shallow groundwater zone, had a detection of 13 ng/l for PFOS on December 19, 2023, which is near the low end of the range of previously detected concentrations and is a decrease compared to the previous result of 34 ng/l (12/18/2020) for PFOS.

The observed flow rates during sampling were consistent with flow rates observed during previous post-repair (repairs completed, September 2020) sampling events and continue to be much lower than before sewer line repairs were completed. PFOS concentrations appear to be variable at a given sampling location but are within a concentration range that is lower than before repairs were implemented.

Based on these results and to continue to allow for evaluation of concentration variability and trends, we propose to collect another round of samples in June 2024 from the upstream sample location SAN-09, SAN-2, 11-07C016, SAN-08, and downstream sample location SAN-21. An update similar to this one will be provided within approximately four weeks of receipt of the analytical results from the laboratory.

Please contact me at 313-333-0211 or clifford.yantz@ramboll.com or Brendan Mullen, who is replacing Dave Favero as the RACER contact for this work, at bmullen@racertrust.org or 201-247-4890, if you have any questions.



Very truly yours,

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

Clifford S. Yantz

Project Manager

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M 313.333.0211

Clifford.yantz@ramboll.com

ENCLOSURES:

Table 1 – Sanitary Sewer Analytical Results – Stanley Road

Figure 1 – Stanley Road Sanitary Sewer/Manhole Point Repairs and Sample Locations

Attachment A – Laboratory Analytical Reports

cc: Mr. Daniel K Eashoo - Genesee Township Supervisor (via email)
Mr. Thad Domick – GCDCWWS (via email)
Mr. Kevin DePottey – GCDCWWS (via email)
Mr. Brent Pittenger – GCDCWWS (via email)
Ms. Carla Davidson – EGLE (via email)
Mr. Brian Zuber – EGLE (via email)
Mr. Brendan Mullen – RACER Trust (via email)
Mr. David Favero – RACER Trust (via email)
Mr. Kevin Schneider – Ramboll (via email)

TABLES



TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - Stanley Road

Coldwater Rd - Sanitary Sewer Samples - Stanley Road

Perfluorinated Compound	Well/Sample ID:	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	II-07C016 (Sanitary Sewer)	SAN-1 (Sanitary Sewer)	SAN-1 (Sanitary Sewer)	SAN-1 (Sanitary Sewer)
	EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	5/20/2021	8/25/2021	12/9/2021	3/31/2022	9/7/2022	12/13/2022	4/6/2023	6/27/2023	12/19/2023	11/5/2019	3/17/2020	12/18/2020
Perfluorobutanoic Acid (PFBA)	--	<10	<10	<9.8 X	<21 X	<11	<10	<10	<9.6	<29 X	<20	<21	<10
Perfluoropentanoic Acid (PFPeA)	--	1.1 J	1.9 J	2.2 J	<4.1	<4.3	<4.1	1.5 J	<3.8	<3.8	<9.9	<11	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorohexanoic Acid (PFHxA)	--	<2.0	<2.0	2.0	<2.1	<2.2	<2.0	1.3 J	1.5 J	<1.9	<9.9	<11	<2.1
Perfluorobutane Sulfonic Acid (PFBS)	670,000	2.0 J	<2.0	2.4	2.8	2.0 J	1.6 J	6.6	4.0	2.0	<9.9	<11	1.7 J
Perfluoroheptanoic Acid (PFHpA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	1.2 J	<1.9	<3.8	<9.9	<11	<2.1
Perfluoropentane Sulfonic Acid (PFPeS)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	1.0 J	<1.9	<1.9	<9.9	<11	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<4.1	<4.1	<3.9	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorooctanoic Acid (PFOA)	170	<2.0	1.8 J	2.3	<2.1	3.1	1.8 J	<2.0	3.2	1.3 J	<9.9	<11	<2.1
Perfluorohexane Sulfonic Acid (PFHxS)	210	2.9	3.2	3.6	<2.1	4.7	4.0	2.5	2.2	2.6	<9.9	<11	2.3
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	2.2	2.2	2.9	<2.1	3.7	3.0	2.1	2.2	2.1	<9.9	<11	1.7 J
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorononanoic Acid (PFNA)	30	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	1.0 J	<1.9	<1.9	<9.9	<11	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<2.0	<4.1	<3.9	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorodecanoic Acid (PFDA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<4.1	<4.1	<3.9	<4.1	<4.3	<4.1	<4.0	<3.8	<3.8	<9.9	<11	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	12	24	27	19	19	43	31	27	27	19	55	59	24
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	7.0	9.4	5.8	3.2	13	8.6	12	8.2	6.0	18	18	6.9
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	17	18	14	15	30	22	13	19	13	36	42	16
Perfluoroundecanoic Acid (PFUnDA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorotridecanoic Acid (PFTrDA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Perfluorotetradecanoic Acid (PFTeDA)	--	<4.1	<4.1	<3.9	<4.1	<4.3	<4.1	<4.0	<3.8	<3.8	<9.9	<11	<4.1
11-chloroicosafuoro-3-oxadecane-1-sulfonic acid (11CI-PF30UdS)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CI-PF30NS)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	--	<2.0	<2.0	<2.0	<2.1	<2.2	<2.0	<2.0	<1.9	<1.9	<9.9	<11	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<10	<10	<9.8	<4.1	<11	<10	<2.0	<1.9	<9.6	<9.9	<11	<2.1
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	<3.8	<9.6	--	--	--
3-Perfluoropentyl propanoic acid (FPpPA (5:3 FTCA))	--	--	--	--	--	--	--	--	<3.8	<9.6	--	--	--
3-Perfluoropropyl propanoic acid (FPpPA (3:3 FTCA))	--	--	--	--	--	--	--	--	<3.8	<9.6	--	--	--
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	<1.9	0.60 J	--	--	--
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	140	65	--	--	--
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	<1.9	<1.9	--	--	--
Total Per-and Polyfluoroalkyl Substances	--	30.0	33.9	31.5	21.8	52.8	38.4	42.1	177.9	90.5	55.0	59.0	28.0

- Notes
- 1) Detections in **bold**.
 - 2) Concentrations in ng/L.
 - 3) < = Not detected at specified reporting limit.
 - 4) -- = Not analyzed/No criteria.
 - 5) Dup = Duplicate sample.
 - 6) EGLE Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.
 - 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
 - 8) B - Compound also found in associated method blank.
 - 9) I - Matrix interference with internal standard.
 - 10) J - Estimated value less than reporting limit, but greater than MDL.
 - 11) X - Elevated reporting limit due to matrix interference.
 - 12) Light gray header is most recent sampling event result.
 - 13) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - Stanley Road

Coldwater Rd - Sanitary Sewer Samples - Stanley Road

Perfluorinated Compound	Well/Sample ID: EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-DUP-033122 SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)	SAN-2 (Sanitary Sewer)
		Sample Date: 11/5/2019	5/20/2021	8/25/2021	12/9/2021	3/31/2022	3/31/2022	9/7/2022	12/13/2022	4/6/2023	6/27/2023	12/19/2023
Perfluorobutanoic Acid (PFBA)	--	<20	<10	<10	13	<21 X	<20 X	<11	<10	<9.7	<10	<31 X
Perfluoropentanoic Acid (PFPeA)	--	<9.9	<4.2	4.3	1.5 J	<4.2	<4.0	<4.2	1.2 J	1.3 J	<4.1	1.2 J
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0 I
Perfluorohexanoic Acid (PFHxA)	--	<9.9	<2.1	7.4	<1.9	<2.1	<2.0	<2.1	1.5 J	1.2 J	<2.1	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<9.9	1.8 J	1.9 J	2.4	3.1	3.9	2.2	1.6 J	7.1	2.0 J	2.3
Perfluoroheptanoic Acid (PFHpA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	1.1 J	<2.1	<3.9
Perfluoropentane Sulfonic Acid (PFPeS)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	1.0 J	<2.1	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<9.9	<4.2	<4.1	<3.8	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorooctanoic Acid (PFOA)	170	<9.9	<2.1	3.2	2.3	<2.1	<2.0	2.5	1.8 J	<1.9	2.4	1.0 J
Perfluorohexane Sulfonic Acid (PFHxS)	210	<9.9	2.8	4.0	4.1	3.5	3.4	4.0	3.3	2.1	1.9 J	1.7 J
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<9.9	1.7 J	3.1	2.5	<2.1	<2.0	3.0	2.5	1.7 J	1.9 J	1.3 J
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorononanoic Acid (PFNA)	30	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<9.9	<2.1	<4.1	<3.8	<2.1	<2.0	<2.1 I	<2.0	<1.9	<2.1	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorodecanoic Acid (PFDA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<9.9	<4.2	<4.1	<3.8	<4.2	<4.0	<4.2	<4.0	<3.9	<4.1	<3.9
Perfluorooctane Sulfonic Acid (PFOS)	12	37	22	31	20	24	24	43	29	9.8	17	17
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	11	6.0	10	7.1	5.2	5.1	14	7.7	2.8	6.4	5.1
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	23	16	21	13	19	20	29	20	7.2	11	11
Perfluoroundecanoic Acid (PFUnDA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorotridecanoic Acid (PFTriDA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<9.9	<4.2	<4.1	<3.8	<4.2	<4.0	2.1 J	<4.0	<3.9	<4.1	<4.0
11-chloroicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF30UdS)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF30NS)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	--	<9.9	<2.1	<2.0	<1.9	<2.1	<2.0	<2.1	<2.0	<1.9	<2.1	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<9.9	<10	<10	<9.6	<4.2	<4.0	<11	<10	<1.9	<2.1	<9.8
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	--	--	<4.1	<9.8
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--	--	--	--	<4.1	<9.8
3-Perfluoropropyl propanoic acid (FPrPA (3:3 FTCA))	--	--	--	--	--	--	--	--	--	--	<4.1	<9.8
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	--	--	<2.1	0.63 J
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	--	--	90	52
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	--	--	<2.1	<2.0
Total Per-and Polyfluoroalkyl Substances	--	37.0	26.6	51.8	43.3	30.6	31.3	53.8	38.4	23.6	113.3	75.8

- Notes
- 1) Detections in **bold**.
 - 2) Concentrations in ng/L.
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 - 4) -- = Not analyzed/No criteria.
 - 5) Dup = Duplicate sample.
 - 6) EGLE Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.
 - 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
 - 8) B - Compound also found in associated method blank.
 - 9) I - Matrix interference with internal standard.
 - 10) J - Estimated value less than reporting limit, but greater than MDL.
 - 11) X - Elevated reporting limit due to matrix interference.
 - 12) Light gray header is most recent sampling event result.
 - 13) OA/OC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - Stanley Road

Coldwater Rd - Sanitary Sewer Samples - Stanley Road

Perfluorinated Compound	Well/Sample ID:	EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)	SAN-08 (Sanitary Sewer)
	Sample Date:		3/18/2020	9/22/2020	12/18/2020	5/20/2021	8/25/2021	12/9/2021	3/31/2022	9/7/2022	12/13/2022	4/6/2023	6/27/2023	12/19/2023
Perfluorobutanoic Acid (PFBA)	--	<20	<9.9	<9.9	<10	<10	<10 X	<21 X	<10	<10	<10	<9.8	<24 X	
Perfluoropentanoic Acid (PFPeA)	--	<10	<3.9	<4.0	<4.0	1.3 J	<4.1	<4.1	<4.0	2.0 J	1.4 J	<4.0		
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorohexanoic Acid (PFHxA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	1.7 J	2.0 J	<2.0		
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<10	<2.0	1.7 J	1.6 J	1.8 J	2.2	4.3	1.4 J	2.4	6.5	3.2	2.3	
Perfluoroheptanoic Acid (PFHpA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	1.3 J	<2.0		
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<2.0	<2.0	<4.0	<4.0	<4.1	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorooctanoic Acid (PFOA)	170	<10	<2.0	<2.0	<2.0	2.3	2.2	<2.1	2.6	2.3	2.2	1.9 J	1.2 J	
Perfluorohexane Sulfonic Acid (PFHxS)	210	<10	2.8	2.4	2.3	3.1	3.1	<2.1	3.3	3.5	3.4	1.9 J	2.6	
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	2.0	1.6 J	1.6 J	<2.0	2.5	<2.1	2.7	2.7	2.8	1.9 J	2.0	
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorononanoic Acid (PFNA)	30	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<2.0	<2.0	<2.0	<4.0	<4.1	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorodecanoic Acid (PFDA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<3.9	<4.0	<4.0	<4.0	<4.1	<4.1	<4.0	<4.0	<4.0	<3.9		
Perfluorooctane Sulfonic Acid (PFOS)	12	42	17	14	16	16	25	9.2	24	25	7.6	25	23	
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	12	5.0	3.6	4.1	5.3	8.7	2.5	6.0	6.4	2.0	7.3	8.8	
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	30	10	9.5	12	11	17	6.3	17	18	6.0	17	15	
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorododecanoic Acid (PFDoDA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorooctane Sulfonamide (FOSA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<3.9	<4.0	<4.0	<4.0	<4.1	<4.1	<4.0	<4.0	<4.0	<3.9		
11-chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<2.0		
Hexafluoropropylene oxide dimer (HFPO-DA)	--	<10	<2.0	<2.0	<10	<10	<10	<4.1	<10	<10	<2.0	<2.0		
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	--	--	--	<3.9		
3-Perfluoropentyl propanoic acid (FPpPA (5:3 FTCA))	--	--	--	--	--	--	--	--	--	--	--	<3.9		
3-Perfluoropropyl propanoic acid (FPpPA (3:3 FTCA))	--	--	--	--	--	--	--	--	--	--	--	<3.9		
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	--	--	--	<2.0		
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	--	--	--	110		
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	--	--	--	<2.0		
Total Per-and Polyfluoroalkyl Substances	--	42.0	19.8	18.1	19.9	23.4	32.5	13.5	31.3	34.9	25.0	143.4	88.1	

Notes
1) Detections in **bold**.
2) Concentrations in ng/L.
3) < = Not detected at specified reporting limit.
4) -- = Not analyzed/No criteria.
5) Dup = Duplicate sample.
6) EGLE Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.
7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
8) B - Compound also found in associated method blank.
9) I - Matrix interference with internal standard.
10) J - Estimated value less than reporting limit, but greater than MDL.
11) X - Elevated reporting limit due to matrix interference.
12) Light gray header is most recent sampling event result.
13) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

TABLE 1
RACER Trust - Coldwater Road
Per-and Polyfluoroalkyl Substances Sampling Results
Sanitary Sewer Samples - Stanley Road

Coldwater Rd - Sanitary Sewer Samples - Stanley Road

Perfluorinated Compound	Well/Sample ID:	EGLE Part 201 Generic Cleanup Criteria and Screening Levels GSI	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-09 (Sanitary Sewer)	SAN-21 (Sanitary Sewer)	SAN-21 (Sanitary Sewer)	SAN-21 (Sanitary Sewer)
	Sample Date:		3/18/2020	5/20/2021	8/25/2021	12/9/2021	3/31/2022	9/7/2022	12/13/2022	4/6/2023	6/27/2023	12/19/2023	6/25/2020	12/18/2020	12/19/2023
Perfluorobutanoic Acid (PFBA)	--	--	<9.7	<9.7	<10	<9.8	<9.9	<9.9	<9.9	<9.6	<9.6	<10	13 U	<10.0	<15 X
Perfluoropentanoic Acid (PFPeA)	--	--	<9.7	1.6 J	1.4 J	<3.9	<3.9	<3.9	<4.0	1.00 J	<3.8	<4.1	<4.0	<4.0	1.2 J
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	<9.7	<1.9	<2.1 I	<2.0 I	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<1.9
Perfluorohexanoic Acid (PFHxA)	--	--	<9.7	2.6	<2.1	<2.0	<2.0	<2.0	<2.0	1.6 J	<1.9	<2.0	<2.0	<2.0	<1.9
Perfluorobutane Sulfonic Acid (PFBS)	670,000	<9.7	<1.9	<2.1	2.1	8.0	<2.0	<2.0	<2.0	1.2	2.6	2.3	<2.0	2.4	2.9
Perfluorohexanoic Acid (PFHxA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	1.2 J	<1.9	<4.1	<2.0	<2.0	<3.9
Perfluoropentane Sulfonic Acid (PFPeS)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<1.9
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<9.7	<3.9	<4.2 I	<3.9 I	<2.0	<2.0	<2.0	<2.0	<1.9	2.3	<2.0	<2.0	<2.0	<1.9
Perfluorooctanoic Acid (PFOA)	170	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	2.9	0.85 J	<2.0	<2.0	0.77 J
Perfluorohexane Sulfonic Acid (PFHxS)	210	<9.7	3.0	<2.1	<2.0	2.2	2.2	1.3	1.7 J	<2.0	1.7 J	<2.0	2.0	2.0	1.2 J
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<9.7	<1.9	<2.1	<2.0	<2.0	1.7 J	1.7 J	<1.9	1.7 J	<2.0	<2.0	<2.0	<2.0	1.2 J
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorononanoic Acid (PFNA)	30	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<9.7	<1.9	<4.2 I	<3.9	<2.0	<2.0 I	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	<1.9
Perfluorohexane Sulfonic Acid (PFHxS)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorodecanoic Acid (PFDA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (EtFOSAA)	--	<9.7	<3.9	<4.2	<3.9 I	<3.9	2.0 J	<4.0	<3.8	<3.8	<4.1	<4.0	<4.0	<4.0	<3.9 I
Perfluorooctane Sulfonic Acid (PFOS)	12	<9.7	15	17	5.4	6.0	3.4	10	3.0	13	5.1	33	34	13	
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	4.8	<1.9	5.5	1.3 J	9.8	9.9	3.5	
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<9.7	13	15	4.6	5.0	2.6	5.2	2.3	7.6	3.6	22	24	9.6	
Perfluoroundecanoic Acid (PFUnDA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorononane Sulfonic Acid (PFNS)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorododecanoic Acid (PFDoDA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorodecane Sulfonic Acid (PFDS)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorotridecanoic Acid (PFTrDA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorooctane Sulfonamide (FOSA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorotetradecanoic Acid (PFTeDA)	--	<9.7	<3.9	<4.2	<3.9	<3.9	<3.9	<4.0	<3.8	<3.8	<4.1	<4.0	<4.0	<4.0	<3.9
11-chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF30UdS)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF30NS)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<9.7	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	<2.0	<1.9
Hexafluoroisopropylene oxide dimer (HFPO-DA)	--	<9.7	<9.7	<10	<9.8	<3.9	<9.9	<9.9	<1.9	<1.9	<10	<2.0	<2.0	<2.0	<9.7
3-Perfluoroheptyl propanoic acid (FHpPA (7:3 FTCA))	--	--	--	--	--	--	--	--	--	<3.8	<10	--	--	--	<9.7
3-Perfluoropentyl propanoic acid (FPePA (5:3 FTCA))	--	--	--	--	--	--	--	--	--	<3.8	<10	--	--	--	<9.7
3-Perfluoropropyl propanoic acid (FPrPA (3:3 FTCA))	--	--	--	--	--	--	--	--	--	<3.8	<10	--	--	--	<9.7
Perfluorobutanesulfonamide (PFBSA)	--	--	--	--	--	--	--	--	--	<1.9	<2.0	--	--	--	0.66 J
Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)	--	--	--	--	--	--	--	--	--	33	18	--	--	--	35
Perfluorohexanesulfonamide (PFHxSA)	--	--	--	--	--	--	--	--	--	<1.9	<2.0	--	--	--	<1.9
Total Per-and Polyfluoroalkyl Substances	--	--	0.0	22.2	18.4	7.5	14.0	7.6	12.2	20.1	57.5	26.3	48.0	38.4	54.7

- Notes
- 1) Detections in **bold**.
 - 2) Concentrations in ng/L.
 - 3) < = Not detected at specified reporting limit.
 - 4) -- = Not analyzed/No criteria.
 - 5) Dup = Duplicate sample.
 - 6) EGLE Part 201 Groundwater Generic Cleanup Criteria and Screening Levels, December 21, 2020.
 - 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
 - 8) B - Compound also found in associated method blank.
 - 9) I - Matrix interference with internal standard.
 - 10) J - Estimated value less than reporting limit, but greater than MDL.
 - 11) X - Elevated reporting limit due to matrix interference.
 - 12) Light gray header is most recent sampling event result.
 - 13) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.

FIGURES

I:\Racer-Trust\1088190\GIS\Coldwater_Road\MXD\Sewer_Lining\Stanley_Road_Figures\1 - Stanley Road Sanitary Sewer Manhole Point Repairs.mxd

PROJECT: 1940100783 | DATED: 1/7/2022 | DESIGNER: MONETANT



- (M) SANITARY SEWER MANHOLE - LINED
- (M) SANITARY SEWER MANHOLE
- DRIPPER/WEEPER REPAIRED
- GUSHER REPAIRED
- RUNNER REPAIRED
- PROPERTY BOUNDARY
- SANITARY SEWER

Note
Repairs were completed in September 2020.



STANLEY ROAD SANITARY SEWER / MANHOLE POINT REPAIRS AND SAMPLE LOCATIONS

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 01

RAMBOLL AMERICAS ENGINEERING
SOLUTIONS, INC.



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



**ATTACHMENT A
LABORATORY ANALYTICAL REPORTS**



Analytical Laboratory Report

Report ID: S57020.01(01)
Generated on 01/22/2024

Report to

Attention: Clifford Yantz
Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211 FAX:
Email: Clifford.Yantz@ramboll.com

Additional Contacts: Kevin Schneider

Report produced by

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Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S57020.01-S57020.06
Project: RACER Coldwater Road
Collected Date(s): 12/19/2023
Submitted Date/Time: 12/19/2023 14:30
Sampled by: Kevin Schneider
P.O. #: 1940006516 TASK 37

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- Sample Summary (Page 6)

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, 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.

Starred (*) analytes are not NY 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.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

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.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
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



Analytical Laboratory Report

Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)



Analytical Laboratory Report

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-chloroeicosafuoro-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
FHpPA (7:3 FTCA)	3-Perfluoroheptyl propanoic acid	812-70-4
FPePA (5:3 FTCA)	3-Perfluoropentyl propanoic acid	914637-49-3
FPrPA (3:3 FTCA)	3-Perfluoropropyl propanoic acid	356-02-5
PFBSA	Perfluorobutanesulfonamide	30334-69-1
PFECHS	Perfluoro-4-ethylcyclohexanesulfonate	67584-42-3
PFHxSA	Perfluorohexanesulfonamide	41997-13-1



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S57020.01	SAN-21	Liquid	12/19/23 10:48
S57020.02	SAN-08	Liquid	12/19/23 11:00
S57020.03	11-07C016	Liquid	12/19/23 11:14
S57020.04	SAN-2	Liquid	12/19/23 11:35
S57020.05	SAN-09	Liquid	12/19/23 11:50
S57020.06	Field Blank-121923	Liquid	12/19/23 13:10



Analytical Laboratory Report

Lab Sample ID: S57020.01

Sample Tag: SAN-21

Collected Date/Time: 12/19/2023 10:48

Matrix: Liquid

COC Reference: 162396

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.27/6.56/11	ASTMD7979-19M	01/04/24 14:30	SRP	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 21:49, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	15	1.9	ng/L	1.93	375-22-4	X
PFPeA*	1.2	3.9	1.2	ng/L	1.93	2706-90-3	J
4:2 FTSA*	Not detected	1.9	0.19	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.2	ng/L	1.93	307-24-4	
PFBS*	2.9	1.9	0.58	ng/L	1.93	375-73-5	
PFHpA*	Not detected	3.9	0.77	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	27619-97-2	
PFOA*	0.77	1.9	0.77	ng/L	1.93	335-67-1	J
PFHxS*	1.2	1.9	0.97	ng/L	1.93	355-46-4	J
PFHxS-LN*	1.2	1.9	0.97	ng/L	1.93	355-46-4-LN	J
PFHxS-BR*	Not detected	1.9	0.97	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	0.97	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	1.2	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	0.77	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.2	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	0.97	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	0.97	ng/L	1.93	2991-50-6	I
PFOS*	13	1.9	0.77	ng/L	1.93	1763-23-1	
PFOS-LN*	3.5	1.9	0.77	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	9.6	1.9	0.77	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	0.77	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	0.97	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	0.58	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	0.97	ng/L	1.93	335-77-3	
PFTTrDA*	Not detected	1.9	0.77	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	0.77	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	0.58	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	0.97	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	0.97	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	0.58	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	9.7	1.9	ng/L	1.93	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	9.7	7.7	ng/L	1.93	812-70-4	
FPePA (5:3 FTCA)*	Not detected	9.7	3.9	ng/L	1.93	914637-49-3	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL

I-Matrix interference with internal standard



Analytical Laboratory Report

Lab Sample ID: S57020.01 (continued)

Sample Tag: SAN-21

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 21:49, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
FPrPA (3:3 FTCA)*	Not detected	9.7	3.9	ng/L	1.93	356-02-5	
PFBSA*	0.66	1.9	0.58	ng/L	1.93	30334-69-1	J
PFECHS*	35	1.9	0.77	ng/L	1.93	67584-42-3	
PFHxSA*	Not detected	1.9	0.58	ng/L	1.93	41997-13-1	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S57020.02

Sample Tag: SAN-08

Collected Date/Time: 12/19/2023 11:00

Matrix: Liquid

COC Reference: 162396

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.33/6.84/11	ASTMD7979-19M	01/04/24 14:30	SRP	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 22:29, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	24	2.0	ng/L	2	375-22-4	X
PFPeA*	Not detected	4.0	1.2	ng/L	2	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.20	ng/L	2	757124-72-4	
PFHxA*	Not detected	2.0	1.2	ng/L	2	307-24-4	
PFBS*	2.3	2.0	0.60	ng/L	2	375-73-5	
PFHpA*	Not detected	4.0	0.80	ng/L	2	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2	2706-91-4	
6:2 FTSA*	Not detected	2.0	1.0	ng/L	2	27619-97-2	
PFOA*	1.2	2.0	0.80	ng/L	2	335-67-1	J
PFHxS*	2.6	2.0	1.0	ng/L	2	355-46-4	
PFHxS-LN*	2.0	2.0	1.0	ng/L	2	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.0	ng/L	2	355-46-4-BR	
PFNA*	Not detected	2.0	1.0	ng/L	2	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	2	39108-34-4	
PFHpS*	Not detected	2.0	0.80	ng/L	2	375-92-8	
PFDA*	Not detected	2.0	1.2	ng/L	2	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.0	ng/L	2	2355-31-9	
EtFOSAA*	Not detected	4.0	1.0	ng/L	2	2991-50-6	
PFOS*	23	2.0	0.80	ng/L	2	1763-23-1	
PFOS-LN*	8.8	2.0	0.80	ng/L	2	1763-23-1-LN	
PFOS-BR*	15	2.0	0.80	ng/L	2	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.80	ng/L	2	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2	68259-12-1	
PFDODA*	Not detected	2.0	0.60	ng/L	2	307-55-1	
PFDS*	Not detected	2.0	1.0	ng/L	2	335-77-3	
PFTTrDA*	Not detected	2.0	0.80	ng/L	2	72629-94-8	
FOSA*	Not detected	2.0	0.80	ng/L	2	754-91-6	
PFTeDA*	Not detected	4.0	0.60	ng/L	2	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.0	ng/L	2	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.0	ng/L	2	756426-58-1	
ADONA*	Not detected	2.0	0.60	ng/L	2	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	10	8.0	ng/L	2	812-70-4	
FPePA (5:3 FTCA)*	Not detected	10	4.0	ng/L	2	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	10	4.0	ng/L	2	356-02-5	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S57020.02 (continued)

Sample Tag: SAN-08

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 22:29, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBSA*	Not detected	2.0	0.60	ng/L	2	30334-69-1	
PFECHS*	59	2.0	0.80	ng/L	2	67584-42-3	
PFHxSA*	Not detected	2.0	0.60	ng/L	2	41997-13-1	



Analytical Laboratory Report

Lab Sample ID: S57020.03

Sample Tag: 11-07C016

Collected Date/Time: 12/19/2023 11:14

Matrix: Liquid

COC Reference: 162396

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.29/6.55/11	ASTMD7979-19M	01/04/24 14:30	SRP	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 23:09, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	29	1.9	ng/L	1.92	375-22-4	X
PFPeA*	Not detected	3.8	1.2	ng/L	1.92	2706-90-3	
4:2 FTSA*	Not detected	1.9	0.19	ng/L	1.92	757124-72-4	
PFHxA*	Not detected	1.9	1.2	ng/L	1.92	307-24-4	
PFBS*	2.0	1.9	0.58	ng/L	1.92	375-73-5	
PFHpA*	Not detected	3.8	0.77	ng/L	1.92	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.92	2706-91-4	
6:2 FTSA*	Not detected	1.9	0.96	ng/L	1.92	27619-97-2	
PFOA*	1.3	1.9	0.77	ng/L	1.92	335-67-1	J
PFHxS*	2.6	1.9	0.96	ng/L	1.92	355-46-4	
PFHxS-LN*	2.1	1.9	0.96	ng/L	1.92	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	0.96	ng/L	1.92	355-46-4-BR	
PFNA*	Not detected	1.9	0.96	ng/L	1.92	375-95-1	
8:2 FTSA*	Not detected	1.9	1.2	ng/L	1.92	39108-34-4	
PFHpS*	Not detected	1.9	0.77	ng/L	1.92	375-92-8	
PFDA*	Not detected	1.9	1.2	ng/L	1.92	335-76-2	
N-MeFOSAA*	Not detected	1.9	0.96	ng/L	1.92	2355-31-9	
EtFOSAA*	Not detected	3.8	0.96	ng/L	1.92	2991-50-6	
PFOS*	19	1.9	0.77	ng/L	1.92	1763-23-1	
PFOS-LN*	6.0	1.9	0.77	ng/L	1.92	1763-23-1-LN	
PFOS-BR*	13	1.9	0.77	ng/L	1.92	1763-23-1-BR	
PFUnDA*	Not detected	1.9	0.77	ng/L	1.92	2058-94-8	
PFNS*	Not detected	1.9	0.96	ng/L	1.92	68259-12-1	
PFDoDA*	Not detected	1.9	0.58	ng/L	1.92	307-55-1	
PFDS*	Not detected	1.9	0.96	ng/L	1.92	335-77-3	
PFTTrDA*	Not detected	1.9	0.77	ng/L	1.92	72629-94-8	
FOSA*	Not detected	1.9	0.77	ng/L	1.92	754-91-6	
PFTeDA*	Not detected	3.8	0.58	ng/L	1.92	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	0.96	ng/L	1.92	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	0.96	ng/L	1.92	756426-58-1	
ADONA*	Not detected	1.9	0.58	ng/L	1.92	919005-14-4	
HFPO-DA*	Not detected	9.6	1.9	ng/L	1.92	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	9.6	7.7	ng/L	1.92	812-70-4	
FPePA (5:3 FTCA)*	Not detected	9.6	3.8	ng/L	1.92	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	9.6	3.8	ng/L	1.92	356-02-5	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S57020.03 (continued)

Sample Tag: 11-07C016

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 23:09, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBSA*	0.60	1.9	0.58	ng/L	1.92	30334-69-1	J
PFECHS*	65	1.9	0.77	ng/L	1.92	67584-42-3	
PFHxSA*	Not detected	1.9	0.58	ng/L	1.92	41997-13-1	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S57020.04

Sample Tag: SAN-2

Collected Date/Time: 12/19/2023 11:35

Matrix: Liquid

COC Reference: 162396

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.16/6.54/11	ASTMD7979-19M	01/04/24 14:30	SRP	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 23:29, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	31	2.0	ng/L	1.96	375-22-4	X
PFPeA*	1.2	3.9	1.2	ng/L	1.96	2706-90-3	J
4:2 FTSA*	Not detected	2.0	0.20	ng/L	1.96	757124-72-4	I
PFHxA*	Not detected	2.0	1.2	ng/L	1.96	307-24-4	
PFBS*	2.3	2.0	0.59	ng/L	1.96	375-73-5	
PFHpA*	Not detected	3.9	0.78	ng/L	1.96	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.96	2706-91-4	
6:2 FTSA*	Not detected	2.0	0.98	ng/L	1.96	27619-97-2	
PFOA*	0.96	2.0	0.78	ng/L	1.96	335-67-1	J
PFHxS*	1.7	2.0	0.98	ng/L	1.96	355-46-4	J
PFHxS-LN*	1.3	2.0	0.98	ng/L	1.96	355-46-4-LN	J
PFHxS-BR*	Not detected	2.0	0.98	ng/L	1.96	355-46-4-BR	
PFNA*	Not detected	2.0	0.98	ng/L	1.96	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	1.96	39108-34-4	
PFHpS*	Not detected	2.0	0.78	ng/L	1.96	375-92-8	
PFDA*	Not detected	2.0	1.2	ng/L	1.96	335-76-2	
N-MeFOSAA*	Not detected	2.0	0.98	ng/L	1.96	2355-31-9	
EtFOSAA*	Not detected	3.9	0.98	ng/L	1.96	2991-50-6	
PFOS*	17	2.0	0.78	ng/L	1.96	1763-23-1	
PFOS-LN*	5.1	2.0	0.78	ng/L	1.96	1763-23-1-LN	
PFOS-BR*	11	2.0	0.78	ng/L	1.96	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.78	ng/L	1.96	2058-94-8	
PFNS*	Not detected	2.0	0.98	ng/L	1.96	68259-12-1	
PFDODA*	Not detected	2.0	0.59	ng/L	1.96	307-55-1	
PFDS*	Not detected	2.0	0.98	ng/L	1.96	335-77-3	
PFTTrDA*	Not detected	2.0	0.78	ng/L	1.96	72629-94-8	
FOSA*	Not detected	2.0	0.78	ng/L	1.96	754-91-6	
PFTeDA*	Not detected	3.9	0.59	ng/L	1.96	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	0.98	ng/L	1.96	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	0.98	ng/L	1.96	756426-58-1	
ADONA*	Not detected	2.0	0.59	ng/L	1.96	919005-14-4	
HFPO-DA*	Not detected	9.8	2.0	ng/L	1.96	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	9.8	7.8	ng/L	1.96	812-70-4	
FPePA (5:3 FTCA)*	Not detected	9.8	3.9	ng/L	1.96	914637-49-3	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL

I-Matrix interference with internal standard



Analytical Laboratory Report

Lab Sample ID: S57020.04 (continued)

Sample Tag: SAN-2

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 23:29, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
FPrPA (3:3 FTCA)*	Not detected	9.8	3.9	ng/L	1.96	356-02-5	
PFBSA*	0.63	2.0	0.59	ng/L	1.96	30334-69-1	J
PFECHS*	52	2.0	0.78	ng/L	1.96	67584-42-3	
PFHxSA*	Not detected	2.0	0.59	ng/L	1.96	41997-13-1	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S57020.05

Sample Tag: SAN-09

Collected Date/Time: 12/19/2023 11:50

Matrix: Liquid

COC Reference: 162396

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.91/6.5/11	ASTMD7979-19M	01/04/24 14:30	SRP	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 23:49, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	2.0	ng/L	2.03	375-22-4	
PFPeA*	Not detected	4.1	1.2	ng/L	2.03	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.20	ng/L	2.03	757124-72-4	
PFHxA*	Not detected	2.0	1.2	ng/L	2.03	307-24-4	
PFBS*	2.3	2.0	0.61	ng/L	2.03	375-73-5	
PFHpA*	Not detected	4.1	0.81	ng/L	2.03	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.03	2706-91-4	
6:2 FTSA*	Not detected	2.0	1.0	ng/L	2.03	27619-97-2	
PFOA*	0.85	2.0	0.81	ng/L	2.03	335-67-1	J
PFHxS*	Not detected	2.0	1.0	ng/L	2.03	355-46-4	
PFHxS-LN*	Not detected	2.0	1.0	ng/L	2.03	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.0	ng/L	2.03	355-46-4-BR	
PFNA*	Not detected	2.0	1.0	ng/L	2.03	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	2.03	39108-34-4	
PFHpS*	Not detected	2.0	0.81	ng/L	2.03	375-92-8	
PFDA*	Not detected	2.0	1.2	ng/L	2.03	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.0	ng/L	2.03	2355-31-9	
EtFOSAA*	Not detected	4.1	1.0	ng/L	2.03	2991-50-6	
PFOS*	5.1	2.0	0.81	ng/L	2.03	1763-23-1	
PFOS-LN*	1.3	2.0	0.81	ng/L	2.03	1763-23-1-LN	J
PFOS-BR*	3.6	2.0	0.81	ng/L	2.03	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.81	ng/L	2.03	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.03	68259-12-1	
PFDODA*	Not detected	2.0	0.61	ng/L	2.03	307-55-1	
PFDS*	Not detected	2.0	1.0	ng/L	2.03	335-77-3	
PFTTrDA*	Not detected	2.0	0.81	ng/L	2.03	72629-94-8	
FOSA*	Not detected	2.0	0.81	ng/L	2.03	754-91-6	
PFTeDA*	Not detected	4.1	0.61	ng/L	2.03	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.0	ng/L	2.03	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.0	ng/L	2.03	756426-58-1	
ADONA*	Not detected	2.0	0.61	ng/L	2.03	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.03	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	10	8.1	ng/L	2.03	812-70-4	
FPePA (5:3 FTCA)*	Not detected	10	4.1	ng/L	2.03	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	10	4.1	ng/L	2.03	356-02-5	
PFBSA*	Not detected	2.0	0.61	ng/L	2.03	30334-69-1	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S57020.05 (continued)

Sample Tag: SAN-09

34 PFAs, Method: ASTMD7979-19M, Run Date: 01/04/24 23:49, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFECHS*	18	2.0	0.81	ng/L	2.03	67584-42-3	
PFHxSA*	Not detected	2.0	0.61	ng/L	2.03	41997-13-1	



Analytical Laboratory Report

Lab Sample ID: S57020.06

Sample Tag: Field Blank-121923

Collected Date/Time: 12/19/2023 13:10

Matrix: Liquid

COC Reference: 162396

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.43/6.55/12	ASTMD7979-19M	12/29/23 13:30	NJH	

Organics

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:55, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	2.0	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	1.2	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	0.20	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.2	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	0.61	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	0.82	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	0.82	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.0	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.0	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.0	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.0	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.2	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	0.82	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	1.2	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	1.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	1.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	0.82	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	0.82	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	0.82	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	0.82	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.0	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	0.61	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.0	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	0.82	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	0.82	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	0.61	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.0	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.0	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	0.61	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.04	13252-13-6	
FHpPA (7:3 FTCA)*	Not detected	10	8.2	ng/L	2.04	812-70-4	
FPePA (5:3 FTCA)*	Not detected	10	4.1	ng/L	2.04	914637-49-3	
FPrPA (3:3 FTCA)*	Not detected	10	4.1	ng/L	2.04	356-02-5	
PFBSA*	Not detected	2.0	0.61	ng/L	2.04	30334-69-1	
PFCHS*	Not detected	2.0	0.82	ng/L	2.04	67584-42-3	



Analytical Laboratory Report

Lab Sample ID: S57020.06 (continued)

Sample Tag: Field Blank-121923

34 PFAs, Method: ASTMD7979-19M, Run Date: 12/29/23 23:55, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFHxSA*	Not detected	2.0	0.61	ng/L	2.04	41997-13-1	

Merit Laboratories Login Checklist

Lab Set ID:S57020

Client:RAMBOLL (Ramboll Americas)

Project: RACER Coldwater Road

Submitted: 12/19/2023 14:30 Login User: PFD

Attention: Clifford Yantz

Address: Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211 FAX:
Email: Clifford.Yantz@ramboll.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 4.0 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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: _____



2680 East Lansing Dr., East Lansing, MI 48823
 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1 162396

REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME Clifford Yantz / Kevin Schneider
 COMPANY Ramboll
 ADDRESS 2090 Commonwealth Blvd
 CITY Ann Arbor STATE MI ZIP CODE 48105
 PHONE NO. _____ CELL NO. 313-333-0211 P.O. NO. 1940006514 Task 37
 E-MAIL ADDRESS Kevin.Schneider@Ramboll.com QUOTE NO. _____
Clifford.Yantz@Ramboll.com

CONTACT NAME SAME
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ E-MAIL ADDRESS _____

PROJECT NO./NAME RACER Coldwater Road SAMPLER(S) - PLEASE PRINT/SIGN NAME Kevin Schneider Z 4/LL
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

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

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Certifications
	DATE	TIME											
57020.01	12/19/23	1048	SAN-21	L	3	X							Certifications <input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water <input type="checkbox"/> DoD <input type="checkbox"/> NPDES Project Locations <input type="checkbox"/> Detroit <input type="checkbox"/> New York <input type="checkbox"/> Other _____ Special Instructions <u>Low level Reporting with estimated values</u> <u>34 PFAS List</u>
.02		1100	SAN-08										
.03		1114	11-07C016										
.04		1135	SAN-7										
.05		1150	SAN-09										
.06		1310	Field Blank-121923		1								
PFAS (7975)													

RELINQUISHED BY: [Signature] Sampler DATE 12/19/23 TIME 1345
 RECEIVED BY: [Signature] DATE 12/19/23 TIME 1324
 RELINQUISHED BY: [Signature] DATE 12/19/23 TIME 1420
 RECEIVED BY: [Signature] DATE 12/19/23 TIME 1430

RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____
 NOTES: TEMP. ON ARRIVAL 4.0



Quality Control Report

Report ID: QC-S57020-01
Generated on 01/23/2024

Report to

Attention: Clifford Yantz
Ramboll Americas
2090 Commonwealth Blvd
Ann Arbor, MI 48105

Phone: 313-333-0211 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): S57020.01-S57020.06
Project: RACER Coldwater Road
Submitted Date/Time: 12/19/2023 14:30
Sampled by: Kevin Schneider
P.O. #: 1940006516 TASK 37

QC Report Sections

- Cover Page (Page 1)
- Analysis Summary (Pages 2-7)
- Prep Batch Summary (Page 8)
- Internal Standards per Lab Sample (Pages 9-14)
- Internal Standards per QC Sample (Pages 15-24)
- Batch QC Results (Pages 25-34)

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: S57020.01

Sample Tag: SAN-21

Collected Date/Time: 12/19/2023 10:48

Matrix: Liquid

COC Reference: 162396

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	01/04/24 21:49	AK240104W	PF240104W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57020.02

Sample Tag: SAN-08

Collected Date/Time: 12/19/2023 11:00

Matrix: Liquid

COC Reference: 162396

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	01/04/24 22:29	AK240104W	PF240104W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57020.03

Sample Tag: 11-07C016

Collected Date/Time: 12/19/2023 11:14

Matrix: Liquid

COC Reference: 162396

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	01/04/24 23:09	AK240104W	PF240104W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57020.04

Sample Tag: SAN-2

Collected Date/Time: 12/19/2023 11:35

Matrix: Liquid

COC Reference: 162396

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	01/04/24 23:29	AK240104W	PF240104W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57020.05

Sample Tag: SAN-09

Collected Date/Time: 12/19/2023 11:50

Matrix: Liquid

COC Reference: 162396

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	01/04/24 23:49	AK240104W	PF240104W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S57020.06

Sample Tag: Field Blank-121923

Collected Date/Time: 12/19/2023 13:10

Matrix: Liquid

COC Reference: 162396

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
34 PFAs	ASTMD7979-19M	12/29/23 23:55	AK231229FB	PF231229W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF231229W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S57020.06	34 PFAs	ASTMD7979-19M	12/29/23 23:55	AK231229FB

Organics - Volatiles, Prep Batch ID: PF240104W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S57020.01	34 PFAs	ASTMD7979-19M	01/04/24 21:49	AK240104W
S57020.02	34 PFAs	ASTMD7979-19M	01/04/24 22:29	AK240104W
S57020.03	34 PFAs	ASTMD7979-19M	01/04/24 23:09	AK240104W
S57020.04	34 PFAs	ASTMD7979-19M	01/04/24 23:29	AK240104W
S57020.05	34 PFAs	ASTMD7979-19M	01/04/24 23:49	AK240104W

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57020.01

Sample Tag: SAN-21

Collected Date/Time: 12/19/2023 10:48

Matrix: Liquid

COC Reference: 162396

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK240104W, Run Date: 01/04/2024 21:49, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		118.8	50.0	150.0
M2-6:2FTSA		120.4	50.0	150.0
M2-8:2FTSA		121.0	50.0	150.0
M2PFTeDA		81.5	12.0	218.0
M3PFBS		91.0	50.0	150.0
M3PFHxS		99.9	50.0	150.0
M4PFHpA		94.8	50.0	150.0
M5PFHxA		87.6	50.0	150.0
M5PFPeA		103.3	50.0	150.0
M6PFDA		99.3	50.0	150.0
M7PFUnDA		102.7	50.0	150.0
M8FOSA		103.0	50.0	150.0
M8PFOA		102.9	50.0	150.0
M8PFOS		100.9	50.0	150.0
M9-PFNA		91.7	50.0	150.0
MPFBA		108.2	50.0	150.0
MPFDoDA		98.6	50.0	150.0
d3N-MeFOSAA		119.7	50.0	150.0
d5EtFOSAA	*	165.0	50.0	150.0
MHFPO-DA		92.5	50.0	150.0
d-N-EtFOSA-M		95.2	50.0	150.0
d-N-MeFOSA-M		88.4	50.0	150.0
d7-N-MeFOSE-M		110.0	50.0	150.0
d9-N-EtFOSE-M		103.3	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57020.02

Sample Tag: SAN-08

Collected Date/Time: 12/19/2023 11:00

Matrix: Liquid

COC Reference: 162396

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK240104W, Run Date: 01/04/2024 22:29, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.1	50.0	150.0
M2-6:2FTSA		110.1	50.0	150.0
M2-8:2FTSA		93.2	50.0	150.0
M2PFTeDA		85.1	12.0	218.0
M3PFBS		88.6	50.0	150.0
M3PFHxS		92.9	50.0	150.0
M4PFHpA		109.3	50.0	150.0
M5PFHxA		91.2	50.0	150.0
M5PFPeA		102.5	50.0	150.0
M6PFDA		91.6	50.0	150.0
M7PFUnDA		105.9	50.0	150.0
M8FOSA		97.6	50.0	150.0
M8PFOA		98.7	50.0	150.0
M8PFOS		95.3	50.0	150.0
M9-PFNA		98.9	50.0	150.0
MPFBA		101.4	50.0	150.0
MPFDoDA		107.1	50.0	150.0
d3N-MeFOSAA		109.4	50.0	150.0
d5EtFOSAA		100.7	50.0	150.0
MHFPO-DA		93.3	50.0	150.0
d-N-EtFOSA-M		88.6	50.0	150.0
d-N-MeFOSA-M		88.5	50.0	150.0
d7-N-MeFOSE-M		88.0	50.0	150.0
d9-N-EtFOSE-M		87.3	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57020.03

Sample Tag: 11-07C016

Collected Date/Time: 12/19/2023 11:14

Matrix: Liquid

COC Reference: 162396

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK240104W, Run Date: 01/04/2024 23:09, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		140.6	50.0	150.0
M2-6:2FTSA		114.0	50.0	150.0
M2-8:2FTSA		87.2	50.0	150.0
M2PFTeDA		86.0	12.0	218.0
M3PFBS		91.0	50.0	150.0
M3PFHxS		97.4	50.0	150.0
M4PFHpA		107.1	50.0	150.0
M5PFHxA		94.4	50.0	150.0
M5PFPeA		106.8	50.0	150.0
M6PFDA		97.6	50.0	150.0
M7PFUnDA		94.5	50.0	150.0
M8FOSA		103.5	50.0	150.0
M8PFOA		95.1	50.0	150.0
M8PFOS		107.1	50.0	150.0
M9-PFNA		107.2	50.0	150.0
MPFBA		104.8	50.0	150.0
MPFDoDA		99.8	50.0	150.0
d3N-MeFOSAA		105.0	50.0	150.0
d5EtFOSAA		106.2	50.0	150.0
MHFPO-DA		97.9	50.0	150.0
d-N-EtFOSA-M		93.6	50.0	150.0
d-N-MeFOSA-M		97.1	50.0	150.0
d7-N-MeFOSE-M		86.8	50.0	150.0
d9-N-EtFOSE-M		95.2	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57020.04

Sample Tag: SAN-2

Collected Date/Time: 12/19/2023 11:35

Matrix: Liquid

COC Reference: 162396

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK240104W, Run Date: 01/04/2024 23:29, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	172.8	50.0	150.0
M2-6:2FTSA		116.6	50.0	150.0
M2-8:2FTSA		97.1	50.0	150.0
M2PFTeDA		79.1	12.0	218.0
M3PFBS		93.3	50.0	150.0
M3PFHxS		107.4	50.0	150.0
M4PFHpA		104.8	50.0	150.0
M5PFHxA		103.0	50.0	150.0
M5PFPeA		102.1	50.0	150.0
M6PFDA		96.2	50.0	150.0
M7PFUnDA		101.6	50.0	150.0
M8FOSA		93.8	50.0	150.0
M8PFOA		100.3	50.0	150.0
M8PFOS		95.9	50.0	150.0
M9-PFNA		109.4	50.0	150.0
MPFBA		108.8	50.0	150.0
MPFDoDA		97.2	50.0	150.0
d3N-MeFOSAA		108.0	50.0	150.0
d5EtFOSAA		95.5	50.0	150.0
MHFPO-DA		97.2	50.0	150.0
d-N-EtFOSA-M		87.1	50.0	150.0
d-N-MeFOSA-M		91.0	50.0	150.0
d7-N-MeFOSE-M		91.8	50.0	150.0
d9-N-EtFOSE-M		89.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57020.05

Sample Tag: SAN-09

Collected Date/Time: 12/19/2023 11:50

Matrix: Liquid

COC Reference: 162396

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK240104W, Run Date: 01/04/2024 23:49, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		137.3	50.0	150.0
M2-6:2FTSA		131.4	50.0	150.0
M2-8:2FTSA		109.2	50.0	150.0
M2PFTeDA		77.4	12.0	218.0
M3PFBS		91.7	50.0	150.0
M3PFHxS		101.1	50.0	150.0
M4PFHpA		107.7	50.0	150.0
M5PFHxA		104.4	50.0	150.0
M5PFPeA		107.9	50.0	150.0
M6PFDA		106.7	50.0	150.0
M7PFUnDA		100.1	50.0	150.0
M8FOSA		102.1	50.0	150.0
M8PFOA		107.0	50.0	150.0
M8PFOS		107.1	50.0	150.0
M9-PFNA		107.5	50.0	150.0
MPFBA		114.2	50.0	150.0
MPFDoDA		104.8	50.0	150.0
d3N-MeFOSAA		111.3	50.0	150.0
d5EtFOSAA		125.5	50.0	150.0
MHFPO-DA		110.7	50.0	150.0
d-N-EtFOSA-M		101.1	50.0	150.0
d-N-MeFOSA-M		96.4	50.0	150.0
d7-N-MeFOSE-M		96.6	50.0	150.0
d9-N-EtFOSE-M		94.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S57020.06

Sample Tag: Field Blank-121923

Collected Date/Time: 12/19/2023 13:10

Matrix: Liquid

COC Reference: 162396

Organics - Volatiles, Analysis: 34 PFAs

Run in Batch: AK231229FB, Run Date: 12/29/2023 23:55, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		87.3	50.0	150.0
M2-6:2FTSA		83.5	50.0	150.0
M2-8:2FTSA		104.3	50.0	150.0
M2PFTeDA		94.0	12.0	218.0
M3PFBS		88.7	50.0	150.0
M3PFHxS		91.4	50.0	150.0
M4PFHpA		93.7	50.0	150.0
M5PFHxA		99.0	50.0	150.0
M5PFPeA		92.5	50.0	150.0
M6PFDA		91.3	50.0	150.0
M7PFUnDA		93.4	50.0	150.0
M8FOSA		95.9	50.0	150.0
M8PFOA		92.0	50.0	150.0
M8PFOS		98.7	50.0	150.0
M9-PFNA		83.2	50.0	150.0
MPFBA		97.1	50.0	150.0
MPFDoDA		94.4	50.0	150.0
d3N-MeFOSAA		98.2	50.0	150.0
d5EtFOSAA		96.5	50.0	150.0
MHFPO-DA		98.8	50.0	150.0
d-N-EtFOSA-M		86.0	50.0	150.0
d-N-MeFOSA-M		88.5	50.0	150.0
d7-N-MeFOSE-M		89.0	50.0	150.0
d9-N-EtFOSE-M		87.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF231229W1

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

Blank (BLK)

Lab Sample ID: AK231229.BLK231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:56, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		110.3	50.0	150.0
M2-6:2FTSA		88.3	50.0	150.0
M2-8:2FTSA		90.1	50.0	150.0
M2PFTeDA		114.0	12.0	218.0
M3PFBS		90.2	50.0	150.0
M3PFHxS		96.0	50.0	150.0
M4PFHpA		89.1	50.0	150.0
M5PFHxA		91.9	50.0	150.0
M5PFPeA		93.7	50.0	150.0
M6PFDA		99.2	50.0	150.0
M7PFUnDA		99.0	50.0	150.0
M8FOSA		104.5	50.0	150.0
M8PFOA		94.3	50.0	150.0
M8PFOS		89.7	50.0	150.0
M9-PFNA		95.0	50.0	150.0
MPFBA		95.7	50.0	150.0
MPFDoDA		92.8	50.0	150.0
d3N-MeFOSAA		95.8	50.0	150.0
d5EtFOSAA		102.4	50.0	150.0
MHFPO-DA		100.1	50.0	150.0
d-N-EtFOSA-M		110.9	50.0	150.0
d-N-MeFOSA-M		107.4	50.0	150.0
d7-N-MeFOSE-M		106.4	50.0	150.0
d9-N-EtFOSE-M		96.7	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:16, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		100.8	50.0	150.0
M2-6:2FTSA		86.2	50.0	150.0
M2-8:2FTSA		103.4	50.0	150.0
M2PFTeDA		127.4	12.0	218.0
M3PFBS		85.8	50.0	150.0
M3PFHxS		93.4	50.0	150.0
M4PFHpA		87.2	50.0	150.0
M5PFHxA		90.1	50.0	150.0
M5PFPeA		93.6	50.0	150.0
M6PFDA		96.4	50.0	150.0
M7PFUnDA		97.1	50.0	150.0
M8FOSA		93.8	50.0	150.0
M8PFOA		92.0	50.0	150.0
M8PFOS		87.2	50.0	150.0
M9-PFNA		92.9	50.0	150.0
MPFBA		92.0	50.0	150.0
MPFDoDA		89.3	50.0	150.0
d3N-MeFOSAA		91.2	50.0	150.0
d5EtFOSAA		100.3	50.0	150.0
MHFPO-DA		96.8	50.0	150.0
d-N-EtFOSA-M		106.5	50.0	150.0
d-N-MeFOSA-M		105.2	50.0	150.0
d7-N-MeFOSE-M		102.0	50.0	150.0
d9-N-EtFOSE-M		103.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK231229.LCSD231229, Parent Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:36, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		99.5	50.0	150.0
M2-6:2FTSA		89.8	50.0	150.0
M2-8:2FTSA		92.0	50.0	150.0
M2PFTeDA		116.8	12.0	218.0
M3PFBS		90.9	50.0	150.0
M3PFHxS		97.7	50.0	150.0
M4PFHpA		84.0	50.0	150.0
M5PFHxA		95.4	50.0	150.0
M5PFPeA		93.5	50.0	150.0
M6PFDA		91.4	50.0	150.0
M7PFUnDA		97.6	50.0	150.0
M8FOSA		96.6	50.0	150.0
M8PFOA		88.0	50.0	150.0
M8PFOS		84.1	50.0	150.0
M9-PFNA		88.3	50.0	150.0
MPFBA		92.1	50.0	150.0
MPFDoDA		95.5	50.0	150.0
d3N-MeFOSAA		102.3	50.0	150.0
d5EtFOSAA		99.6	50.0	150.0
MHFPO-DA		97.2	50.0	150.0
d-N-EtFOSA-M		112.7	50.0	150.0
d-N-MeFOSA-M		111.1	50.0	150.0
d7-N-MeFOSE-M		99.2	50.0	150.0
d9-N-EtFOSE-M		98.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: AK240103W.5690001RM, Parent Sample ID: S56900.01

Run in Batch: AK240103W, Run Date: 01/03/2024 19:57, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		79.6	50.0	150.0
M2-6:2FTSA		87.5	50.0	150.0
M2-8:2FTSA		81.2	50.0	150.0
M2PFTeDA		87.2	12.0	218.0
M3PFBS		105.0	50.0	150.0
M3PFHxS		106.9	50.0	150.0
M4PFHpA		105.0	50.0	150.0
M5PFHxA		102.6	50.0	150.0
M5PFPeA		105.1	50.0	150.0
M6PFDA		105.9	50.0	150.0
M7PFUnDA		100.9	50.0	150.0
M8FOSA		101.2	50.0	150.0
M8PFOA		108.5	50.0	150.0
M8PFOS		117.2	50.0	150.0
M9-PFNA		95.4	50.0	150.0
MPFBA		102.4	50.0	150.0
MPFDoDA		101.3	50.0	150.0
d3N-MeFOSAA		97.6	50.0	150.0
d5EtFOSAA		85.0	50.0	150.0
MHFPO-DA		109.6	50.0	150.0
d-N-EtFOSA-M		93.6	50.0	150.0
d-N-MeFOSA-M		91.4	50.0	150.0
d7-N-MeFOSE-M		78.1	50.0	150.0
d9-N-EtFOSE-M		79.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK231229.5690002D, Parent Sample ID: S56900.02

Run in Batch: AK231229, Run Date: 12/29/2023 19:55, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		88.0	50.0	150.0
M2-6:2FTSA		78.6	50.0	150.0
M2-8:2FTSA		94.8	50.0	150.0
M2PFTeDA		95.1	12.0	218.0
M3PFBS		92.5	50.0	150.0
M3PFHxS		92.5	50.0	150.0
M4PFHpA		97.8	50.0	150.0
M5PFHxA		106.1	50.0	150.0
M5PFPeA		98.8	50.0	150.0
M6PFDA		101.0	50.0	150.0
M7PFUnDA		89.6	50.0	150.0
M8FOSA		107.0	50.0	150.0
M8PFOA		97.5	50.0	150.0
M8PFOS		105.2	50.0	150.0
M9-PFNA		93.6	50.0	150.0
MPFBA		98.8	50.0	150.0
MPFDoDA		100.9	50.0	150.0
d3N-MeFOSAA		87.1	50.0	150.0
d5EtFOSAA		93.7	50.0	150.0
MHFPO-DA		100.6	50.0	150.0
d-N-EtFOSA-M		95.3	50.0	150.0
d-N-MeFOSA-M		89.6	50.0	150.0
d7-N-MeFOSE-M		99.9	50.0	150.0
d9-N-EtFOSE-M		101.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF240104W2

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

Blank (BLK)

Lab Sample ID: AK240104W.BLK240104

Run in Batch: AK240104W, Run Date: 01/04/2024 21:09, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		94.5	50.0	150.0
M2-6:2FTSA		97.4	50.0	150.0
M2-8:2FTSA		89.7	50.0	150.0
M2PFTeDA		74.3	12.0	218.0
M3PFBS		92.2	50.0	150.0
M3PFHxS		98.8	50.0	150.0
M4PFHpA		110.4	50.0	150.0
M5PFHxA		97.3	50.0	150.0
M5PFPeA		93.4	50.0	150.0
M6PFDA		100.7	50.0	150.0
M7PFUnDA		90.3	50.0	150.0
M8FOSA		97.4	50.0	150.0
M8PFOA		95.8	50.0	150.0
M8PFOS		98.0	50.0	150.0
M9-PFNA		93.9	50.0	150.0
MPFBA		96.6	50.0	150.0
MPFDoDA		95.9	50.0	150.0
d3N-MeFOSAA		96.6	50.0	150.0
d5EtFOSAA		103.7	50.0	150.0
MHFPO-DA		89.8	50.0	150.0
d-N-EtFOSA-M		97.7	50.0	150.0
d-N-MeFOSA-M		92.2	50.0	150.0
d7-N-MeFOSE-M		89.3	50.0	150.0
d9-N-EtFOSE-M		99.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK240104W.LCS240104

Run in Batch: AK240104W, Run Date: 01/04/2024 20:29, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		94.0	50.0	150.0
M2-6:2FTSA		99.3	50.0	150.0
M2-8:2FTSA		88.8	50.0	150.0
M2PFTeDA		88.0	12.0	218.0
M3PFBS		85.0	50.0	150.0
M3PFHxS		89.3	50.0	150.0
M4PFHpA		100.6	50.0	150.0
M5PFHxA		99.6	50.0	150.0
M5PFPeA		97.5	50.0	150.0
M6PFDA		95.4	50.0	150.0
M7PFUnDA		95.3	50.0	150.0
M8FOSA		94.5	50.0	150.0
M8PFOA		101.6	50.0	150.0
M8PFOS		97.8	50.0	150.0
M9-PFNA		106.4	50.0	150.0
MPFBA		98.6	50.0	150.0
MPFDoDA		99.8	50.0	150.0
d3N-MeFOSAA		106.4	50.0	150.0
d5EtFOSAA		106.8	50.0	150.0
MHFPO-DA		96.1	50.0	150.0
d-N-EtFOSA-M		86.3	50.0	150.0
d-N-MeFOSA-M		91.2	50.0	150.0
d7-N-MeFOSE-M		87.1	50.0	150.0
d9-N-EtFOSE-M		86.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK240104W.LCSD240104, Parent Sample ID: AK240104W.LCS240104

Run in Batch: AK240104W, Run Date: 01/04/2024 20:49, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.5	50.0	150.0
M2-6:2FTSA		109.1	50.0	150.0
M2-8:2FTSA		90.7	50.0	150.0
M2PFTeDA		86.9	12.0	218.0
M3PFBS		93.0	50.0	150.0
M3PFHxS		93.1	50.0	150.0
M4PFHpA		94.4	50.0	150.0
M5PFHxA		97.2	50.0	150.0
M5PFPeA		98.0	50.0	150.0
M6PFDA		99.2	50.0	150.0
M7PFUnDA		87.8	50.0	150.0
M8FOSA		94.6	50.0	150.0
M8PFOA		102.4	50.0	150.0
M8PFOS		95.5	50.0	150.0
M9-PFNA		92.1	50.0	150.0
MPFBA		97.0	50.0	150.0
MPFDoDA		94.6	50.0	150.0
d3N-MeFOSAA		94.6	50.0	150.0
d5EtFOSAA		99.0	50.0	150.0
MHFPO-DA		95.4	50.0	150.0
d-N-EtFOSA-M		92.4	50.0	150.0
d-N-MeFOSA-M		95.5	50.0	150.0
d7-N-MeFOSE-M		90.1	50.0	150.0
d9-N-EtFOSE-M		85.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: AK240104W.5702002M, Parent Sample ID: S57020.02

Run in Batch: AK240104W, Run Date: 01/04/2024 22:49, Prep Date: 01/04/2024, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		110.5	50.0	150.0
M2-6:2FTSA		95.7	50.0	150.0
M2-8:2FTSA		88.3	50.0	150.0
M2PFTeDA		80.4	12.0	218.0
M3PFBS		94.2	50.0	150.0
M3PFHxS		101.9	50.0	150.0
M4PFHpA		101.9	50.0	150.0
M5PFHxA		101.2	50.0	150.0
M5PFPeA		106.3	50.0	150.0
M6PFDA		102.6	50.0	150.0
M7PFUnDA		93.8	50.0	150.0
M8FOSA		105.6	50.0	150.0
M8PFOA		95.6	50.0	150.0
M8PFOS		100.9	50.0	150.0
M9-PFNA		102.8	50.0	150.0
MPFBA		107.0	50.0	150.0
MPFDoDA		99.1	50.0	150.0
d3N-MeFOSAA		103.6	50.0	150.0
d5EtFOSAA		104.8	50.0	150.0
MHFPO-DA		102.6	50.0	150.0
d-N-EtFOSA-M		99.8	50.0	150.0
d-N-MeFOSA-M		95.0	50.0	150.0
d7-N-MeFOSE-M		96.0	50.0	150.0
d9-N-EtFOSE-M		95.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK240104W.5702001D, Parent Sample ID: S57020.01

Run in Batch: AK240104W, Run Date: 01/04/2024 22:09, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		126.6	50.0	150.0
M2-6:2FTSA		124.2	50.0	150.0
M2-8:2FTSA		127.6	50.0	150.0
M2PFTeDA		83.5	12.0	218.0
M3PFBS		89.2	50.0	150.0
M3PFHxS		87.6	50.0	150.0
M4PFHpA		101.7	50.0	150.0
M5PFHxA		101.2	50.0	150.0
M5PFPeA		101.6	50.0	150.0
M6PFDA		103.6	50.0	150.0
M7PFUnDA		101.8	50.0	150.0
M8FOSA		106.0	50.0	150.0
M8PFOA		97.6	50.0	150.0
M8PFOS		99.1	50.0	150.0
M9-PFNA		94.7	50.0	150.0
MPFBA		106.0	50.0	150.0
MPFDoDA		99.8	50.0	150.0
d3N-MeFOSAA		121.2	50.0	150.0
d5EtFOSAA	*	173.5	50.0	150.0
MHFPO-DA		87.8	50.0	150.0
d-N-EtFOSA-M		92.6	50.0	150.0
d-N-MeFOSA-M		90.6	50.0	150.0
d7-N-MeFOSE-M		98.4	50.0	150.0
d9-N-EtFOSE-M		95.8	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1

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

Blank (BLK)

Lab Sample ID: AK231229.BLK231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:56, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	10	ng/l
PFPPrS		ND	2	ng/l
PFPeA		ND	4	ng/l
PFMBA		ND	2	ng/l
4:2 FTSA		ND	2	ng/l
NFDHA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
HFPO-DA		ND	10	ng/l
FPePA (5:3 FTCA)		ND	10	ng/l
PFEESA		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
ADONA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFBSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
FHpPA (7:3 FTCA)		ND	10	ng/l
PFNA		ND	2	ng/l
PFECHS		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
PFOS-BR		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFHxSA		ND	2	ng/l
PFUnDA		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
PFDOS		ND	6	ng/l
NMeFOSE		ND	4	ng/l
NMeFOSAM		ND	2	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Blank (BLK) (continued)

Lab Sample ID: AK231229.BLK231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:56, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
NEtFOSE		ND	4	ng/l
NEtFOSAM		ND	2	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:16, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		100.0	70.0	130.0
PFMPA		100.4	70.0	130.0
FPrPA (3:3 FTCA)		96.8	70.0	130.0
PFPPrS		108.2	70.0	130.0
PFPeA		100.0	70.0	130.0
PFMBA		86.8	70.0	130.0
4:2 FTSA		95.6	70.0	130.0
NFDHA		83.0	70.0	130.0
PFHxA		104.2	70.0	130.0
PFBS		102.4	70.0	130.0
HFPO-DA		92.4	70.0	130.0
FPePA (5:3 FTCA)		106.8	70.0	130.0
PFEESA		83.0	70.0	130.0
PFHpA		78.4	70.0	130.0
PFPeS		100.8	70.0	130.0
ADONA		102.6	70.0	130.0
6:2 FTSA		99.2	70.0	130.0
PFBSA		84.2	70.0	130.0
PFOA		100.6	70.0	130.0
PFHxS		98.8	70.0	130.0
FHpPA (7:3 FTCA)		120.0	70.0	130.0
PFNA		109.0	70.0	130.0
PFECHS		91.2	70.0	130.0
8:2 FTSA		97.0	70.0	130.0
PFHpS		107.8	70.0	130.0
N-MeFOSAA		112.2	70.0	130.0
PFDA		101.4	70.0	130.0
EtFOSAA		97.8	70.0	130.0
PFOS		101.8	70.0	130.0
PFHxSA		89.6	70.0	130.0
PFUnDA		107.0	70.0	130.0
9CL-PF3ONS		107.0	70.0	130.0
PFNS		101.8	70.0	130.0
PFDoDA		104.8	70.0	130.0
PFDS		108.0	70.0	130.0
PFTTrDA		113.0	70.0	130.0
11CL-PF3OUdS		103.4	70.0	130.0
FOSA		103.2	70.0	130.0
PFTeDA		94.2	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:16, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFDOS		122.4	70.0	130.0
NMeFOSE		90.6	70.0	130.0
NMeFOSAM		98.2	70.0	130.0
NEtFOSE		98.6	70.0	130.0
NEtFOSAM		99.2	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK231229.LCSD231229, Parent Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:36, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		110.2	70.0	130.0	9.7	30.0
PFMPA		109.6	70.0	130.0	8.8	30.0
FPrPA (3:3 FTCA)		106.6	70.0	130.0	9.6	30.0
PFPPrS		107.4	70.0	130.0	0.7	30.0
PFPeA		104.2	70.0	130.0	4.1	30.0
PFMBA		90.0	70.0	130.0	3.6	30.0
4:2 FTSA		103.2	70.0	130.0	7.6	30.0
NFDHA		101.4	70.0	130.0	20.0	30.0
PFHxA		101.6	70.0	130.0	2.5	30.0
PFBS		100.4	70.0	130.0	2.0	30.0
HFPO-DA		96.0	70.0	130.0	3.8	30.0
FPePA (5:3 FTCA)		105.2	70.0	130.0	1.5	30.0
PFEESA		88.6	70.0	130.0	6.5	30.0
PFHpA		94.6	70.0	130.0	18.7	30.0
PFPeS		91.2	70.0	130.0	10.0	30.0
ADONA		104.6	70.0	130.0	1.9	30.0
6:2 FTSA		95.0	70.0	130.0	4.3	30.0
PFBSA		84.8	70.0	130.0	0.7	30.0
PFOA		118.6	70.0	130.0	16.4	30.0
PFHxS		97.8	70.0	130.0	1.0	30.0
FHpPA (7:3 FTCA)		125.0	70.0	130.0	4.1	30.0
PFNA		104.6	70.0	130.0	4.1	30.0
PFECHS		100.0	70.0	130.0	9.2	30.0
8:2 FTSA		113.4	70.0	130.0	15.6	30.0
PFHpS		105.0	70.0	130.0	2.6	30.0
N-MeFOSAA		105.8	70.0	130.0	5.9	30.0
PFDA		107.2	70.0	130.0	5.6	30.0
EtFOSAA		103.0	70.0	130.0	5.2	30.0
PFOS		115.4	70.0	130.0	12.5	30.0
PFHxSA		85.4	70.0	130.0	4.8	30.0
PFUnDA		109.4	70.0	130.0	2.2	30.0
9CL-PF3ONS		110.0	70.0	130.0	2.8	30.0
PFNS		119.8	70.0	130.0	16.2	30.0
PFDODA		94.6	70.0	130.0	10.2	30.0
PFDS		113.6	70.0	130.0	5.1	30.0
PFTTrDA		116.0	70.0	130.0	2.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK231229.LCSD231229, Parent Sample ID: AK231229.LCS231229

Run in Batch: AK231229, Run Date: 12/29/2023 12:36, Prep Date: 12/29/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
11CL-PF3OUdS		110.4	70.0	130.0	6.5	30.0
FOSA		104.8	70.0	130.0	1.5	30.0
PFTeDA		107.2	70.0	130.0	12.9	30.0
PFDOS		121.2	70.0	130.0	1.0	30.0
NMeFOSE		98.0	70.0	130.0	7.8	30.0
NMeFOSAM		99.6	70.0	130.0	1.4	30.0
NEtFOSE		100.0	70.0	130.0	1.4	30.0
NEtFOSAM		96.6	70.0	130.0	2.7	30.0

Matrix Spike (MS)

Lab Sample ID: AK240103W.5690001RM, Parent Sample ID: S56900.01

Run in Batch: AK240103W, Run Date: 01/03/2024 19:57, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.1

Analyte	Flags	% Rec	LCL	UCL
PFBA		114.3	70.0	130.0
PFPeA		104.8	70.0	130.0
4:2 FTSA		104.8	70.0	130.0
PFHxA		100.3	70.0	130.0
PFBS		111.9	70.0	130.0
PFHpA		91.8	70.0	130.0
PFPeS		114.3	70.0	130.0
6:2 FTSA		104.8	70.0	130.0
PFOA		98.1	70.0	130.0
PFHxS		104.8	70.0	130.0
PFNA		123.8	70.0	130.0
8:2 FTSA		114.3	70.0	130.0
PFHpS		104.8	70.0	130.0
PFDA		114.3	70.0	130.0
N-MeFOSAA		123.8	70.0	130.0
EtFOSAA		104.8	70.0	130.0
PFOS		92.4	70.0	130.0
PFUnDA		104.8	70.0	130.0
PFNS		104.8	70.0	130.0
PFDoDA		104.8	70.0	130.0
PFDS		95.2	70.0	130.0
PFTrDA		114.3	70.0	130.0
FOSA		104.8	70.0	130.0
PFTeDA		104.8	70.0	130.0
11CL-PF3OUdS		95.2	70.0	130.0
9CL-PF3ONS		104.8	70.0	130.0
ADONA		94.3	70.0	130.0
HFPO-DA		104.8	70.0	130.0
FHpPA (7:3 FTCA)	*	133.3	70.0	130.0
FPePA (5:3 FTCA)		104.8	70.0	130.0
FPrPA (3:3 FTCA)		104.8	70.0	130.0
PFBSA		88.6	70.0	130.0
PFECHS		88.9	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF231229W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: AK240103W.5690001RM, Parent Sample ID: S56900.01

Run in Batch: AK240103W, Run Date: 01/03/2024 19:57, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.1

Analyte	Flags	% Rec	LCL	UCL
PFHxSA		104.8	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK231229.5690002D, Parent Sample ID: S56900.02

Run in Batch: AK231229, Run Date: 12/29/2023 19:55, Prep Date: 12/29/2023, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0
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
PFTTrDA		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
FHpPA (7:3 FTCA)		NC	30.0
FPePA (5:3 FTCA)		NC	30.0
FPrPA (3:3 FTCA)		NC	30.0
PFBSA		NC	30.0
PFECHS		NC	30.0
PFHxSA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF240104W2

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

Blank (BLK)

Lab Sample ID: AK240104W.BLK240104

Run in Batch: AK240104W, Run Date: 01/04/2024 21:09, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	5	ng/l
PFMPA		ND	1	ng/l
FPrPA (3:3 FTCA)		ND	5	ng/l
PFPPrS		ND	1	ng/l
PFPeA		ND	2	ng/l
PFMBA		ND	1	ng/l
4:2 FTSA		ND	1	ng/l
NFDHA		ND	1	ng/l
PFHxA		ND	1	ng/l
PFBS		ND	1	ng/l
HFPO-DA		ND	5	ng/l
FPePA (5:3 FTCA)		ND	5	ng/l
PFEESA		ND	1	ng/l
PFHpA	J*	0.77	2	ng/l
ADONA		ND	1	ng/l
PFPeS		ND	1	ng/l
PFBSA		ND	1	ng/l
6:2 FTSA		ND	1	ng/l
PFOA		ND	1	ng/l
PFHxS-BR		ND	1	ng/l
PFHxS		ND	1	ng/l
PFHxS-LN		ND	1	ng/l
FHpPA (7:3 FTCA)		ND	5	ng/l
PFNA		ND	1	ng/l
8:2 FTSA		ND	1	ng/l
PFECHS		ND	1	ng/l
PFHpS		ND	1	ng/l
N-MeFOSAA		ND	1	ng/l
PFDA		ND	1	ng/l
EtFOSAA		ND	2	ng/l
PFOS		ND	1	ng/l
PFOS-BR		ND	1	ng/l
PFHxSA		ND	1	ng/l
PFOS-LN		ND	1	ng/l
PFUnDA		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
PFNS		ND	1	ng/l
PFDoDA		ND	1	ng/l
PFDS		ND	1	ng/l
PFTTrDA		ND	1	ng/l
FOSA		ND	1	ng/l
11CL-PF3OUdS		ND	1	ng/l
PFTeDA		ND	2	ng/l
PFDOS		ND	3	ng/l
NMeFOSE		ND	2	ng/l
NMeFOSAM		ND	1	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF240104W2 (continued)

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

Blank (BLK) (continued)

Lab Sample ID: AK240104W.BLK240104

Run in Batch: AK240104W, Run Date: 01/04/2024 21:09, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
NEtFOSE		ND	2	ng/l
NEtFOSAM		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK240104W.LCS240104

Run in Batch: AK240104W, Run Date: 01/04/2024 20:29, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		102.8	70.0	130.0
PFMPA		94.4	70.0	130.0
FPrPA (3:3 FTCA)		92.0	70.0	130.0
PFPPrS		102.6	70.0	130.0
PFPeA		92.0	70.0	130.0
PFMBA		74.6	70.0	130.0
4:2 FTSA		98.2	70.0	130.0
NFDHA		86.4	70.0	130.0
PFHxA		88.8	70.0	130.0
PFBS		88.8	70.0	130.0
HFPO-DA		79.6	70.0	130.0
FPePA (5:3 FTCA)		88.4	70.0	130.0
PFEESA		80.8	70.0	130.0
PFHpA		91.4	70.0	130.0
ADONA		84.0	70.0	130.0
PFPeS		91.8	70.0	130.0
PFBSA		71.6	70.0	130.0
6:2 FTSA		96.8	70.0	130.0
PFOA		90.6	70.0	130.0
PFHxS		108.0	70.0	130.0
FHpPA (7:3 FTCA)		119.8	70.0	130.0
PFNA		86.6	70.0	130.0
8:2 FTSA		102.8	70.0	130.0
PFECHS		84.4	70.0	130.0
PFHpS		97.4	70.0	130.0
N-MeFOSAA		111.8	70.0	130.0
PFDA		93.8	70.0	130.0
EtFOSAA		80.6	70.0	130.0
PFOS		93.6	70.0	130.0
PFHxSA		76.4	70.0	130.0
PFUnDA		102.6	70.0	130.0
9CL-PF3ONS		95.4	70.0	130.0
PFNS		105.6	70.0	130.0
PFDoDA		91.2	70.0	130.0
PFDS		96.2	70.0	130.0
PFTTrDA		90.8	70.0	130.0
FOSA		94.0	70.0	130.0
11CL-PF3OUdS		93.6	70.0	130.0
PFTeDA		83.8	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF240104W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK240104W.LCS240104

Run in Batch: AK240104W, Run Date: 01/04/2024 20:29, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFDOS		109.4	70.0	130.0
NMeFOSE		88.2	70.0	130.0
NMeFOSAM		85.8	70.0	130.0
NEtFOSE		101.4	70.0	130.0
NEtFOSAM		98.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK240104W.LCSD240104, Parent Sample ID: AK240104W.LCS240104

Run in Batch: AK240104W, Run Date: 01/04/2024 20:49, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		100.0	70.0	130.0	2.8	30.0
PFMPA		97.6	70.0	130.0	3.3	30.0
FPrPA (3:3 FTCA)		98.2	70.0	130.0	6.5	30.0
PFPPrS		96.0	70.0	130.0	6.6	30.0
PFPeA		93.0	70.0	130.0	1.1	30.0
PFMBA		80.6	70.0	130.0	7.7	30.0
4:2 FTSA		92.6	70.0	130.0	5.9	30.0
NFDHA		84.8	70.0	130.0	1.9	30.0
PFHxA		87.8	70.0	130.0	1.1	30.0
PFBS		86.4	70.0	130.0	2.7	30.0
HFPO-DA		79.4	70.0	130.0	0.3	30.0
FPePA (5:3 FTCA)		91.2	70.0	130.0	3.1	30.0
PFEESA		78.0	70.0	130.0	3.5	30.0
PFHpA		90.0	70.0	130.0	1.5	30.0
ADONA		87.0	70.0	130.0	3.5	30.0
PFPeS		93.0	70.0	130.0	1.3	30.0
PFBSA		77.4	70.0	130.0	7.8	30.0
6:2 FTSA		87.0	70.0	130.0	10.7	30.0
PFOA		92.2	70.0	130.0	1.8	30.0
PFHxS		94.2	70.0	130.0	13.6	30.0
FHpPA (7:3 FTCA)		100.2	70.0	130.0	17.8	30.0
PFNA		101.0	70.0	130.0	15.4	30.0
8:2 FTSA		108.0	70.0	130.0	4.9	30.0
PFECHS		93.2	70.0	130.0	9.9	30.0
PFHpS		103.6	70.0	130.0	6.2	30.0
N-MeFOSAA		115.0	70.0	130.0	2.8	30.0
PFDA		94.2	70.0	130.0	0.4	30.0
EtFOSAA		94.4	70.0	130.0	15.8	30.0
PFOS		91.6	70.0	130.0	2.2	30.0
PFHxSA		82.8	70.0	130.0	8.0	30.0
PFUnDA		107.4	70.0	130.0	4.6	30.0
9CL-PF3ONS		89.2	70.0	130.0	6.7	30.0
PFNS		97.6	70.0	130.0	7.9	30.0
PFDODA		90.6	70.0	130.0	0.7	30.0
PFDS		100.2	70.0	130.0	4.1	30.0
PFTTrDA		103.0	70.0	130.0	12.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF240104W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK240104W.LCSD240104, Parent Sample ID: AK240104W.LCS240104

Run in Batch: AK240104W, Run Date: 01/04/2024 20:49, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FOSA		100.6	70.0	130.0	6.8	30.0
11CL-PF3OUdS		96.6	70.0	130.0	3.2	30.0
PFTeDA		98.4	70.0	130.0	16.0	30.0
PFDOS		118.0	70.0	130.0	7.6	30.0
NMeFOSE		89.8	70.0	130.0	1.8	30.0
NMeFOSAM		83.4	70.0	130.0	2.8	30.0
NEtFOSE		101.4	70.0	130.0	0.0	30.0
NEtFOSAM		94.0	70.0	130.0	5.0	30.0

Matrix Spike (MS)

Lab Sample ID: AK240104W.5702002M, Parent Sample ID: S57020.02

Run in Batch: AK240104W, Run Date: 01/04/2024 22:49, Prep Date: 01/04/2024, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
PFBA		110.0	70.0	130.0
PFPeA		98.0	70.0	130.0
4:2 FTSA		94.0	70.0	130.0
PFHxA		89.0	70.0	130.0
PFBS		84.7	70.0	130.0
PFHpA		92.2	70.0	130.0
PFPeS		86.0	70.0	130.0
6:2 FTSA		100.0	70.0	130.0
PFOA		98.8	70.0	130.0
PFHxS		95.4	70.0	130.0
PFNA		91.0	70.0	130.0
8:2 FTSA		110.0	70.0	130.0
PFHpS		93.0	70.0	130.0
PFDA		100.0	70.0	130.0
N-MeFOSAA		110.0	70.0	130.0
EtFOSAA		90.0	70.0	130.0
PFOS		97.0	70.0	130.0
PFUnDA		110.0	70.0	130.0
PFNS		100.0	70.0	130.0
PFDoDA		91.0	70.0	130.0
PFDS		110.0	70.0	130.0
PFTrDA		96.0	70.0	130.0
FOSA		90.0	70.0	130.0
PFTeDA		110.0	70.0	130.0
11CL-PF3OUdS		84.0	70.0	130.0
9CL-PF3ONS		94.0	70.0	130.0
ADONA		94.0	70.0	130.0
HFPO-DA		82.0	70.0	130.0
FHpPA (7:3 FTCA)		120.0	70.0	130.0
FPePA (5:3 FTCA)		100.0	70.0	130.0
FPrPA (3:3 FTCA)		96.0	70.0	130.0
PFBSA		73.0	70.0	130.0
PFECHS		91.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF240104W2 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: AK240104W.5702002M, Parent Sample ID: S57020.02

Run in Batch: AK240104W, Run Date: 01/04/2024 22:49, Prep Date: 01/04/2024, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
PFHxSA		74.0	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK240104W.5702001D, Parent Sample ID: S57020.01

Run in Batch: AK240104W, Run Date: 01/04/2024 22:09, Prep Date: 01/04/2024, Matrix: WW, Dilution: 1.93

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA	J	8.0	30.0
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		3.5	30.0
PFHpA	J	10.0	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA	J	23.0	30.0
PFHxS	*	50.0	30.0
PFHxS-LN	*	50.0	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		20.7	30.0
PFOS-LN		2.9	30.0
PFOS-BR		22.2	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		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
FHpPA (7:3 FTCA)		NC	30.0
FPePA (5:3 FTCA)		NC	30.0
FPrPA (3:3 FTCA)		NC	30.0
PFBSA	J	4.4	30.0
PFECHS		0.0	30.0
PFHxSA		NC	30.0

