

**Mr. Eric Brubaker**

City of Flint Water Pollution  
Water Pollution Control Facilities  
G4652 Beecher Rd.  
Flint, MI, 48532

RE: ***Discharge Permit Submittal– October 2022 through December 2022***

*Permit No.: 6-08-04-04-GML1*

**FILE: 1088190/1940102192/Docs**

Dear **Mr. Brubaker:**

In accordance with requirements of the above referenced discharge permit, we are providing you with the following discharge information for the period October 1, 2022 to December 31, 2022 for the Coldwater Road Landfill facility, located at 6220 Horton Avenue, Mount Morris, Michigan. In addition, we are reporting the performance of the per- and polyfluoroalkyl substances (PFAS) pretreatment system in this letter and will continue to do so as long as the pretreatment system is in operation.

January 25, 2023

- Periodic Report on Continued Compliance, certification
- Periodic Report on Continued Compliance Sample (Table 1)
- Daily Discharge Summary Table (Table 2)
- PFAS Sampling Results Table (Table 3)
- Analytical Reports provided by Merit Laboratories, Inc. for samples from the on-Site, above ground collection tank collected on November 9, 2022.
- Analytical Reports provided by Merit Laboratories, Inc. for samples from the on-Site, PFAS pretreatment system collected on December 7, 2022 and December 8, 2022 during the discharge of the liquids from the on-Site, above ground collection tank through the system.
- Copy of Chain-of-Custody forms.

Ramboll  
2090 Commonwealth Blvd.  
Ann Arbor, MI 48105  
USA

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<https://ramboll.com>

The laboratory analytical results indicate concentrations in the effluent were below the Sewer Use Permit limits for the required monitoring parameters during the discharge period.

In addition, the PFAS analytical results for the effluent sample were non-detect or below the Sewer Use Permit limits and therefore were reduced below the current EGLE Part 4, Water Quality Standards, Rule 57 Water Quality Values. Therefore, the PFAS pretreatment system is operating as designed.

Breakthrough samples were collected from GAC vessels on December 7, 2022 and December 8, 2022 during the accumulation tank discharge. The influent sample collected on December 7, 2022 had a detection of 8,500 ng/L for perfluorooctane sulfonic acid (PFOS).

The highest PFOS detection from the primary GAC drum samples was detected at 14 ng/L in the sample collected on December 7, 2022. The primary GAC drum was replaced with a new GAC drum on December 7, 2022 following the sample collection and submission to the laboratory due to corrosion and a leak in the drum. The result of the PFAS sample collected on December 8, 2022 from the primary GAC drum was collected from the new drum.

In the samples collected just before discharge was discontinued on December 8, 2022, PFOS was detected at a concentration of 8.6 ng/L in the primary GAC drum, at a concentration of 5.9 in the secondary GAC drum, at a concentration of 5.0 ng/L in the tertiary (third) GAC drum, and at a concentration of 2.5 ng/l in the quaternary (fourth) GAC drum.

On December 29, 2022, the four GAC drums were taken out of service and set aside for disposal. The steel GAC drums were replaced with four 200-pound capacity fiberglass reinforced plastic (FRP) filtration vessels and connected using the existing interconnecting hoses. The change in vessels was approved via email on November 28, 2022 by the City of Flint and through the already submitted Pretreatment Plan and modified Use Permit. The change to FRP vessels should eliminate corrosion and any leaks that had occurred while using the steel GAC drums and the need to change out the GAC before it is necessary.

Please call me at 313-333-0211 if you have any questions.

Yours sincerely,  
**RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.**



**Clifford S. Yantz**  
Managing Hydrogeologist  
1943864 - MIDWEST EAST Resources 056

M 313.333.0211  
[Clifford.yantz@ramboll.com](mailto:Clifford.yantz@ramboll.com)

cc: Mr. Kevin Forbes – Beecher Metropolitan District, Flint, MI  
Mr. John McCabe – EGLE (via email)  
Ms. Nicole Sanabria – EGLE (via email)  
Mr. David Favero – RACER Trust  
Mr. Kevin Schneider – Ramboll

**City of Flint  
Industrial Pretreatment Program**

**Periodic Report on Continued Compliance**

Company Name: RACER Trust, Coldwater Road  
Street Address: 6220 Horton Avenue, Flint, Michigan  
Permit Number: 6-08-04-04-GML1  
Outfall Number: 001

Reporting Period: October 1, 2022 through December 31, 2022

Average Volume of Daily Discharge (during reporting period): 2,510 gallons  
(One Day Event)

Complete the following:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name of Authorized Representative: Clifford Yantz

Title of Authorized Representative: Managing Hydrogeologist, Ramboll Americas Engineering Solutions, Inc., As agent for the RACER Trust

Signature of Authorized Representative: *Clifford Yantz, as agent for RACER Trust*

Date Signed by Authorized Representative: 1/25/23

If required to implement a Toxic Organics Management Plan (TOMP), complete the following:

"Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing of the last Periodic Report on Continued Compliance. I further certify that, this facility is implementing the toxic organic management plan submitted to the control authority."

Name of Authorized Representative: \_\_\_\_\_ N/A

Title of Authorized Representative: \_\_\_\_\_ N/A

Signature of Authorized Representative: \_\_\_\_\_ N/A

Date Signed by Authorized Representative: \_\_\_\_\_ N/A

TABLES

**Table 1**  
**Periodic Report on Continued Compliance**  
**City of Flint Sewer User Self-Monitoring Report**  
**Fourth Quarter - 2022 - GSWVR Sample**

<b>RACER Trust - Coldwater Road Landfill Facility</b>						
<b>Permit Number 6-08-04-04-GML1</b>						
<b>6220 Horton Avenue</b>						
<b>Analytical Parameter</b>	<b>Ammonia-N</b>	<b>BOD5</b>	<b>HEM</b>	<b>pH @ 25°C</b>	<b>Phosphorus</b>	<b>TSS</b>
<b>Units</b>	mg/L	mg/L	mg/L	SU	mg/L	mg/L
<b>Sampling Frequency</b>	Per Batch	Per Batch	Per Batch	Per Batch	Per Batch	Per Batch
<b>Sampling Procedure</b>	Grab sample	Grab sample	Grab sample	Grab sample	Grab sample	Grab sample
<b>Daily Maximum Limit</b>	110	1196	100	NA	14	570
<b>Maximum Limit</b>	NA	NA	NA	10.5	NA	NA
<b>Minimum Limit</b>	NA	NA	NA	6	NA	NA
<b>Test Result</b>	4.66	17.5	3	8.31	0.03	41
<b>Test Method</b>	4500-NH3 D	10360	1664A	4500-H+ B	4500-PE	2540 D
<b>Test Date</b>	11/17/2022	11/16/2022	11/18/2022	11/9/2022	11/17/2022	11/15/2022
<b>Sample Date</b>	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022
<b>Sample Type</b>	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater
<b>Test Result</b>						
<b>Test Method</b>						
<b>Test Date</b>						
<b>Sample Date</b>						
<b>Sample Type</b>						
<b>Test Result</b>						
<b>Test Method</b>						
<b>Test Date</b>						
<b>Sample Date</b>						
<b>Sample Type</b>						
<b>Average Daily Conc.</b>						
<b>No. of Samples</b>						
<b>Number of Limit Exceedances</b>						

**Table 1**  
**Periodic Report on Continued Compliance**  
**City of Flint Sewer User Self-Monitoring Report**  
**Fourth Quarter - 2022 - GSWVR Sample**

<b>RACER Trust - Coldwater Road Landfill Facility</b>							
<b>Permit Number 6-08-04-04-GML1</b>							
<b>6220 Horton Avenue</b>							
<b>Analytical Parameter</b>	<b>Arsenic</b>	<b>Chromium</b>	<b>Copper</b>	<b>Mercury</b>	<b>Nickel</b>	<b>Zinc</b>	<b>Cyanide, available</b>
<b>Units</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>
<b>Sampling Frequency</b>	<b>Per Batch</b>	<b>Per Batch</b>	<b>Per Batch</b>	<b>Per Batch</b>	<b>Per Batch</b>	<b>Per Batch</b>	<b>Per Batch</b>
<b>Sampling Procedure</b>	<b>Grab sample</b>	<b>Grab sample</b>	<b>Grab sample</b>	<b>Grab sample</b>	<b>Grab sample</b>	<b>Grab sample</b>	<b>Grab sample</b>
<b>Daily Maximum Limit</b>	<b>0.051</b>	<b>1.273</b>	<b>1.797</b>	<b>0.000012</b>	<b>0.543</b>	<b>2.626</b>	<b>0.165</b>
<b>Maximum Limit</b>	NA	NA	NA	NA	NA	NA	NA
<b>Minimum Limit</b>	NA	NA	NA	NA	NA	NA	NA
<b>Test Result</b>	<b>0.007</b>	<b>0.015</b>	<b>0.515</b>	<b>&lt;0.0002</b>	<b>0.187</b>	<b>0.030</b>	<b>&lt;0.002</b>
<b>Test Method</b>	E200.8	200.8	200.8	245.1	200.8	200.8	1677
<b>Test Date</b>	11/14/2022	11/14/2022	11/14/2022	11/16/2022	11/14/2022	11/14/2022	11/10/2022
<b>Sample Date</b>	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022
<b>Sample Type</b>	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater
<b>Test Result</b>							
<b>Test Method</b>							
<b>Test Date</b>							
<b>Sample Date</b>							
<b>Sample Type</b>							
<b>Test Result</b>							
<b>Test Method</b>							
<b>Test Date</b>							
<b>Sample Date</b>							
<b>Sample Type</b>							
<b>Average Daily Conc.</b>							
<b>No. of Samples</b>							
<b>Number of Limit Exceedances</b>							



**TABLE 2**  
**RACER Trust - Coldwater Road**  
**Daily Discharge Summary Table**  
**Fourth Quarter 2022**  
**6-08-04-04-GML1**

Date	Beginning Flow Meter Reading	End Flow Meter Reading	Gallons Discharged	Begin Time of Discharge	End Time of Discharge	Average Flow (gal/min)	Temperature at Discharge		pH
							(C)	(F)	
<b>12/7/2022-12/7/2022</b>	790,395	790,450	<b>55</b>	10:29 AM (12/7/22)	10:45 AM (12/7/22)	3.43	9.9	49.8	9.83
<b>12/7/2022-12/7/2022</b>	790,450	790,482	<b>32</b>	2:22 PM (9/8/22)	2:31 AM (9/9/22)	3.55	9.9	49.8	9.83
<b>12/7/2022-12/7/2022</b>	790,482	790,765	<b>283</b>	3:06 PM (12/7/22)	4:40 PM (12/7/22)	3.01	9.9	49.8	9.83
<b>12/8/2022-12/8/2022</b>	790,765	792,905	<b>2,140</b>	9:20 AM (12/8/22)	7:51 PM (12/8/22)	3.39	9.7	49.5	9.79

**Total Discharge Volume: 2,510**

NOTES : The discharge was stopped two times on 12/7/2022 to repair/replace leaking GAC drums.

**TABLE 3**  
**RACER Trust - Coldwater Road**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results - December 2022**

Coldwater Road - PFAS Pretreatment System Samples

Perfluorinated Compound	Well/Sample ID:  Sample Date:	EGLE Part 201 Generic Groundwater Surface Water Interface Criteria / Rule 57 Surface Water Quality Values	04-PRCC-22-INF (Influent Sample)  12/7/2022	04-PRCC-22-PRIM (Primary GAC Drum Sample)  12/7/2022	04-PRCC-22-PRIM-56 (Primary GAC Drum Sample after 56 Bed Volumes)  12/8/2022	04-PRCC-22-MID-1-56 (Secondary GAC Drum Sample after 56 Bed Volumes)  12/8/2022	04-PRCC-22-MID-2-56 (Tertiary GAC Drum Sample after 56 Bed Volumes)  12/8/2022	04-PRCC-22-EFF-56 (Effluent Sample after 56 Bed Volumes)  12/8/2022
Perfluorobutanoic Acid (PFBA)	--	--	<490 IX	<9.5	<9.9	<10	<9.8	<9.8
Perfluoropentanoic Acid (PFPeA)	--	--	400 I	<3.8	<4.0	<4.1	<3.9	<3.9
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	<2.0 I	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorohexanoic Acid (PFHxA)	--	--	240	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	<b>670,000</b>	--	160	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic Acid (PFHpA)	--	--	40	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	340	<1.9	<2.0	<2.0	<2.0	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	<2.0 I	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorooctanoic Acid (PFOA)	<b>170</b>	--	140	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)	--	--	960	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	790	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	160	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorononanoic Acid (PFNA)	--	--	3.1	<1.9	<2.0	<2.0	<2.0	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	--	150	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic Acid (PFDA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	<4.1	<3.8	<4.0	<4.1	<3.9	<3.9
Perfluorooctane Sulfonic Acid (PFOS)	<b>12</b>	--	<b>8,500</b>	<b>14.0</b>	<b>8.6</b>	<b>5.9</b>	<b>5.0</b>	<b>2.5</b>
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	--	5,100	11	5.7	4.8	4.2	<2.0
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	--	3,800	2.7	2.6	<2.0	<2.0	<2.0
Perfluoroundecanoic Acid (PFUnDA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	--	2.4	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	--	<4.1	<3.8	<4.0	<4.1	<3.9	<3.9
11-chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	--	--	<10	<9.5	<9.9	<10	<9.8	<9.8
Total Per-and Polyfluoroalkyl Substances	--	--	<b>10,935.5</b>	<b>14.0</b>	<b>8.6</b>	<b>5.9</b>	<b>5.0</b>	<b>2.5</b>

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 and Rule 57 Surface Water Quality Values.
- 7) Concentration above the groundwater surface water interface (GSI) criteria are highlighted in yellow.
- 8) Number after Prim (Primary GAC drum), Mid (Secondary GAC drum), and Eff (Effluent sample after tertiary GAC drum) samples equals number of GAC Bed volumes discharged through the pretreatment system at the time of sample collection. One bed volume equals 45 gallons.
- 9) The primary GAC drum was replaced with a new GAC drum on December 7, 2022 following the sample collection and submission to the laboratory due to a leak in the drum.
- 10) I - Matrix interference with internal standard.
- 11) J - Estimated value less than reporting limit, but greater than MDL.
- 12) X - Elevated reporting limit due to matrix interference.
- 13) QA/QC Samples were either not detected above the reporting limit or below the EGLE Part 201 Groundwater Generic Cleanup Criteria.
- 14) The primary drum was replaced due to leaking after the sample was collected on 12/7/2022.

ANALYTICAL REPORTS



# Analytical Laboratory Report

Report ID: S42383.01(01)  
Generated on 11/22/2022

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**Report to**

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

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

Additional Contacts: Kevin Schneider

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**Report produced by**

Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

**Contacts for report questions:**

John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

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**Report Summary**

Lab Sample ID(s): S42383.01  
Project: RACER Coldwater Road  
Collected Date(s): 11/09/2022  
Submitted Date/Time: 11/09/2022 16:15  
Sampled by: Kevin Schneider  
P.O. #: 1940004462 TASK001

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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.

## Report Narrative

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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



# Analytical Laboratory Report

## Method Summary

Method	Version
E1664A	EPA Method 1664 Revision A February 1999
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
HACH 10360	HACH 10360
OIA-1677	EPA Method OIA-1677-09
SM2540D	Standard Method 2540 D 2015
SM2550B	Standard Method 2550 B 2011
SM4500-H+ B	Standard Method 4500 H + B 2011
SM4500-NH3 D	Standard Method 4500 NH3 D 2011
SM4500-PE	Standard Method 4500 P E 2011 / 4500 P B(5) 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007



# Analytical Laboratory Report

## Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42383.01	04-PRCC-22	Wastewater	11/09/22 12:19



# Analytical Laboratory Report

Lab Sample ID: S42383.01

Sample Tag: 04-PRCC-22

Collected Date/Time: 11/09/2022 12:19

Matrix: Wastewater

COC Reference: 155315

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	1L Plastic	None	Yes	5.2	IR
1	125ml Plastic	HNO3	Yes	5.2	IR
1	500ml Plastic	None	Yes	5.2	IR
1	125ml Amber	PbCO3/NaOH	Yes	5.2	IR
1	32oz Glass	HCL	Yes	5.2	IR
1	250ml Plastic	H2SO4	Yes	5.2	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	11/16/22 12:30	CTV	
TBOD5 - Set*	Completed	HACH 10360	11/11/22 11:40	PJH	
Metal Digestion	Completed	SW3015A	11/14/22 10:00	CCM	

### Inorganics

Method: E1664A, Run Date: 11/18/22 09:00, Analyst: PTW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Oil & Grease n-Hexane Extract.	3	2		mg/L	1		

Method: HACH 10360, Run Date: 11/16/22 11:45, Analyst: PJH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	17.5	3		mg/L	6		

Method: SM2540D, Run Date: 11/15/22 19:00, Analyst: SSM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	41	3		mg/L	1		

Method: SM2550B, Run Date: 11/09/22 12:19, Analyst: KS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field Temperature*	56	1		oF	1		

Method: SM4500-H+ B, Run Date: 11/09/22 12:19, Analyst: KS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field pH*	8.31	0.01		STD Units	1		

Method: SM4500-NH3 D, Run Date: 11/17/22 15:37, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Ammonia-N (Undistilled)	4.66	0.04	0.006	mg/L	2	7664-41-7	

Method: SM4500-PE, Run Date: 11/17/22 14:16, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.03	0.01	0.009	mg/L	1	7723-14-0	

### Metals

Method: E200.8, Run Date: 11/14/22 11:13, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.007	0.002		mg/L	5	7440-38-2	



# Analytical Laboratory Report

Lab Sample ID: S42383.01 (continued)

Sample Tag: 04-PRCC-22

**Method: E200.8, Run Date: 11/14/22 11:13, Analyst: CCM (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium	0.015	0.005		mg/L	5	7440-47-3	
Copper	0.515	0.005		mg/L	5	7440-50-8	
Nickel	0.187	0.005		mg/L	5	7440-02-0	
Zinc	0.030	0.005		mg/L	5	7440-66-6	

**Method: E245.1, Run Date: 11/16/22 14:10, Analyst: CTV**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002		mg/L	1	7439-97-6	

**Other / Misc.**

**Method: OIA-1677, Run Date: 11/10/22 14:42, Analyst: JDP**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Available Cyanide	Not detected	0.002	0.0015	mg/L	1	57-12-5	

# Merit Laboratories Login Checklist

Lab Set ID:S42383

Client:OBG02 (Ramboll Americas)

Project: RACER Coldwater Road

Submitted: 11/09/2022 16:15 Login User: MMC

Attention: Clifford Yantz

Address: Ramboll  
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 5.2 |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input 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: \_\_\_\_\_

# Merit Laboratories Bottle Preservation Check

Lab Set ID: S42383 Submitted: 11/09/2022 16:15

Client: OBG02 (Ramboll Americas)

Project: RACER Coldwater Road

Initial Preservation Check: 11/09/2022 16:33 MMC

Preservation Recheck (E200.8): N/A

Attention: Clifford Yantz

Address: Ramboll

2090 Commonwealth Blvd.

Ann Arbor, MI 48105

Phone: 313-333-0211

FAX:

Email: Clifford.Yantz@ramboll.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S42383.01	125ml Amber PbCO3/NaOH	>12			
S42383.01	125ml Plastic HNO3	<2			
S42383.01	250ml Plastic H2SO4	<2			
S42383.01	32oz Glass HCL	6	1.0	<2	Lot# 2020080697





# Quality Control Report

Report ID: QC-S42383-01  
Generated on 11/22/2022

Report to

Attention: Clifford Yantz  
Ramboll  
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): S42383.01  
Project: RACER Coldwater Road  
Submitted Date/Time: 11/09/2022 16:15  
Sampled by: Kevin Schneider  
P.O. #: 1940004462 TASK001

QC Report Sections

Cover Page (Page 1)  
Analysis Summary (Page 2)  
Prep Batch Summary (Page 3)  
Batch QC Results (Pages 4-13)

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: S42383.01**

Sample Tag: 04-PRCC-22

Collected Date/Time: 11/09/2022 12:19

Matrix: Wastewater

COC Reference: 155315

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b><i>Inorganics</i></b>						
Ammonia-N (Undistilled)	SM4500-NH3 D	11/17/22 15:37	AMN221117QC	AMN221117QC	No	BLK/LCS/MS/DUP
Oil & Grease n-Hexane Extract.	E1664A	11/18/22 09:00	OGHEX221118W1	OGHEX221118W1	No	BLK/LCS
TBOD5	HACH 10360	11/16/22 11:45	BOD221111	BOD221111	No	BLK/LCS/DUP
Total Phosphorus	SM4500-PE	11/17/22 14:16	PHS221117QC	PHS221117QC	No	BLK/LCS/MS/DUP
Total Suspended Solids	SM2540D	11/15/22 19:00	TSS221115	TSS221115	No	BLK/LCS/DUP
<b><i>Metals</i></b>						
Arsenic	E200.8	11/14/22 11:13	MT4-22-1114A	MTD-111422-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	11/14/22 11:13	MT4-22-1114A	MTD-111422-2	No	BLK/LCS/MS/MSD
Copper	E200.8	11/14/22 11:13	MT4-22-1114A	MTD-111422-2	No	BLK/LCS/MS/MSD
Mercury	E245.1	11/16/22 14:10	HG3-22-1116B	HGD-111622-1	No	BLK/LCS/MS/MSD
Nickel	E200.8	11/14/22 11:13	MT4-22-1114A	MTD-111422-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	11/14/22 11:13	MT4-22-1114A	MTD-111422-2	No	BLK/LCS/MS/MSD
<b><i>Other / Misc.</i></b>						
Available Cyanide	OIA-1677	11/10/22 14:42	ACN221110-W1	ACN221110-W1	No	BLK/LCS/MS/MSD/DU

# QC Report - Prep Batch Summary

## Inorganics, Prep Batch ID: AMN221117QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	Ammonia-N (Undistilled)	SM4500-NH3 D	11/17/22 15:37	AMN221117QC

## Inorganics, Prep Batch ID: BOD221111

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	TBOD5	HACH 10360	11/16/22 11:45	BOD221111

## Inorganics, Prep Batch ID: OGHEX221118W1

Surrogates: No, QC Types: BLK/LCS

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	Oil & Grease n-Hexane Extract.	E1664A	11/18/22 09:00	OGHEX221118W1

## Inorganics, Prep Batch ID: PHS221117QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	Total Phosphorus	SM4500-PE	11/17/22 14:16	PHS221117QC

## Inorganics, Prep Batch ID: TSS221115

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	Total Suspended Solids	SM2540D	11/15/22 19:00	TSS221115

## Metals, Prep Batch ID: HGD-111622-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	Mercury	E245.1	11/16/22 14:10	HG3-22-1116B

## Metals, Prep Batch ID: MTD-111422-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	Arsenic	E200.8	11/14/22 11:13	MT4-22-1114A
S42383.01	Chromium	E200.8	11/14/22 11:13	MT4-22-1114A
S42383.01	Copper	E200.8	11/14/22 11:13	MT4-22-1114A
S42383.01	Nickel	E200.8	11/14/22 11:13	MT4-22-1114A
S42383.01	Zinc	E200.8	11/14/22 11:13	MT4-22-1114A

## Other / Misc., Prep Batch ID: ACN221110-W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42383.01	Available Cyanide	OIA-1677	11/10/22 14:42	ACN221110-W1

# QC Report - Batch QC Results

## Inorganics, Prep Batch ID: AMN221117QC

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

### Blank (BLK)

Lab Sample ID: AMN221117QC.LRB1

Run in Batch: AMN221117QC, Run Date: 11/17/2022 11:45, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Ammonia-N (Undistilled)		ND	0.02	mg/L

### Laboratory Control Sample (LCS)

Lab Sample ID: AMN221117QC.LCS1

Run in Batch: AMN221117QC, Run Date: 11/17/2022 13:23, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		94	90	110

### Matrix Spike (MS)

Lab Sample ID: AMN221117QC.MS1, Parent Sample ID: S42587.01

Run in Batch: AMN221117QC, Run Date: 11/17/2022 14:41, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		104	80	120

### Matrix Spike (MS)

Lab Sample ID: AMN221117QC.MS2, Parent Sample ID: S41975.01

Run in Batch: AMN221117QC, Run Date: 11/17/2022 16:45, Prep Date: 11/17/2022, Matrix: Solid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		110	80	120

### Duplicate (DUP)

Lab Sample ID: AMN221117QC.DP1, Parent Sample ID: S42512.01

Run in Batch: AMN221117QC, Run Date: 11/17/2022 13:53, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Ammonia-N (Undistilled)		3.6	20

### Duplicate (DUP)

Lab Sample ID: AMN221117QC.DP2, Parent Sample ID: S41975.01

Run in Batch: AMN221117QC, Run Date: 11/17/2022 16:38, Prep Date: 11/17/2022, Matrix: Solid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Ammonia-N (Undistilled)		0.5	20

## QC Report - Batch QC Results

**Inorganics, Prep Batch ID: BOD221111**

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

**Blank (BLK)**

Lab Sample ID: BOD221111.LRB1

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
TBOD5		ND	3	mg/L

**Blank (BLK)**

Lab Sample ID: BOD221111.LRB2

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
TBOD5		ND	3	mg/L

**Blank (BLK)**

Lab Sample ID: BOD221111.LRB3

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
TBOD5		ND	3	mg/L

**Laboratory Control Sample (LCS)**

Lab Sample ID: BOD221111.LCS1

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 20

Analyte	Flags	% Rec	LCL	UCL
TBOD5		96.9	50.7	167

**Laboratory Control Sample (LCS)**

Lab Sample ID: BOD221111.LCS2

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 20

Analyte	Flags	% Rec	LCL	UCL
TBOD5		93.4	50.7	167

**Laboratory Control Sample (LCS)**

Lab Sample ID: BOD221111.LCS3

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 20

Analyte	Flags	% Rec	LCL	UCL
TBOD5		90.6	50.7	167

**Duplicate (DUP)**

Lab Sample ID: BOD221111.DP1, Parent Sample ID: S42370.02

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 60

Analyte	Flags	RPD	RPD CL
TBOD5		8.5	20

**Duplicate (DUP)**

Lab Sample ID: BOD221111.DP2, Parent Sample ID: S42443.01

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 15

Analyte	Flags	RPD	RPD CL
TBOD5		1.2	20

# QC Report - Batch QC Results

## Inorganics, Prep Batch ID: BOD221111 (continued)

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

### Duplicate (DUP)

Lab Sample ID: BOD221111.DP3, Parent Sample ID: S42450.01

Run in Batch: BOD221111, Run Date: 11/16/2022 11:45, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 15

---

Analyte	Flags	RPD	RPD CL
TBOD5		13.9	20

---

# QC Report - Batch QC Results

## Inorganics, Prep Batch ID: OGHEX221118W1

Surrogates: No, QC Types: BLK/LCS

### Blank (BLK)

Lab Sample ID: OGHEX221118W1.LRB3

Run in Batch: OGHEX221118W1, Run Date: 11/18/2022 09:00, Prep Date: 11/18/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Oil & Grease n-Hexane Extract.		ND	1	mg/L

### Laboratory Control Sample (LCS)

Lab Sample ID: OGHEX221118W1.LCS1

Run in Batch: OGHEX221118W1, Run Date: 11/18/2022 09:00, Prep Date: 11/18/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		88	78	114

### Laboratory Control Sample (LCS)

Lab Sample ID: OGHEX221118W1.LCS2

Run in Batch: OGHEX221118W1, Run Date: 11/18/2022 09:00, Prep Date: 11/18/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		113	78	114

# QC Report - Batch QC Results

## Inorganics, Prep Batch ID: PHS221117QC

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

### Blank (BLK)

Lab Sample ID: PHS221117QC.LRB1

Run in Batch: PHS221117QC, Run Date: 11/17/2022 13:58, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

### Blank (BLK)

Lab Sample ID: PHS221117QC.LRB2

Run in Batch: PHS221117QC, Run Date: 11/17/2022 14:05, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

### Laboratory Control Sample (LCS)

Lab Sample ID: PHS221117QC.LCS1

Run in Batch: PHS221117QC, Run Date: 11/17/2022 14:12, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		98	90	110

### Matrix Spike (MS)

Lab Sample ID: PHS221117QC.MS1, Parent Sample ID: S42421.01

Run in Batch: PHS221117QC, Run Date: 11/17/2022 20:05, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		102	80	120

### Duplicate (DUP)

Lab Sample ID: PHS221117QC.DP1, Parent Sample ID: S42416.06

Run in Batch: PHS221117QC, Run Date: 11/17/2022 20:01, Prep Date: 11/17/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		3.8	20

# QC Report - Batch QC Results

## Inorganics, Prep Batch ID: TSS221115

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

### Blank (BLK)

Lab Sample ID: TSS221115.LRB1

Run in Batch: TSS221115, Run Date: 11/15/2022 19:00, Prep Date: 11/15/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Suspended Solids		ND	3	mg/L

### Laboratory Control Sample (LCS)

Lab Sample ID: TSS221115.LCS1

Run in Batch: TSS221115, Run Date: 11/15/2022 19:00, Prep Date: 11/15/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Total Suspended Solids		94.57	78.8	113

### Duplicate (DUP)

Lab Sample ID: TSS221115.DP1, Parent Sample ID: S42496.08

Run in Batch: TSS221115, Run Date: 11/15/2022 19:00, Prep Date: 11/15/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	RPD	RPD CL
Total Suspended Solids		4.444	10

# QC Report - Batch QC Results

## Metals, Prep Batch ID: HGD-111622-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

### Blank (BLK)

Lab Sample ID: HG3-22-1116B.015.LRB

Run in Batch: HG3-22-1116B, Run Date: 11/16/2022 13:11, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Mercury		ND	0.05	ug/L

### Laboratory Control Sample (LCS)

Lab Sample ID: HG3-22-1116B.014.LCS

Run in Batch: HG3-22-1116B, Run Date: 11/16/2022 13:08, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		102	85	115

### Matrix Spike (MS)

Lab Sample ID: HG3-22-1116B.018.MS, Parent Sample ID: S42282.01

Run in Batch: HG3-22-1116B, Run Date: 11/16/2022 13:21, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Mercury		109	80	120

### Matrix Spike (MS)

Lab Sample ID: HG3-22-1116B.040.MS, Parent Sample ID: S42437.01

Run in Batch: HG3-22-1116B, Run Date: 11/16/2022 14:33, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		105	80	120

### Matrix Spike Duplicate (MSD)

Lab Sample ID: HG3-22-1116B.019.MSD, Parent Sample ID: HG3-22-1116B.018.MS

Run in Batch: HG3-22-1116B, Run Date: 11/16/2022 13:24, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		110	80	120	1	20

### Matrix Spike Duplicate (MSD)

Lab Sample ID: HG3-22-1116B.041.MSD, Parent Sample ID: HG3-22-1116B.040.MS

Run in Batch: HG3-22-1116B, Run Date: 11/16/2022 14:37, Prep Date: 11/16/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		105	80	120	0	20

## QC Report - Batch QC Results

### Metals, Prep Batch ID: MTD-111422-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

#### Blank (BLK)

Lab Sample ID: MT4-22-1114A.021.LRB

Run in Batch: MT4-22-1114A, Run Date: 11/14/2022 10:55, Prep Date: 11/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Nickel		ND	0.001	mg/L
Zinc		ND	0.001	mg/L

#### Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-1114A.019.LCS

Run in Batch: MT4-22-1114A, Run Date: 11/14/2022 10:53, Prep Date: 11/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		100	85	115
Chromium		100	85	115
Copper		102	85	115
Nickel		102	85	115
Zinc		103	85	115

#### Matrix Spike (MS)

Lab Sample ID: MT4-22-1114A.034.MS, Parent Sample ID: S42429.01

Run in Batch: MT4-22-1114A, Run Date: 11/14/2022 11:23, Prep Date: 11/14/2022, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL
Arsenic		106	75	125
Chromium		106	75	125
Copper		102	75	125
Nickel		104	75	125
Zinc		107	75	125

#### Matrix Spike (MS)

Lab Sample ID: MT4-22-1114A.049.MS, Parent Sample ID: S42431.01

Run in Batch: MT4-22-1114A, Run Date: 11/14/2022 12:26, Prep Date: 11/14/2022, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL
Arsenic		106	75	125
Chromium		106	75	125
Copper		102	75	125
Nickel		100	75	125
Zinc		104	75	125

#### Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-1114A.035.MSD, Parent Sample ID: MT4-22-1114A.034.MS

Run in Batch: MT4-22-1114A, Run Date: 11/14/2022 11:24, Prep Date: 11/14/2022, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		108	75	125	1	20
Chromium		106	75	125	0	20
Copper		102	75	125	1	20
Nickel		105	75	125	1	20
Zinc		109	75	125	1	20

# QC Report - Batch QC Results

## Metals, Prep Batch ID: MTD-111422-2 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

### Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-1114A.050.MSD, Parent Sample ID: MT4-22-1114A.049.MS

Run in Batch: MT4-22-1114A, Run Date: 11/14/2022 12:27, Prep Date: 11/14/2022, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		109	75	125	2	20
Chromium		106	75	125	1	20
Copper		100	75	125	2	20
Nickel		105	75	125	5	20
Zinc		107	75	125	3	20

# QC Report - Batch QC Results

## Other / Misc., Prep Batch ID: ACN221110-W1

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

### Blank (BLK)

Lab Sample ID: ACN221110-W1.LRB1

Run in Batch: ACN221110-W1, Run Date: 11/10/2022 14:00, Prep Date: 11/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Available Cyanide		ND	0.002	mg/L

### Blank (BLK)

Lab Sample ID: ACN221110-W1.LRB2

Run in Batch: ACN221110-W1, Run Date: 11/10/2022 14:50, Prep Date: 11/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Available Cyanide		ND	0.002	mg/L

### Laboratory Control Sample (LCS)

Lab Sample ID: ACN221110-W1.LCS1

Run in Batch: ACN221110-W1, Run Date: 11/10/2022 14:04, Prep Date: 11/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		96	88	109

### Matrix Spike (MS)

Lab Sample ID: ACN221110-W1.MS1, Parent Sample ID: S42328.04

Run in Batch: ACN221110-W1, Run Date: 11/10/2022 14:18, Prep Date: 11/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		96	82	130

### Matrix Spike Duplicate (MSD)

Lab Sample ID: ACN221110-W1.MSD1, Parent Sample ID: ACN221110-W1.MS1

Run in Batch: ACN221110-W1, Run Date: 11/10/2022 14:20, Prep Date: 11/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Available Cyanide		98	82	130	2	15

### Duplicate (DUP)

Lab Sample ID: ACN221110-W1.DP1, Parent Sample ID: S42328.04

Run in Batch: ACN221110-W1, Run Date: 11/10/2022 14:14, Prep Date: 11/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Available Cyanide		<1	15





# Analytical Laboratory Report

Report ID: S43216.01(01)  
Generated on 12/22/2022

## 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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Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

## Contacts for report questions:

John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

## Report Summary

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Lab Sample ID(s): S43216.01-S43216.03  
Project: RACER Coldwater Rd  
Collected Date(s): 12/07/2022  
Submitted Date/Time: 12/07/2022 15:10  
Sampled by: Kalyssa Ramirez  
P.O. #: 1940004462 TASK 37

## Table of Contents

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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.

## Report Narrative

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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



# Analytical Laboratory Report

## Method Summary

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

## 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



# Analytical Laboratory Report

## Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S43216.01	04-PRCC-22-INF	Liquid	12/07/22 10:32
S43216.02	04-PRCC-22-PRIM	Liquid	12/07/22 10:37
S43216.03	Field Blank-120722	Liquid	12/07/22 10:23



# Analytical Laboratory Report

Lab Sample ID: S43216.01

Sample Tag: 04-PRCC-22-INF

Collected Date/Time: 12/07/2022 10:32

Matrix: Liquid

COC Reference: 154981

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.3	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.46/6.57/10	ASTMD7979-19M	12/09/22 12:00	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 12/10/22 02:05, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	490	10	ng/L	2.04	375-22-4	IX
PFPeA*	400	4.1	1.0	ng/L	2.04	2706-90-3	I
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	I
PFHxA*	240	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	160	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	40	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	340	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	I
PFOA*	140	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	960	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	790	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	160	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	3.1	2.0	1.8	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	150	2.0	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	8,500	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	5,100	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	3,800	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	2.4	2.0	1.4	ng/L	2.04	68259-12-1	
PFDaDA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.04	13252-13-6	

I-Matrix interference with internal standard X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S43216.02

Sample Tag: 04-PRCC-22-PRIM

Collected Date/Time: 12/07/2022 10:37

Matrix: Liquid

COC Reference: 154981

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.3	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.85/6.59/10	ASTMD7979-19M	12/09/22 12:00	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 12/10/22 02:25, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.5	9.5	ng/L	1.9	375-22-4	
PFPeA*	Not detected	3.8	0.95	ng/L	1.9	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.9	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.9	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.9	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.9	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.9	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.9	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.9	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.9	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.9	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.9	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.9	375-95-1	
8:2 FTSA*	Not detected	1.9	0.95	ng/L	1.9	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.9	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.9	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.9	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.9	2991-50-6	
PFOS*	14	1.9	1.9	ng/L	1.9	1763-23-1	
PFOS-LN*	11	1.9	1.9	ng/L	1.9	1763-23-1-LN	
PFOS-BR*	2.7	1.9	1.9	ng/L	1.9	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.9	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.9	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.9	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.9	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.9	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.9	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.9	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.9	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.9	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.9	919005-14-4	
HFPO-DA*	Not detected	9.5	1.9	ng/L	1.9	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S43216.03

Sample Tag: Field Blank-120722

Collected Date/Time: 12/07/2022 10:23

Matrix: Liquid

COC Reference: 154981

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.3	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.35/6.49/10	ASTMD7979-19M	12/09/22 12:00	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 12/10/22 02:44, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.06	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.06	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.6	ng/L	2.06	757124-72-4	
PFHxA*	Not detected	2.1	1.4	ng/L	2.06	307-24-4	
PFBS*	Not detected	2.1	1.4	ng/L	2.06	375-73-5	
PFHpA*	Not detected	2.1	1.4	ng/L	2.06	375-85-9	
PFPeS*	Not detected	2.1	1.9	ng/L	2.06	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.06	27619-97-2	
PFOA*	Not detected	2.1	1.6	ng/L	2.06	335-67-1	
PFHxS*	Not detected	2.1	1.6	ng/L	2.06	355-46-4	
PFHxS-LN*	Not detected	2.1	1.6	ng/L	2.06	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.6	ng/L	2.06	355-46-4-BR	
PFNA*	Not detected	2.1	1.9	ng/L	2.06	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.06	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.06	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.06	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.06	2355-31-9	
EtFOSAA*	Not detected	4.1	2.1	ng/L	2.06	2991-50-6	
PFOS*	Not detected	2.1	2.0	ng/L	2.06	1763-23-1	
PFOS-LN*	Not detected	2.1	2.0	ng/L	2.06	1763-23-1-LN	
PFOS-BR*	Not detected	2.1	2.0	ng/L	2.06	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.4	ng/L	2.06	2058-94-8	
PFNS*	Not detected	2.1	1.4	ng/L	2.06	68259-12-1	
PFDODA*	Not detected	2.1	1.6	ng/L	2.06	307-55-1	
PFDS*	Not detected	2.1	1.4	ng/L	2.06	335-77-3	
PFTTrDA*	Not detected	2.1	1.2	ng/L	2.06	72629-94-8	
FOSA*	Not detected	2.1	1.9	ng/L	2.06	754-91-6	
PFTeDA*	Not detected	4.1	1.9	ng/L	2.06	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.9	ng/L	2.06	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.4	ng/L	2.06	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.06	919005-14-4	
HFPO-DA*	Not detected	10	2.1	ng/L	2.06	13252-13-6	

# Merit Laboratories Login Checklist

Lab Set ID:S43216

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

Client:OBG02 (Ramboll Americas - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted: 12/07/2022 15:10 Login User: BJB

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 4.3 |
| 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: \_\_\_\_\_





# Quality Control Report

Report ID: QC-S43216-01  
Generated on 12/22/2022

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): S43216.01-S43216.03  
Project: RACER Coldwater Rd  
Submitted Date/Time: 12/07/2022 15:10  
Sampled by: Kalyssa Ramirez  
P.O. #: 1940004462 TASK 37

QC Report Sections

Cover Page (Page 1)  
Analysis Summary (Pages 2-4)  
Prep Batch Summary (Page 5)  
Internal Standards per Lab Sample (Pages 6-8)  
Internal Standards per QC Sample (Pages 9-13)  
Batch QC Results (Pages 14-18)

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: S43216.01

Sample Tag: 04-PRCC-22-INF

Collected Date/Time: 12/07/2022 10:32

Matrix: Liquid

COC Reference: 154981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	12/10/22 02:05	AK221209W	PF221209W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S43216.02

Sample Tag: 04-PRCC-22-PRIM

Collected Date/Time: 12/07/2022 10:37

Matrix: Liquid

COC Reference: 154981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	12/10/22 02:25	AK221209W	PF221209W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S43216.03

Sample Tag: Field Blank-120722

Collected Date/Time: 12/07/2022 10:23

Matrix: Liquid

COC Reference: 154981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	12/10/22 02:44	AK221209W	PF221209W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Prep Batch Summary

## Organics - Volatiles, Prep Batch ID: PF221209W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S43216.01	28 PFAs	ASTMD7979-19M	12/10/22 02:05	AK221209W
S43216.02	28 PFAs	ASTMD7979-19M	12/10/22 02:25	AK221209W
S43216.03	28 PFAs	ASTMD7979-19M	12/10/22 02:44	AK221209W

## QC Report - Internal Standards per Lab Sample

**Lab Sample ID: S43216.01**

Sample Tag: 04-PRCC-22-INF

Collected Date/Time: 12/07/2022 10:32

Matrix: Liquid

COC Reference: 154981

### Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK221209W, Run Date: 12/10/2022 02:05, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	<b>203.6</b>	50.0	150.0
M2-6:2FTSA	*	<b>154.7</b>	50.0	150.0
M2-8:2FTSA		<b>97.5</b>	50.0	150.0
M2PFTeDA		<b>107.8</b>	12.0	218.0
M3PFBS		<b>97.7</b>	50.0	150.0
M3PFHxS		<b>91.5</b>	50.0	150.0
M4PFHpA		<b>72.6</b>	50.0	150.0
M5PFHxA		<b>50.8</b>	50.0	150.0
M5PFPeA	*	<b>33.1</b>	50.0	150.0
M6PFDA		<b>93.6</b>	50.0	150.0
M7PFUnDA		<b>97.9</b>	50.0	150.0
M8FOSA		<b>89.4</b>	50.0	150.0
M8PFOA		<b>91.1</b>	50.0	150.0
M8PFOS		<b>97.9</b>	50.0	150.0
M9-PFNA		<b>100.8</b>	50.0	150.0
MPFBA	*	<b>20.9</b>	50.0	150.0
MPFDoDA		<b>107.9</b>	50.0	150.0
d3N-MeFOSAA		<b>90.9</b>	50.0	150.0
d5EtFOSAA		<b>81.4</b>	50.0	150.0
MHFPO-DA		<b>52.5</b>	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43216.02

Sample Tag: 04-PRCC-22-PRIM

Collected Date/Time: 12/07/2022 10:37

Matrix: Liquid

COC Reference: 154981

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK221209W, Run Date: 12/10/2022 02:25, Matrix: WW, Dilution: 1.9

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		85.0	50.0	150.0
M2-6:2FTSA		93.9	50.0	150.0
M2-8:2FTSA		82.9	50.0	150.0
M2PFTeDA		89.7	12.0	218.0
M3PFBS		93.0	50.0	150.0
M3PFHxS		95.6	50.0	150.0
M4PFHpA		79.8	50.0	150.0
M5PFHxA		88.0	50.0	150.0
M5PFPeA		97.5	50.0	150.0
M6PFDA		85.5	50.0	150.0
M7PFUnDA		82.6	50.0	150.0
M8FOSA		81.5	50.0	150.0
M8PFOA		97.1	50.0	150.0
M8PFOS		101.7	50.0	150.0
M9-PFNA		83.6	50.0	150.0
MPFBA		91.2	50.0	150.0
MPFDoDA		90.2	50.0	150.0
d3N-MeFOSAA		77.8	50.0	150.0
d5EtFOSAA		72.2	50.0	150.0
MHFPO-DA		79.2	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43216.03

Sample Tag: Field Blank-120722

Collected Date/Time: 12/07/2022 10:23

Matrix: Liquid

COC Reference: 154981

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK221209W, Run Date: 12/10/2022 02:44, Matrix: WW, Dilution: 2.06

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		87.6	50.0	150.0
M2-6:2FTSA		90.5	50.0	150.0
M2-8:2FTSA		92.8	50.0	150.0
M2PFTeDA		94.5	12.0	218.0
M3PFBS		93.5	50.0	150.0
M3PFHxS		98.8	50.0	150.0
M4PFHpA		91.4	50.0	150.0
M5PFHxA		87.7	50.0	150.0
M5PFPeA		97.0	50.0	150.0
M6PFDA		96.4	50.0	150.0
M7PFUnDA		86.5	50.0	150.0
M8FOSA		92.4	50.0	150.0
M8PFOA		96.1	50.0	150.0
M8PFOS		96.8	50.0	150.0
M9-PFNA		96.4	50.0	150.0
MPFBA		95.1	50.0	150.0
MPFDoDA		98.7	50.0	150.0
d3N-MeFOSAA		97.8	50.0	150.0
d5EtFOSAA		83.9	50.0	150.0
MHFPO-DA		95.3	50.0	150.0

# QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF221209W1

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

## Blank (BLK)

Lab Sample ID: AK221209RUSH.BLK221209

Run in Batch: AK221209RUSH, Run Date: 12/09/2022 20:34, Prep Date: 12/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		110.3	50.0	150.0
M2-6:2FTSA		101.5	50.0	150.0
M2-8:2FTSA		105.1	50.0	150.0
M2PFTeDA		87.9	12.0	218.0
M3PFBS		101.4	50.0	150.0
M3PFHxS		102.1	50.0	150.0
M4PFHpA		95.0	50.0	150.0
M5PFHxA		103.4	50.0	150.0
M5PFPeA		104.6	50.0	150.0
M6PFDA		94.0	50.0	150.0
M7PFUnDA		113.0	50.0	150.0
M8FOSA		102.5	50.0	150.0
M8PFOA		100.8	50.0	150.0
M8PFOS		113.7	50.0	150.0
M9-PFNA		102.8	50.0	150.0
MPFBA		103.7	50.0	150.0
MPFDoDA		105.1	50.0	150.0
d3N-MeFOSAA		102.9	50.0	150.0
d5EtFOSAA		93.8	50.0	150.0
MHFPO-DA		103.7	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Laboratory Control Sample (LCS)

Lab Sample ID: AK221209RUSH.LCS221209

Run in Batch: AK221209RUSH, Run Date: 12/09/2022 19:55, Prep Date: 12/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>103.0</b>	50.0	150.0
M2-6:2FTSA		<b>92.1</b>	50.0	150.0
M2-8:2FTSA		<b>105.9</b>	50.0	150.0
M2PFTeDA		<b>111.0</b>	12.0	218.0
M3PFBS		<b>97.4</b>	50.0	150.0
M3PFHxS		<b>101.5</b>	50.0	150.0
M4PFHpA		<b>92.6</b>	50.0	150.0
M5PFHxA		<b>103.1</b>	50.0	150.0
M5PFPeA		<b>105.2</b>	50.0	150.0
M6PFDA		<b>98.5</b>	50.0	150.0
M7PFUnDA		<b>99.2</b>	50.0	150.0
M8FOSA		<b>97.5</b>	50.0	150.0
M8PFOA		<b>98.5</b>	50.0	150.0
M8PFOS		<b>109.8</b>	50.0	150.0
M9-PFNA		<b>107.8</b>	50.0	150.0
MPFBA		<b>101.8</b>	50.0	150.0
MPFDoDA		<b>101.7</b>	50.0	150.0
d3N-MeFOSAA		<b>103.0</b>	50.0	150.0
d5EtFOSAA		<b>85.7</b>	50.0	150.0
MHFPO-DA		<b>96.0</b>	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK221209RUSH.LCS221209, Parent Sample ID: AK221209RUSH.LCS221209

Run in Batch: AK221209RUSH, Run Date: 12/09/2022 20:14, Prep Date: 12/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>110.5</b>	50.0	150.0
M2-6:2FTSA		<b>101.6</b>	50.0	150.0
M2-8:2FTSA		<b>107.3</b>	50.0	150.0
M2PFTeDA		<b>109.5</b>	12.0	218.0
M3PFBS		<b>103.0</b>	50.0	150.0
M3PFHxS		<b>107.7</b>	50.0	150.0
M4PFHpA		<b>102.5</b>	50.0	150.0
M5PFHxA		<b>108.1</b>	50.0	150.0
M5PFPeA		<b>107.1</b>	50.0	150.0
M6PFDA		<b>113.5</b>	50.0	150.0
M7PFUnDA		<b>107.2</b>	50.0	150.0
M8FOSA		<b>100.3</b>	50.0	150.0
M8PFOA		<b>107.1</b>	50.0	150.0
M8PFOS		<b>123.4</b>	50.0	150.0
M9-PFNA		<b>110.9</b>	50.0	150.0
MPFBA		<b>104.6</b>	50.0	150.0
MPFDoDA		<b>109.3</b>	50.0	150.0
d3N-MeFOSAA		<b>108.8</b>	50.0	150.0
d5EtFOSAA		<b>97.0</b>	50.0	150.0
MHFPO-DA		<b>105.5</b>	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Matrix Spike (MS)

Lab Sample ID: AK221209W.4314606M, Parent Sample ID: S43146.06

Run in Batch: AK221209W, Run Date: 12/09/2022 23:49, Prep Date: 12/09/2022, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>111.3</b>	50.0	150.0
M2-6:2FTSA		<b>92.3</b>	50.0	150.0
M2-8:2FTSA		<b>106.2</b>	50.0	150.0
M2PFTeDA		<b>112.3</b>	12.0	218.0
M3PFBS		<b>104.9</b>	50.0	150.0
M3PFHxS		<b>97.6</b>	50.0	150.0
M4PFHpA		<b>89.4</b>	50.0	150.0
M5PFHxA		<b>106.6</b>	50.0	150.0
M5PFPeA		<b>110.8</b>	50.0	150.0
M6PFDA		<b>100.2</b>	50.0	150.0
M7PFUnDA		<b>101.0</b>	50.0	150.0
M8FOSA		<b>99.1</b>	50.0	150.0
M8PFOA		<b>106.0</b>	50.0	150.0
M8PFOS		<b>111.6</b>	50.0	150.0
M9-PFNA		<b>103.6</b>	50.0	150.0
MPFBA		<b>106.8</b>	50.0	150.0
MPFDoDA		<b>103.8</b>	50.0	150.0
d3N-MeFOSAA		<b>100.3</b>	50.0	150.0
d5EtFOSAA		<b>91.6</b>	50.0	150.0
MHFPO-DA		<b>96.7</b>	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK221209W.4314607D, Parent Sample ID: S43146.07

Run in Batch: AK221209W, Run Date: 12/10/2022 00:28, Prep Date: 12/09/2022, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>107.0</b>	50.0	150.0
M2-6:2FTSA		<b>104.5</b>	50.0	150.0
M2-8:2FTSA		<b>101.7</b>	50.0	150.0
M2PFTeDA		<b>143.5</b>	12.0	218.0
M3PFBS		<b>110.7</b>	50.0	150.0
M3PFHxS		<b>101.0</b>	50.0	150.0
M4PFHpA		<b>97.9</b>	50.0	150.0
M5PFHxA		<b>110.4</b>	50.0	150.0
M5PFPeA		<b>113.4</b>	50.0	150.0
M6PFDA		<b>115.3</b>	50.0	150.0
M7PFUnDA		<b>109.4</b>	50.0	150.0
M8FOSA		<b>104.6</b>	50.0	150.0
M8PFOA		<b>109.3</b>	50.0	150.0
M8PFOS		<b>118.1</b>	50.0	150.0
M9-PFNA		<b>112.8</b>	50.0	150.0
MPFBA		<b>112.9</b>	50.0	150.0
MPFDoDA		<b>124.5</b>	50.0	150.0
d3N-MeFOSAA		<b>108.3</b>	50.0	150.0
d5EtFOSAA		<b>92.0</b>	50.0	150.0
MHFPO-DA		<b>103.1</b>	50.0	150.0

# QC Report - Batch QC Results

**Organics - Volatiles, Prep Batch ID: PF221209W1**

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

**Blank (BLK)**

Lab Sample ID: AK221209RUSH.BLK221209

Run in Batch: AK221209RUSH, Run Date: 12/09/2022 20:34, Prep Date: 12/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	4	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
PFEESA		ND	2	ng/l
FPePA (5:3 FTCA)		ND	4	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	4	ng/l
PFNA		ND	2	ng/l
PFECHS		ND	2	ng/l
PFHpS		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFOS		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFHxSA		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

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF221209W1 (continued)**

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

**Laboratory Control Sample (LCS)**

Lab Sample ID: AK221209RUSH.LCS221209

Run in Batch: AK221209RUSH, Run Date: 12/09/2022 19:55, Prep Date: 12/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		101.2	70.0	130.0
PFMPA		112.0	70.0	130.0
FPrPA (3:3 FTCA)		103.6	70.0	130.0
PFPPrS		103.4	70.0	130.0
PFPeA		91.0	70.0	130.0
PFMBA		106.8	70.0	130.0
4:2 FTSA		111.4	70.0	130.0
NFDHA		98.2	70.0	130.0
PFHxA		104.0	70.0	130.0
PFBS		100.8	70.0	130.0
HFPO-DA		98.2	70.0	130.0
PFEESA		104.6	70.0	130.0
FPePA (5:3 FTCA)		101.4	70.0	130.0
PFHpA		100.2	70.0	130.0
PFPeS		107.0	70.0	130.0
ADONA		102.8	70.0	130.0
6:2 FTSA		101.4	70.0	130.0
PFBSA		91.2	70.0	130.0
PFOA		109.6	70.0	130.0
PFHxS		99.0	70.0	130.0
FHpPA (7:3 FTCA)		100.2	70.0	130.0
PFNA		90.8	70.0	130.0
PFECHS		102.8	70.0	130.0
PFHpS		94.8	70.0	130.0
8:2 FTSA		106.4	70.0	130.0
N-MeFOSAA		91.0	70.0	130.0
PFDA		100.0	70.0	130.0
PFOS		107.8	70.0	130.0
EtFOSAA		112.8	70.0	130.0
PFUnDA		87.4	70.0	130.0
PFHxSA		87.8	70.0	130.0
9CL-PF3ONS		104.2	70.0	130.0
PFNS		101.6	70.0	130.0
PFDoDA		94.0	70.0	130.0
PFDS		101.8	70.0	130.0
PFTTrDA		88.2	70.0	130.0
11CL-PF3OUdS		93.4	70.0	130.0
FOSA		86.8	70.0	130.0
PFTeDA		92.6	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK221209RUSH.LCSD221209, Parent Sample ID: AK221209RUSH.LCS221209

Run in Batch: AK221209RUSH, Run Date: 12/09/2022 20:14, Prep Date: 12/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		102.4	70.0	130.0	1.2	30.0
PFMPA		100.4	70.0	130.0	10.9	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF221209W1 (continued)

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

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK221209RUSH.LCSD221209, Parent Sample ID: AK221209RUSH.LCS221209

Run in Batch: AK221209RUSH, Run Date: 12/09/2022 20:14, Prep Date: 12/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FPrPA (3:3 FTCA)		102.4	70.0	130.0	1.2	30.0
PFPPrS		101.4	70.0	130.0	2.0	30.0
PFPeA		98.0	70.0	130.0	7.4	30.0
PFMBA		103.4	70.0	130.0	3.2	30.0
4:2 FTSA		113.0	70.0	130.0	1.4	30.0
NFDHA		86.6	70.0	130.0	12.6	30.0
PFHxA		88.4	70.0	130.0	16.2	30.0
PFBS		94.0	70.0	130.0	7.0	30.0
HFPO-DA		94.0	70.0	130.0	4.4	30.0
PFEESA		95.8	70.0	130.0	8.8	30.0
FPePA (5:3 FTCA)		90.6	70.0	130.0	11.3	30.0
PFHpA		94.2	70.0	130.0	6.2	30.0
PFPeS		86.6	70.0	130.0	21.1	30.0
ADONA		98.2	70.0	130.0	4.6	30.0
6:2 FTSA		98.6	70.0	130.0	2.8	30.0
PFBSA		84.2	70.0	130.0	8.0	30.0
PFOA		108.8	70.0	130.0	0.7	30.0
PFHxS		100.2	70.0	130.0	1.2	30.0
FHpPA (7:3 FTCA)		92.8	70.0	130.0	7.7	30.0
PFNA		93.0	70.0	130.0	2.4	30.0
PFECHS		93.4	70.0	130.0	9.6	30.0
PFHpS		107.2	70.0	130.0	12.3	30.0
8:2 FTSA		110.6	70.0	130.0	3.9	30.0
N-MeFOSAA		98.6	70.0	130.0	8.0	30.0
PFDA		93.2	70.0	130.0	7.0	30.0
PFOS		88.2	70.0	130.0	20.0	30.0
EtFOSAA		96.0	70.0	130.0	16.1	30.0
PFUnDA		91.0	70.0	130.0	4.0	30.0
PFHxSA		86.6	70.0	130.0	1.4	30.0
9CL-PF3ONS		87.0	70.0	130.0	18.0	30.0
PFNS		92.2	70.0	130.0	9.7	30.0
PFDoDA		93.6	70.0	130.0	0.4	30.0
PFDS		90.4	70.0	130.0	11.9	30.0
PFTTrDA		81.6	70.0	130.0	7.8	30.0
11CL-PF3OUdS		83.6	70.0	130.0	11.1	30.0
FOSA		92.8	70.0	130.0	6.7	30.0
PFTeDA		87.8	70.0	130.0	5.3	30.0

### Matrix Spike (MS)

Lab Sample ID: AK221209W.4314606M, Parent Sample ID: S43146.06

Run in Batch: AK221209W, Run Date: 12/09/2022 23:49, Prep Date: 12/09/2022, Matrix: WW, Dilution: 2.04

Analyte	Flags	% Rec	LCL	UCL
PFBA		101.0	70.0	130.0
PFPeA		105.9	70.0	130.0
4:2 FTSA		107.8	70.0	130.0
PFHxA		101.0	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF221209W1 (continued)**

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

**Matrix Spike (MS) (continued)**

Lab Sample ID: AK221209W.4314606M, Parent Sample ID: S43146.06

Run in Batch: AK221209W, Run Date: 12/09/2022 23:49, Prep Date: 12/09/2022, Matrix: WW, Dilution: 2.04

Analyte	Flags	% Rec	LCL	UCL
PFBS		105.9	70.0	130.0
PFHpA		116.7	70.0	130.0
PFPeS		91.2	70.0	130.0
6:2 FTSA		117.6	70.0	130.0
PFOA		97.1	70.0	130.0
PFHxS	*	147.1	70.0	130.0
PFNA		109.2	70.0	130.0
8:2 FTSA		107.8	70.0	130.0
PFHpS		112.1	70.0	130.0
PFDA		98.0	70.0	130.0
N-MeFOSAA		98.0	70.0	130.0
EtFOSAA		107.8	70.0	130.0
PFOS		118.6	70.0	130.0
PFUnDA		96.1	70.0	130.0
PFNS		107.8	70.0	130.0
PFDoDA		95.1	70.0	130.0
PFDS		107.8	70.0	130.0
PFTTrDA		92.2	70.0	130.0
FOSA		94.1	70.0	130.0
PFTeDA		91.2	70.0	130.0
11CL-PF3OUdS		96.1	70.0	130.0
9CL-PF3ONS		107.8	70.0	130.0
ADONA		90.2	70.0	130.0
HFPO-DA		98.0	70.0	130.0

**Duplicate (DUP)**

Lab Sample ID: AK221209W.4314607D, Parent Sample ID: S43146.07

Run in Batch: AK221209W, Run Date: 12/10/2022 00:28, Prep Date: 12/09/2022, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
PFBA		8.0	30.0
PFPeA		10.5	30.0
4:2 FTSA		NC	30.0
PFHxA		11.8	30.0
PFBS		28.0	30.0
PFHpA		0.0	30.0
PFPeS		5.2	30.0
6:2 FTSA		NC	30.0
PFOA		6.2	30.0
PFHxS		6.2	30.0
PFHxS-LN		10.9	30.0
PFHxS-BR		5.7	30.0
PFNA		5.8	30.0
8:2 FTSA		NC	30.0
PFHpS		6.5	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF221209W1 (continued)

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

## Duplicate (DUP) (continued)

Lab Sample ID: AK221209W.4314607D, Parent Sample ID: S43146.07

Run in Batch: AK221209W, Run Date: 12/10/2022 00:28, Prep Date: 12/09/2022, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
EtFOSAA		NC	30.0
PFOS		5.1	30.0
PFOS-LN		4.9	30.0
PFOS-BR		7.4	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





# Analytical Laboratory Report

Report ID: S43314.01(01)  
Generated on 01/06/2023

## Report to

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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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Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

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

## Report Summary

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Lab Sample ID(s): S43314.01-S43314.04  
Project: RACER Coldwater Rd  
Collected Date(s): 12/08/2022  
Submitted Date/Time: 12/09/2022 14:50  
Sampled by: Kevin Schneider  
P.O. #: 1940004462 TASK 36

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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.

## Report Narrative

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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



# Analytical Laboratory Report

## Method Summary

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

## 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



# Analytical Laboratory Report

## Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S43314.01	04-PRCC-22-EFF-56	Liquid	12/08/22 18:42
S43314.02	04-PRCC-22-MID-2-56	Liquid	12/08/22 18:44
S43314.03	04-PRCC-22-MID-1-56	Liquid	12/08/22 18:46
S43314.04	04-PRCC-22-PRIM-56	Liquid	12/08/22 18:48



# Analytical Laboratory Report

Lab Sample ID: S43314.01

Sample Tag: 04-PRCC-22-EFF-56

Collected Date/Time: 12/08/2022 18:42

Matrix: Liquid

COC Reference: 154982

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.11/6.50/11	ASTMD7979-19M	12/20/22 11:00	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 12/20/22 22:03, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	9.8	ng/L	1.96	375-22-4	
PFPeA*	Not detected	3.9	0.98	ng/L	1.96	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.96	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.96	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.96	375-73-5	
PFHpA*	Not detected	2.0	1.4	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	2.0	ng/L	1.96	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.96	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.96	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.96	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.96	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.96	375-95-1	
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.96	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.96	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.96	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.96	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.96	2991-50-6	
PFOS*	2.5	2.0	1.9	ng/L	1.96	1763-23-1	
PFOS-LN*	Not detected	2.0	1.9	ng/L	1.96	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.9	ng/L	1.96	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.96	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.96	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.96	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.96	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.96	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.96	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.96	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.96	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.96	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.96	919005-14-4	
HFPO-DA*	Not detected	9.8	2.0	ng/L	1.96	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S43314.02

Sample Tag: 04-PRCC-22-MID-2-56

Collected Date/Time: 12/08/2022 18:44

Matrix: Liquid

COC Reference: 154982

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.13/6.50/11	ASTMD7979-19M	12/20/22 11:00	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 12/20/22 22:42, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	9.8	ng/L	1.95	375-22-4	
PFPeA*	Not detected	3.9	0.98	ng/L	1.95	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.95	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.95	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.95	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.95	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.95	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.95	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.95	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.95	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.95	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.95	375-95-1	
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.95	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.95	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.95	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.95	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.95	2991-50-6	
PFOS*	5.0	2.0	1.9	ng/L	1.95	1763-23-1	
PFOS-LN*	4.2	2.0	1.9	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.9	ng/L	1.95	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.95	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.95	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.95	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.95	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.95	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.95	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.95	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.95	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.95	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.95	919005-14-4	
HFPO-DA*	Not detected	9.8	2.0	ng/L	1.95	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S43314.03

Sample Tag: 04-PRCC-22-MID-1-56

Collected Date/Time: 12/08/2022 18:46

Matrix: Liquid

COC Reference: 154982

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.41/6.49/10	ASTMD7979-19M	12/20/22 11:00	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 12/20/22 23:21, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.03	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.03	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.03	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.03	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.03	375-73-5	
PFHpA*	Not detected	2.0	1.4	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	2.0	ng/L	2.03	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.03	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.03	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.03	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.03	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.03	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.03	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.03	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.03	2991-50-6	
PFOS*	5.9	2.0	2.0	ng/L	2.03	1763-23-1	
PFOS-LN*	4.8	2.0	2.0	ng/L	2.03	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.03	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.03	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.03	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.03	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.03	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.03	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.03	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.03	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.03	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.03	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.03	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S43314.04

Sample Tag: 04-PRCC-22-PRIM-56

Collected Date/Time: 12/08/2022 18:48

Matrix: Liquid

COC Reference: 154982

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.09/6.53/11	ASTMD7979-19M	12/20/22 11:00	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 12/20/22 23:40, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.9	9.9	ng/L	1.98	375-22-4	
PFPeA*	Not detected	4.0	0.99	ng/L	1.98	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.98	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.98	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.98	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.98	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.98	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.98	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.98	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.98	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.98	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.98	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.98	375-95-1	
8:2 FTSA*	Not detected	2.0	0.99	ng/L	1.98	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.98	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.98	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.98	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.98	2991-50-6	
PFOS*	8.6	2.0	1.9	ng/L	1.98	1763-23-1	
PFOS-LN*	5.7	2.0	1.9	ng/L	1.98	1763-23-1-LN	
PFOS-BR*	2.6	2.0	1.9	ng/L	1.98	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.98	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.98	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.98	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.98	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.98	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.98	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.98	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.98	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.98	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.98	919005-14-4	
HFPO-DA*	Not detected	9.9	2.0	ng/L	1.98	13252-13-6	

# Merit Laboratories Login Checklist

Lab Set ID:S43314

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

Client:OBG02 (Ramboll Americas - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted: 12/09/2022 14:50 Login User: BJB

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

Selection	Description	Note
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## 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 4.7 |
| 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: \_\_\_\_\_





# Quality Control Report

Report ID: QC-S43314-01  
Generated on 01/06/2023

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): S43314.01-S43314.04  
Project: RACER Coldwater Rd  
Submitted Date/Time: 12/09/2022 14:50  
Sampled by: Kevin Schneider  
P.O. #: 1940004462 TASK 36

QC Report Sections

- Cover Page (Page 1)
- Analysis Summary (Pages 2-5)
- Prep Batch Summary (Page 6)
- Internal Standards per Lab Sample (Pages 7-10)
- Internal Standards per QC Sample (Pages 11-15)
- Batch QC Results (Pages 16-20)

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: S43314.01

Sample Tag: 04-PRCC-22-EFF-56

Collected Date/Time: 12/08/2022 18:42

Matrix: Liquid

COC Reference: 154982

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	12/20/22 22:03	AK221220W	PF221220W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S43314.02

Sample Tag: 04-PRCC-22-MID-2-56

Collected Date/Time: 12/08/2022 18:44

Matrix: Liquid

COC Reference: 154982

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	12/20/22 22:42	AK221220W	PF221220W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S43314.03

Sample Tag: 04-PRCC-22-MID-1-56

Collected Date/Time: 12/08/2022 18:46

Matrix: Liquid

COC Reference: 154982

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	12/20/22 23:21	AK221220W	PF221220W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S43314.04

Sample Tag: 04-PRCC-22-PRIM-56

Collected Date/Time: 12/08/2022 18:48

Matrix: Liquid

COC Reference: 154982

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	12/20/22 23:40	AK221220W	PF221220W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Prep Batch Summary

## Organics - Volatiles, Prep Batch ID: PF221220W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S43314.01	28 PFAs	ASTMD7979-19M	12/20/22 22:03	AK221220W
S43314.02	28 PFAs	ASTMD7979-19M	12/20/22 22:42	AK221220W
S43314.03	28 PFAs	ASTMD7979-19M	12/20/22 23:21	AK221220W
S43314.04	28 PFAs	ASTMD7979-19M	12/20/22 23:40	AK221220W

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43314.01

Sample Tag: 04-PRCC-22-EFF-56

Collected Date/Time: 12/08/2022 18:42

Matrix: Liquid

COC Reference: 154982

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK221220W, Run Date: 12/20/2022 22:03, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.1	50.0	150.0
M2-6:2FTSA		108.3	50.0	150.0
M2-8:2FTSA		70.0	50.0	150.0
M2PFTeDA		89.0	12.0	218.0
M3PFBS		95.8	50.0	150.0
M3PFHxS		95.3	50.0	150.0
M4PFHpA		92.7	50.0	150.0
M5PFHxA		98.3	50.0	150.0
M5PFPeA		103.8	50.0	150.0
M6PFDA		92.6	50.0	150.0
M7PFUnDA		103.8	50.0	150.0
M8FOSA		93.5	50.0	150.0
M8PFOA		96.0	50.0	150.0
M8PFOS		101.6	50.0	150.0
M9-PFNA		113.3	50.0	150.0
MPFBA		94.8	50.0	150.0
MPFDoDA		90.9	50.0	150.0
d3N-MeFOSAA		105.2	50.0	150.0
d5EtFOSAA		87.4	50.0	150.0
MHFPO-DA		94.3	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43314.02

Sample Tag: 04-PRCC-22-MID-2-56

Collected Date/Time: 12/08/2022 18:44

Matrix: Liquid

COC Reference: 154982

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK221220W, Run Date: 12/20/2022 22:42, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.4	50.0	150.0
M2-6:2FTSA		126.2	50.0	150.0
M2-8:2FTSA		72.3	50.0	150.0
M2PFTeDA		124.9	12.0	218.0
M3PFBS		99.9	50.0	150.0
M3PFHxS		103.6	50.0	150.0
M4PFHpA		94.6	50.0	150.0
M5PFHxA		98.9	50.0	150.0
M5PFPeA		107.6	50.0	150.0
M6PFDA		99.0	50.0	150.0
M7PFUnDA		115.1	50.0	150.0
M8FOSA		106.0	50.0	150.0
M8PFOA		98.2	50.0	150.0
M8PFOS		101.8	50.0	150.0
M9-PFNA		106.6	50.0	150.0
MPFBA		97.2	50.0	150.0
MPFDoDA		106.2	50.0	150.0
d3N-MeFOSAA		109.1	50.0	150.0
d5EtFOSAA		94.5	50.0	150.0
MHFPO-DA		95.0	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43314.03

Sample Tag: 04-PRCC-22-MID-1-56

Collected Date/Time: 12/08/2022 18:46

Matrix: Liquid

COC Reference: 154982

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK221220W, Run Date: 12/20/2022 23:21, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>103.8</b>	50.0	150.0
M2-6:2FTSA		<b>114.5</b>	50.0	150.0
M2-8:2FTSA		<b>77.7</b>	50.0	150.0
M2PFTeDA		<b>131.2</b>	12.0	218.0
M3PFBS		<b>105.7</b>	50.0	150.0
M3PFHxS		<b>110.9</b>	50.0	150.0
M4PFHpA		<b>101.9</b>	50.0	150.0
M5PFHxA		<b>94.7</b>	50.0	150.0
M5PFPeA		<b>109.0</b>	50.0	150.0
M6PFDA		<b>106.9</b>	50.0	150.0
M7PFUnDA		<b>114.3</b>	50.0	150.0
M8FOSA		<b>96.8</b>	50.0	150.0
M8PFOA		<b>103.8</b>	50.0	150.0
M8PFOS		<b>103.1</b>	50.0	150.0
M9-PFNA		<b>100.3</b>	50.0	150.0
MPFBA		<b>97.2</b>	50.0	150.0
MPFDoDA		<b>108.8</b>	50.0	150.0
d3N-MeFOSAA		<b>119.6</b>	50.0	150.0
d5EtFOSAA		<b>100.5</b>	50.0	150.0
MHFPO-DA		<b>88.2</b>	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43314.04

Sample Tag: 04-PRCC-22-PRIM-56

Collected Date/Time: 12/08/2022 18:48

Matrix: Liquid

COC Reference: 154982

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK221220W, Run Date: 12/20/2022 23:40, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.9	50.0	150.0
M2-6:2FTSA		121.3	50.0	150.0
M2-8:2FTSA		83.4	50.0	150.0
M2PFTeDA		104.9	12.0	218.0
M3PFBS		101.1	50.0	150.0
M3PFHxS		99.0	50.0	150.0
M4PFHpA		103.6	50.0	150.0
M5PFHxA		98.3	50.0	150.0
M5PFPeA		101.3	50.0	150.0
M6PFDA		95.6	50.0	150.0
M7PFUnDA		103.1	50.0	150.0
M8FOSA		93.2	50.0	150.0
M8PFOA		109.5	50.0	150.0
M8PFOS		104.7	50.0	150.0
M9-PFNA		104.6	50.0	150.0
MPFBA		96.5	50.0	150.0
MPFDoDA		93.0	50.0	150.0
d3N-MeFOSAA		108.7	50.0	150.0
d5EtFOSAA		96.9	50.0	150.0
MHFPO-DA		96.4	50.0	150.0

## QC Report - Internal Standards per QC Sample

**Organics - Volatiles, Prep Batch ID: PF221220W1**

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

**Blank (BLK)**

Lab Sample ID: AK221220W.BLK221220R

Run in Batch: AK221220W, Run Date: 12/20/2022 14:59, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>88.9</b>	50.0	150.0
M2-6:2FTSA		<b>103.3</b>	50.0	150.0
M2-8:2FTSA		<b>89.0</b>	50.0	150.0
M2PFTeDA		<b>98.0</b>	12.0	218.0
M3PFBS		<b>111.1</b>	50.0	150.0
M3PFHxS		<b>107.9</b>	50.0	150.0
M4PFHpA		<b>112.0</b>	50.0	150.0
M5PFHxA		<b>102.8</b>	50.0	150.0
M5PFPeA		<b>112.1</b>	50.0	150.0
M6PFDA		<b>96.2</b>	50.0	150.0
M7PFUnDA		<b>106.0</b>	50.0	150.0
M8FOSA		<b>107.7</b>	50.0	150.0
M8PFOA		<b>109.2</b>	50.0	150.0
M8PFOS		<b>108.3</b>	50.0	150.0
M9-PFNA		<b>118.7</b>	50.0	150.0
MPFBA		<b>104.8</b>	50.0	150.0
MPFDoDA		<b>88.3</b>	50.0	150.0
d3N-MeFOSAA		<b>118.2</b>	50.0	150.0
d5EtFOSAA		<b>100.6</b>	50.0	150.0
MHFPO-DA		<b>93.9</b>	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample (LCS)

Lab Sample ID: AK221220W.LCS221220

Run in Batch: AK221220W, Run Date: 12/20/2022 12:59, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>97.9</b>	50.0	150.0
M2-6:2FTSA		<b>124.1</b>	50.0	150.0
M2-8:2FTSA		<b>81.7</b>	50.0	150.0
M2PFTeDA		<b>81.8</b>	12.0	218.0
M3PFBS		<b>103.2</b>	50.0	150.0
M3PFHxS		<b>106.9</b>	50.0	150.0
M4PFHpA		<b>96.6</b>	50.0	150.0
M5PFHxA		<b>103.8</b>	50.0	150.0
M5PFPeA		<b>110.7</b>	50.0	150.0
M6PFDA		<b>100.4</b>	50.0	150.0
M7PFUnDA		<b>99.1</b>	50.0	150.0
M8FOSA		<b>102.2</b>	50.0	150.0
M8PFOA		<b>112.1</b>	50.0	150.0
M8PFOS		<b>112.8</b>	50.0	150.0
M9-PFNA		<b>108.8</b>	50.0	150.0
MPFBA		<b>104.9</b>	50.0	150.0
MPFDoDA		<b>90.0</b>	50.0	150.0
d3N-MeFOSAA		<b>105.7</b>	50.0	150.0
d5EtFOSAA		<b>95.9</b>	50.0	150.0
MHFPO-DA		<b>96.5</b>	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK221220W.LCSD221220, Parent Sample ID: AK221220W.LCS221220

Run in Batch: AK221220W, Run Date: 12/20/2022 13:19, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>99.1</b>	50.0	150.0
M2-6:2FTSA		<b>109.9</b>	50.0	150.0
M2-8:2FTSA		<b>77.8</b>	50.0	150.0
M2PFTeDA		<b>128.1</b>	12.0	218.0
M3PFBS		<b>110.2</b>	50.0	150.0
M3PFHxS		<b>98.9</b>	50.0	150.0
M4PFHpA		<b>98.3</b>	50.0	150.0
M5PFHxA		<b>99.1</b>	50.0	150.0
M5PFPeA		<b>109.6</b>	50.0	150.0
M6PFDA		<b>93.7</b>	50.0	150.0
M7PFUnDA		<b>112.5</b>	50.0	150.0
M8FOSA		<b>112.4</b>	50.0	150.0
M8PFOA		<b>115.6</b>	50.0	150.0
M8PFOS		<b>100.3</b>	50.0	150.0
M9-PFNA		<b>103.6</b>	50.0	150.0
MPFBA		<b>102.1</b>	50.0	150.0
MPFDoDA		<b>96.9</b>	50.0	150.0
d3N-MeFOSAA		<b>108.3</b>	50.0	150.0
d5EtFOSAA		<b>109.6</b>	50.0	150.0
MHFPO-DA		<b>93.9</b>	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Matrix Spike (MS)

Lab Sample ID: AK221220W.4331401M, Parent Sample ID: S43314.01

Run in Batch: AK221220W, Run Date: 12/20/2022 22:22, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.6	50.0	150.0
M2-6:2FTSA		128.4	50.0	150.0
M2-8:2FTSA		60.9	50.0	150.0
M2PFTeDA		106.1	12.0	218.0
M3PFBS		100.4	50.0	150.0
M3PFHxS		98.9	50.0	150.0
M4PFHpA		99.0	50.0	150.0
M5PFHxA		89.2	50.0	150.0
M5PFPeA		97.6	50.0	150.0
M6PFDA		96.8	50.0	150.0
M7PFUnDA		102.1	50.0	150.0
M8FOSA		96.0	50.0	150.0
M8PFOA		98.4	50.0	150.0
M8PFOS		113.3	50.0	150.0
M9-PFNA		97.2	50.0	150.0
MPFBA		94.9	50.0	150.0
MPFDoDA		100.7	50.0	150.0
d3N-MeFOSAA		110.6	50.0	150.0
d5EtFOSAA		97.1	50.0	150.0
MHFPO-DA		94.0	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK221220W.4331402D, Parent Sample ID: S43314.02

Run in Batch: AK221220W, Run Date: 12/20/2022 23:01, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>109.8</b>	50.0	150.0
M2-6:2FTSA		<b>115.0</b>	50.0	150.0
M2-8:2FTSA		<b>80.2</b>	50.0	150.0
M2PFTeDA		<b>76.5</b>	12.0	218.0
M3PFBS		<b>98.5</b>	50.0	150.0
M3PFHxS		<b>96.2</b>	50.0	150.0
M4PFHpA		<b>102.0</b>	50.0	150.0
M5PFHxA		<b>99.3</b>	50.0	150.0
M5PFPeA		<b>102.4</b>	50.0	150.0
M6PFDA		<b>103.2</b>	50.0	150.0
M7PFUnDA		<b>95.6</b>	50.0	150.0
M8FOSA		<b>97.6</b>	50.0	150.0
M8PFOA		<b>108.4</b>	50.0	150.0
M8PFOS		<b>96.5</b>	50.0	150.0
M9-PFNA		<b>117.7</b>	50.0	150.0
MPFBA		<b>100.4</b>	50.0	150.0
MPFDoDA		<b>87.0</b>	50.0	150.0
d3N-MeFOSAA		<b>122.7</b>	50.0	150.0
d5EtFOSAA		<b>97.8</b>	50.0	150.0
MHFPO-DA		<b>99.3</b>	50.0	150.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF221220W1**

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

**Blank (BLK)**

Lab Sample ID: AK221220W.BLK221220R

Run in Batch: AK221220W, Run Date: 12/20/2022 14:59, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBSA		ND	2	ng/l
PFECHS		ND	2	ng/l
PFHxSA		ND	2	ng/l
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFNS		ND	2	ng/l
PFDODA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
11CL-PF3OUdS		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
ADONA		ND	2	ng/l
HFPO-DA		ND	10	ng/l

**Laboratory Control Sample (LCS)**

Lab Sample ID: AK221220W.LCS221220

Run in Batch: AK221220W, Run Date: 12/20/2022 12:59, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		94.8	70.0	130.0
PFMPA		97.6	70.0	130.0
FPrPA (3:3 FTCA)		102.0	70.0	130.0
PFPPrS		99.4	70.0	130.0
PFPeA		91.8	70.0	130.0
PFMBA		94.2	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF221220W1 (continued)**

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

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK221220W.LCS221220

Run in Batch: AK221220W, Run Date: 12/20/2022 12:59, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
4:2 FTSA		107.2	70.0	130.0
NFDHA		92.2	70.0	130.0
PFHxA		107.8	70.0	130.0
PFBS		99.2	70.0	130.0
HFPO-DA		96.4	70.0	130.0
FPePA (5:3 FTCA)		80.2	70.0	130.0
PFEESA		94.0	70.0	130.0
PFHpA		105.6	70.0	130.0
PFPeS		103.4	70.0	130.0
ADONA		95.8	70.0	130.0
PFBSA		85.2	70.0	130.0
6:2 FTSA		93.2	70.0	130.0
PFOA		93.6	70.0	130.0
PFHxS		96.4	70.0	130.0
FHpPA (7:3 FTCA)		92.4	70.0	130.0
PFNA		93.2	70.0	130.0
8:2 FTSA		92.8	70.0	130.0
PFECHS		96.6	70.0	130.0
PFHpS		95.6	70.0	130.0
N-MeFOSAA		109.6	70.0	130.0
PFDA		93.0	70.0	130.0
EtFOSAA		105.4	70.0	130.0
PFOS		93.8	70.0	130.0
PFHxSA		84.6	70.0	130.0
PFUnDA		87.8	70.0	130.0
9CL-PF3ONS		95.0	70.0	130.0
PFNS		94.2	70.0	130.0
PFDODA		90.6	70.0	130.0
PFDS		96.4	70.0	130.0
FOSA		94.8	70.0	130.0
PFTrDA		83.4	70.0	130.0
11CL-PF3OUdS		90.4	70.0	130.0
PFTeDA		103.2	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK221220W.LCSD221220, Parent Sample ID: AK221220W.LCS221220

Run in Batch: AK221220W, Run Date: 12/20/2022 13:19, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		98.0	70.0	130.0	3.3	30.0
PFMPA		107.4	70.0	130.0	9.6	30.0
FPrPA (3:3 FTCA)		94.6	70.0	130.0	7.5	30.0
PFPPrS		91.0	70.0	130.0	8.8	30.0
PFPeA		93.0	70.0	130.0	1.3	30.0
PFMBA		107.6	70.0	130.0	13.3	30.0
4:2 FTSA		105.2	70.0	130.0	1.9	30.0
NFDHA		96.8	70.0	130.0	4.9	30.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF221220W1 (continued)**

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

**Laboratory Control Sample Duplicate (LCSD) (continued)**

Lab Sample ID: AK221220W.LCSD221220, Parent Sample ID: AK221220W.LCS221220

Run in Batch: AK221220W, Run Date: 12/20/2022 13:19, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFHxA		102.2	70.0	130.0	5.3	30.0
PFBS		96.2	70.0	130.0	3.1	30.0
HFPO-DA		97.0	70.0	130.0	0.6	30.0
FPePA (5:3 FTCA)		100.6	70.0	130.0	22.6	30.0
PFEESA		103.2	70.0	130.0	9.3	30.0
PFHpA		101.4	70.0	130.0	4.1	30.0
PFPeS		84.6	70.0	130.0	20.0	30.0
ADONA		86.6	70.0	130.0	10.1	30.0
PFBSA		74.2	70.0	130.0	13.8	30.0
6:2 FTSA		102.8	70.0	130.0	9.8	30.0
PFOA		89.8	70.0	130.0	4.1	30.0
PFHxS		103.2	70.0	130.0	6.8	30.0
FHpPA (7:3 FTCA)		85.6	70.0	130.0	7.6	30.0
PFNA		102.0	70.0	130.0	9.0	30.0
8:2 FTSA		116.4	70.0	130.0	22.6	30.0
PFECHS		97.4	70.0	130.0	0.8	30.0
PFHpS		100.4	70.0	130.0	4.9	30.0
N-MeFOSAA		100.8	70.0	130.0	8.4	30.0
PFDA		105.4	70.0	130.0	12.5	30.0
EtFOSAA		87.8	70.0	130.0	18.2	30.0
PFOS		115.8	70.0	130.0	21.0	30.0
PFHxSA		74.4	70.0	130.0	12.8	30.0
PFUnDA		87.4	70.0	130.0	0.5	30.0
9CL-PF3ONS		110.4	70.0	130.0	15.0	30.0
PFNS		109.8	70.0	130.0	15.3	30.0
PFDoDA		106.2	70.0	130.0	15.9	30.0
PFDS		122.0	70.0	130.0	23.4	30.0
FOSA		89.6	70.0	130.0	5.6	30.0
PFTTrDA		89.0	70.0	130.0	6.5	30.0
11CL-PF3OUdS		105.8	70.0	130.0	15.7	30.0
PFTeDA		87.4	70.0	130.0	16.6	30.0

**Matrix Spike (MS)**

Lab Sample ID: AK221220W.4331401M, Parent Sample ID: S43314.01

Run in Batch: AK221220W, Run Date: 12/20/2022 22:22, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1.96

Analyte	Flags	% Rec	LCL	UCL
PFBA		100.0	70.0	130.0
PFPeA		102.0	70.0	130.0
4:2 FTSA		112.2	70.0	130.0
PFHxA		96.9	70.0	130.0
PFBS		95.9	70.0	130.0
PFHpA		100.0	70.0	130.0
PFPeS		100.0	70.0	130.0
6:2 FTSA		84.7	70.0	130.0
PFOA		112.2	70.0	130.0
PFHxS		98.0	70.0	130.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF221220W1 (continued)

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

### Matrix Spike (MS) (continued)

Lab Sample ID: AK221220W.4331401M, Parent Sample ID: S43314.01

Run in Batch: AK221220W, Run Date: 12/20/2022 22:22, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1.96

Analyte	Flags	% Rec	LCL	UCL
PFNA		101.0	70.0	130.0
8:2 FTSA		122.4	70.0	130.0
PFHpS		102.0	70.0	130.0
PFDA		102.0	70.0	130.0
N-MeFOSAA		94.9	70.0	130.0
EtFOSAA		95.9	70.0	130.0
PFOS		96.4	70.0	130.0
PFUnDA		99.0	70.0	130.0
PFNS		100.0	70.0	130.0
PFDoDA		88.8	70.0	130.0
PFDS		101.0	70.0	130.0
PFTTrDA		98.0	70.0	130.0
FOSA		95.9	70.0	130.0
PFTeDA		112.2	70.0	130.0
11CL-PF3OUdS		84.7	70.0	130.0
9CL-PF3ONS		92.9	70.0	130.0
ADONA		100.0	70.0	130.0
HFPO-DA		98.0	70.0	130.0

### Duplicate (DUP)

Lab Sample ID: AK221220W.4331402D, Parent Sample ID: S43314.02

Run in Batch: AK221220W, Run Date: 12/20/2022 23:01, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1.95

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		13.1	30.0
PFOS-LN		13.3	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF221220W1 (continued)

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

## Duplicate (DUP) (continued)

Lab Sample ID: AK221220W.4331402D, Parent Sample ID: S43314.02

Run in Batch: AK221220W, Run Date: 12/20/2022 23:01, Prep Date: 12/20/2022, Matrix: WW, Dilution: 1.95

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Analyte	Flags	RPD	RPD CL
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



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C.O.C. PAGE # 1 OF 1 154982

**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. 313-333-0211 CELL NO. \_\_\_\_\_ P.O. NO. 1940004462 Task 36  
 E-MAIL ADDRESS Clifford.Yantz@Ramboll.com Kevin.Schneider@Ramboll.com QUOTE NO. \_\_\_\_\_

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 KS  
 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=WIPE 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 <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER	PFAS (1979)	Certifications		Project Locations		Special Instructions
	DATE	TIME												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	
43314.01	12/18/22	1842	04-PRCC-22-EFF - 56	ww	3	X							X					Low Level Reporting Limits with estimated values
.02	↓	1844	04-PRCC-22-MID-2 - 56	ww	3	X							X					
.03	↓	1846	04-PRCC-22-MID-1 - 56	ww	3	X							X					
.04	↓	1848	04-PRCC-22-PRIM - 56	ww	3	X							X					

RELINQUISHED BY: [Signature]  Sampler DATE 12/19/22 TIME 14:00  
 RECEIVED BY: [Signature] DATE 12/19/22 TIME 14:00  
 RELINQUISHED BY: [Signature] DATE 12/19/22 TIME 14:58  
 RECEIVED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_

RELINQUISHED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 RECEIVED BY: Bante Bull DATE 12/19/22 TIME 14:50  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_ NOTES: TEMP. ON ARRIVAL 4.7  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_

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