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Date October 26, 2020

2020 Annual PFAS Sampling Report

FILE: 15388/75178/Docs

This letter report has been prepared by Ramboll Americas Engineering Solutions (Ramboll) on behalf of the Revitalizing Auto Communities Environmental Response Trust (RACER Trust) to document the 2020 annual per- and polyfluoroalkyl substances (PFAS) groundwater sampling event conducted in June 2020 at the Coldwater Road facility located in Flint, Michigan (Site).

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PFAS Sampling Protocol

For this sampling event, the sample team followed the protocol set forth in the EGLE Michigan PFAS Action Response Team (MPART) Groundwater PFAS Sampling Guidance dated October 2018.

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Special care was taken during sampling and transport of the samples to avoid contamination from clothing, sampling material, and storage containers due to the extremely low detection limits for PFAS (<2 ng/L), because PFAS are used in a variety of applications and products, such as fire retardants, water repellant clothing, microwavable food wrappers, cosmetics, etc.

The sample team wore natural fiber (predominantly 100% cotton, or as near to 100% as possible) clothing (especially no water repellant materials [coats, gloves, shoes, etc.]) and avoided bathing with or applying particular products (deodorants/antiperspirants, lotions, cosmetics, etc.) prior to sampling to minimize the potential for cross contamination.

Sampling Methods

Annual PFAS samples were collected in conjunction with the routine landfill operations, maintenance, and monitoring (OMM) June 2020 Semiannual

Groundwater Monitoring event. During this annual PFAS groundwater sampling event samples were collected from the following locations:

Perched Zones (Twenty-one Monitoring Wells)

- B-7, B-9, B-18A, B-19Ar, B-24r, B-28, OBG MW-9, OBG MW-11, OBG MW-12S, OBG MW-13, OBG MW-14, OBG MW-17S, OBG MW-18S, OBG MW-21, OBG MW-22, OBG MW-24, OBG MW-25 (since abandoned), OBG MW-26, OBG MW-28, PZ-1, and PZ-3 (since abandoned).

Drift Unit (Thirteen Monitoring Wells)

- B-27D, OBG MW-12D, OBG MW-15D, OBG MW-16D, OBG MW-17D, OBG MW-18D, OBG MW-19D, OBG MW-23, OBG MW-27, PZ-2 (since abandoned), MW-15-10, MW-16-10, and PFW-1.

Leak Detection Vaults

- Vault A, Vault C, and Vault E.

Samples were collected during the weeks of June 15, 2020 and June 22, 2020. See [Figure 1](#) for monitoring well locations. On July 31, 2020, monitoring wells OBG MW-25, PZ-2, and PZ-3 were abandoned in accordance with the July 7, 2020 memorandum which was approved by EGLE via letter on July 14, 2020 in preparation for the construction of the stormwater management improvements for the Site.

In addition to the EGLE MPART Groundwater PFAS Sampling Guidance, the groundwater sampling was performed in accordance with USEPA, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (EPA/540/S-95/504) and the USEPA Region 1 (July 30, 1996, Revision 4, revised September 19, 2017) *Low Stress (Low-Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells*. Groundwater samples from the perched zone were collected using a Whale pump (B-18A and B-19Ar) or peristaltic pump. Groundwater samples from the drift unit were collected using a bladder pump. Groundwater sampling logs are included in [Appendix A](#).

Monitoring wells (B-7, B-9, B-18A, B-19Ar, B-24r, B-28, and OBG MW-14) were purged “dry”, allowed to recharge, and the samples were collected as soon as sufficient water was present to obtain the necessary sample volume in accordance with Ramboll procedures and the site-specific Field Method Guide.

Groundwater sampling was performed using high density polyethylene (HDPE) sample tubing attached to the appropriate sampling pump (a Whale, peristaltic, or bladder pump) lowered approximately to the midpoint of the well screen. The tubing was then attached to a flow-through cell attached to a physical parameter measurement instrument capable of measuring temperature, conductivity, pH, dissolved oxygen (DO), and oxidation-reduction potential (ORP). Turbidity was also measured with a Hach® turbidity meter.

Purging continued until the water quality parameters stabilized within the USEPA Low Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells over a 5-minute period, except at wells that were purged “dry” where physical parameter measurements were collected when possible. Once stabilized, the flow-through cell was disconnected and the samples were collected directly into clean, laboratory supplied containers, labeled, placed in an ice-filled cooler, and transported to Merit Laboratories in East Lansing, Michigan under appropriate chain-of-custody (COC) protocols. The samples were submitted to the laboratory for analysis on a standard turnaround time.

Samples were analyzed for the presence of PFAS by ASTM Method D7979 – 19 Modified (no preservation). The following QC samples were collected: a field duplicate, equipment blank (bladder pump), and field (ambient) blanks.

Prior to sampling, water level measurements were collected from monitoring wells at the Site and the offsite wells. Groundwater elevation data is included on [Table 1](#). A groundwater potentiometric surface map was completed for the shallow wells ([Figure 2](#)) and for the deeper drift unit ([Figure 3](#)). As part of the annual sampling event the following monitoring wells and piezometers were gauged:

Perched Zones (Thirty-four Monitoring Wells)

- B-7, B-9, B-18A, B-19A, B-19Ar, B-24r, B-28, OBG MW-1, OBG MW-2, OBG MW-3, OBG MW-4, OBG MW-5, OBG MW-6, OBG MW-7, OBG MW-8, OBG MW-9, OBG MW-10, OBG MW-11, OBG MW-12S, OBG MW-13, OBG MW-14, OBG MW-17S, OBG MW-18S, OBG MW-20, OBG MW-21, OBG MW-22, OBG MW-24, OBG MW-25 (since abandoned), OBG MW-26, OBG MW-28, PZ-1, PZ-3 (since abandoned), MW-19-13, and MW-20-13.

Drift Unit (Seventeen Monitoring Wells)

- B-20D, B-21D, B-22D, B-23Dr, B-27D, OBG MW-12D, OBG MW-15D, OBG MW-16D, OBG MW-17D, OBG MW-18D, OBG MW-19D, OBG MW-23, OBG MW-27, PZ-2 (since abandoned), MW-15-10, MW-16-10, and PFW-1.

The perched zone static water elevations were down approximately 1 foot (at most 2 feet) compared to the elevations collected the previous year. Groundwater in the perched zone flows predominantly toward the northwest as shown on [Figure 2](#). The drift unit static water elevations were consistent with historical data. Groundwater in the drift unit flows in a southerly direction as shown on [Figure 3](#).

Analytical Results

The analytical results for the samples collected at the Coldwater Road Landfill facility are presented in [Table 2](#) – Perched PFAS Sample Results, [Table 3](#) – Drift PFAS Sample Results [Table 4](#) – Vault PFAS Sample Results. The results are also shown on [Figure 4](#) – Perched Data, [Figure 5](#) – Drift Data, [Figure 6](#) – Vault Data. The complete analytical laboratory report is contained in [Appendix B](#).

On August 3, 2020, EGLE finalized the PFAS drinking water rules and established maximum contaminant levels (MCLs) for the following seven PFAS compounds, which this sampling event’s data was compared against:

Parameter	MCL (ng/l)
Perfluorononanoic Acid (PFNA)	6
Perfluorooctanoic Acid (PFOA)	8
Perfluorooctane Sulfonic Acid (PFOS)	16
Perfluorohexane Sulfonic Acid (PFHxS)	51
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) (a GenX compound)	370
Perfluorobutane Sulfonic Acid (PFBS)	420
Perfluorohexanoic Acid (PFHxA)	400,000

ng/l = Nanogram/liter

Perched Analytical Results

Analytical results for the following perched zone samples were either not detected above the reporting limits or were below the EGLE PFAS drinking water MCLs. The results were similar to previous results.

Non-detect or Below MCLs Perched zone Monitoring Wells:

- B-18A, B-18A (Dup-1), B-19Ar, B-24r, B-28, OBG MW-9, OBG MW-13, OBG MW-18S, OBG MW-21, OBG MW-24, OBG MW-25, OBG MW-28, OBG MW-28 (Dup-3), and PZ-1.

Analytical results for the following perched zone samples were detected above the EGLE PFAS drinking water MCLs. The results appear to have slightly increased compared to previous results.

PFOA *Perched zone Monitoring Wells:*

- OBG MW-11 (25 ng/l), OBG MW-14 (26 ng/l), OBG MW-26 (32 ng/l), and PZ-3 (11 ng/l).

PFHxS *Perched zone Monitoring Wells:*

- OBG MW-11 (440 ng/l), OBG MW-14 (130 ng/l).

PFOS *Perched zone Monitoring Wells:*

- B-7 (140 ng/l), B-9 (16 ng/l), OBG MW-11 (160 ng/l), OBG MW-12S (220 ng/l), OBG MW-14 (1,300 ng/l), OBG MW-17S (580 ng/l), OBG MW-17S/DUP-2 (DUP-2: 590 ng/l), OBG MW-22 (2,300 ng/l), OBG MW-26 (530 ng/l), and PZ-3 (860 ng/l).

Drift Unit Analytical Results

Analytical results for the following drift unit samples were either not detected above the reporting limits or were below the EGLE PFAS drinking water MCLs. The results were similar to previous results.

Non-detect or Below MCLs Drift Unit Monitoring Wells:

- B-27D, OBG MW-12D, OBG MW-15D, OBG MW-16D, OBG MW-17D, OBG MW-18D, OBG MW-19D, OBG MW-23, MW-15-10, MW-16-10, PFW-1, and PZ-2.

Analytical results for the following drift unit sample was detected above the EGLE PFAS drinking water MCLs. The results appear to have slightly increased compared to previous results.

PFOS *Drift Unit Monitoring Wells:*

- OBG MW-27 (28 ng/l).

Vault Analytical Results

Analytical results for the following vault samples were detected above the EGLE PFAS drinking water MCLs. The results appear to have slightly decreased compared to previous results.

PFOA *Perched zone Monitoring Wells:*

- Vault-A (9.7 ng/l), Vault-C (9.0 ng/l), and Vault-E (15 ng/l).

PFOS *Perched zone Monitoring Wells:*

- Vault-A (430 ng/l), Vault-C (430 ng/l), and Vault-E (480 ng/l).

The relative percent difference (RPD) for the duplicate sample results for B-18A and Dup-1 (B-18A), OBG MW-17S and DUP-2 (OBG MW-17S), and OBG MW-28 and Dup-3 (OBG MW-28) were within acceptable limits. No PFAS were detected in equipment and field blanks associated with the field procedures/methods for this sampling event.

Summary

The results of the June 2020 annual PFAS sampling event appeared to increase slightly in wells with historical detections compared to the previous results. The elevated concentrations are interior to the Site, and wells with non-detects or low detections appear to be stable. Based on the current results we do not see evidence of the extent of PFAS-impacted groundwater expanding. The apparent increase in concentrations may be related to drier conditions, as evident by lower water levels, at the Site in comparison to previous sampling events and will continue to be evaluated during future sampling events.

Based on the results of the past two annual PFAS sampling analytical results data, we request modifying the sampling plan to reduce the number of monitoring wells sampled.

Phased out monitoring wells

We request phasing out the sixteen following monitoring wells from the sampling program that have had results either not detected above the reporting limits or were below the EGLE PFAS drinking water MCLs. See [Figure 7](#) for monitoring well locations.

- *Perched zone monitoring wells:* B-18A, B-19Ar, B-24r, B-28, OBG MW-18S, OBG MW-20 (dry), and PZ-1
- *Drift unit monitoring wells:* OBG MW-12D, OBG MW-15D, OBG MW-16D, OBG MW-17D, OBG MW-18D, OBG MW-19D, MW-15-10, MW-16-10, and PFW-1.

Proposed Annual Monitoring Wells

The following nine monitoring wells still have concentrations above the EGLE PFAS drinking water MCLs and are proposed to be sampled on an annual basis:

- *Perched zone monitoring wells:* B-7, B-9, OBG MW-11, OBG MW-12S, OBG MW-14, OBG MW-17S, OBG MW-22, and OBG MW-26
- *Drift unit monitoring wells:* OBG MW-27.

The following seven monitoring wells with concentrations that have had results either not detected above the reporting limits or were below the EGLE PFAS drinking water MCLs border the Site and will continued to be monitored as sentinel wells:

- *Perched zone monitoring wells:* OBG MW-9, OBG MW-13, OBG MW-21, OBG MW-24, and OBG MW-28
- *Drift unit monitoring wells:* B-27D, and OBG MW-23.

A reduction in the number of monitoring wells sampled would not diminish the ability to verify protection to human health and the environment and would still provide adequate monitoring of the extent of PFAS-impacted groundwater on the Site. The annual sampling would continue to be conducted in the



spring/summer time frame (typically June) of each year. Water level measurements will also continue to be collected on an annual basis from all thirty-two perched zone and sixteen drift unit monitoring wells (listed in the Sampling Methods section) to assist in creating the groundwater contour figures and evaluating groundwater flow.

The next sampling event is currently scheduled for June 2021. If you have any questions, please feel free to contact Clifford Yantz at (313) 333-0211.

Very truly yours,

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

A handwritten signature in blue ink that reads "Clifford S. Yantz".

Clifford S. Yantz

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	Mr. David Favero – RACER Trust	Mr. James Henry – GCHD
	Mr. Kevin Schneider – Ramboll	

Enclosures:

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Appendix

Appendix A – Groundwater Sampling Logs
Appendix B – Analytical Laboratory Results

TABLES

TABLE 1
RACER Trust - Coldwater Road
Depth to Groundwater Levels in Monitoring Wells

June 15, 2020

Well ID	Top of Casing Elevation (ft)*	Depth to Water (ft)	Static Water Elevation (ft)
<i>Landfill Monitoring Wells</i>			
B-7	813.63	16.72	796.91
B-9	807.45	4.58	802.87
B-18A	810.85	20.52	790.33
B-19A	812.66	7.46	805.20
B-19AR	811.80	37.67	774.13
B-20D	815.14	68.55	746.59
B-21D	821.07	79.26	741.81
B-22D	822.15	83.63	738.52
B-23DR	812.12	80.67	731.45
B-24R	816.04	13.07	802.97
B-27D	812.70	75.01	737.69
B-28	816.46	4.84	811.62
OBG MW-16D	807.43	56.16	751.27
<i>former WWTP Monitoring Wells</i>			
OBG MW-1	811.56	5.09	806.47
OBG MW-2	813.77	7.43	806.34
OBG MW-3	810.09	4.50	805.59
OBG MW-4	812.66	5.74	806.92
OBG MW-5	816.04	7.43	808.61
OBG MW-6	815.75	10.99	804.76
OBG MW-7	813.47	7.47	806.00
OBG MW-8	817.50	9.09	808.41
OBG MW-9	809.97	4.00	805.97
OBG MW-10	811.54	6.72	804.82
<i>Additional Site Monitoring Wells</i>			
OBG MW-11	801.94	5.47	796.47
OBG MW-12D	797.13	45.62	751.51
OBG MW-12S	796.88	8.80	788.08
OBG MW-13	801.81	9.92	791.89
OBG MW-14	810.98	7.55	803.43
OBG MW-15D	810.68	79.40	731.28
OBG MW-17D	800.09	48.74	751.35
OBG MW-17S	800.51	9.99	790.52
OBG MW-18D	800.17	48.56	751.61
OBG MW-18S	799.32	11.11	788.21
OBG MW-19D	795.37	44.85	750.52
OBG MW-20	783.93	DRY	--
OBG MW-21	797.49	3.25	794.24
OBG MW-22	794.11	4.43	789.68
OBG MW-23 (D)	776.76	26.61	750.15
OBG MW-24	781.50	5.05	776.45
OBG MW-25	786.61	5.50	781.11
OBG MW-26	772.34	6.17	766.17
OBG MW-27 (D)	771.94	21.52	750.42
<i>Piezometers</i>			
PZ-1	790.30	17.26	773.04
PZ-2 (D)	774.64	24.58	750.06
PZ-3	788.37	6.01	782.36
<i>Peregrine Site Wells</i>			
MW-19-13	807.85	2.24	805.61
MW-20-13	810.81	4.81	806.00
MW-15-10	808.15	76.55	731.60
MW-16-10	798.64	66.80	731.84
PFW-1	809.51	77.35	732.16

Notes

Casing elevations were provided by Norway & Hale Surveyors and are in feet relative to National Geodetic Vertical Datum

-- Depth to water not collected.

NA - Not available

NG - No ground water detected

Top of casing elevations were resurveyed in June 2017.

R - Indicates a replacement well location.

Monitoring wells OBG MW-25, PZ-2, and PZ-3 were abandon on July 7, 2020 as part of the onsite berm construction.

TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	B-7	B-7 (Collocated)	B-7	B-7	B-7	B-9	B-9	B-9	B-9
	Sample Date:	11/30/2016	11/30/2016	6/12/2018	5/30/2019	6/18/2020	6/20/2017	6/12/2018	6/3/2019	6/17/2020
Perfluorobutanoic Acid (PFBA)	--	9.2 J	7.1 J	8.2 B	<20	10 U	14 B	9.5 B	<19	28
Perfluoropentanoic Acid (PFPeA)	--	2.6	1.7 J	4.2	<9.8	1.2 J	2.2	1.7 J	<9.4	1.0 J
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	--	--	<9.8	<2.0	--	--	<9.4	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	3.9	3.1	3.3	<9.8	2.0 J	9.3	7.0	<9.4	4.3
Perfluorobutane Sulfonic Acid (PFBS)	420	5.7	5.8	4.1	<9.8	4.8	2.3	2.1	<9.4	2.3
Perfluoroheptanoic Acid (PFHpA)	--	2.4	1.6 J	2.3	<9.8	<2	4.2	<0.24	<9.4	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	--	--	<9.8	5.1	--	--	<9.4	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<3.8	<3.7	--	<20	<2.0	<3.7	--	<9.4	<2.0
Perfluorooctanoic Acid (PFOA)	8	9.2 JN	7.6 JN	9.2	<9.8	5.6	15	12	<9.4	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)	51	23	22 JN	18 B	<19	17	6.9	3.7 B	<9.4	5.1
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	--	--	<14	13	--	--	<9.4	4.2
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	--	--	<9.8	3.3	--	--	<9.4	<2.0
Perfluorononanoic Acid (PFNA)	6	0.87 J	0.79 J	0.82 J	<9.8	<2.0	<0.64	<0.26	<9.4	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	--	--	<9.8	<2.0	--	--	<9.4	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	3.8	3.9	3.0	<9.8	2.4	0.70 J	0.33 J	<9.4	<2.0
Perfluorodecanoic Acid (PFDA)	--	<2.0	<2.0	<2.0	<9.8	<2.0	<0.43	<1.9	<9.4	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	--	--	<9.8	<2.0	--	--	<9.4	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	--	--	<9.8	<4.1	--	--	<9.4	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	16	220	230	130	140	140	13	9.3	16	16
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	--	--	--	72	84	--	--	<9.4	<2.0
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	--	--	--	20	57	--	--	13	13
Perfluoroundecanoic Acid (PFUnDA)	--	<2.0	<2.0	<2.0	<9.8	<2.0	<0.73	<1.9	<9.4	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	--	--	--	<9.8	<2.0	--	--	<9.4	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<2.0	<2.0	<2.0	<9.8	<2.0	<0.57	<1.9	<9.4	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<2.0	<2.0	<2.0	<9.8	<2.0	<1.2	<1.9	<9.4	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	<2.0	<2.0	<2.0	<9.8	<2.0	<0.54	<1.9	<9.4	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<0.64 UJ	<0.62 UJ	<0.34	<9.8	<2.0	3.3 J H	<0.33	<9.4	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<2.0 U	<2.0 U	<0.28	<9.8	<4.1	1.2 J B	<0.27	<9.4	<4.1
11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	--	<2.0	--	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	--	<2.0	--	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	--	<2.0	--	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	--	--	<2.0	--	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	280.7	283.6	183.1	140.0	178.1	72.1	45.6	16.0	56.7

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) * = Monitoring well has been abandoned.
- 6) Dup = Duplicate sample.
- 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 8) Light gray header is most recent sampling event result.
- 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	B-18A	B-18A	B-18A	B-18A (GW-DUP-1)	B-18A	B-18A (DUP-1)	B-19Ar	B-19Ar	B-19Ar	B-19Ar
	Sample Date:	6/20/2017	6/12/2018	6/3/2019	6/3/2019	6/18/2020	6/18/2020	11/30/2016	6/12/2018	6/3/2019	6/18/2020
Perfluorobutanoic Acid (PFBA)	--	4.2 B	1.1 J/B	<19	<20	12 U	<9.7	1.0 J	1.2 J/B	<20	14 U
Perfluoropentanoic Acid (PFPeA)	--	<0.94	0.51 J	<9.5	<9.8	<4.0	<3.9	<0.98 U	1.1 J	<9.9	<3.8
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
Perfluorohexanoic Acid (PFHxA)	400,000	<0.75	<0.56	<9.5	<9.8	<2.0	<1.9	<0.78 U	<0.54	<9.9	<1.9
Perfluorobutane Sulfonic Acid (PFBS)	420	<0.87	<0.19	<9.5	<9.8	<2.0	<1.9	<0.91 U	0.28 J	<9.9	<1.9
Perfluoroheptanoic Acid (PFHpA)	--	<0.76	<0.24	<9.5	<9.8	<2.0	<1.9	<0.80 U	0.33 J	<9.9	<1.9
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<3.6	--	<9.5	<9.8	2.1	2.3	<3.8	--	<9.9	5.7
Perfluorooctanoic Acid (PFOA)	8	1.2 J	<0.82	<9.5	<9.8	<2.0	<1.9	0.84 JN	0.93 J	<9.9	<1.9
Perfluorohexane Sulfonic Acid (PFHxS)	51	<0.83	0.27 J/B	<9.5	<9.8	<2.0	<1.9	<2.0 U	0.89 J/B	<9.9	<1.9
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
Perfluorononanoic Acid (PFNA)	6	<0.62	<0.26	<9.5	<9.8	<2.0	<1.9	<0.65 U	<0.25	<9.9	<1.9
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<0.68	<0.18	<9.5	<9.8	<2.0	<1.9	1.0 J	0.31 J	<9.9	<1.9
Perfluorodecanoic Acid (PFDA)	--	<0.42	<1.9	<9.5	<9.8	<2.0	<1.9	<2.0	<1.9	<9.9	<1.9
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	--	<9.5	<9.8	<4.0	<3.9	--	--	<9.9	<3.8
Perfluorooctane Sulfonic Acid (PFOS)	16	1.3 J	<0.52	<9.5	<9.8	<2.0	<1.9	3.9	4.1	10	3.2
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
Perfluoroundecanoic Acid (PFUnDA)	--	<0.71	<1.9	<9.5	<9.8	<2.0	<1.9	<2.0	<1.9	<9.9	<1.9
Perfluorononane Sulfonic Acid (PFNS)	--	--	--	<9.5	<9.8	<2.0	<1.9	--	--	<9.9	<1.9
Perfluorododecanoic Acid (PFDoDA)	--	<0.56	<1.9	<9.5	<9.8	<2.0	<1.9	<2.0	<1.9	<9.9	<1.9
Perfluorodecane Sulfonic Acid (PFDS)	--	<1.2	<1.9	<9.5	<9.8	<2.0	<1.9	<2.0	<1.9	<9.9	<1.9
Perfluorotridecanoic Acid (PFTTrDA)	--	<0.52	<1.9	<9.5	<9.8	<2.0	<1.9	<2.0	<1.9	<9.9	<1.9
Perfluorooctane Sulfonamide (FOSA)	--	<0.61	<0.34	<9.5	<9.8	<2.0	<1.9	<0.63 UJ	<0.33	<9.9	<1.9
Perfluorotetradecanoic Acid (PFTeDA)	--	<0.19	<0.28	<9.5	<9.8	<4.0	<3.9	<2.0 U	<0.27	<9.9	<3.8
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	--	<2.0	<1.9	--	--	--	<1.9
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	--	<2.0	<1.9	--	--	--	<1.9
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	--	<2.0	<1.9	--	--	--	<1.9
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	--	--	<2.0	<1.9	--	--	--	<1.9
Total Per-and Polyfluoroalkyl Substances	--	6.7	1.9	0.0	0.0	2.1	2.3	6.7	9.1	10.0	8.9

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
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- 5) * = Monitoring well has been abandoned.
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- 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 8) Light gray header is most recent sampling event result.
- 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
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- 14) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	B-24r	B-24r	B-24r	B-24r	B-28	B-28	B-28	B-28	OBG MW-6
Sample Date:		6/20/2017	6/12/2018	5/30/2019	6/17/2020	6/20/2017	6/12/2018	5/29/2019	6/16/2020	9/20/2018
Perfluorobutanoic Acid (PFBA)	--	14 B	8.9 B	<17	18 U	2.9 B	1.5 J/B	<18	<10	30
Perfluoropentanoic Acid (PFPeA)	--	<0.93	2.0	<8.5	<3.9	<0.96	0.47 J	<8.9	<4.0	<10
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	--	<8.5	<2.0	--	--	<8.9	<2.0	<10
Perfluorohexanoic Acid (PFHxA)	400,000	3.9	2.7	<8.5	<2.0	0.92 J	<0.55	<8.9	<2.0	<10
Perfluorobutane Sulfonic Acid (PFBS)	420	3.7	1.5 J	<8.5	2.4	<0.89	<0.19	<8.9	<2.0	<10
Perfluoroheptanoic Acid (PFHpA)	--	1.7 J	<0.23	<8.5	<2.0	<0.78	<0.24	<8.9	<2.0	<10
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	--	<8.5	<2.0	--	--	<8.9	<2.0	<10
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<3.6	--	<17	<2.0	<3.7	--	<18	<2.0	<10
Perfluorooctanoic Acid (PFOA)	8	3.9	3.4	<8.5	<2.0	0.79 J	0.84 J	<8.9	<2.0	<10
Perfluorohexane Sulfonic Acid (PFHxS)	51	5.4	2.6 B	<8.5	3.3	<0.84	0.27 J/B	<8.9	<2.0	<10
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	--	<8.5	2.4	--	--	<8.9	<2.0	<10
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	--	<8.5	<2.0	--	--	<8.9	<2.0	<10
Perfluorononanoic Acid (PFNA)	6	<0.62	<0.25	<8.5	<2.0	<0.63	<0.26	<8.9	<2.0	<10
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	--	<8.5	<2.0	--	--	<8.9	<2.0	<10
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<0.67	<0.18	<8.5	<2.0	<0.69	<0.18	<8.9	<2.0	<10
Perfluorodecanoic Acid (PFDA)	--	<0.41	<1.9	<8.5	<2.0	<0.43	<1.9	<8.9	<2.0	<10
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	--	<8.5	<2.0	--	--	<8.9	<2.0	<10
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	--	<8.5	<3.9	--	--	<8.9	<4.0	<10
Perfluorooctane Sulfonic Acid (PFOS)	16	5.0	2.5	<8.5	3.8	1.7 J	<0.51	<8.9	<2.0	<10
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	--	--	<8.5	3.3	--	--	<8.9	<2.0	<10
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	--	--	<8.5	<2.0	--	--	<8.9	<2.0	<10
Perfluoroundecanoic Acid (PFUnDA)	--	<0.70	<1.9	<8.5	<2.0	<0.73	<1.9	<8.9	<2.0	<10
Perfluorononane Sulfonic Acid (PFNS)	--	--	--	<8.5	<2.0	--	--	<8.9	<2.0	<10
Perfluorododecanoic Acid (PFDoDA)	--	<0.55	<1.9	<8.5	<2.0	<0.57	<1.9	<8.9	<2.0	<10
Perfluorodecane Sulfonic Acid (PFDS)	--	<1.1	<1.9	<8.5	<2.0	<1.2	<1.9	<8.9	<2.0	<10
Perfluorotridecanoic Acid (PFTrDA)	--	<0.52	<1.9	<8.5	<2.0	<0.53	<1.9	<8.9	<2.0	<10
Perfluorooctane Sulfonamide (FOSA)	--	0.66 J	<0.32	<8.5	<2.0	1.2 J	<0.33	<8.9	<2.0	<10
Perfluorotetradecanoic Acid (PFTeDA)	--	<0.19	<0.27	<8.5	<3.9	<0.19	<0.28	<8.9	<4.0	<10
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	<2.0	--	--	--	<2.0	--
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	<2.0	--	--	--	<2.0	--
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	<2.0	--	--	--	<2.0	--
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	--	<2.0	--	--	--	<2.0	--
Total Per-and Polyfluoroalkyl Substances	--	38.3	23.6	0.0	9.5	7.5	3.1	0.0	0.0	30.0

Notes

- 1) Detections in **bold**.
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TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG-MW-7	OBG MW-7	OBG MW-8	OBG-MW-9	OBG MW-9	OBG MW-9 REPLICATE 01	OBG MW-9	OBG-MW-11	OBG MW-11	OBG MW-11
Sample Date:		6/20/2017	9/20/2018	9/20/2018	6/20/2017	9/20/2018	9/20/2018	6/19/2020	7/19/2018	5/30/2019	6/24/2020
Perfluorobutanoic Acid (PFBA)	--	8.0 B	<20	<20	1.4 J B	<20	<20	24 U	29 B	<19	34
Perfluoropentanoic Acid (PFPeA)	--	<0.96	<10	<10	<0.94	<10	<10	<3.8	5.7	<9.7	6.6
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	<10	<10	--	<10	<10	<1.9	--	<9.7	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	1.0 J	<10	<10	<0.75	<10	<10	<1.9	29	17	19
Perfluorobutane Sulfonic Acid (PFBS)	420	<0.86	<10	<10	2.0	<10	<10	1.7 J	79	350	190
Perfluoroheptanoic Acid (PFHpA)	--	<0.78	<10	<10	<0.76	<10	<10	<1.9	14	<9.7	8.8
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	<10	<10	--	<10	<10	<1.9	160	94	98
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<3.7	<10	<10	<3.6	<10	<10	6.4	5.4 JB	<9.7	<2.0
Perfluorooctanoic Acid (PFOA)	8	<0.72	<10	20	1.1 J	<10	<10	<1.9	54	34	25
Perfluorohexane Sulfonic Acid (PFHxS)	51	<0.84	<10	70	5.0	<10	<10	3.2	450 B	370	440
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	<10	60	--	<10	<10	2.5	--	310	370
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	<10	<10	--	<10	<10	<1.9	--	58	71
Perfluorononanoic Acid (PFNA)	6	<0.63	<10	<10	<0.62	<10	<10	<1.9	<0.22	<9.7	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	<10	<10	--	<10	<10	<1.9	--	<9.7	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<0.69	<10	30	<0.68	<10	<10	<1.9	13	<12	13
Perfluorodecanoic Acid (PFDA)	--	<0.43	<10	<10	<0.42	<10	<10	<1.9	<1.6	<9.7	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	<10	<10	--	<10	<10	<1.9	--	<9.7	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	<10	<10	--	<10	<10	<3.8	--	<9.7	<3.9
Perfluorooctane Sulfonic Acid (PFOS)	16	<1.9	<10	2710	2.9	<10	<10	11	110	130	160
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	--	<10	1570	--	<10	<10	6.4	--	19	26
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	--	<10	1270	--	<10	<10	3.7	--	110	130
Perfluoroundecanoic Acid (PFUnDA)	--	<0.72	<10	<10	<0.71	<10	<10	<1.9	<1.6	<9.7	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	--	<10	<10	--	<10	<10	<1.9	--	<9.7	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<0.57	<10	<10	<0.55	<10	<10	<1.9	<1.6	<9.7	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<1.2	<10	<10	<1.1	<10	<10	<1.9	<1.6	<9.7	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	<0.53	<10	<10	<0.52	<10	<10	<1.9	<1.6	<9.7	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<0.62	<10	<10	<0.61	<10	<10	<1.9	<0.28	<9.7	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	1.0 J B	<10	<10	<0.19	<10	<10	<3.8	<0.24	<9.7	<3.9
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	--	--	--	<1.9	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	--	--	--	<1.9	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	--	--	--	<1.9	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	--	--	--	--	<1.9	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	10.0	0.0	2830.0	12.4	0.0	0.0	22.3	949.1	995.0	994.4

Notes

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TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-12S	OBG MW-12S	OBG MW-12S	OBG MW-13	OBG MW-13	OBG MW-13	OBG MW-14	OBG MW-14	OBG MW-14
	Sample Date:	1/2/2019	6/5/2019	6/22/2020	10/19/2018	6/6/2019	6/19/2020	10/19/2018	6/6/2019	6/25/2020
Perfluorobutanoic Acid (PFBA)	--	<20	<19	19 U	<20	<19	13 U	<20	<20	36 U
Perfluoropentanoic Acid (PFPeA)	--	<10	<9.5	<3.9	<10	<9.7	<3.8	<10	<10	5.5
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	4.9
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<9.5	3.7	<10	<9.7	<1.9	10	18	23
Perfluoroheptanoic Acid (PFHpA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	3.1
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<9.5	5.1	<10	<9.7	<1.9	20	32	45
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<9.5	5.6	<10	<9.7	2.3	<10	<10	6.5
Perfluorooctanoic Acid (PFOA)	8	<10	<9.5	<2.0	<10	<9.7	<1.9	20	18	26
Perfluorohexane Sulfonic Acid (PFHxS)	51	20	15	17	<10	<9.7	<1.9	100	120	130
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	10	12	15	<10	<9.7	<1.9	100	100	110
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<9.5	2.4	<10	<9.7	<1.9	10	18	20
Perfluorononanoic Acid (PFNA)	6	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<9.5	4.9	<10	<9.7	<1.9	20	32	28
Perfluorodecanoic Acid (PFDA)	--	<10	<9.5	<2.0	<20	<9.7	<1.9	<20	<10	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<9.5	<3.9	<10	<9.7	<3.8	<10	<10	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	16	300	150	220	<10	<9.7	<1.9	540	1100	1300
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	50	23	42	<10	<9.7	<1.9	230	450	580
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	250	130	180	<10	<9.7	<1.9	300	700	730
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluorotridecanoic Acid (PFTriDA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<10	<9.5	<2.0	<10	<9.7	<1.9	<10	<10	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<9.5	<3.9	<10	<9.7	<3.8	<10	<10	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	<2.0	--	--	<1.9	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	<2.0	--	--	<1.9	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	<2.0	--	--	<1.9	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	<2.0	--	--	<1.9	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	320.0	165.0	256.3	0.0	0.0	2.3	710.0	1320.0	1572.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
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- 5) * = Monitoring well has been abandoned.
- 6) Dup = Duplicate sample.
- 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 8) Light gray header is most recent sampling event result.
- 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-17S	OBG MW-17S	OBG MW-17S (GW-DUP-2)	OBG MW-17S	OBG MW-17S (DUP-2)	OBG MW-18S	OBG MW-18S	OBG MW-18S
Sample Date:		1/2/2019	6/6/2019	6/6/2019	6/22/2020	6/22/2020	1/3/2019	6/4/2019	6/19/2020
Perfluorobutanoic Acid (PFBA)	--	<20	<20	<20	26 U	27 U	<20	<19	16 U
Perfluoropentanoic Acid (PFPeA)	--	<10	<9.8	<10	<3.9	<3.9	<10	<9.5	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<9.8	<10	2.0	1.9 J	<10	<9.5	<2.1
Perfluoroheptanoic Acid (PFHpA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<9.8	<10	1.7 J	1.8 J	<10	<9.5	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorooctanoic Acid (PFOA)	8	<10	<9.8	<10	1.6 J	<1.9	<10	<9.5	<2.1
Perfluorohexane Sulfonic Acid (PFHxS)	51	<10	11	15	9.7	8.7	<10	<9.5	1.9 J
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	9.9	13	8.5	7.1	<10	<9.5	<2.1
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<9.8	<10	<1.9	1.8 J	<10	<9.5	<2.1
Perfluorononanoic Acid (PFNA)	6	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<9.8	<10	5.2	4.7	<10	<9.5	<2.1
Perfluorodecanoic Acid (PFDA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<9.8	<10	<3.9	<3.9	<10	<9.5	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	16	460	430	470	580	590	<10	<9.5	<2.1
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	210	210	240	310	330	<10	<9.5	<2.1
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	250	220	240	290	280	<10	<9.5	<2.1
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorotridecanoic Acid (PFTTrDA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<10	<9.8	<10	<1.9	<1.9	<10	<9.5	<2.1
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<9.8	<10	<3.9	<3.9	<10	<9.5	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	<1.9	<1.9	--	--	<2.1
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	<1.9	<1.9	--	--	<2.1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	<1.9	<1.9	--	--	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	--	<1.9	<1.9	--	--	<2.1
Total Per-and Polyfluoroalkyl Substances	--	460.0	441.0	485.0	600.2	607.1	0.0	0.0	1.9

Notes

- 1) Detections in **bold**.
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- 6) Dup = Duplicate sample.
- 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 8) Light gray header is most recent sampling event result.
- 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 10) B - Compound also found in associated method blank.
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- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-21	OBG MW-21	OBG MW-21	OBG MW-22	OBG MW-22 (DUP-1)	OBG MW-22	OBG MW-22 (GW-DUP-3)	OBG MW-22
Sample Date:		1/2/2019	6/4/2019	6/18/2020	1/3/2019	1/3/2019	6/6/2019	6/6/2019	6/24/2020
Perfluorobutanoic Acid (PFBA)	--	<20	<20	24 U	<20	<20	<20	<19	<9.8
Perfluoropentanoic Acid (PFPeA)	--	<10	<9.8	<4.1	<10	<10	<9.8	<9.5	<3.9
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<9.8	8.9	<10	<10	<9.8	<9.5	5.1
Perfluoroheptanoic Acid (PFHpA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<9.8	2.2	<10	10	10	9.6	6.9
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorooctanoic Acid (PFOA)	8	<10	<9.8	<2.1	<10	10	<9.8	<9.5	7.2
Perfluorohexane Sulfonic Acid (PFHxS)	51	<10	<9.8	3.2	50	50	43	47	38
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	<9.8	1.6 J	40	40	39	41	34
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<9.8	1.8 J	<10	<10	<9.8	<9.5	3.8
Perfluorononanoic Acid (PFNA)	6	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<9.8	<2.1	30	30	31	22	30
Perfluorodecanoic Acid (PFDA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<9.8	<4.1	<10	<10	<9.8	<9.5	<3.9
Perfluorooctane Sulfonic Acid (PFOS)	16	<10	<9.8	<2.1	1620	1800	1800	1800	2300
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	<10	<9.8	<2.1	590	670	810	800	1200
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	<10	<9.8	<2.1	1020	1110	1000	1000	1200
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorotridecanoic Acid (PFTTrDA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<10	<9.8	<2.1	<10	<10	<9.8	<9.5	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<9.8	<4.1	<10	<10	<9.8	<9.5	<3.9
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	<2.1	--	--	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	<2.1	--	--	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	<2.1	--	--	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	<2.1	--	--	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	0.0	0.0	14.3	1700.0	1900.0	1884.0	1878.6	2387.2

Notes

- 1) Detections in **bold**.
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- 6) Dup = Duplicate sample.
- 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 8) Light gray header is most recent sampling event result.
- 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
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TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-24	OBG MW-24	OBG MW-24	OBG MW-25*	OBG MW-25*	OBG MW-26	OBG MW-26	OBG MW-28	OBG MW-28 (DUP-3)
	Sample Date:	1/3/2019	6/6/2019	6/23/2020	6/5/2019	6/22/2020	6/6/2019	6/24/2020	6/24/2020	6/24/2020
Perfluorobutanoic Acid (PFBA)	--	<20	<20	<10	<20	17 U	25	48 U	14	12
Perfluoropentanoic Acid (PFPeA)	--	<10	<10	<4.0	<10	<3.9	79	53	<3.8	<3.8
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<10	<2.0	<10	<1.9	64	43	<1.9	<1.9
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<10	<2.0	<10	<1.9	<9.9	5.4	1.9 J	2.4
Perfluoroheptanoic Acid (PFHpA)	--	<10	<10	<2.0	<10	<1.9	11	7.5	<1.9	<1.9
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<10	<2.0	<10	<1.9	<9.9	8.5	<1.9	<1.9
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorooctanoic Acid (PFOA)	8	<10	<10	<2.0	<10	<1.9	41	32	7.2	6.1
Perfluorohexane Sulfonic Acid (PFHxS)	51	<10	<10	<2.0	<10	<1.9	40	34	2.3	2.1
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	<10	<2.0	<10	<1.9	36	31	1.9	1.8 J
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<10	<2.0	<10	<1.9	<9.9	3.1	<1.9	<1.9
Perfluorononanoic Acid (PFNA)	6	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<10	<2.0	<10	<1.9	18	12	<1.9	<1.9
Perfluorodecanoic Acid (PFDA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<10	<4.0	<10	<3.9	<9.9	<3.8	<3.8	<3.8
Perfluorooctane Sulfonic Acid (PFOS)	16	<10	<10	<2.0	<10	<1.9	490	530	<1.9	<1.9
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<10	<10	<2.0	<10	<1.9	170	190	<1.9	<1.9
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<10	<10	<2.0	<10	<1.9	320	330	<1.9	<1.9
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorododecanoic Acid (PFDoDA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorooctane Sulfonamide (FOSA)	--	<10	<10	<2.0	<10	<1.9	<9.9	<1.9	<1.9	<1.9
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<10	<4.0	<10	<3.9	<9.9	<3.8	<3.8	<3.8
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	<2.0	--	<1.9	--	<1.9	<1.9	<1.9
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	<2.0	--	<1.9	--	<1.9	<1.9	<1.9
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	<2.0	--	<1.9	--	<1.9	<1.9	<1.9
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	<2.0	--	<1.9	--	<1.9	<1.9	<1.9
Total Per-and Polyfluoroalkyl Substances	--	0.0	0.0	0.0	0.0	0.0	768.0	725.4	25.4	22.6

Notes

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- 6) Dup = Duplicate sample.
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TABLE 2
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Perched Monitoring Well Sampling

Coldwater Road - Monitoring Wells - PERCHED Zone

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	PZ-1	PZ-1	PZ-1	PZ-3*	PZ-3*	PZ-3*	MW-4-02*	MW-18-13*	MW-19-13	MW-19-13
	Sample Date:	1/2/2019	6/6/2019	6/23/2020	1/3/2019	6/5/2019	6/24/2020	11/30/2016	11/29/2016	11/30/2016	6/12/2018
Perfluorobutanoic Acid (PFBA)	--	<20	<20	17 U	<20	<19	33 U	4.7	5.0	13	5.0 B
Perfluoropentanoic Acid (PFPeA)	--	<10	<10	<3.8	<10	<9.6	<3.8	<0.94 U	<0.93 U	16	3.0
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<10	<1.9	<10	<9.6	<1.9	--	--	--	--
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<10	<1.9	<10	<9.6	<1.9	<0.75 U	<0.74 U	29	6.0
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<10	<1.9	10	14	8.9	0.92 J	2.8	13	9.0
Perfluoroheptanoic Acid (PFHpA)	--	<10	<10	<1.9	<10	<9.6	<1.9	<0.76 U	<0.76 U	18	6.7
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<10	<1.9	10	11	13	--	--	--	--
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<10	2.6	<10	<9.6	<1.9	<3.5	<3.6	<3.7	--
Perfluorooctanoic Acid (PFOA)	8	<10	<10	<1.9	<10	<9.6	11	<0.71 U	3.9	39	16
Perfluorohexane Sulfonic Acid (PFHxS)	51	<10	<10	<1.9	50	42	46	<0.83 U	4.3	31	14 B
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	<10	<1.9	40	37	39	--	--	--	--
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<10	<1.9	<10	<9.6	7.3	--	--	--	--
Perfluorononanoic Acid (PFNA)	6	<10	<10	<1.9	<10	<9.6	<1.9	<0.62 U	<0.62 U	<0.63	<0.25
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<10	<1.9	<10	<9.6	<1.9	--	--	--	--
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<10	<1.9	10	18	15	<0.68 U	0.78 J	1.3 J	0.46 J
Perfluorodecanoic Acid (PFDA)	--	<10	<10	<1.9	<10	<9.6	<1.9	<0.42	<0.42	<0.42	<0.29
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<10	<1.9	<10	<9.6	<1.9	--	--	--	--
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<10	<3.8	<10	<9.6	<3.8	--	--	--	--
Perfluorooctane Sulfonic Acid (PFOS)	16	<10	<10	<1.9	300	620	860	3.5	27	19	4.9
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<10	<10	<1.9	80	210	370	--	--	--	--
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<10	<10	<1.9	210	410	490	--	--	--	--
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<10	<1.9	<10	<9.6	<1.9	<0.71	<0.71	<0.72	<1.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<10	<1.9	<10	<9.6	<1.9	--	--	--	--
Perfluorododecanoic Acid (PFDoDA)	--	<10	<10	<1.9	<10	<9.6	<1.9	<0.56	<0.55	<0.56	<0.51
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<10	<1.9	<10	<9.6	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotridecanoic Acid (PFTTrDA)	--	<10	<10	<1.9	<10	<9.6	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorooctane Sulfonamide (FOSA)	--	<10	<10	<1.9	<10	<9.6	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<10	<3.8	<10	<9.6	<3.8	0.65 J F1 B	0.60 J B	0.54 J B	<0.27
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	<1.9	--	--	<1.9	--	--	--	--
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	<1.9	--	--	<1.9	--	--	--	--
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	<1.9	--	--	<1.9	--	--	--	--
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	<1.9	--	--	<1.9	--	--	--	--
Total Per-and Polyfluoroalkyl Substances	--	0.0	0.0	2.6	380.0	705.0	953.9	9.8	44.4	179.8	65.1

- Notes
- 1) Detections in **bold**.
 - 2) Concentrations in ng/L.
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 - 6) Dup = Duplicate sample.
 - 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
 - 8) Light gray header is most recent sampling event result.
 - 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
 - 10) B - Compound also found in associated method blank.
 - 11) I - Matrix interference with internal standard.
 - 12) J - Estimated value less than reporting limit, but greater than MDL.
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 - 14) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 3
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Drift Monitoring Well Sampling

Coldwater Road - Monitoring Wells - DRIFT Unit

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	B-20D	B-21D	B-22D	B-22D (DUP-2)	B-23Dr	B-23Dr (DUP-01-GW)	B-27D	B-27D	B-27D
Sample Date:		9/19/2018	9/19/2018	6/13/2018	6/13/2018	9/21/2018	9/21/2018	6/20/2017	6/12/2018	6/17/2020
Perfluorobutanoic Acid (PFBA)	--	<20	<20	0.72 J/B	0.63 J/B	<20	<20	2.0 B	0.47 J/B	12
Perfluoropentanoic Acid (PFPeA)	--	<10	<10	<0.48	<0.45	<10	<10	<0.95	0.26 J	<3.9
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<10	<0.57	<0.53	<10	<10	<0.75	<0.53	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<10	<0.20	<0.18	<10	<10	<0.88	<0.18	<2.0
Perfluoroheptanoic Acid (PFHpA)	--	<10	<10	<0.25	<0.23	<10	<10	<0.77	<0.23	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<10	--	--	<10	<10	--	--	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluorooctanoic Acid (PFOA)	8	<10	<10	<0.83	<0.78	<10	<10	<0.72	<0.78	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)	51	<10	<10	<0.17	0.29 J/B	<10	<10	<0.83	0.23 J/B	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluorononanoic Acid (PFNA)	6	<10	<10	<2.0	<1.8	<10	<10	<0.63	<1.8	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<10	<0.19	<0.17	<10	<10	<0.68	<0.17	<2.0
Perfluorodecanoic Acid (PFDA)	--	<10	<10	<2.0	<1.8	<10	<10	<0.42	<1.8	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<10	--	--	<10	<10	--	--	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<10	--	--	<10	<10	--	--	<3.9
Perfluorooctane Sulfonic Acid (PFOS)	16	<10	<10	<0.53	<0.49	<10	<10	<1.2	<0.49	<2.0
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<10	<1.1	<1.0	<10	<10	1.4 J	<1.0	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<10	<10	<2.0	<1.8	<10	<10	<0.56	<1.8	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<10	<2.0	<1.8	<10	<10	<1.2	<1.8	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<10	<2.0	<1.8	<10	<10	<0.53	<1.8	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<10	<10	--	--	<10	<10	--	--	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<10	<2.0	<1.8	<10	<10	<0.19	<1.8	<3.9
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	--	--	--	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	--	--	--	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	--	--	--	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	--	--	--	--	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	0.0	0.0	0.7	0.9	0.0	0.0	3.4	1.0	12.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
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- 6) ** = B-2D was found to be damaged. Sample results are not representative of the drift aquifer.
The well was abandoned on December 5, 2018 and replaced by OBG MW-16D.
- 7) Dup = Duplicate sample.
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- 9) Light gray header is most recent sampling event result.
- 10) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process.
The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
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TABLE 3
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Drift Monitoring Well Sampling

Coldwater Road - Monitoring Wells - DRIFT Unit

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-12D	OBG MW-12D	OBG MW-12D	OBG MW-15D	OBG MW-15D (DUP-1)	OBG MW-15D	OBG MW-15D
	Sample Date:		10/22/2018	6/5/2019	6/22/2020	10/23/2018	10/23/2018	6/6/2019	6/19/2020
Perfluorobutanoic Acid (PFBA)	--	--	<20	<20	9.9 U	<20	<20	<19	<10
Perfluoropentanoic Acid (PFPeA)	--	--	<10	<9.8	<3.9	<10	<10	<9.6	<4.0
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorohexanoic Acid (PFHxA)	--	400,000	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	--	420	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluoroheptanoic Acid (PFHpA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorooctanoic Acid (PFOA)	--	8	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)	--	51	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorononanoic Acid (PFNA)	--	6	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorodecanoic Acid (PFDA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	<10	<9.8	<3.9	<10	<10	<9.6	<4.0
Perfluorooctane Sulfonic Acid (PFOS)	--	16	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluoroundecanoic Acid (PFUnDA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorotridecanoic Acid (PFTTrDA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	--	<10	<9.8	<1.9	<10	<10	<9.6	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	--	<10	<9.8	<3.9	<10	<10	<9.6	<4.0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	<1.9	--	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	<1.9	--	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	<1.9	--	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	--	370	--	--	<1.9	--	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
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- 5) * = Monitoring well has been abandoned.
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TABLE 3
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Drift Monitoring Well Sampling

Coldwater Road - Monitoring Wells - DRIFT Unit

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)	B-2D**	B-2D**	B-2D** (DUP-071918)	OBG MW-16D	OBG MW-16D	OBG MW-16D	OBG MW-17D	OBG MW-17D	OBG MW-17D
	Sample Date:		6/13/2018	7/19/2018	7/19/2018	10/22/2018	6/4/2019	6/18/2020	10/22/2018	6/5/2019	6/22/2020
Perfluorobutanoic Acid (PFBA)	--	--	1.8 J/B	2.7 B	2.8 B	<20	<20	16 U	<20	<19	17 U
Perfluoropentanoic Acid (PFPeA)	--	--	1.2 J	<0.41	0.44 J	<10	<10	<3.9	<10	<9.6	<3.8
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorohexanoic Acid (PFHxA)	--	400,000	0.78 J	<0.49	0.70 J	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorobutane Sulfonic Acid (PFBS)	--	420	1.5 J	1.0 J	0.97 J	<10	<10	<2.0	<10	<9.6	<1.9
Perfluoroheptanoic Acid (PFHpA)	--	--	0.52 J	0.47 J	0.42 J	<10	<10	<2.0	<10	<9.6	<1.9
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	--	3.2	2.9	<10	<10	<2.0	<10	<9.6	<1.9
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorooctanoic Acid (PFOA)	--	8	3.3	3.1	3.7	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorohexane Sulfonic Acid (PFHxS)	--	51	13 B	13 B	12 B	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorononanoic Acid (PFNA)	--	6	<1.9	<1.7	<1.7	<10	<10	<2.0	<10	<9.6	<1.9
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluoroheptane Sulfonic Acid (PFHpS)	--	--	2.9	2.4	2.6	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorodecanoic Acid (PFDA)	--	--	<1.9	<1.7	<1.7	<10	<10	<2.0	<10	<9.6	<1.9
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	--	--	--	<10	<10	<3.9	<10	<9.6	<3.8
Perfluorooctane Sulfonic Acid (PFOS)	--	16	110	99	98	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluoroundecanoic Acid (PFUnDA)	--	--	<1.0	<0.93	<0.92	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorononane Sulfonic Acid (PFNS)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorododecanoic Acid (PFDoDA)	--	--	<1.9	<1.7	<1.7	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorodecane Sulfonic Acid (PFDS)	--	--	<1.9	<1.7	<1.7	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorotridecanoic Acid (PFTTrDA)	--	--	<1.9	<1.7	<1.7	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorooctane Sulfonamide (FOSA)	--	--	--	--	--	<10	<10	<2.0	<10	<9.6	<1.9
Perfluorotetradecanoic Acid (PFTeDA)	--	--	<1.9	<1.7	<1.7	<10	<10	<3.9	<10	<9.6	<3.8
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	--	--	--	<2.0	--	--	<1.9
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	--	--	--	<2.0	--	--	<1.9
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	--	--	--	<2.0	--	--	<1.9
Hexafluoropropylene oxide dimer (HFPO-DA)	--	370	--	--	--	--	--	<2.0	--	--	<1.9
Total Per-and Polyfluoroalkyl Substances	--	--	135.0	124.9	124.5	0.0	0.0	0.0	0.0	0.0	0.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) * = Monitoring well has been abandoned.
- 6) ** = B-2D was found to be damaged. Sample results are not representative of the drift aquifer.
The well was abandoned on December 5, 2018 and replaced by OBG MW-16D.
- 7) Dup = Duplicate sample.
- 8) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 9) Light gray header is most recent sampling event result.
- 10) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process.
The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 11) B - Compound also found in associated method blank.
- 12) I - Matrix interference with internal standard.
- 13) J - Estimated value less than reporting limit, but greater than MDL.
- 14) X - Elevated reporting limit due to matrix interference.
- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 3
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Drift Monitoring Well Sampling

Coldwater Road - Monitoring Wells - DRIFT Unit

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-18D	OBG MW-18D	OBG MW-18D	OBG MW-19D	OBG MW-19D	OBG MW-19D	MW-15-10	MW-15-10
	Sample Date:	10/19/2018	6/6/2019	6/23/2020	10/23/2018	6/5/2019	6/23/2020	9/21/2018	6/19/2020
Perfluorobutanoic Acid (PFBA)	--	<20	<20	11	<20	<19	<9.7	<20	21 U
Perfluoropentanoic Acid (PFPeA)	--	<10	<10	<4.0	<10	<9.7	<3.9	<10	<4.0
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluoroheptanoic Acid (PFHpA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorooctanoic Acid (PFOA)	8	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)	51	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorononanoic Acid (PFNA)	6	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorodecanoic Acid (PFDA)	--	<20	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<10	<4.0	<10	<9.7	<3.9	<10	<4.0
Perfluorooctane Sulfonic Acid (PFOS)	16	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorotridecanoic Acid (PFTTrDA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<10	<10	<2.0	<10	<9.7	<1.9	<10	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<10	<4.0	<10	<9.7	<3.9	<10	<4.0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	<2.0	--	--	<1.9	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	<2.0	--	--	<1.9	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	<2.0	--	--	<1.9	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	<2.0	--	--	<1.9	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) * = Monitoring well has been abandoned.
- 6) ** = B-2D was found to be damaged. Sample results are not representative of the drift aquifer.
The well was abandoned on December 5, 2018 and replaced by OBG MW-16D.
- 7) Dup = Duplicate sample.
- 8) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 9) Light gray header is most recent sampling event result.
- 10) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process.
The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 11) B - Compound also found in associated method blank.
- 12) I - Matrix interference with internal standard.
- 13) J - Estimated value less than reporting limit, but greater than MDL.
- 14) X - Elevated reporting limit due to matrix interference.
- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 3
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Drift Monitoring Well Sampling

Coldwater Road - Monitoring Wells - DRIFT Unit

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	PFW-1 9/21/2018	PFW-1 6/23/2020	MW-16-10 11/29/2016	MW-16-10 (Duplicate) 11/29/2016	MW-16-10 6/13/2018	MW-16-10 6/19/2020	OBG MW-23 1/3/2019	OBG MW-23 6/4/2019	OBG MW-23 6/23/2020
	Sample Date:									
Perfluorobutanoic Acid (PFBA)	--	<20	18 U	<0.45 U	0.87 J	0.40 J/B	<9.7	<20	<19	22 U
Perfluoropentanoic Acid (PFPeA)	--	<10	<4.0	<0.98 U	<0.97 U	<0.46	<3.9	<10	<9.7	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
Perfluorohexanoic Acid (PFHxA)	400,000	<10	<2.0	<0.78 U	<0.77 U	<0.55	<1.9	<10	<9.7	<2.1
Perfluorobutane Sulfonic Acid (PFBS)	420	<10	<2.0	<0.91 U	<0.90 U	<0.19	<1.9	<10	<9.7	<2.1
Perfluoroheptanoic Acid (PFHpA)	--	<10	<2.0	<0.79 U	<0.79 U	<0.24	<1.9	<10	<9.7	<2.1
Perfluoropentane Sulfonic Acid (PFPeS)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<10	<2.0	<3.8	<3.7	--	<1.9	<10	<9.7	<2.1
Perfluorooctanoic Acid (PFOA)	8	<10	<2.0	<0.74 U	<0.73 U	<0.80	<1.9	<10	<9.7	<2.1
Perfluorohexane Sulfonic Acid (PFHxS)	51	<10	<2.0	<0.86 U	<0.85 U	0.30 J/B	<1.9	<10	<9.7	<2.1
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
Perfluorononanoic Acid (PFNA)	6	<10	<2.0	<0.65 U	<0.64 U	<0.26	<1.9	<10	<9.7	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<10	<2.0	<0.71 U	<0.70 U	<0.18	<1.9	<10	<9.7	<2.1
Perfluorodecanoic Acid (PFDA)	--	<10	<2.0	<0.44	<0.43	<0.29	<1.9	<10	<9.7	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<10	<4.0	--	--	--	<3.9	<10	<9.7	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	16	<10	<2.0	<1.3 U	<1.3 U	<0.51	<1.9	<10	<9.7	<2.1
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
Perfluoroundecanoic Acid (PFUnDA)	--	<10	<2.0	<0.74	<0.73	<1.0	<1.9	<10	<9.7	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<10	<2.0	--	--	--	<1.9	<10	<9.7	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<10	<2.0	<0.58	<0.57	<0.52	<1.9	<10	<9.7	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<10	<2.0	<2.0 U	<2.0 U	<1.9	<1.9	<10	<9.7	<2.1
Perfluorotridecanoic Acid (PFTrDA)	--	<10	<2.0	<2.0	<2.0	<1.9	<1.9	<10	<9.7	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<10	<2.0	<2.0	<2.0	<1.9	<1.9	<10	<9.7	<2.1
Perfluorotetradecanoic Acid (PFTeDA)	--	<10	<4.0	0.42 J B	0.50 J B	<0.27	<3.9	<10	<9.7	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	<2.0	--	--	--	<1.9	--	--	<2.1
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	<2.0	--	--	--	<1.9	--	--	<2.1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	<2.0	--	--	--	<1.9	--	--	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	<2.0	--	--	--	<1.9	--	--	<2.1
Total Per-and Polyfluoroalkyl Substances	--	0.0	0.0	0.4	1.4	0.7	0.0	0.0	0.0	0.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
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- 9) Light gray header is most recent sampling event result.
- 10) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process.
The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 11) B - Compound also found in associated method blank.
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- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 3
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Drift Monitoring Well Sampling

Coldwater Road - Monitoring Wells - DRIFT Unit

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-27	OBG MW-27	OBG MW-27	PZ-2	PZ-2	PZ-2*
	Sample Date:		11/21/2019	1/16/2020	6/24/2020	1/3/2019	6/4/2019	6/23/2020
Perfluorobutanoic Acid (PFBA)	--	--	<20	<20	33 U	<20	<19	<10
Perfluoropentanoic Acid (PFPeA)	--	--	19	<10	3.3 J	<10	<9.6	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	400,000	18	<10	3.5	<10	<9.6	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	420	420	12	12	18	<10	<9.6	<4.1 X
Perfluoroheptanoic Acid (PFHpA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	17	18	21	<10	<9.6	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorooctanoic Acid (PFOA)	8	8	12	<10	5.6	<10	<9.6	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)	51	51	41	40	40	<10	<9.6	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	31	30	28	<10	<9.6	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	10	<10	9.7	<10	<9.6	<2.0
Perfluorononanoic Acid (PFNA)	6	6	<9.9	<10	<1.9	<10	<9.6	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	--	<9.9	<10	1.9	<10	<9.6	<2.0
Perfluorodecanoic Acid (PFDA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	<9.9	<10	<3.9	<10	<9.6	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	16	16	25	18	28	<10	<9.6	<2.0
Perfluorooctane Sulfonic Acid (PFOS -LN)	--	--	<9.9	<10	3.5	<10	<9.6	<2.0
Perfluorooctane Sulfonic Acid (PFOS -BR)	--	--	20	18	24	<10	<9.6	<2.0
Perfluoroundecanoic Acid (PFUnDA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	--	<9.9	<10	<1.9	<10	<9.6	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	--	<9.9	<10	<3.9	<10	<9.6	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	<9.9	<10	<1.9	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	<9.9	<10	<1.9	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	<9.9	<10	<1.9	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	370	<9.9	<10	<1.9	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	--	144.0	88.0	121.3	0.0	0.0	0.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) * = Monitoring well has been abandoned.
- 6) ** = B-2D was found to be damaged. Sample results are not representative of the drift aquifer.
The well was abandoned on December 5, 2018 and replaced by OBG MW-16D.
- 7) Dup = Duplicate sample.
- 8) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 9) Light gray header is most recent sampling event result.
- 10) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process.
The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 11) B - Compound also found in associated method blank.
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- 13) J - Estimated value less than reporting limit, but greater than MDL.
- 14) X - Elevated reporting limit due to matrix interference.
- 15) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 4
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Vault Samples

Coldwater Rd - VAULT Samples

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	Vault A	Vault A	Vault-A	Vault B	Vault C	Vault C	Vault C (DUP-1)	Vault-C
	Sample Date:	6/19/2017	6/12/2018	6/25/2020	6/19/2017	6/19/2017	6/12/2018	6/12/2018	6/25/2020
Perfluorobutanoic Acid (PFBA)	--	18 B	13 B	30 U	4.6 B	19 B	13 B	13 B	34 U
Perfluoropentanoic Acid (PFPeA)	--	1.9	3.1	<4.0	<0.98	<0.94	1.7 J	2.4	<4.0
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	--	<2.0	--	--	--	--	<2.0
Perfluorohexanoic Acid (PFHxA)	400,000	4.9	4.7	2.4	0.79 J	6.0	2.4	2.4	1.9 J
Perfluorobutane Sulfonic Acid (PFBS)	420	9.3	8.5	5.4	4.1	<0.88	7.4	4.7	5.5
Perfluoroheptanoic Acid (PFHpA)	--	4.4	3.4	1.7 J	<0.79	3.3	2.7	2.2	1.5 J
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	--	6.8	--	--	--	--	6.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	--	<2.0	--	--	--	--	<2.0
Perfluorooctanoic Acid (PFOA)	8	16	15	9.7	4.1	12	12	12	9.0
Perfluorohexane Sulfonic Acid (PFHxS)	51	32	27 B	21	12	<0.83	19 B	19 B	17
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	--	17	--	--	--	--	13
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	--	3.1	--	--	--	--	3.5
Perfluorononanoic Acid (PFNA)	6	<0.64	<0.24	<2.0	<0.65	<0.62	<0.26	<0.26	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	--	<2.0	--	--	--	--	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	7.2	6.5	6.2	2.4	<0.68	6.0	5.6	4.0
Perfluorodecanoic Acid (PFDA)	--	<0.43	<0.28	<2.0	<0.44	<0.42	<0.30	<0.30	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	--	<2.0	--	--	--	--	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	--	<4.0	--	--	--	--	<4.0
Perfluorooctane Sulfonic Acid (PFOS)	16	450	460	430	150	440	380	400	430
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	--	--	220	--	--	--	--	240
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	--	--	220	--	--	--	--	180
Perfluoroundecanoic Acid (PFUnDA)	--	<0.73	<0.98	<2.0	<0.74	<0.71	<1.1	<1.1	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	--	--	<2.0	--	--	--	--	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<0.57	<1.8	<2.0	<0.58	<0.56	<1.9	<1.9	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<1.2	<0.29	<2.0	<1.2	<1.2	<0.31	<0.31	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	<0.54	<1.8	<2.0	<0.55	<0.53	<1.9	<1.9	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<0.62	<0.31	<2.0	<0.63	<0.61	0.65 J	0.71 J	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<0.19	0.45 J	<4.0	<0.20	0.21 J B	<0.28	<0.28	<4.0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	<2.0	--	--	--	--	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	<2.0	--	--	--	--	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	<2.0	--	--	--	--	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	<2.0	--	--	--	--	<2.0
Total Per-and Polyfluoroalkyl Substances	--	543.7	541.7	513.2	178.0	480.5	444.9	462.0	509.0

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) * = Monitoring well has been abandoned.
- 6) Dup = Duplicate sample.
- 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 8) Light gray header is most recent sampling event result.
- 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

TABLE 4
RACER Trust - Coldwater Road
Pre-and Polyfluoroalkyl Substances Sampling Results - Vault Samples

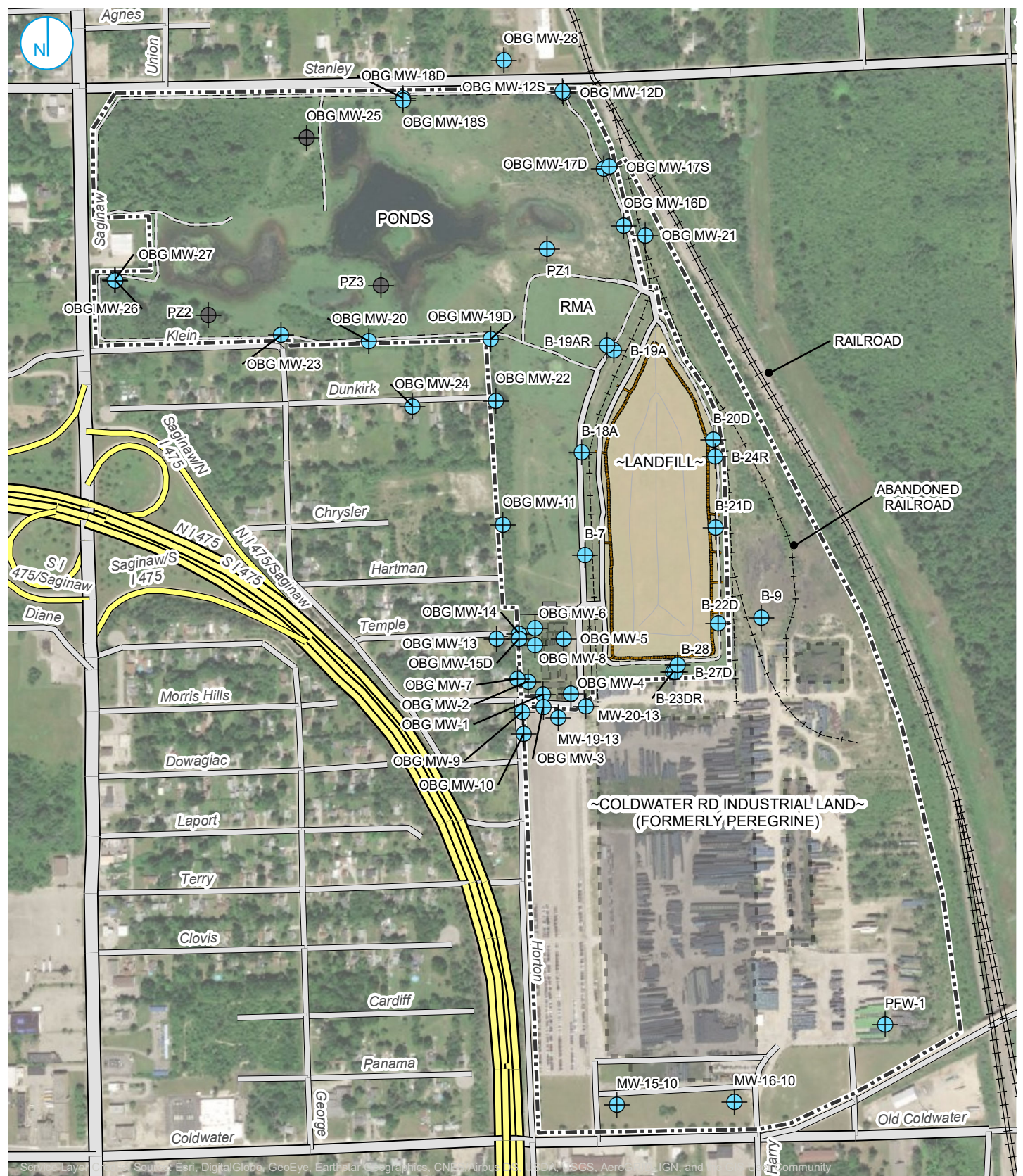
Coldwater Rd - VAULT Samples

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	Vault D	Vault E	Vault E (DUP-1)	Vault E	Vault-E	Vault F
	Sample Date:	6/19/2017	6/19/2017	6/19/2017	6/12/2018	6/25/2020	6/19/2017
Perfluorobutanoic Acid (PFBA)	--	5.3 B	8.6 B	8 B	6.3 B	24 U	6.8 B
Perfluoropentanoic Acid (PFPeA)	--	6.5	<0.96	4.7	4.1	2.6 J	15
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	--	--	--	<2.0	--
Perfluorohexanoic Acid (PFHxA)	400,000	<0.80	6.5	6.3	4.5	2.5	13
Perfluorobutane Sulfonic Acid (PFBS)	420	11	13	12	11	7.6	12
Perfluoroheptanoic Acid (PFHpA)	--	0.96 J	5.5	5.3	4.1	2.6	12
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	--	--	--	12	--
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	--	--	--	<2.0	--
Perfluorooctanoic Acid (PFOA)	8	9.9	24	25	22	15	57
Perfluorohexane Sulfonic Acid (PFHxS)	51	33	65	63	53 B	33	35
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	--	--	--	--	28	--
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	--	--	--	--	5.8	--
Perfluorononanoic Acid (PFNA)	6	<0.67	<0.63	0.64 J	0.60 J	<2.0	1.2 J
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	--	--	--	--	<2.0	--
Perfluoroheptane Sulfonic Acid (PFHpS)	--	8.4	15	15	15	9.5	7.3
Perfluorodecanoic Acid (PFDA)	--	<0.45	<0.43	<0.43	<0.28	<2.0	<0.42
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	--	--	--	--	<2.0	--
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	--	--	--	--	<3.9	--
Perfluorooctane Sulfonic Acid (PFOS)	16	350	730	730	680	480	300
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	--	--	--	--	240	--
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	--	--	--	--	240	--
Perfluoroundecanoic Acid (PFUnDA)	--	<0.76	<0.72	<0.74	<1.0	<2.0	<0.71
Perfluorononane Sulfonic Acid (PFNS)	--	--	--	--	--	<2.0	--
Perfluorododecanoic Acid (PFDoDA)	--	<0.59	<0.56	<0.57	<1.8	<2.0	<0.56
Perfluorodecane Sulfonic Acid (PFDS)	--	<1.2	<1.2	<1.2	<0.29	<2.0	<1.2
Perfluorotridecanoic Acid (PFTrDA)	--	<0.56	<0.53	<0.54	<1.8	<2.0	<0.53
Perfluorooctane Sulfonamide (FOSA)	--	<0.65	3.5 J H	16 J B	1.2 J	<2.0	22 J H
Perfluorotetradecanoic Acid (PFTeDA)	--	0.25 J B	<0.19	0.43 J B	<0.27	<3.9	<0.19
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	--	--	--	--	<2.0	--
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	--	--	--	--	<2.0	--
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	--	--	--	--	<2.0	--
Hexafluoropropylene oxide dimer (HFPO-DA)	370	--	--	--	--	<2.0	--
Total Per-and Polyfluoroalkyl Substances	--	425.3	871.1	886.4	801.8	588.8	481.3

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) * = Monitoring well has been abandoned.
- 6) Dup = Duplicate sample.
- 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.
- 8) Light gray header is most recent sampling event result.
- 9) The detection of PFBA in Field Blank-061920, Field Blank-062220, Field Blank-062520 was caused from the centrifuge tubes leaching out PFBA during the extraction process. The 5X Rule was applied to PFBA detections. If the sample value(s) is less than 5 times the blank concentration (5X Rule), then positive results are qualified "U," undetected.
- 10) B - Compound also found in associated method blank.
- 11) I - Matrix interference with internal standard.
- 12) J - Estimated value less than reporting limit, but greater than MDL.
- 13) X - Elevated reporting limit due to matrix interference.
- 14) QA/QC Samples were either not detected above the reporting limit or below the EGLE PFAS drinking water MCLs.

FIGURES



LEGEND

- MONITORING WELL / PIEZOMETER
- ABANDONED MONITORING WELL / PIEZOMETER
- PROPERTY BOUNDARY
- FORMER BUILDING

0 250 500
Feet

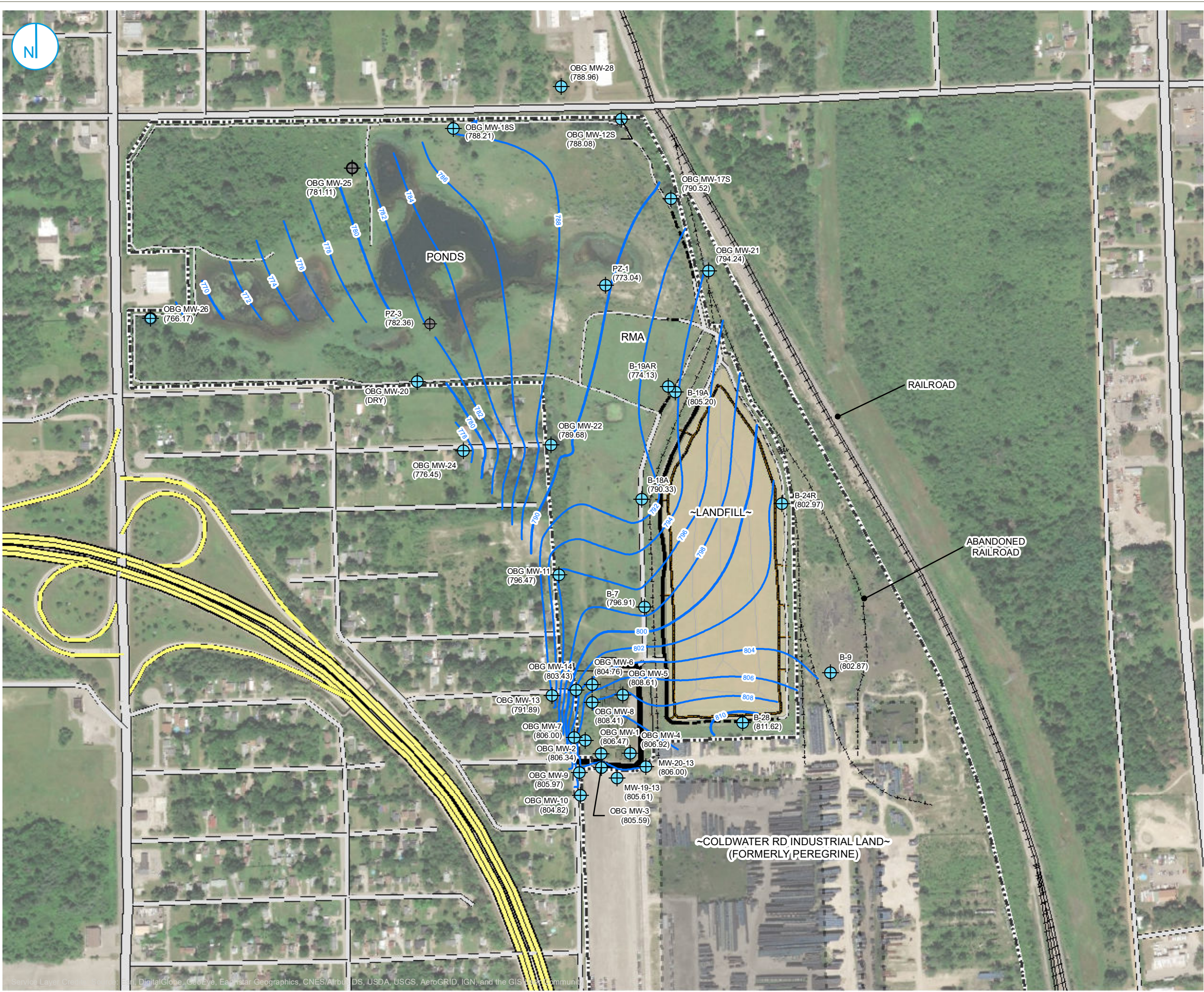
MONITORING WELL LOCATION MAP

FIGURE 1

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL



- MONITORING WELL / PIEZOMETER
- ABANDONED WELL
- GROUNDWATER CONTOUR (JUNE 15, 2020)
- PROPERTY BOUNDARY
- FORMER BUILDING
- (800.93) GROUNDWATER ELEVATION

NOTES

THE GROUNDWATER ELEVATION FOR MONITORING WELLS B-19A, B-AR, AND PZ-1 WERE NOT USED IN DEVELOPING THE GROUNDWATER POTENTIOMETRIC SURFACE DUE TO THE DEPTH OF THESE WELLS AND VERTICAL GRADIENTS AT THE SITE.

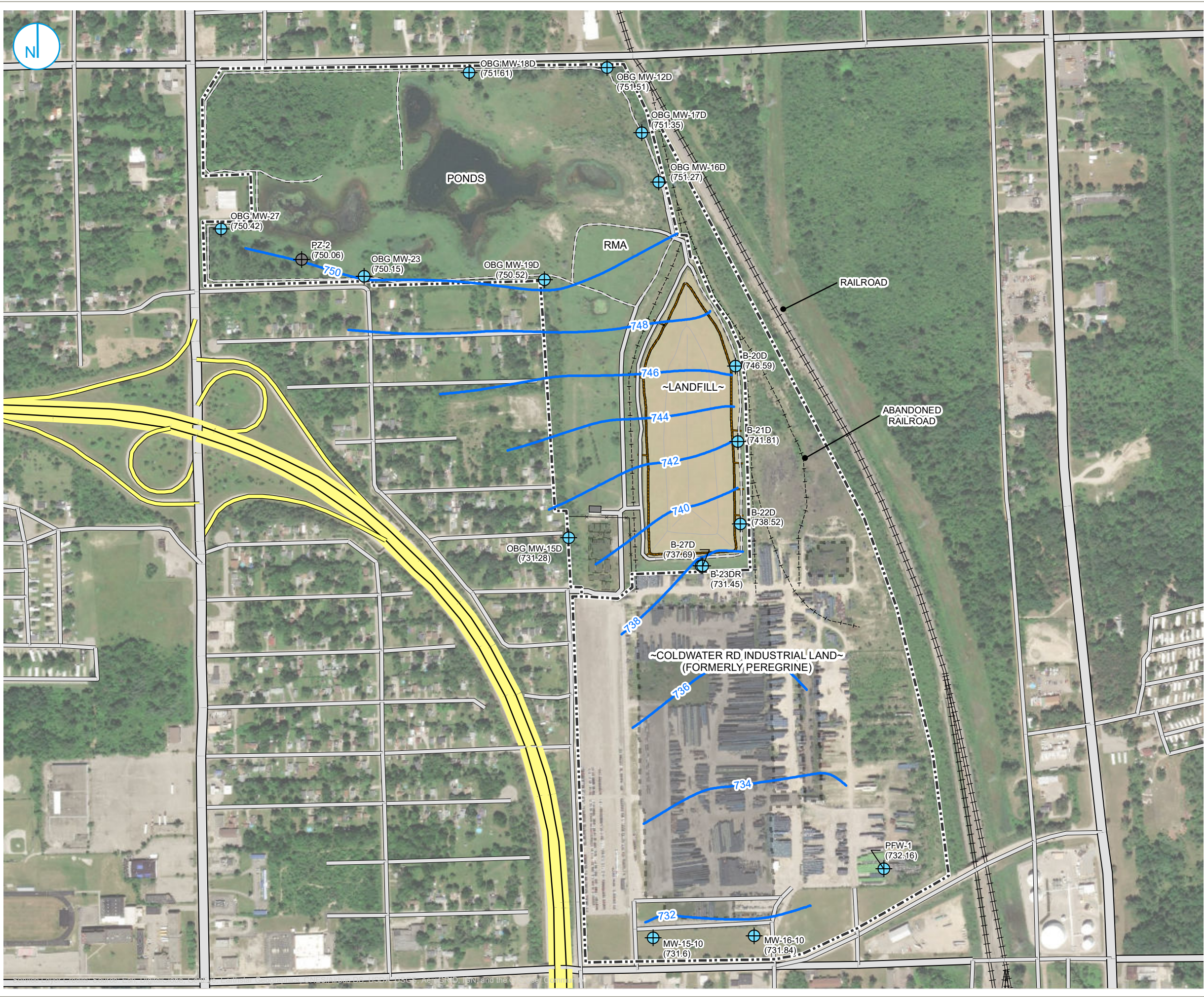
THE ADDITIONAL SITE MONITORING WELLS WERE USED IN THE CREATION OF THE GROUNDWATER CONTOURS BUT ARE NOT PART OF THE LANDFILL MONITORING PROGRAM.

0 225 450 Feet

PERCHED ZONE GROUNDWATER ELEVATION MAP
JUNE 15, 2020

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 2



- MONITORING WELL / PIEZOMETER
- ABANDONED WELL
- GROUNDWATER CONTOUR (JUNE 15, 2020)
- PROPERTY BOUNDARY
- FORMER BUILDING
- (800.93) GROUNDWATER ELEVATION

NOTES
THE GROUNDWATER ELEVATIONS FOR MONITORING WELLS B-23DR AND OBG MW-15D WERE NOT USED IN DEVELOPING THE GROUNDWATER POTENTIOMETRIC SURFACE DUE TO THE DEPTH OF THESE WELLS AND APPARENT VERTICAL GRADIENT WITHIN THE DRIFT UNIT.

THE ADDITIONAL SITE MONITORING WELLS WERE USED IN THE CREATION OF THE GROUNDWATER CONTOURS BUT ARE NOT PART OF THE LANDFILL MONITORING PROGRAM.



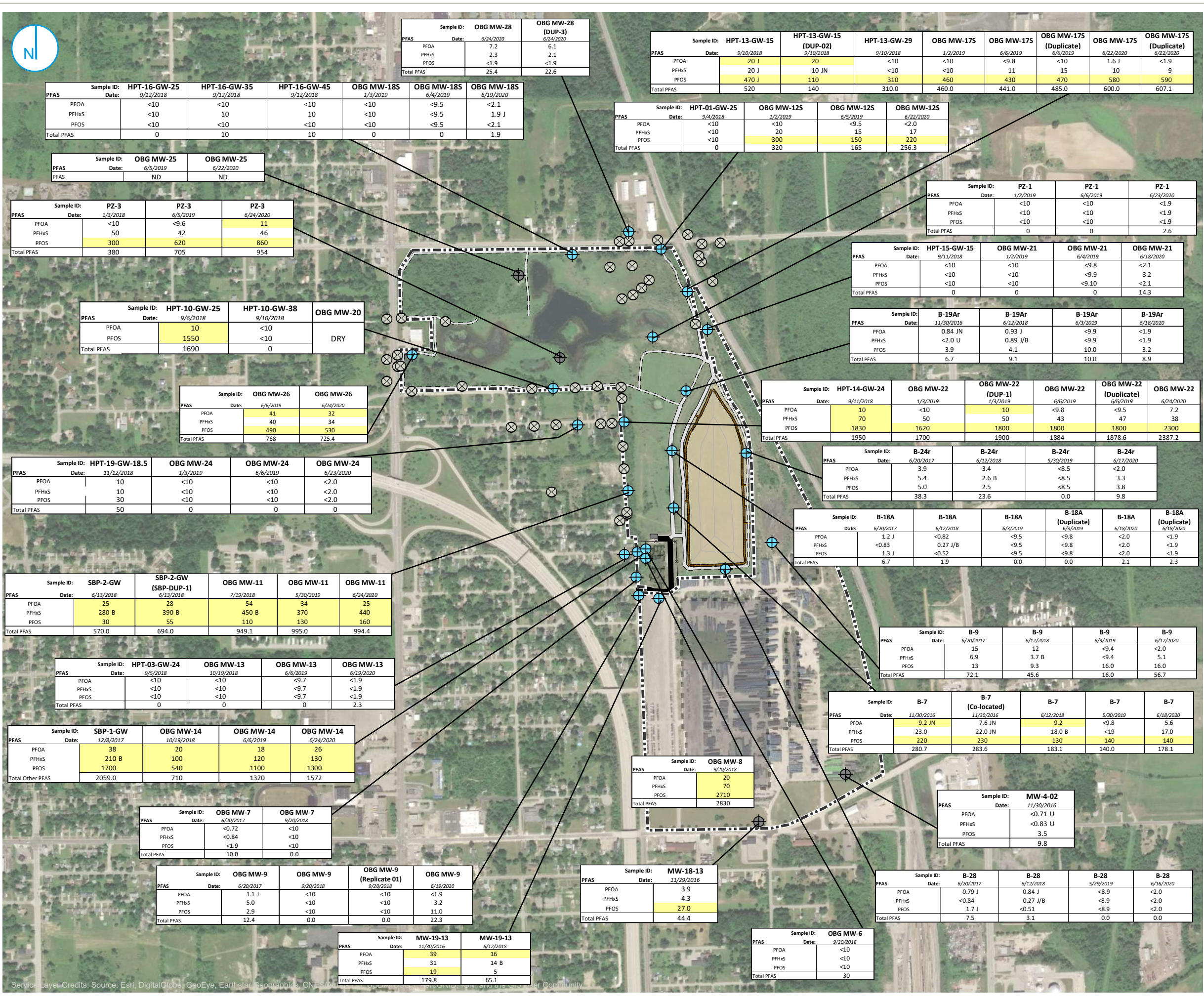
DRIFT UNIT GROUNDWATER ELEVATION MAP
JUNE 15, 2020

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 3

RAMBOLL US CORPORATION
A RAMBOLL COMPANY





LEGEND

- MONITORING WELL / PIEZOMETER
- ABANDONED WELL
- TEMPORARY WELL / BORING
- PROPERTY BOUNDARY
- FORMER BUILDING

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)
Perfluorooctanoic Acid (PFOA)		8
Perfluorohexane Sulfonic Acid (PFHxS)		51
Perfluorooctane Sulfonic Acid (PFOS)		16
Total Per-and Polyfluoroalkyl Substances		--

Notes

- 1) Only detections shown in analytical text boxes.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed.
- 5) ND = Not detected.
- 6) Dup = Duplicate sample.
- 7) J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
- 8) B - Compound also found in associated method blank.
- 9) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.

0 425 850 Feet

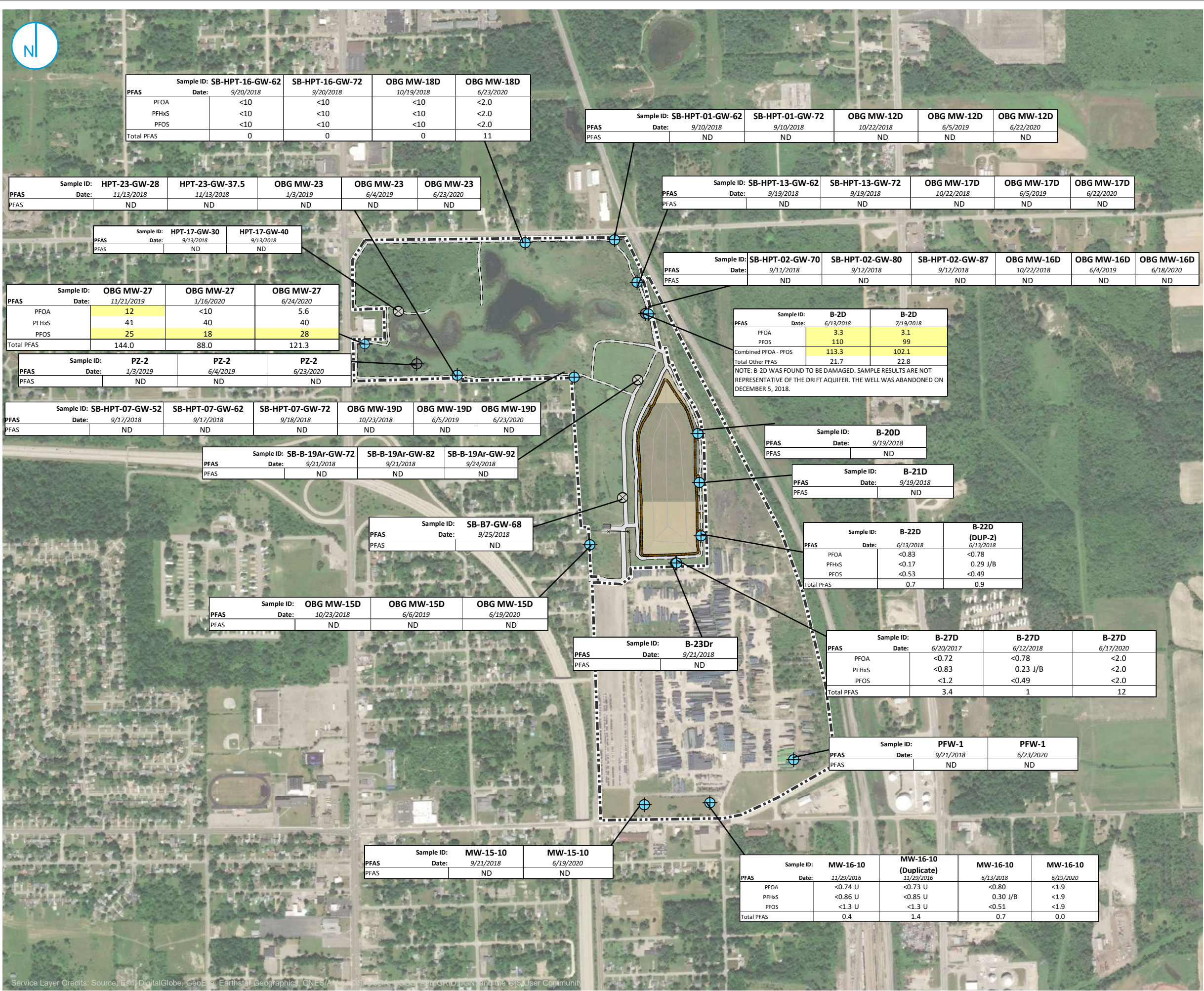
PERCHED ZONE MONITORING WELL PFAS SAMPLE RESULTS (NOVEMBER 2016 - JUNE 2020)

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 4

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL



LEGEND

- MONITORING WELL / PIEZOMETER
- ABANDONED WELL
- TEMPORARY WELL / BORING
- PROPERTY BOUNDARY
- FORMER BUILDING

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	
	Sample Date:	
Perfluorooctanoic Acid (PFOA)	8	
Perfluorohexane Sulfonic Acid (PFHxS)	51	
Perfluorooctane Sulfonic Acid (PFOS)	16	
Total Per-and Polyfluoroalkyl Substances	--	

- Notes
- 1) Concentrations in ng/L.
 - 2) < = Not detected at specified reporting limit.
 - 3) ND = Not detected.
 - 4) Dup = Duplicate sample.
 - 5) B - Compound also found in associated method blank.
 - 6) J - Estimated value less than reporting limit, but greater than MDL.
 - 7) Concentrations above the EGLE Drinking Water Maximum Contaminant Levels (MCLs) are highlighted in yellow.



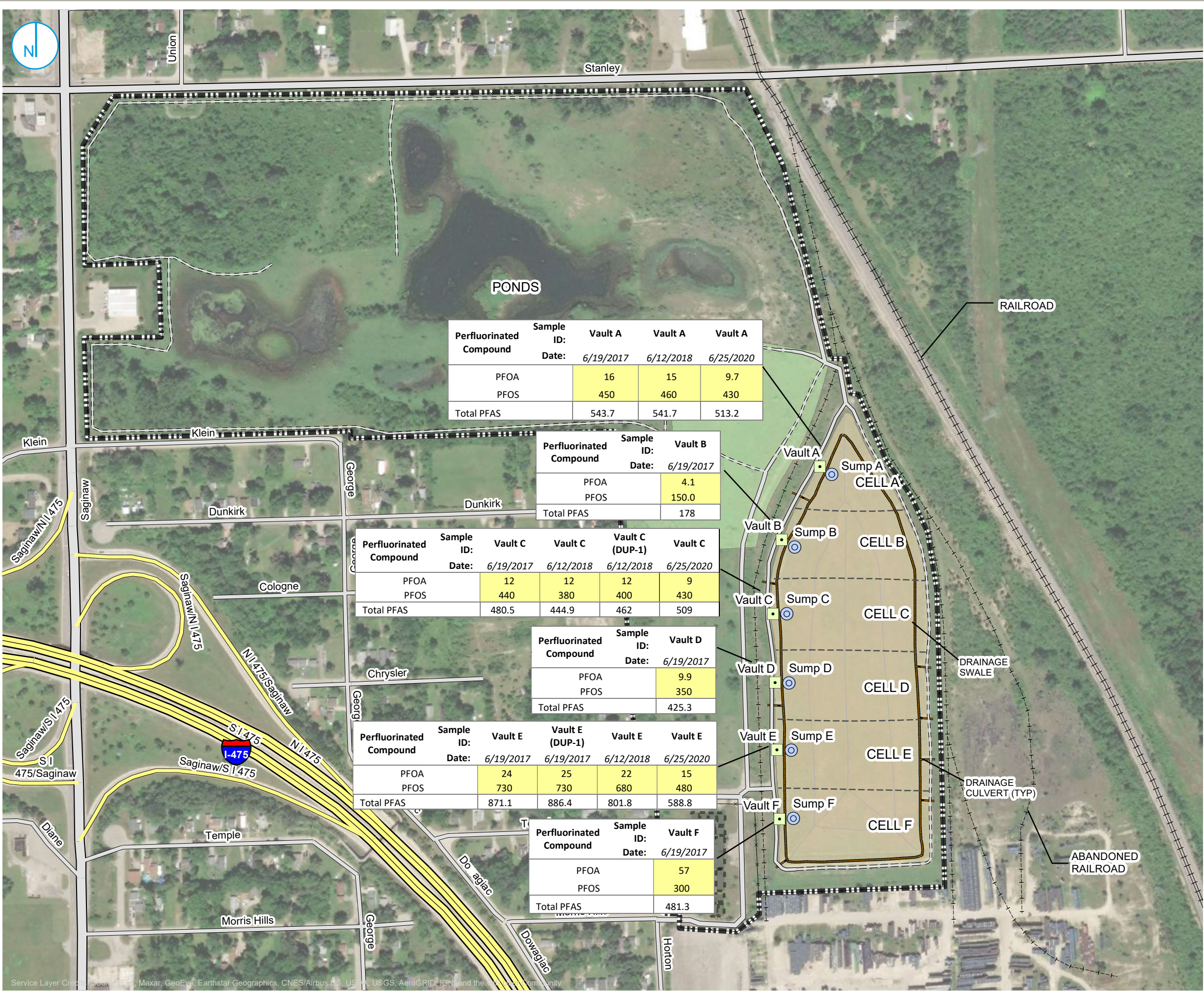
DRIFT UNIT PFAS SAMPLE RESULTS
(JUNE 2017 - JUNE 2020)

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 5

RAMBOLL US CORPORATION
A RAMBOLL COMPANY





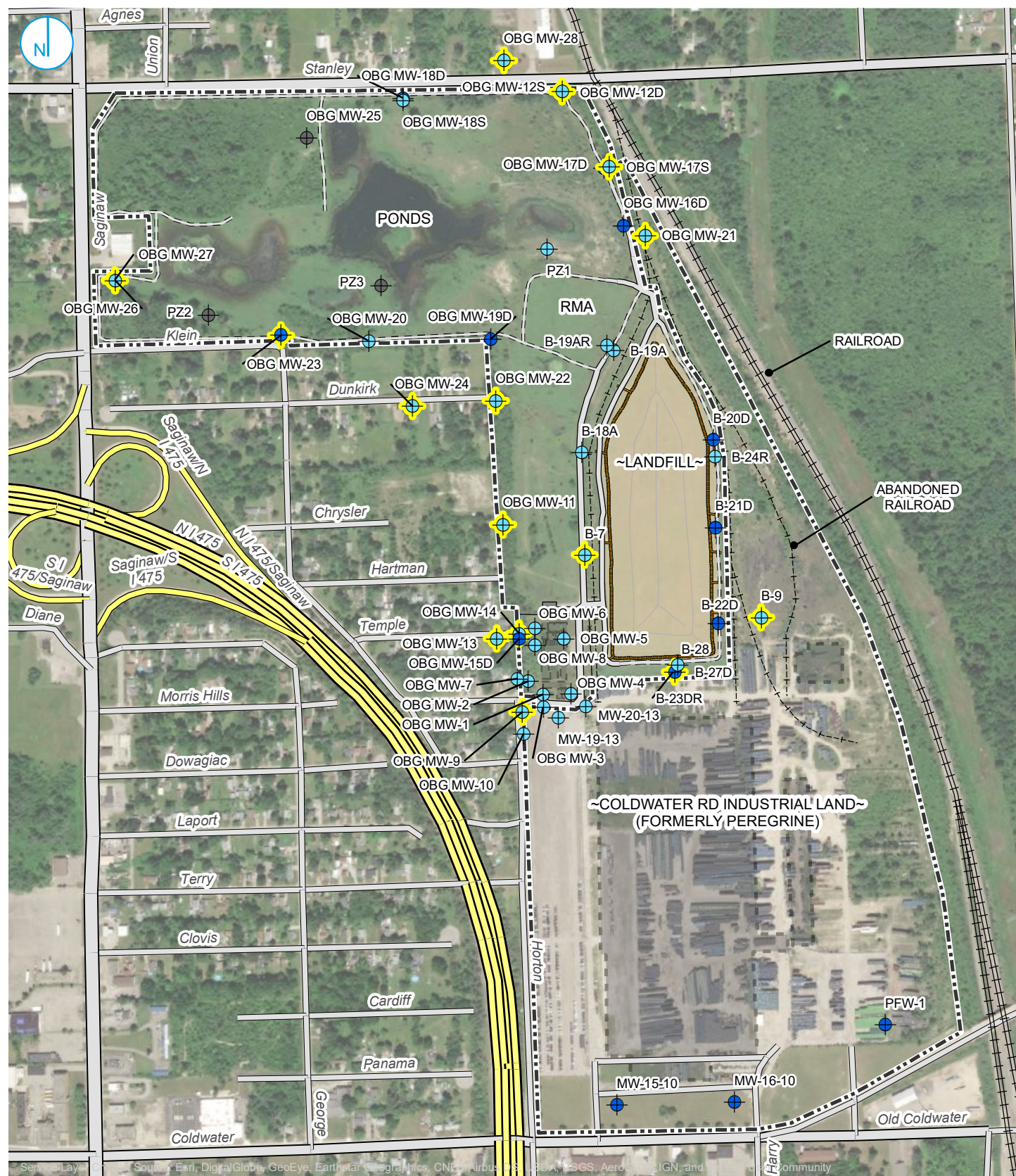
LEAK DETECTION VAULTS
PFAS SAMPLE RESULTS
(JUNE 2017 - JUNE 2020)

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 6

RAMBOLL US CORPORATION
A RAMBOLL COMPANY





LEGEND

- PERCHED ZONE MONITORING WELL
- PROPOSED PERCHED ZONE MONITORING WELL
- DRIFT UNIT MONITORING WELL
- PROPOSED DRIFT UNIT MONITORING WELL
- ABANDONED MONITORING WELL
- PROPERTY BOUNDARY
- FORMER BUILDING

0 250 500
Feet

PROPOSED MONITORING WELL LOCATIONS TO BE SAMPLED AS PART OF ANNUAL PFAS SAMPLING

RACER TRUST
COLDWATER ROAD
FLINT, MICHIGAN

FIGURE 7

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

APPENDIX A GROUNDWATER SAMPLING LOGS

Standard Groundwater Sampling Log

Date 6/16/20-6/18/20
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL, KBS

Weather sunny, 70s
 Well # B-7
 Evacuation Method Whale Pump-Peristaltic
 Sampling Method Purged Dry

Well Information:

Depth of Well * 28.80 ft.
 Depth to Water * 16.72 - 6/18 was 22.76 ft.
 Length of Water Column 12.08 ft.
 Volume of Water in Well 1.97 gal.(s)
 3X Volume of Water in Well 5.91 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 2 gal.(s)
 Did well go dry? yes

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

	Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial	<u>19.38</u>	initial <u>16.88</u>	initial <u>0.75</u>	initial <u>3.61</u>	initial <u>7.43</u>	initial <u>74.5</u>	initial <u>59.50</u>
5 min	<u>25.08</u>	<u>10.78</u>	<u>0.81</u>	<u>6.63</u>	<u>7.48</u>	<u>91.3</u>	<u>30.40</u>
10 min	<u>26.98</u>						
15 min	<u>6/18/2020</u>						
20 min	<u>22.76</u>	<u>23.77</u>	<u>0.79</u>	<u>1.91</u>	<u>7.30</u>	<u>120.4</u>	<u>21.81</u>
25 min	<u>25.44</u>	<u>15.26</u>	<u>0.87</u>	<u>2.87</u>	<u>7.33</u>	<u>115.6</u>	<u>20.90</u>
30 min	<u>26.50</u>						
35 min							
40 min							
45 min							
50 min							
55 min							
60 min							
65 min							
70 min							
75 min							
80 min							
85 min							
90 min							

Water Sample:

Time Collected 6/18/2020 - 1:10

Physical Appearance at Start

Physical Appearance at Sampling

Color light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/16/20-6/17/20
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather sunny, 70s
 Well # B-9
 Evacuation Method Whale Pump-Peristaltic
 Sampling Method Purge Dry

Well Information:

Depth of Well * 25.79 ft.
 Depth to Water * 5.29 - 6/17 was 7.79 ft.
 Length of Water Column 20.50 ft.
 Volume of Water in Well 3.34 gal.(s)
 3X Volume of Water in Well 10.02 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 4.5 gal.(s)
 Did well go dry? yes

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial	initial <u>17.89</u>	initial <u>2.15</u>	initial <u>3.05</u>	initial <u>7.03</u>	initial <u>240.2</u>	initial <u>50.7</u>
5 min <u>14.62</u>	<u>11.38</u>	<u>2.31</u>	<u>5.59</u>	<u>7.03</u>	<u>209.1</u>	<u>70.1</u>
10 min <u>21.64</u>	<u>11.38</u>	<u>2.39</u>	<u>4.12</u>	<u>7.13</u>	<u>160.7</u>	<u>81.6</u>
15 min <u>23.58</u>						
20 min <u>6/17/2020</u>						
25 min <u>7.79</u>	<u>15.46</u>	<u>2.30</u>	<u>5.21</u>	<u>7.14</u>	<u>127.7</u>	<u>60.9</u>
30 min <u>8.92</u>	<u>13.13</u>	<u>2.41</u>	<u>5.63</u>	<u>7.13</u>	<u>124.1</u>	<u>42.0</u>
35 min <u>11.29</u>						
40 min						
45 min						
50 min						
55 min						
60 min						
65 min						
70 min						
75 min						
80 min						
85 min						
90 min						

Water Sample:

Time Collected 6/17/2020 - 10:25

Physical Appearance at Start

Physical Appearance at Sampling

Color light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/16/20-6/18/20
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL, KBS

Weather sunny, 80s
 Well # B-18A
 Evacuation Method Whale Pump
 Sampling Method purged dry

Well Information:

Depth of Well * 43.44 ft.
 Depth to Water * 20.52 - 6/18 was 33.92 ft.
 Length of Water Column 22.92 ft.
 Volume of Water in Well 3.74 gal.(s)
 3X Volume of Water in Well 11.21 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 8 gal.(s)
 Did well go dry? yes

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial <u>21.87</u>	initial <u>16.41</u>	initial <u>0.91</u>	initial <u>3.67</u>	initial <u>7.39</u>	initial <u>97.4</u>	initial <u>13.10</u>
5 min <u>26.33</u>	<u>11.6</u>	<u>1.00</u>	<u>2.70</u>	<u>7.34</u>	<u>86.7</u>	<u>7.23</u>
10 min <u>31.22</u>	<u>11.44</u>	<u>1.02</u>	<u>1.36</u>	<u>7.31</u>	<u>80.0</u>	<u>9.23</u>
15 min <u>36.54</u>	<u>11.57</u>	<u>1.03</u>	<u>0.56</u>	<u>7.29</u>	<u>71.4</u>	<u>6.74</u>
20 min <u>39.54</u>	<u>11.7</u>	<u>1.03</u>	<u>0.48</u>	<u>7.23</u>	<u>54.0</u>	<u>6.53</u>
25 min <u>41.56</u>	<u>11.8</u>	<u>1.03</u>	<u>0.76</u>	<u>7.26</u>	<u>46.5</u>	<u>16.00</u>
30 min <u>41.57</u>	<u>11.7</u>		<u>0.70</u>	<u>7.28</u>	<u>65.0</u>	<u>25.20</u>
35 min <u>6/18/2020</u>						
40 min <u>33.92</u>	<u>18.29</u>	<u>0.92</u>	<u>2.75</u>	<u>7.20</u>	<u>65.3</u>	<u>20.70</u>
45 min <u>40.25</u>	<u>13.22</u>	<u>1.03</u>	<u>2.81</u>	<u>7.18</u>	<u>89.1</u>	<u>14.50</u>
50 min _____						
55 min _____						
60 min _____						
65 min _____						
70 min _____						
75 min _____						
80 min _____						
85 min _____						
90 min _____						

Water Sample:

Time Collected 6/18/2020 - 11:55

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color Clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	<u>3</u>	<u>15 ml plastic</u>	<u>None</u>	<u>No</u>

Notes: DUP-1 collected

Standard Groundwater Sampling Log

Date 6/16/20-6/18/20
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL, KBS

Weather sunny, 70s
 Well # B-19Ar
 Evacuation Method Whale Pump
 Sampling Method Purge Dry

Well Information:

Depth of Well * 47.10 ft.
 Depth to Water * 37.67 - 6/18 was 42.15 ft.
 Length of Water Column 9.43 ft.
 Volume of Water in Well 1.54 gal.(s)
 3X Volume of Water in Well 4.61 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 4 gal.(s)
 Did well go dry? yes

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

	Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial	<u>39.47</u>	initial <u>17.05</u>	initial <u>1.03</u>	initial <u>0.15</u>	initial <u>7.31</u>	initial <u>77.4</u>	initial <u>236</u>
5 min	<u>41.83</u>	<u>13.13</u>	<u>1.10</u>	<u>0.13</u>	<u>7.30</u>	<u>67.1</u>	<u>415</u>
10 min	<u>43.27</u>	<u>13.05</u>	<u>1.08</u>	<u>0.36</u>	<u>7.33</u>	<u>79.9</u>	
15 min	<u>45.38</u>						
20 min	<u>6/18/2020</u>						
25 min	<u>42.15</u>	<u>22.20</u>	<u>0.92</u>	<u>0.54</u>	<u>7.26</u>	<u>85.8</u>	<u>623</u>
30 min		<u>13.44</u>	<u>1.08</u>	<u>0.63</u>	<u>7.26</u>	<u>97.2</u>	<u>677</u>
35 min							
40 min							
45 min							
50 min							
55 min							
60 min							
65 min							
70 min							
75 min							
80 min							
85 min							
90 min							

Water Sample:

Time Collected 6/18/2020 - 9:55

Physical Appearance at Start

Physical Appearance at Sampling

Color light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color cloudy / light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	<u>3</u>	<u>15 ml plastic</u>	<u>None</u>	<u>No</u>

Notes:

collected sample prior to readings

Standard Groundwater Sampling Log

Date 6/16/20 - 6/17/20
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather sunny, 70s
 Well # B-24r
 Evacuation Method Whale Pump-Peristaltic
 Sampling Method purge dry

Well Information:

Depth of Well * 30.38 ft.
 Depth to Water * 13.07 - 6/17 was 13.82 ft.
 Length of Water Column 17.31 ft.
 Volume of Water in Well 2.82 gal.(s)
 3X Volume of Water in Well 8.46 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 7.5 gal.(s)
 Did well go dry? yes

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial <u>14.31</u>	initial <u>18.14</u>	initial <u>0.96</u>	initial <u>0.26</u>	initial <u>7.35</u>	initial <u>92.6</u>	initial <u>73</u>
5 min <u>20.67</u>	<u>11.01</u>	<u>1.12</u>	<u>0.26</u>	<u>7.33</u>	<u>69.8</u>	<u>19</u>
10 min <u>21.76</u>	<u>10.80</u>	<u>1.22</u>	<u>1.07</u>	<u>7.33</u>	<u>77.2</u>	<u>21.5</u>
15 min <u>24.71</u>	<u>10.70</u>	<u>1.13</u>	<u>0.29</u>	<u>7.33</u>	<u>59.3</u>	<u>79.6</u>
20 min <u>27.62</u>	<u>10.92</u>	<u>1.10</u>	<u>0.21</u>	<u>7.34</u>	<u>53.9</u>	<u>35.1</u>
25 min <u>28.9</u>						
30 min <u>6/17/2020</u>						
35 min <u>13.82</u>	<u>21.01</u>	<u>1.05</u>	<u>6.94</u>	<u>7.39</u>	<u>103.9</u>	<u>88.2</u>
40 min <u>14.84</u>	<u>14.87</u>	<u>1.20</u>	<u>9.02</u>	<u>7.38</u>	<u>109.3</u>	<u>36.2</u>
45 min <u>17.43</u>						
50 min						
55 min						
60 min						
65 min						
70 min						
75 min						
80 min						
85 min						
90 min						

Water Sample:

Time Collected 6/17/2020 - 13:20

Physical Appearance at Start

Physical Appearance at Sampling

Color light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/15/20-6/16/20
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL, KBS

Weather sunny, 70s
 Well # B-28
 Evacuation Method Whale Pump-Peristaltic
 Sampling Method purge dry

Well Information:

Depth of Well * 32.23 ft.
 Depth to Water * 4.84 - 6/16 was 5.25 ft.
 Length of Water Column 27.39 ft.
 Volume of Water in Well 4.40 gal.(s)
 3X Volume of Water in Well 13.39 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 14 gal.(s)
 Did well go dry? yes

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial		initial	12.96	initial	0.84	initial	1.22	initial	7.19	initial	56.3	initial	<800
5 min	16.85		11.6		0.85		0.96		7.23		40.8		100
10 min	20.95		12.03		0.84		1.24		7.25		33.7		100
15 min	23.94		12.23		0.84		1.16		7.23		32.1		100
20 min	26.17		11.5		0.83		0.41		7.24		15.2		800
25 min	27.98		11.59		0.80		0.65		7.26		51.3		800
30 min	29.48		11.72		0.77		0.61		7.27		47.7		800
35 min	31.65		11.82		0.75		2.11		7.34		46.8		>1000
40 min	30.45												
45 min	6/16/2020												
50 min	6.05		18.68		0.79		3.38		7.38		70.2		>1000
55 min	6.55		15.75		0.82		3.56		7.38		83.2		157.7
60 min	7.19		14.44		0.83		3.59		7.38		89.1		84.4
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 6/16/2020 - 16:33

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

		Standard Groundwater Sampling Log				
Date	6/17/2020	Weather	sunny, 70s			
Site Name	RACER Coldwater Rd	Well #	B-27D			
Location	Flint, MI	Evacuation Method	badder pump			
Project No.	75178	Sampling Method	low flow			
Personnel	WHL, KBS					
Well Information:						
Depth of Well *	88.47 ft.	Water Volume /ft. for: X 2" Diameter Well = 0.163 X LWC 4" Diameter Well = 0.653 X LWC 6" Diameter Well = 1.469 X LWC				
Depth to Water *	75.01 ft.					
Length of Water Column	13.46 ft.					
Volume of Water in Well	2.20 gal.(s)					
3X Volume of Water in Well	6.58 gal.(s)	Volume removed before sampling	6 gal.(s)			
		Did well go dry?	no			
* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify)						
Instrument Calibration:						
	Calibrated within range					
pH	Yes					
ORP	Yes					
Conductivity	Yes					
DO	Yes					
Water parameters:						
Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial 75.04	initial 13.80	initial 0.42	initial 0.42	initial 7.66	initial -57.9	initial >1000
5 min 75.31	12.80	0.42	0.20	7.66	-75.1	>1000
10 min 75.41	12.57	0.41	0.17	7.62	-71.0	>1000
15 min 75.41	12.74	0.41	0.31	7.66	-74.3	928
20 min 75.41	12.62	0.41	0.19	7.66	-78.1	981
25 min 75.41	13.40	0.40	0.19	7.67	-71.8	978
30 min 75.41	12.53	0.40	0.17	7.67	-80.6	981
35 min 75.41	12.57	0.40	0.13	7.67	-82.9	898
40 min 75.41	12.66	0.39	0.15	7.67	-84.1	846
45 min 75.41	12.71	0.38	0.07	7.67	-85.8	
50 min 75.41	12.53	0.38	0.06	7.67	-86.3	857
55 min 75.41	12.67	0.37	0.17	7.67	-87.2	723
60 min 75.41	12.53	0.37	0.04	7.67	-87.3	677
65 min 75.41	12.80	0.36	0.29	7.67	-87.5	654
70 min 75.41	12.89	0.36	0.53	7.67	-84.4	639
75 min 75.41	12.57	0.36	0.09	7.67	-85.9	589
80 min 75.41	12.61	0.35	0.07	7.67	-86.1	537
85 min 75.41	12.66	0.35	0.09	7.67	-86.3	
90 min 75.41	12.57	0.35	0.06	7.67	-87.0	537
95 min 75.41	12.62	0.34	0.03	7.67	-87.4	398
100 min 75.41	12.65	0.34	0.03	7.67	-87.5	413
105 min 75.41	12.57	0.33	0.03	7.67	-87.8	415
110 min 75.41	12.59	0.33	0.02	7.67	-85.0	417
Water Sample:						
Time Collected 12:06						
Physical Appearance at Start			Physical Appearance at Sampling			
Color	gray	Color	light gray			
Odor	no	Odor	no			
Turbidity (> 100 NTU)	no	Turbidity (> 100 NTU)	no			
Sheen/Free Product	no	Sheen/Free Product	no			
Samples collected:						
Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered		
PFAS (7979)	3	15 ml plastic	None	No		
Notes:						

Standard Groundwater Sampling Log

Date 6/18/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather sunny, 80's
 Well # OBG MW-16D
 Evacuation Method bladder pump
 Sampling Method low flow

Well Information:

Depth of Well * 75.10 ft.
 Depth to Water * 55.96 ft.
 Length of Water Column 19.14 ft.
 Volume of Water in Well 3.11 gal.(s)
 3X Volume of Water in Well 9.35 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 2 1/2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial <u>55.65</u>	initial <u>18.48</u>	initial <u>0.55</u>	initial <u>3.05</u>	initial <u>7.66</u>	initial <u>-30.4</u>	initial <u>526</u>
5 min <u>56.00</u>	<u>14.31</u>	<u>0.57</u>	<u>4.75</u>	<u>7.68</u>	<u>-37.2</u>	<u>417</u>
10 min <u>55.95</u>	<u>13.59</u>	<u>0.58</u>	<u>3.97</u>	<u>7.66</u>	<u>-56.5</u>	<u>252</u>
15 min <u>55.93</u>	<u>13.41</u>	<u>0.58</u>	<u>4.28</u>	<u>7.66</u>	<u>-58.0</u>	<u>167</u>
20 min <u>55.91</u>	<u>13.34</u>	<u>0.58</u>	<u>4.80</u>	<u>7.68</u>	<u>-58.0</u>	<u>134</u>
25 min <u>55.91</u>	<u>13.40</u>	<u>0.58</u>	<u>5.02</u>	<u>7.68</u>	<u>-60.6</u>	<u>114</u>
30 min <u>55.90</u>	<u>13.36</u>	<u>0.58</u>	<u>5.21</u>	<u>7.68</u>	<u>-63.3</u>	<u>90.4</u>
35 min <u>55.89</u>	<u>13.31</u>	<u>0.58</u>	<u>5.52</u>	<u>7.69</u>	<u>-63.9</u>	<u>76.3</u>
40 min <u>55.91</u>	<u>13.31</u>	<u>0.58</u>	<u>5.49</u>	<u>7.69</u>	<u>-68.3</u>	<u>70.5</u>
45 min <u>55.89</u>	<u>13.24</u>	<u>0.58</u>	<u>5.55</u>	<u>7.70</u>	<u>-68.1</u>	<u>63.1</u>
50 min _____	_____	_____	_____	_____	_____	_____
55 min _____	_____	_____	_____	_____	_____	_____
60 min _____	_____	_____	_____	_____	_____	_____
65 min _____	_____	_____	_____	_____	_____	_____
70 min _____	_____	_____	_____	_____	_____	_____
75 min _____	_____	_____	_____	_____	_____	_____
80 min _____	_____	_____	_____	_____	_____	_____
85 min _____	_____	_____	_____	_____	_____	_____
90 min _____	_____	_____	_____	_____	_____	_____

Water Sample:

Time Collected 15:50

Physical Appearance at Start _____

Physical Appearance at Sampling _____

Color clear / light gray
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/19/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather sunny 80s
 Well # OBG MW-9
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 18.11 ft.
 Depth to Water * 3.93 ft.
 Length of Water Column 14.18 ft.
 Volume of Water in Well 2.31 gal.(s)
 3X Volume of Water in Well 6.93 gal.(s)

Water Volume /ft. for:
☒ 2" Diameter Well = 0.163 X LWC
☐ 4" Diameter Well = 0.653 X LWC
☐ 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

	Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial	<u>4.97</u>	initial <u>16.49</u>	initial <u>2.74</u>	initial <u>0.08</u>	initial <u>7.23</u>	initial <u>69.0</u>	initial <u><100</u>
5 min	<u>5.34</u>	<u>16.22</u>	<u>2.66</u>	<u>0.03</u>	<u>7.24</u>	<u>54.5</u>	<u><100</u>
10 min	<u>5.41</u>	<u>17.01</u>	<u>2.63</u>	<u>0.03</u>	<u>7.24</u>	<u>51.6</u>	<u><100</u>
15 min	<u>5.51</u>	<u>16.78</u>	<u>2.62</u>	<u>0.03</u>	<u>7.25</u>	<u>48.6</u>	<u>22.0</u>
20 min	<u>5.44</u>	<u>17.19</u>	<u>2.63</u>	<u>0.04</u>	<u>7.25</u>	<u>45.0</u>	<u>24.2</u>
25 min	<u>5.44</u>	<u>17.46</u>	<u>2.6</u>	<u>0.04</u>	<u>7.26</u>	<u>40.5</u>	<u>23.9</u>
30 min							
35 min							
40 min							
45 min							
50 min							
55 min							
60 min							
65 min							
70 min							
75 min							
80 min							
85 min							
90 min							

Water Sample:

Time Collected 10:28

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/24/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel BKK

Weather partly cloudy 70s
 Well # OBG MW-11
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 24.68 ft.
 Depth to Water * 6.55 ft.
 Length of Water Column 18.13 ft.
 Volume of Water in Well 2.95 gal.(s)
 3X Volume of Water in Well 8.86 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 1/2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial <u>7.42</u>	initial <u>12.68</u>	initial <u>1.73</u>	initial <u>0.13</u>	initial <u>7.20</u>	initial <u>-78.1</u>	initial <u>52.3</u>
5 min <u>7.74</u>	<u>12.35</u>	<u>1.75</u>	<u>0.10</u>	<u>7.20</u>	<u>-92.6</u>	<u>42.4</u>
10 min <u>7.74</u>	<u>12.31</u>	<u>1.75</u>	<u>0.08</u>	<u>7.20</u>	<u>-95.4</u>	<u>40.1</u>
15 min <u>7.78</u>	<u>12.15</u>	<u>1.75</u>	<u>0.06</u>	<u>7.20</u>	<u>-96.7</u>	<u>37.6</u>
20 min <u>7.80</u>	<u>12.08</u>	<u>1.74</u>	<u>0.05</u>	<u>7.20</u>	<u>-96.7</u>	<u>30.6</u>
25 min <u>7.85</u>	<u>12.03</u>	<u>1.74</u>	<u>0.04</u>	<u>7.20</u>	<u>-96.0</u>	<u>21.7</u>
30 min <u>7.87</u>	<u>11.99</u>	<u>1.74</u>	<u>0.04</u>	<u>7.20</u>	<u>-96.0</u>	<u>17.0</u>
35 min <u>7.90</u>	<u>11.86</u>	<u>1.75</u>	<u>0.03</u>	<u>7.20</u>	<u>-97.8</u>	<u>13.8</u>
40 min <u>7.92</u>	<u>11.89</u>	<u>1.75</u>	<u>0.03</u>	<u>7.20</u>	<u>-98.3</u>	<u>10.9</u>
45 min _____	_____	_____	_____	_____	_____	_____
50 min _____	_____	_____	_____	_____	_____	_____
55 min _____	_____	_____	_____	_____	_____	_____
60 min _____	_____	_____	_____	_____	_____	_____
65 min _____	_____	_____	_____	_____	_____	_____
70 min _____	_____	_____	_____	_____	_____	_____
75 min _____	_____	_____	_____	_____	_____	_____
80 min _____	_____	_____	_____	_____	_____	_____
85 min _____	_____	_____	_____	_____	_____	_____
90 min _____	_____	_____	_____	_____	_____	_____

Water Sample:

Time Collected 10:27

Physical Appearance at Start _____

Physical Appearance at Sampling _____

Color cloudy / light gray
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/22/2020
Site Name RACER Coldwater Rd
Location Flint, MI
Project No. 75178
Personnel CSY/WHL

Weather partly cloudy 80s
Well # OBG MW-12S
Evacuation Method peristaltic
Sampling Method low flow

Well Information:

Depth of Well * 21.35 ft.
Depth to Water * 9.63 ft.
Length of Water Column 11.72 ft.
Volume of Water in Well 1.91 gal.(s)
3X Volume of Water in Well 5.73 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1/2 gal.(s)
Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
ORP Yes
Conductivity Yes
DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	10.69	initial	15.14	initial	0.92	initial	0.02	initial	7.32	initial	43.1	initial	27.0
5 min	10.71		15.17		0.92		0.02		7.32		36.5		9.2
10 min	10.72		15.64		0.92		0.02		7.32		34.1		6.4
15 min	10.71		15.54		0.92		0.02		7.32		31.8		3.5
20 min													
25 min													
30 min													
35 min													
40 min													
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 12:08

Physical Appearance at Start

Physical Appearance at Sampling

Color cloudy
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/22/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel CSY/WHL

Weather partly cloudy 80s
 Well # OBG MW-12D
 Evacuation Method bladder pump
 Sampling Method low flow

Well Information:

Depth of Well * 65.00 ft.
 Depth to Water * 45.50 ft.
 Length of Water Column 19.50 ft.
 Volume of Water in Well 3.17 gal.(s)
 3X Volume of Water in Well 9.53 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 1/2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial	initial <u>23.50</u>	initial <u>0.00056</u>	initial <u>5.10</u>	initial <u>7.84</u>	initial <u>24.2</u>	initial <u>73</u>
5 min	<u>21.70</u>	<u>0.00056</u>	<u>4.96</u>	<u>7.87</u>	<u>5.0</u>	
10 min	<u>19.49</u>	<u>0.00057</u>	<u>4.88</u>	<u>7.79</u>	<u>5.8</u>	
15 min	<u>15.96</u>	<u>0.00059</u>	<u>5.22</u>	<u>7.75</u>	<u>7.9</u>	
20 min	<u>15.14</u>	<u>0.00</u>	<u>5.88</u>	<u>7.79</u>	<u>-9.2</u>	<u>86.9</u>
25 min	<u>45.33</u>	<u>15.34</u>	<u>0.00</u>	<u>7.83</u>	<u>-4.4</u>	<u>42.0</u>
30 min	<u>14.3</u>	<u>0.00</u>	<u>6.17</u>	<u>7.82</u>	<u>-8.8</u>	<u>41.6</u>
35 min	<u>44.61</u>	<u>14.59</u>	<u>0.00</u>	<u>7.83</u>	<u>-8.0</u>	<u>33.3</u>
40 min	<u>44.63</u>	<u>14.62</u>	<u>0.00</u>	<u>7.81</u>	<u>-10.5</u>	<u>31.8</u>
45 min	<u>44.65</u>	<u>14.59</u>	<u>0.00</u>	<u>7.83</u>	<u>-9.1</u>	<u>32.0</u>
50 min						
55 min						
60 min						
65 min						
70 min						
75 min						
80 min						
85 min						
90 min						

Water Sample:

Time Collected 13:00

Physical Appearance at Start

Physical Appearance at Sampling

Color cloudy
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color cloudy
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes: Possible issue with conductivity probe. Not reading correctly. Will need to re-calibrate.

Standard Groundwater Sampling Log

Date 6/19/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather sunny 80s
 Well # OBG MW-13
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 23.69 ft.
 Depth to Water * 8.79 ft.
 Length of Water Column 14.90 ft.
 Volume of Water in Well 2.42 gal.(s)
 3X Volume of Water in Well 7.28 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured		Temperature Celsius		Conductivity mS/cm		Dissolved Oxygen mg/L		pH		ORP mV		Turbidity NTUs	
0.3 feet or less		±3 percent		±3 percent		±10 percent		±0.1 pH units		±10 millivolts		±10 percent	
initial	<u>9.84</u>	initial	<u>16.56</u>	initial	<u>1.86</u>	initial	<u>0.56</u>	initial	<u>6.99</u>	initial	<u>54.3</u>	initial	<u>881</u>
5 min	<u>10.35</u>		<u>15.04</u>		<u>1.99</u>		<u>0.47</u>		<u>6.98</u>		<u>59.7</u>		<u>180</u>
10 min	<u>11.02</u>		<u>15.66</u>		<u>1.99</u>		<u>0.46</u>		<u>6.98</u>		<u>60.5</u>		<u>143</u>
15 min	<u>11.41</u>		<u>15.17</u>		<u>1.98</u>		<u>0.42</u>		<u>6.98</u>		<u>59.3</u>		<u>131</u>
20 min	<u>12.08</u>		<u>14.96</u>		<u>2.00</u>		<u>0.43</u>		<u>6.98</u>		<u>58.7</u>		<u>96.4</u>
25 min	<u>12.53</u>		<u>15.30</u>		<u>1.99</u>		<u>0.42</u>		<u>6.98</u>		<u>48.8</u>		<u>96.2</u>
30 min	<u>13.02</u>		<u>15.13</u>		<u>1.98</u>		<u>0.42</u>		<u>6.98</u>		<u>41.5</u>		<u>93.4</u>
35 min	<u>13.42</u>												
40 min													
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 13:18

Physical Appearance at Start

Physical Appearance at Sampling

Color brown
 Odor no
 Turbidity (> 100 NTU) yes
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/24/20-6/25/20
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather sunny 80s
 Well # OBG MW-14
 Evacuation Method peristaltic
 Sampling Method purged dry

Well Information:

Depth of Well * 17.75 ft.
 Depth to Water * 8.45 ft.
 Length of Water Column 9.3 ft.
 Volume of Water in Well 1.51 gal.(s)
 3X Volume of Water in Well 4.54 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 3 gal.(s)
 Did well go dry? yes

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

	Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial	<u>10.51</u>	initial <u>14.22</u>	initial <u>1.42</u>	initial <u>1.03</u>	initial <u>7.33</u>	initial <u>96.4</u>	initial <u>46.00</u>
5 min	<u>11.13</u>	<u>13.36</u>	<u>1.45</u>	<u>1.28</u>	<u>7.34</u>	<u>95.1</u>	<u>37.50</u>
10 min	<u>11.8</u>	<u>13.14</u>	<u>1.46</u>	<u>1.61</u>	<u>7.36</u>	<u>95.2</u>	<u>22.00</u>
15 min	<u>12.78</u>	<u>13.44</u>	<u>1.46</u>	<u>2.26</u>	<u>7.40</u>	<u>96.6</u>	<u>32.10</u>
20 min	<u>13.2</u>	<u>13.64</u>	<u>1.45</u>	<u>2.64</u>	<u>7.38</u>	<u>98.7</u>	<u>36.00</u>
25 min	<u>13.4</u>	<u>13.63</u>	<u>1.45</u>	<u>1.67</u>	<u>7.33</u>	<u>96.7</u>	<u>39.60</u>
30 min	<u>13.77</u>	<u>13.40</u>	<u>1.45</u>	<u>1.04</u>	<u>7.30</u>	<u>93.8</u>	<u>28.60</u>
35 min	<u>14.02</u>	<u>13.36</u>	<u>1.46</u>	<u>0.63</u>	<u>7.29</u>	<u>90.8</u>	<u>30.70</u>
40 min	<u>14.29</u>	<u>13.18</u>	<u>1.46</u>	<u>0.43</u>	<u>7.28</u>	<u>88.8</u>	<u>39.60</u>
45 min	<u>14.60</u>	<u>12.97</u>	<u>1.47</u>	<u>0.31</u>	<u>7.28</u>	<u>87.0</u>	<u>39.20</u>
50 min	<u>15.58</u>						
55 min							
60 min							
65 min							
70 min							
75 min							
80 min							
85 min							
90 min							

Water Sample:

Time Collected 14:00 (6/25/20)

Physical Appearance at Start

Physical Appearance at Sampling

Color light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color light brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	<u>3</u>	<u>15 ml plastic</u>	<u>None</u>	<u>No</u>

Notes:

Standard Groundwater Sampling Log

Date 6/19/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel KBS

Weather sunny 80s
 Well # OBG MW-15D
 Evacuation Method bladder pump
 Sampling Method low flow

Well Information:

Depth of Well * 99.26 ft.
 Depth to Water * 79.03 ft.
 Length of Water Column 20.23 ft.
 Volume of Water in Well 3.29 gal.(s)
 3X Volume of Water in Well 9.89 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 3/4 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured		Temperature Celsius		Conductivity mS/cm		Dissolved Oxygen mg/L		pH		ORP mV		Turbidity NTUs	
0.3 feet or less		±3 percent		±3 percent		±10 percent		±0.1 pH units		±10 millivolts		±10 percent	
initial		initial		initial		initial		initial		initial		initial	
5 min	<u>79.05</u>	<u>14.62</u>		<u>0.54</u>		<u>0.18</u>		<u>7.63</u>		<u>-65.2</u>		<u>11</u>	
10 min	<u>79.05</u>	<u>14.27</u>		<u>0.54</u>		<u>0.13</u>		<u>7.62</u>		<u>-71.7</u>		<u>3.72</u>	
15 min	<u>79.05</u>	<u>13.92</u>		<u>0.54</u>		<u>0.11</u>		<u>7.62</u>		<u>-72.3</u>		<u>3.44</u>	
20 min	<u>79.05</u>	<u>14.02</u>		<u>0.53</u>		<u>0.09</u>		<u>7.62</u>		<u>-72.6</u>		<u>3.04</u>	
25 min	<u>79.05</u>	<u>14.25</u>		<u>0.53</u>		<u>0.09</u>		<u>7.62</u>		<u>-73.8</u>		<u>1.69</u>	
30 min	<u>79.05</u>	<u>14.39</u>		<u>0.53</u>		<u>0.08</u>		<u>7.62</u>		<u>-74.1</u>		<u>0.27</u>	
35 min													
40 min													
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected _____

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/22/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel CSY/WHL

Weather partly cloudy 80s
 Well # OBG MW-17S
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 22.24 ft.
 Depth to Water * 10.59 ft.
 Length of Water Column 11.65 ft.
 Volume of Water in Well 1.89 gal.(s)
 3X Volume of Water in Well 5.69 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	<u>11.37</u>	initial	<u>16.21</u>	initial	<u>0.81</u>	initial	<u>0.16</u>	initial	<u>7.28</u>	initial	<u>-99.9</u>	initial	<u>61.4</u>
5 min	<u>11.47</u>		<u>14.96</u>		<u>0.85</u>		<u>0.07</u>		<u>7.28</u>		<u>-100.4</u>		<u>37.3</u>
10 min	<u>11.39</u>		<u>14.58</u>		<u>0.84</u>		<u>0.06</u>		<u>7.28</u>		<u>-97.7</u>		<u>21.2</u>
15 min	<u>11.34</u>		<u>15.05</u>		<u>0.86</u>		<u>0.05</u>		<u>7.28</u>		<u>-97.8</u>		<u>18.1</u>
20 min	<u>11.3</u>		<u>15.24</u>		<u>0.86</u>		<u>0.03</u>		<u>7.28</u>		<u>-98.2</u>		<u>11.3</u>
25 min	<u>11.35</u>		<u>15.57</u>		<u>0.85</u>		<u>0.02</u>		<u>7.28</u>		<u>-101.4</u>		<u>8.7</u>
30 min													
35 min	<u>11.31</u>		<u>15.27</u>		<u>0.85</u>		<u>0.02</u>		<u>7.29</u>		<u>-99.1</u>		<u>15.5</u>
40 min	<u>11.31</u>		<u>15.24</u>		<u>0.85</u>		<u>0.01</u>		<u>7.29</u>		<u>-101.0</u>		<u>11.9</u>
45 min	<u>11.31</u>		<u>14.86</u>		<u>0.86</u>		<u>0.01</u>		<u>7.29</u>		<u>-101.5</u>		<u>10.5</u>
50 min	<u>11.30</u>		<u>15.41</u>		<u>0.86</u>		<u>0.00</u>		<u>7.28</u>		<u>-102.3</u>		<u>10.1</u>
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 16:04

Physical Appearance at Start

Physical Appearance at Sampling

Color clear/brown
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Collected Dup-2

Standard Groundwater Sampling Log

Date 6/22/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather partly cloudy 80s
 Well # OBG MW-17D
 Evacuation Method bladder pump
 Sampling Method low flow

Well Information:

Depth of Well * 61.30 ft.
 Depth to Water * 48.64 ft.
 Length of Water Column 12.66 ft.
 Volume of Water in Well 2.06 gal.(s)
 3X Volume of Water in Well 6.19 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	48.69	initial	12.99	initial	0.00	initial	0.61	initial	7.76	initial	6.5	initial	154
5 min	48.75		12.68		0.00		0.69		7.76		6.3		88.1
10 min	48.62		15.02		0.00		0.75		7.75		3.2		84.3
15 min	48.62		15.34		0.00		0.79		7.74		3.8		63.9
20 min	48.62		15.91		0.00		0.98		7.74		3.6		52.6
25 min	48.62		15.12		0.00		1.19		7.75		6.5		40.4
30 min	48.62		15.43		0.00		1.29		7.75		6.8		32.1
35 min	48.62		15.38		0.00		1.49		7.75		8.9		26.8
40 min	48.62		15.45		0.00		1.92		7.75		11.3		23.7
45 min	48.62		15.53		0.00		1.92		7.75		10.2		22.6
50 min	48.62		15.74		0.00		2.01		7.75		10.8		22.4
55 min	48.62		15.54		0.00		2.07		7.75		10.4		17.5
60 min	48.62		15.75		0.00		2.17		7.75		9.5		16.3
65 min	48.62		15.75		0.00		2.31		7.75		10.3		15.7
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 16:00

Physical Appearance at Start

Physical Appearance at Sampling

Color cloudy
 Odor no
 Turbidity (> 100 NTU) yes
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes: Possible issue with conductivity probe. Not reading correctly. Will need to re-calibrate.

Standard Groundwater Sampling Log

Date 6/19/2020
Site Name RACER Coldwater Rd
Location Flint, MI
Project No. 75178
Personnel WHL

Weather sunny 80s
Well # OBG MW-18S
Evacuation Method peristaltic
Sampling Method low flow

Well Information:

Depth of Well * 30.83 ft.
Depth to Water * 11.33 ft.
Length of Water Column 19.5 ft.
Volume of Water in Well 3.18 gal.(s)
3X Volume of Water in Well 9.54 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
ORP Yes
Conductivity Yes
DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	11.49	initial	20.46	initial	0.80	initial	1.76	initial	7.32	initial	38.6	initial	53.8
5 min	11.51		15.33		0.85		0.24		7.30		41.7		53.5
10 min	11.51		14.78		0.91		0.18		7.29		35.0		45.1
15 min	11.52		14.45		0.98		0.14		7.28		28.1		34.2
20 min	11.52		14.51		1.08		0.11		7.28		20.3		31.4
25 min	11.53		14.59		1.13		0.08		7.27		17.6		23.4
30 min	11.53		14.85		1.19		0.07		7.26		15.7		19.1
35 min	11.53		15.04		1.23		0.06		7.26		16.9		19.1
40 min													
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 12:00

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/23/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel CSY

Weather cloudy 70s
 Well # OBG MW-18D
 Evacuation Method bladder
 Sampling Method low flow

Well Information:

Depth of Well * 56.10 ft.
 Depth to Water * 48.31 ft.
 Length of Water Column 7.79 ft.
 Volume of Water in Well 1.26 gal.(s)
 3X Volume of Water in Well 3.80 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 7 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial <u>48.31</u>	initial <u>12.95</u>	initial <u>1.65</u>	initial <u>0.16</u>	initial <u>7.13</u>	initial <u>-25.1</u>	initial <u>999</u>
5 min <u>48.31</u>	<u>12.60</u>	<u>1.7</u>	<u>0.10</u>	<u>7.12</u>	<u>-26.9</u>	<u>999</u>
10 min <u>48.31</u>	<u>12.43</u>	<u>1.71</u>	<u>0.06</u>	<u>7.12</u>	<u>-29.1</u>	<u>387</u>
15 min <u>48.31</u>	<u>12.48</u>	<u>1.73</u>	<u>0.05</u>	<u>7.12</u>	<u>-30.7</u>	<u>214</u>
20 min <u>48.31</u>	<u>12.30</u>	<u>1.74</u>	<u>0.03</u>	<u>7.13</u>	<u>-31.3</u>	<u>190</u>
25 min <u>48.31</u>	<u>12.20</u>	<u>1.74</u>	<u>0.02</u>	<u>7.13</u>	<u>-32.3</u>	<u>129</u>
30 min <u>48.31</u>	<u>12.25</u>	<u>1.75</u>	<u>0.02</u>	<u>7.13</u>	<u>-32.7</u>	<u>116</u>
35 min <u>48.33</u>	<u>12.20</u>	<u>1.75</u>	<u>0.01</u>	<u>7.13</u>	<u>-33.0</u>	<u>72.4</u>
40 min <u>48.33</u>	<u>12.29</u>	<u>1.75</u>	<u>0.01</u>	<u>7.13</u>	<u>-33.4</u>	<u>57.9</u>
45 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.01</u>	<u>7.13</u>	<u>-33.3</u>	<u>42.0</u>
50 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.01</u>	<u>7.13</u>	<u>-33.3</u>	<u>34.1</u>
55 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.00</u>	<u>7.13</u>	<u>-33.4</u>	<u>27.0</u>
60 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.00</u>	<u>7.13</u>	<u>-33.8</u>	<u>23.6</u>
65 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.00</u>	<u>7.13</u>	<u>-34</u>	<u>21.7</u>
70 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.00</u>	<u>7.13</u>	<u>-34</u>	<u>20.5</u>
75 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.00</u>	<u>7.13</u>	<u>-34.2</u>	<u>19.1</u>
80 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.00</u>	<u>7.13</u>	<u>-34.3</u>	<u>15.9</u>
85 min <u>48.33</u>	<u>12.25</u>	<u>1.75</u>	<u>0.00</u>	<u>7.13</u>	<u>-34.4</u>	<u>16.7</u>
90 min <u>48.33</u>	<u>12.23</u>	<u>1.76</u>	<u>0.00</u>	<u>7.13</u>	<u>-34.4</u>	<u>15.4</u>

Water Sample:

Time Collected 17:35

Physical Appearance at Start

Physical Appearance at Sampling

Color cloudy/light gray
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes: collected equipment blank-02 after sampling OBG MW-19D which was sampled just before this well.

Standard Groundwater Sampling Log

Date 6/23/2020
Site Name RACER Coldwater Rd
Location Flint, MI
Project No. 75178
Personnel CSY/BKK

Weather cloudy 70s
Well # OBG MW-19D
Evacuation Method bladder
Sampling Method low flow

Well Information:

Depth of Well * 53.60 ft.
Depth to Water * 44.47 ft.
Length of Water Column 9.13 ft.
Volume of Water in Well 1.48 gal.(s)
3X Volume of Water in Well 4.46 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 5 1/2 gal.(s)
Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
ORP Yes
Conductivity Yes
DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	<u>44.5</u>	initial	<u>12.67</u>	initial	<u>0.60</u>	initial	<u>1.04</u>	initial	<u>7.52</u>	initial	<u>-34.8</u>	initial	<u>966</u>
5 min	<u>44.58</u>		<u>12.30</u>		<u>0.60</u>		<u>1.55</u>		<u>7.52</u>		<u>-34.1</u>		<u>727</u>
10 min	<u>44.59</u>		<u>12.20</u>		<u>0.60</u>		<u>1.81</u>		<u>7.52</u>		<u>-33.7</u>		<u>416</u>
15 min	<u>44.59</u>		<u>12.11</u>		<u>0.60</u>		<u>1.96</u>		<u>7.52</u>		<u>-34.4</u>		<u>204</u>
20 min	<u>44.59</u>		<u>12.04</u>		<u>0.60</u>		<u>2.11</u>		<u>7.52</u>		<u>-35.6</u>		<u>138</u>
25 min	<u>44.59</u>		<u>11.96</u>		<u>0.59</u>		<u>2.09</u>		<u>7.53</u>		<u>-36.7</u>		<u>82</u>
30 min	<u>44.59</u>		<u>11.88</u>		<u>0.59</u>		<u>2.14</u>		<u>7.53</u>		<u>-36.8</u>		<u>57.5</u>
35 min	<u>44.59</u>		<u>11.81</u>		<u>0.59</u>		<u>2.13</u>		<u>7.53</u>		<u>-38.9</u>		<u>41.7</u>
40 min	<u>44.59</u>		<u>11.74</u>		<u>0.59</u>		<u>2.15</u>		<u>7.53</u>		<u>-40.0</u>		<u>34.7</u>
45 min	<u>44.59</u>		<u>11.70</u>		<u>0.59</u>		<u>2.12</u>		<u>7.53</u>		<u>-40.2</u>		<u>31.1</u>
50 min	<u>44.59</u>		<u>11.70</u>		<u>0.59</u>		<u>2.07</u>		<u>7.53</u>		<u>-41.3</u>		<u>27.3</u>
55 min	<u>44.59</u>		<u>11.79</u>		<u>0.59</u>		<u>2.11</u>		<u>7.53</u>		<u>-42.5</u>		<u>23.7</u>
60 min	<u>44.59</u>		<u>11.68</u>		<u>0.59</u>		<u>2.04</u>		<u>7.53</u>		<u>-43.1</u>		<u>22.3</u>
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 15:00

Physical Appearance at Start

Physical Appearance at Sampling

Color cloudy
Odor no
Turbidity (> 100 NTU) yes
Sheen/Free Product no

Color slightly cloudy
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/18/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel KBS

Weather sunny 80s
 Well # OBG MW-21
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 17.40 ft.
 Depth to Water * 3.64 ft.
 Length of Water Column 13.76 ft.
 Volume of Water in Well 2.24 gal.(s)
 3X Volume of Water in Well 6.72 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	3.91	initial	22.88	initial	1.03	initial	2.19	initial	7.23	initial	-31.2	initial	257
5 min	4.47		17.94		1.07		0.62		7.22		-34.2		121
10 min	4.95		17.88		1.08		0.41		7.22		-36.9		66
15 min	5.01		17.66		1.06		0.28		7.22		-38.1		55
20 min	5.10		17.31		1.07		0.23		7.23		-38.6		71
25 min	5.13		17.36		1.07		0.19		7.22		-39.1		70
30 min	5.15		17.34		1.06		0.16		7.23		-39.1		58.3
35 min	5.18		16.94		1.11		0.16		7.21		-39.8		35.8
40 min	5.20		16.91		1.13		0.15		7.21		-40.2		26.3
45 min	5.20		16.73		1.12		0.15		7.20		-40.7		24.3
50 min	5.22		16.64		1.12		0.15		7.20		-40.9		19.3
55 min	5.22		16.46		1.11		0.15		7.21		-40.4		18.8
60 min	5.22		16.52		1.12		0.14		7.20		-41.9		17.1
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 16:38

Physical Appearance at Start

Physical Appearance at Sampling

Color rust color
 Odor no
 Turbidity (> 100 NTU) yes
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/24/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel BKK

Weather partly cloudy 70s
 Well # OBG MW-22
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 26.65 ft.
 Depth to Water * 5.70 ft.
 Length of Water Column 20.95 ft.
 Volume of Water in Well 3.41 gal.(s)
 3X Volume of Water in Well 10.20 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 1/2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

	Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial	<u>5.94</u>	initial <u>13.68</u>	initial <u>0.9</u>	initial <u>0.14</u>	initial <u>7.05</u>	initial <u>80.5</u>	initial <u>93.6</u>
5 min	<u>5.95</u>	<u>12.68</u>	<u>0.91</u>	<u>0.13</u>	<u>7.04</u>	<u>96.2</u>	<u>86.5</u>
10 min	<u>5.97</u>	<u>12.18</u>	<u>0.92</u>	<u>0.13</u>	<u>7.05</u>	<u>96.8</u>	<u>27.9</u>
15 min	<u>5.99</u>	<u>12.29</u>	<u>0.92</u>	<u>0.13</u>	<u>7.04</u>	<u>97.1</u>	<u>36.9</u>
20 min	<u>5.99</u>	<u>12.35</u>	<u>0.92</u>	<u>0.12</u>	<u>7.04</u>	<u>97.1</u>	<u>23.0</u>
25 min	<u>6.00</u>	<u>12.12</u>	<u>0.93</u>	<u>0.10</u>	<u>7.04</u>	<u>91.8</u>	<u>29.2</u>
30 min	<u>6.00</u>	<u>12.17</u>	<u>0.92</u>	<u>0.11</u>	<u>7.04</u>	<u>94.9</u>	<u>26.5</u>
35 min	<u>6.00</u>	<u>11.99</u>	<u>0.93</u>	<u>0.11</u>	<u>7.04</u>	<u>95.6</u>	<u>17.2</u>
40 min	<u>6.00</u>	<u>12.31</u>	<u>0.92</u>	<u>0.09</u>	<u>7.04</u>	<u>95.9</u>	<u>6.09</u>
45 min	<u>6.00</u>	<u>12.40</u>	<u>0.92</u>	<u>0.09</u>	<u>7.04</u>	<u>96.2</u>	<u>8.39</u>
50 min	<u>6.00</u>	<u>12.57</u>	<u>0.92</u>	<u>0.08</u>	<u>7.04</u>	<u>96.1</u>	<u>6.60</u>
55 min							
60 min							
65 min							
70 min							
75 min							
80 min							
85 min							
90 min							

Water Sample:

Time Collected 13:00

Physical Appearance at Start

Physical Appearance at Sampling

Color cloudy, light gray
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/23/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather cloudy 70s
 Well # OBG MW-23
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 33.40 ft.
 Depth to Water * 26.11 ft.
 Length of Water Column 7.29 ft.
 Volume of Water in Well 1.18 gal.(s)
 3X Volume of Water in Well 3.56 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	<u>26.21</u>	initial	<u>19.22</u>	initial	<u>0.98</u>	initial	<u>1.94</u>	initial	<u>7.28</u>	initial	<u>59.5</u>	initial	<u>13.8</u>
5 min	<u>26.19</u>		<u>17.32</u>		<u>1.00</u>		<u>1.38</u>		<u>7.28</u>		<u>77.7</u>		<u>6.36</u>
10 min	<u>26.21</u>		<u>16.39</u>		<u>1.01</u>		<u>1.21</u>		<u>7.28</u>		<u>21.3</u>		<u>8.53</u>
15 min	<u>26.21</u>		<u>15.76</u>		<u>1.02</u>		<u>1.04</u>		<u>7.28</u>		<u>4.8</u>		<u>6.92</u>
20 min	<u>26.21</u>		<u>16.01</u>		<u>1.02</u>		<u>0.98</u>		<u>7.27</u>		<u>4.9</u>		<u>6.51</u>
25 min	<u>26.20</u>		<u>17.22</u>		<u>1.01</u>		<u>0.87</u>		<u>7.27</u>		<u>-12.9</u>		<u>4.21</u>
30 min	<u>26.19</u>		<u>17.48</u>		<u>1.02</u>		<u>0.91</u>		<u>7.27</u>		<u>-12.4</u>		<u>3.59</u>
35 min	<u>26.19</u>		<u>18.39</u>		<u>1.04</u>		<u>0.89</u>		<u>7.26</u>		<u>-19.1</u>		<u>2.94</u>
40 min	<u>26.19</u>		<u>17.93</u>		<u>1.01</u>		<u>0.83</u>		<u>7.27</u>		<u>-17.3</u>		<u>3.40</u>
45 min	<u>26.19</u>		<u>17.55</u>		<u>1.01</u>		<u>0.73</u>		<u>7.27</u>		<u>-22.0</u>		<u>4.15</u>
50 min	<u>26.20</u>		<u>17.19</u>		<u>1.01</u>		<u>0.53</u>		<u>7.27</u>		<u>-25.8</u>		<u>3.51</u>
55 min	<u>26.21</u>		<u>16.01</u>		<u>1.01</u>		<u>0.43</u>		<u>7.28</u>		<u>-26.0</u>		<u>3.69</u>
60 min	<u>26.20</u>		<u>15.93</u>		<u>1.02</u>		<u>0.50</u>		<u>7.27</u>		<u>-26.9</u>		<u>3.29</u>
65 min	<u>26.21</u>		<u>16.20</u>		<u>1.02</u>		<u>0.53</u>		<u>7.27</u>		<u>-28.0</u>		<u>3.94</u>
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 13:08

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/23/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather cloudy 70s
 Well # OBG MW-24
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 23.80 ft.
 Depth to Water * 5.48 ft.
 Length of Water Column 18.32 ft.
 Volume of Water in Well 2.99 gal.(s)
 3X Volume of Water in Well 8.96 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1/2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured	Temperature Celsius	Conductivity mS/cm	Dissolved Oxygen mg/L	pH	ORP mV	Turbidity NTUs
0.3 feet or less	±3 percent	±3 percent	±10 percent	±0.1 pH units	±10 millivolts	±10 percent
initial <u>5.94</u>	initial <u>16.60</u>	initial <u>0.89</u>	initial <u>0.95</u>	initial <u>7.36</u>	initial <u>78.0</u>	initial <u>52.2</u>
5 min <u>6.57</u>	<u>14.13</u>	<u>0.94</u>	<u>0.13</u>	<u>7.36</u>	<u>64.1</u>	<u>44.3</u>
10 min <u>6.87</u>	<u>14.55</u>	<u>0.94</u>	<u>0.13</u>	<u>7.35</u>	<u>57.7</u>	<u>44.3</u>
15 min <u>7.14</u>	<u>14.57</u>	<u>0.94</u>	<u>0.12</u>	<u>7.35</u>	<u>48.8</u>	<u>38.4</u>
20 min <u>7.59</u>						
25 min						
30 min						
35 min						
40 min						
45 min						
50 min						
55 min						
60 min						
65 min						
70 min						
75 min						
80 min						
85 min						
90 min						

Water Sample:

Time Collected 15:38

Physical Appearance at Start

Physical Appearance at Sampling

Color clear/gray
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/22/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather partly sunny 80s
 Well # OBG MW-25
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 17.38 ft.
 Depth to Water * 6.30 ft.
 Length of Water Column 11.08 ft.
 Volume of Water in Well 1.80 gal.(s)
 3X Volume of Water in Well 5.41 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial <u>6.57</u>	initial <u>27.03</u>	initial <u>0.62</u>	initial <u>1.68</u>	initial <u>7.36</u>	initial <u>-95.6</u>	initial <u>75.8</u>
5 min <u>6.81</u>	<u>16.78</u>	<u>0.74</u>	<u>0.06</u>	<u>7.35</u>	<u>-70.0</u>	<u>29.7</u>
10 min <u>6.08</u>	<u>16.49</u>	<u>0.74</u>	<u>0.04</u>	<u>7.35</u>	<u>-67.5</u>	<u>24.3</u>
15 min <u>7.02</u>	<u>16.42</u>	<u>0.74</u>	<u>0.02</u>	<u>7.36</u>	<u>-54.7</u>	<u>26.1</u>
20 min <u>7.21</u>	<u>16.16</u>	<u>0.73</u>	<u>0.01</u>	<u>7.36</u>	<u>-61.7</u>	<u>21.8</u>
25 min <u>7.38</u>						
30 min						
35 min						
40 min						
45 min						
50 min						
55 min						
60 min						
65 min						
70 min						
75 min						
80 min						
85 min						
90 min						

Water Sample:

Time Collected 17:51

Physical Appearance at Start

Physical Appearance at Sampling

Color clear/gray
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/24/2020

Site Name RACER Coldwater Rd

Location Flint, MI

Project No. 75178

Personnel WHL

Weather partly cloudy 70s

Well # OBG MW-26

Evacuation Method peristaltic

Sampling Method low flow

Well Information:

Depth of Well * 12.16 ft.

Depth to Water * 7.56 ft.

Length of Water Column 4.6 ft.

Volume of Water in Well 0.75 gal.(s)

3X Volume of Water in Well 2.24 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC

4" Diameter Well = 0.653 X LWC

6" Diameter Well = 1.469 X LWC

Volume removed before sampling 3 gal.(s)

Did well go dry? no

* Measurements taken from

☒

Well Casing

☐

Protective Casing

(Other, Specify)

Instrument Calibration:

Calibrated within range

pH Yes

ORP Yes

Conductivity Yes

DO Yes

Water parameters:

Drawdown measured		Temperature Celsius		Conductivity mS/cm		Dissolved Oxygen mg/L		pH		ORP mV		Turbidity NTUs	
0.3 feet or less		±3 percent		±3 percent		±10 percent		±0.1 pH units		±10 millivolts		±10 percent	
initial	8.53	initial	14.7	initial	2.26	initial	2.86	initial	7.10	initial	69.8	initial	706
5 min	8.59		15.0		2.24		1.73		7.02		73.0		398
10 min	8.63		14.5		2.28		0.82		6.94		75.2		513
15 min	8.62		14.9		2.33		0.47		6.91		75.1		300
20 min	8.41		15.8		2.35		8.23		6.94		72.0		351
25 min	8.48		14.5		2.42		8.47		6.89		73.0		171
30 min	8.54		14.7		2.43		8.18		6.88		72.6		113
35 min	8.58		14.5		2.46		8.03		6.87		72.0		73.0
40 min	8.6		14.1		2.49		7.89		6.87		71.0		61.9
45 min	8.62		14.2		2.45		7.69		6.87		70.3		202
50 min	8.61		14.1		2.51		7.47		6.86		70.9		272
55 min	8.62		14.1		2.52		7.29		6.85		69.8		181
60 min	8.62		14.2		2.53		7.31		6.84		69.3		99.6
65 min	8.62		14.3		2.52		7.00		6.85		68.0		49.5
70 min	8.62		14.1		2.52		6.88		6.85		65.9		30.3
75 min	8.62		14.0		2.51		6.77		6.85		63.9		18.7
80 min	8.62		14.0		2.52		6.64		6.85		63.3		12.5
85 min	8.62		14.3		2.52		6.43		6.85		62.2		8.44
90 min	8.62		14.1		2.53		6.38		6.85		61.5		4.95
95 min	8.62		14.1		2.53		6.20		6.85		61.5		4.87
100 min	8.62		14.1		2.53		6.01		6.85		61.2		4.40

Water Sample:

Time Collected 18:20

Physical Appearance at Start

Physical Appearance at Sampling

Color grayish brown

Odor no

Turbidity (> 100 NTU) yes

Sheen/Free Product no

Color clear

Odor no

Turbidity (> 100 NTU) no

Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/25/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather partly cloudy 70s
 Well # OBG MW-27
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 31.78 ft.
 Depth to Water * 21.44 ft.
 Length of Water Column 10.34 ft.
 Volume of Water in Well 1.68 gal.(s)
 3X Volume of Water in Well 5.06 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured		Temperature Celsius		Conductivity mS/cm		Dissolved Oxygen mg/L		pH		ORP mV		Turbidity NTUs	
0.3 feet or less		±3 percent		±3 percent		±10 percent		±0.1 pH units		±10 millivolts		±10 percent	
initial	<u>21.49</u>	initial	<u>17.00</u>	initial	<u>1.33</u>	initial	<u>1.86</u>	initial	<u>7.21</u>	initial	<u>134.1</u>	initial	<u>8.8</u>
5 min	<u>21.51</u>		<u>16.20</u>		<u>1.33</u>		<u>1.44</u>		<u>7.21</u>		<u>43.9</u>		<u>6.8</u>
10 min	<u>21.51</u>		<u>16.03</u>		<u>1.33</u>		<u>1.22</u>		<u>7.20</u>		<u>26.0</u>		<u>4.6</u>
15 min	<u>21.51</u>		<u>15.94</u>		<u>1.31</u>		<u>1.10</u>		<u>7.20</u>		<u>16.1</u>		<u>4.7</u>
20 min	<u>21.51</u>		<u>15.75</u>		<u>1.30</u>		<u>0.90</u>		<u>7.20</u>		<u>6.8</u>		<u>4.9</u>
25 min	<u>21.51</u>		<u>15.89</u>		<u>1.28</u>		<u>0.81</u>		<u>7.20</u>		<u>0.5</u>		<u>4.6</u>
30 min													
35 min													
40 min													
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 10:25

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/24/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather partly cloudy 70s
 Well # OBG MW-28
 Evacuation Method peristaltic
 Sampling Method low flow

Well Information:

Depth of Well * 17.25 ft.
 Depth to Water * 11.80 ft.
 Length of Water Column 5.45 ft.
 Volume of Water in Well 0.88 gal.(s)
 3X Volume of Water in Well 2.66 gal.(s)

Water Volume /ft. for:
☒ 2" Diameter Well = 0.163 X LWC
☐ 4" Diameter Well = 0.653 X LWC
☐ 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured		Temperature Celsius		Conductivity mS/cm		Dissolved Oxygen mg/L		pH		ORP mV		Turbidity NTUs	
0.3 feet or less		±3 percent		±3 percent		±10 percent		±0.1 pH units		±10 millivolts		±10 percent	
initial	<u>11.86</u>	initial	<u>14.9</u>	initial	<u>0.262</u>	initial	<u>5.85</u>	initial	<u>7.12</u>	initial	<u>178.2</u>	initial	<u>9.23</u>
5 min	<u>11.87</u>		<u>14.7</u>		<u>0.264</u>		<u>6.49</u>		<u>7.02</u>		<u>171.5</u>		<u>5.68</u>
10 min	<u>11.87</u>		<u>14.1</u>		<u>0.260</u>		<u>6.28</u>		<u>7.01</u>		<u>165.5</u>		<u>5.40</u>
15 min	<u>11.86</u>		<u>14.4</u>		<u>0.261</u>		<u>6.19</u>		<u>7.03</u>		<u>160.0</u>		<u>4.16</u>
20 min	<u>11.86</u>		<u>14.3</u>		<u>0.262</u>		<u>6.97</u>		<u>7.05</u>		<u>184.8</u>		<u>4.38</u>
25 min													
30 min													
35 min													
40 min													
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 12:18

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Collected Dup-3

Standard Groundwater Sampling Log

Date 6/23/2020
Site Name RACER Coldwater Rd
Location Flint, MI
Project No. 75178
Personnel WHL

Weather cloudy 70s
Well # PZ-1
Evacuation Method peristaltic
Sampling Method low flow

Well Information:

Depth of Well * 25.17 ft.
Depth to Water * 16.63 ft.
Length of Water Column 8.54 ft.
Volume of Water in Well 1.39 gal.(s)
3X Volume of Water in Well 4.17 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
ORP Yes
Conductivity Yes
DO Yes

Water parameters:

Drawdown measured		Temperature Celsius		Conductivity mS/cm		Dissolved Oxygen mg/L		pH		ORP mV		Turbidity NTUs	
0.3 feet or less		±3 percent		±3 percent		±10 percent		±0.1 pH units		±10 millivolts		±10 percent	
initial	<u>17.09</u>	initial	<u>20.23</u>	initial	<u>1.30</u>	initial	<u>1.51</u>	initial	<u>7.17</u>	initial	<u>173.0</u>	initial	<u>14.00</u>
5 min	<u>17.53</u>		<u>14.76</u>		<u>1.39</u>		<u>0.47</u>		<u>7.21</u>		<u>93.3</u>		<u>7.29</u>
10 min	<u>17.89</u>		<u>15.00</u>		<u>1.36</u>		<u>0.56</u>		<u>7.21</u>		<u>58.1</u>		<u>6.82</u>
15 min	<u>18.23</u>		<u>14.84</u>		<u>1.37</u>		<u>0.59</u>		<u>7.22</u>		<u>44.1</u>		<u>4.84</u>
20 min	<u>18.43</u>		<u>14.67</u>		<u>1.36</u>		<u>0.54</u>		<u>7.21</u>		<u>23.4</u>		<u>1.97</u>
25 min	<u>18.71</u>		<u>14.92</u>		<u>1.37</u>		<u>0.49</u>		<u>7.21</u>		<u>13.4</u>		<u>2.22</u>
30 min	<u>18.93</u>		<u>15.22</u>		<u>1.37</u>		<u>0.49</u>		<u>7.21</u>		<u>9.7</u>		<u>3.02</u>
35 min	<u>19.14</u>		<u>15.22</u>		<u>1.37</u>		<u>0.52</u>		<u>7.21</u>		<u>6.3</u>		<u>2.90</u>
40 min	<u>19.35</u>												
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 11:20

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/23/2020
Site Name RACER Coldwater Rd
Location Flint, MI
Project No. 75178
Personnel WHL

Weather cloudy 70s
Well # PZ-2
Evacuation Method peristaltic
Sampling Method low flow

Well Information:

Depth of Well * 32.26 ft.
Depth to Water * 24.12 ft.
Length of Water Column 8.14 ft.
Volume of Water in Well 1.33 gal.(s)
3X Volume of Water in Well 3.98 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 1/2 gal.(s)
Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
ORP Yes
Conductivity Yes
DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	<u>24.17</u>	initial	<u>14.18</u>	initial	<u>0.6</u>	initial	<u>0.67</u>	initial	<u>7.2</u>	initial	<u>-39.2</u>	initial	<u>40.6</u>
5 min	<u>24.17</u>		<u>12.96</u>		<u>0.61</u>		<u>0.13</u>		<u>7.24</u>		<u>-47.4</u>		<u>31.1</u>
10 min	<u>24.17</u>		<u>12.58</u>		<u>0.61</u>		<u>0.04</u>		<u>7.28</u>		<u>-52.4</u>		<u>28.0</u>
15 min	<u>24.17</u>		<u>12.49</u>		<u>0.62</u>		<u>0.03</u>		<u>7.28</u>		<u>-53.4</u>		<u>22.2</u>
20 min	<u>24.17</u>		<u>12.36</u>		<u>0.62</u>		<u>0.03</u>		<u>7.28</u>		<u>-53.5</u>		<u>15.3</u>
25 min	<u>24.17</u>		<u>12.31</u>		<u>0.62</u>		<u>0.03</u>		<u>7.32</u>		<u>-58.5</u>		<u>12.2</u>
30 min	<u>24.17</u>		<u>12.26</u>		<u>0.62</u>		<u>0.03</u>		<u>7.29</u>		<u>-53.5</u>		<u>10.7</u>
35 min	<u>24.18</u>		<u>12.31</u>		<u>0.61</u>		<u>0.02</u>		<u>7.32</u>		<u>-59.2</u>		<u>9.39</u>
40 min	<u>24.18</u>		<u>12.26</u>		<u>0.62</u>		<u>0.03</u>		<u>7.33</u>		<u>-59.7</u>		<u>8.06</u>
45 min	<u>24.18</u>		<u>12.17</u>		<u>0.62</u>		<u>0.02</u>		<u>7.33</u>		<u>-60.7</u>		<u>5.90</u>
50 min	<u>24.18</u>		<u>12.31</u>		<u>0.62</u>		<u>0.02</u>		<u>7.33</u>		<u>-58.5</u>		<u>5.47</u>
55 min	<u>24.18</u>		<u>12.32</u>		<u>0.63</u>		<u>0.02</u>		<u>7.33</u>		<u>-51.9</u>		<u>5.13</u>
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 17:27

Physical Appearance at Start

Physical Appearance at Sampling

Color clear / brown
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/24/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel WHL

Weather cloudy 70s
 Well # PZ-3
 Evacuation Method peritaltic
 Sampling Method low flow

Well Information:

Depth of Well * 23.24 ft.
 Depth to Water * 6.09 ft.
 Length of Water Column 17.15 ft.
 Volume of Water in Well 2.79 gal.(s)
 3X Volume of Water in Well 8.38 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	<u>6.54</u>	initial	<u>14.4</u>	initial	<u>0.88</u>	initial	<u>0.25</u>	initial	<u>6.94</u>	initial	<u>68.2</u>	initial	<u>17.6</u>
5 min	<u>7.17</u>		<u>13.3</u>		<u>0.88</u>		<u>0.15</u>		<u>6.94</u>		<u>45.4</u>		<u>15.3</u>
10 min	<u>7.61</u>		<u>12.8</u>		<u>0.87</u>		<u>0.12</u>		<u>6.95</u>		<u>39.1</u>		<u>10.3</u>
15 min	<u>7.86</u>		<u>13.8</u>		<u>0.86</u>		<u>0.13</u>		<u>6.96</u>		<u>33.3</u>		<u>12.4</u>
20 min	<u>8.00</u>		<u>13.3</u>		<u>0.88</u>		<u>0.12</u>		<u>7.00</u>		<u>26.7</u>		<u>11.6</u>
25 min	<u>8.19</u>		<u>13.4</u>		<u>0.87</u>		<u>0.12</u>		<u>7.00</u>		<u>24.4</u>		<u>13.6</u>
30 min													
35 min													
40 min													
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 15:44

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color clear
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/19/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel KBS

Weather sunny 80s
 Well # MW-15-10
 Evacuation Method bladder pump
 Sampling Method low flow

Well Information:

Depth of Well * 96.85 ft.
 Depth to Water * 75.71 ft.
 Length of Water Column 21.14 ft.
 Volume of Water in Well 3.44 gal.(s)
 3X Volume of Water in Well 10.33 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 1/2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured 0.3 feet or less	Temperature Celsius ±3 percent	Conductivity mS/cm ±3 percent	Dissolved Oxygen mg/L ±10 percent	pH ±0.1 pH units	ORP mV ±10 millivolts	Turbidity NTUs ±10 percent
initial <u>76.35</u>	initial <u>18.00</u>	initial <u>0.56</u>	initial <u>0.24</u>	initial <u>7.66</u>	initial <u>-135.8</u>	initial _____
5 min <u>76.35</u>	<u>17.34</u>	<u>0.59</u>	<u>0.20</u>	<u>7.64</u>	<u>-152.0</u>	<u>59.0</u>
10 min _____	<u>21.16</u>	<u>0.58</u>	<u>0.20</u>	<u>7.62</u>	<u>-168.5</u>	<u>60.2</u>
15 min _____	<u>22.30</u>	<u>0.58</u>	<u>0.23</u>	<u>7.61</u>	<u>-173.2</u>	<u>55.4</u>
20 min <u>77.65</u>	<u>22.84</u>	<u>0.58</u>	<u>0.23</u>	<u>7.61</u>	<u>-173.4</u>	<u>77.4</u>
25 min <u>77.65</u>	<u>23.29</u>	<u>0.58</u>	<u>0.24</u>	<u>7.60</u>	<u>-167.0</u>	_____
30 min <u>77.65</u>	<u>23.31</u>	<u>0.59</u>	<u>0.25</u>	<u>7.60</u>	<u>-165.7</u>	<u>109</u>
35 min <u>77.90</u>	<u>23.33</u>	<u>0.57</u>	<u>0.21</u>	<u>7.61</u>	<u>-152.4</u>	<u>63.5</u>
40 min <u>77.90</u>	<u>21.14</u>	<u>0.57</u>	<u>0.22</u>	<u>7.61</u>	<u>-148.4</u>	<u>58.6</u>
45 min <u>77.95</u>	<u>20.34</u>	<u>0.58</u>	<u>0.19</u>	<u>7.62</u>	<u>-144.8</u>	<u>52.8</u>
50 min <u>77.95</u>	<u>21.29</u>	<u>0.58</u>	<u>0.18</u>	<u>7.61</u>	<u>-145.9</u>	<u>47.2</u>
55 min <u>77.95</u>	<u>21.36</u>	<u>0.58</u>	<u>0.17</u>	<u>7.61</u>	<u>-146.5</u>	<u>44.6</u>
60 min <u>77.95</u>	<u>22.01</u>	<u>0.58</u>	<u>0.16</u>	<u>7.61</u>	<u>-147.3</u>	<u>46.2</u>
65 min _____	_____	_____	_____	_____	_____	_____
70 min _____	_____	_____	_____	_____	_____	_____
75 min _____	_____	_____	_____	_____	_____	_____
80 min _____	_____	_____	_____	_____	_____	_____
85 min _____	_____	_____	_____	_____	_____	_____
90 min _____	_____	_____	_____	_____	_____	_____

Water Sample:

Time Collected 12:03

Physical Appearance at Start _____

Physical Appearance at Sampling _____

Color light gray
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color slightly cloudy
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/19/2020
 Site Name RACER Coldwater Rd
 Location Flint, MI
 Project No. 75178
 Personnel KBS

Weather sunny 80s
 Well # MW-16-10
 Evacuation Method bladder pump
 Sampling Method low flow

Well Information:

Depth of Well * 88.06 ft.
 Depth to Water * 65.85 ft.
 Length of Water Column 22.21 ft.
 Volume of Water in Well 3.62 gal.(s)
 3X Volume of Water in Well 10.86 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 1/2 gal.(s)
 Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
 ORP Yes
 Conductivity Yes
 DO Yes

Water parameters:

Drawdown measured		Temperature Celsius		Conductivity mS/cm		Dissolved Oxygen mg/L		pH		ORP mV		Turbidity NTUs	
0.3 feet or less		±3 percent		±3 percent		±10 percent		±0.1 pH units		±10 millivolts		±10 percent	
initial		initial	19.54	initial	0.51	initial	0.47	initial	7.80	initial	-140.3	initial	
5 min	68.41		17.59		0.54		0.33		7.79		-141.9		25.5
10 min	68.84		16.90		0.54		0.28		7.79		-140.5		27.6
15 min	68.85		18.33		0.55		0.30		7.77		-143.3		24.3
20 min	68.71		19.44		0.54		0.32		7.76		-143.7		31.0
25 min	68.71		20.21		0.54		0.32		7.76		-143.5		37.8
30 min	68.51		19.79		0.55		0.32		7.76		-143.4		41.3
35 min	68.51		19.81		0.55		0.31		7.76		-143.2		39.2
40 min	68.51		19.54		0.55		0.30		7.75		-144.0		37.6
45 min													
50 min													
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 13:30

Physical Appearance at Start

Physical Appearance at Sampling

Color cloudy
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Color cloudy
 Odor no
 Turbidity (> 100 NTU) no
 Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

Standard Groundwater Sampling Log

Date 6/23/2020
Site Name RACER Coldwater Rd
Location Flint, MI
Project No. 75178
Personnel CSY/BKK

Weather cloudy 70s
Well # PFW-1
Evacuation Method bladder pump
Sampling Method low flow

Well Information:

Depth of Well * 87.90 ft.
Depth to Water * 76.57 ft.
Length of Water Column 11.33 ft.
Volume of Water in Well 1.84 gal.(s)
3X Volume of Water in Well 5.54 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
4" Diameter Well = 0.653 X LWC
6" Diameter Well = 1.469 X LWC

Volume removed before sampling 1 1/2 gal.(s)
Did well go dry? no

* Measurements taken from ☒ Well Casing ☐ Protective Casing ☐ (Other, Specify) _____

Instrument Calibration:

Calibrated within range

pH Yes
ORP Yes
Conductivity Yes
DO Yes

Water parameters:

Drawdown measured 0.3 feet or less		Temperature Celsius ±3 percent		Conductivity mS/cm ±3 percent		Dissolved Oxygen mg/L ±10 percent		pH ±0.1 pH units		ORP mV ±10 millivolts		Turbidity NTUs ±10 percent	
initial	<u>76.58</u>	initial	<u>16.01</u>	initial	<u>1.23</u>	initial	<u>2.33</u>	initial	<u>7.42</u>	initial	<u>-63.9</u>	initial	<u>7.77</u>
5 min	<u>76.58</u>		<u>16.39</u>		<u>1.27</u>		<u>1.90</u>		<u>7.40</u>		<u>-71.5</u>		<u>5.08</u>
10 min	<u>76.58</u>		<u>17.35</u>		<u>1.29</u>		<u>1.12</u>		<u>7.39</u>		<u>-79.5</u>		<u>4.01</u>
15 min	<u>76.58</u>		<u>16.49</u>		<u>1.3</u>		<u>0.85</u>		<u>7.39</u>		<u>-79.8</u>		<u>4.40</u>
20 min	<u>76.58</u>		<u>16.29</u>		<u>1.31</u>		<u>0.68</u>		<u>7.38</u>		<u>-79.9</u>		<u>3.79</u>
25 min	<u>76.58</u>		<u>16.58</u>		<u>1.32</u>		<u>0.60</u>		<u>7.38</u>		<u>-79.8</u>		<u>2.74</u>
30 min	<u>76.58</u>		<u>16.19</u>		<u>1.32</u>		<u>0.56</u>		<u>7.37</u>		<u>-77.6</u>		<u>2.36</u>
35 min	<u>76.58</u>		<u>16.37</u>		<u>1.32</u>		<u>0.55</u>		<u>7.37</u>		<u>-76.8</u>		<u>1.82</u>
40 min	<u>76.58</u>		<u>16.86</u>		<u>1.32</u>		<u>0.48</u>		<u>7.36</u>		<u>-77.3</u>		<u>3.46</u>
45 min	<u>76.58</u>		<u>17.43</u>		<u>1.32</u>		<u>0.44</u>		<u>7.36</u>		<u>-78.1</u>		<u>1.47</u>
50 min	<u>76.58</u>		<u>17.29</u>		<u>1.32</u>		<u>0.41</u>		<u>7.36</u>		<u>-77.4</u>		<u>1.37</u>
55 min													
60 min													
65 min													
70 min													
75 min													
80 min													
85 min													
90 min													

Water Sample:

Time Collected 12:15

Physical Appearance at Start

Physical Appearance at Sampling

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Color clear
Odor no
Turbidity (> 100 NTU) no
Sheen/Free Product no

Samples collected:

Analyses	# Bottles	Bottle size/type	Preservative	Field Filtered
PFAS (7979)	3	15 ml plastic	None	No

Notes:

APPENDIX B

ANALYTICAL LABORATORY RESULTS



Analytical Laboratory Report

Report ID: S14947.01(01)
Generated on 07/09/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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

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)

Report Summary

Lab Sample ID(s): S14947.01-S14947.04
Project: RACER Coldwater Rd
Collected Date(s): 06/16/2020 - 06/17/2020
Submitted Date/Time: 06/17/2020 13:35
Sampled by: Kevin Schneider
P.O. #: 12000277

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
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)

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
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-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S14947.01	B-28	Groundwater	06/16/20 16:33
S14947.02	B-9	Groundwater	06/17/20 10:25
S14947.03	Field Blank 061720	Liquid	06/17/20 12:00
S14947.04	B-27D	Groundwater	06/17/20 12:06



Analytical Laboratory Report

Lab Sample ID: S14947.01

Sample Tag: B-28

Collected Date/Time: 06/16/2020 16:33

Matrix: Groundwater

COC Reference: 128654

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)*	12.70/6.75/12	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/07/20 22:58, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.02	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2.02	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.02	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.02	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.02	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.02	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.02	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.02	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.02	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.02	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.02	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.02	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.02	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.02	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.02	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.02	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.02	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.02	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.02	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.02	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.02	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.02	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.02	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.02	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S14947.02

Sample Tag: B-9

Collected Date/Time: 06/17/2020 10:25

Matrix: Groundwater

COC Reference: 128654

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)*	12.10/6.72/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/07/20 23:17, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	28	10	10	ng/L	2.04	375-22-4	
PFPeA*	1.0	4.1	1.0	ng/L	2.04	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	4.3	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	2.3	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	5.1	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	4.2	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	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*	Not detected	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*	16	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	13	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*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	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	2.0	2.0	ng/L	2.04	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S14947.03

Sample Tag: Field Blank 061720

Collected Date/Time: 06/17/2020 12:00

Matrix: Liquid

COC Reference: 128654

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)*	11.48/6.76/9	ASTMD7979-19M	06/18/20 16:30	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 06/23/20 04:31, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.6	9.6	ng/L	1.91	375-22-4	
PFPeA*	Not detected	3.8	0.96	ng/L	1.91	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.91	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.91	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.91	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.91	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.91	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.91	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.91	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.91	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.91	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.91	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.91	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.91	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.91	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.91	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.91	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.91	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.91	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.91	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.91	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.91	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.91	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.91	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.91	335-77-3	
PFTDA*	Not detected	1.9	1.1	ng/L	1.91	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.91	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.91	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.91	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.91	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.91	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.91	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S14947.04

Sample Tag: B-27D

Collected Date/Time: 06/17/2020 12:06

Matrix: Groundwater

COC Reference: 128654

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)*	12.32/6.73/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/07/20 23:37, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	12	9.9	9.9	ng/L	1.97	375-22-4	
PFPeA*	Not detected	3.9	0.99	ng/L	1.97	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.97	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.97	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.97	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.97	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.97	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.97	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.97	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.97	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.97	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.97	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.97	375-95-1	
8:2 FTSA*	Not detected	2.0	0.99	ng/L	1.97	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.97	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.97	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.97	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.97	2991-50-6	
PFOS*	Not detected	2.0	1.9	ng/L	1.97	1763-23-1	
PFOS-LN*	Not detected	2.0	1.9	ng/L	1.97	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.9	ng/L	1.97	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.97	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.97	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.97	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.97	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	1.97	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.97	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.97	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.97	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.97	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.97	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.97	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S14947

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted:06/17/2020 13:35 Login User: SRS

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☐ Yes ☐ No ☒ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME Clifford Yantz			
COMPANY O'Brien & Gere, A Ramboll Company			
ADDRESS 2260 East Saginaw			
CITY East Lansing		STATE MI	ZIP CODE 48823
PHONE NO. 313-333-0211		FAX NO.	P.O. NO.
E-MAIL ADDRESS RALER Coldwater Rd			QUOTE NO.

CHAIN OF CUSTODY RECORD

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

INVOICE TO

PROJECT NO./NAME	CLIFFORD, KENT@RAMBOLL.COM	SAMPLER(S) - PLEASE PRINT/SIGN NAME	K 44 Kevin Schneider

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

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

Containers & Preservatives

[illegible]

RELINQUISHED BY:
SIGNATURE/ORGANIZATION

RECEIVED BY:
SIGNATURE/ORGANIZATION

RELINQUISHED BY:
SIGNATURE/ORGANIZATION

RECEIVED BY:
SIGNATURE/ORGANIZATION☒ Sampler

DATE 6/17/20 TIME 1242

DATE 6/7/80 TIME 12:40

DATE 6/17/80 TIME 13:45

DATE 11/7/20 TIME 1335

RELINQUISHED BY:
SIGNATURE/ORGANIZATION

RECEIVED BY:
SIGNATURE/ORGANIZATION

SEAL NO.

SEAL NO.

DATE	TIME

DATE: 11/11/2019 TIME: 11:11

NOTES: TEMP. ON ARRIVAL _____

4.5

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



Quality Control Report

Report ID: QC-S14947-01
Generated on 07/09/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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): S14947.01-S14947.04
Project: RACER Coldwater Rd
Submitted Date/Time: 06/17/2020 13:35
Sampled by: Kevin Schneider
P.O. #: 12000277

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 11-16)
Batch QC Results (Pages 17-24)

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: S14947.01

Sample Tag: B-28

Collected Date/Time: 06/16/2020 16:33

Matrix: Groundwater

COC Reference: 128654

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/07/20 22:58	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14947.02

Sample Tag: B-9

Collected Date/Time: 06/17/2020 10:25

Matrix: Groundwater

COC Reference: 128654

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/07/20 23:17	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14947.03

Sample Tag: Field Blank 061720

Collected Date/Time: 06/17/2020 12:00

Matrix: Liquid

COC Reference: 128654

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	06/23/20 04:31	AK200622	PF200618W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14947.04

Sample Tag: B-27D

Collected Date/Time: 06/17/2020 12:06

Matrix: Groundwater

COC Reference: 128654

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/07/20 23:37	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200618W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14947.03	28 PFAs	ASTMD7979-19M	06/23/20 04:31	AK200622

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14947.01	28 PFAs	ASTMD7979-19M	07/07/20 22:58	AK200707A
S14947.02	28 PFAs	ASTMD7979-19M	07/07/20 23:17	AK200707A
S14947.04	28 PFAs	ASTMD7979-19M	07/07/20 23:37	AK200707A

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14947.01

Sample Tag: B-28

Collected Date/Time: 06/16/2020 16:33

Matrix: Groundwater

COC Reference: 128654

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/07/2020 22:58, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.4	50.0	150.0
M2-6:2FTSA		98.3	50.0	150.0
M2-8:2FTSA		110.0	50.0	150.0
M2PFTeDA		116.2	12.0	218.0
M3PFBS		109.0	50.0	150.0
M3PFHxS		117.2	50.0	150.0
M4PFHpA		115.3	50.0	150.0
M5PFHxA		109.7	50.0	150.0
M5PFPeA		109.8	50.0	150.0
M6PFDA		104.8	50.0	150.0
M7PFUnDA		112.5	50.0	150.0
M8FOSA		105.0	50.0	150.0
M8PFOA		107.6	50.0	150.0
M8PFOS		103.6	50.0	150.0
M9-PFNA		111.9	50.0	150.0
MPFBA		108.3	50.0	150.0
MPFDoDA		108.3	50.0	150.0
d3N-MeFOSAA		116.2	50.0	150.0
d5EtFOSAA		117.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14947.02

Sample Tag: B-9

Collected Date/Time: 06/17/2020 10:25

Matrix: Groundwater

COC Reference: 128654

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/07/2020 23:17, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		95.6	50.0	150.0
M2-6:2FTSA		91.8	50.0	150.0
M2-8:2FTSA		101.4	50.0	150.0
M2PFTeDA		126.1	12.0	218.0
M3PFBS		101.2	50.0	150.0
M3PFHxS		112.5	50.0	150.0
M4PFHpA		96.7	50.0	150.0
M5PFHxA		101.2	50.0	150.0
M5PFPeA		102.7	50.0	150.0
M6PFDA		109.2	50.0	150.0
M7PFUnDA		113.5	50.0	150.0
M8FOSA		106.3	50.0	150.0
M8PFOA		104.2	50.0	150.0
M8PFOS		104.1	50.0	150.0
M9-PFNA		112.4	50.0	150.0
MPFBA		101.7	50.0	150.0
MPFDoDA		109.0	50.0	150.0
d3N-MeFOSAA		90.2	50.0	150.0
d5EtFOSAA		114.9	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14947.03

Sample Tag: Field Blank 061720

Collected Date/Time: 06/17/2020 12:00

Matrix: Liquid

COC Reference: 128654

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200622, Run Date: 06/23/2020 04:31, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.8	50.0	150.0
M2-6:2FTSA		93.7	50.0	150.0
M2-8:2FTSA		144.0	50.0	150.0
M2PFTeDA		120.2	12.0	218.0
M3PFBS		106.6	50.0	150.0
M3PFHxS		102.8	50.0	150.0
M4PFHpA		109.9	50.0	150.0
M5PFHxA		113.5	50.0	150.0
M5PFPeA		106.4	50.0	150.0
M6PFDA		106.9	50.0	150.0
M7PFUnDA		96.9	50.0	150.0
M8FOSA		109.2	50.0	150.0
M8PFOA		106.2	50.0	150.0
M8PFOS		104.6	50.0	150.0
M9-PFNA		107.0	50.0	150.0
MPFBA		105.3	50.0	150.0
MPFDoDA		109.4	50.0	150.0
d3N-MeFOSAA		110.2	50.0	150.0
d5EtFOSAA		112.2	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14947.04

Sample Tag: B-27D

Collected Date/Time: 06/17/2020 12:06

Matrix: Groundwater

COC Reference: 128654

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/07/2020 23:37, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.0	50.0	150.0
M2-6:2FTSA		100.0	50.0	150.0
M2-8:2FTSA		99.0	50.0	150.0
M2PFTeDA		101.9	12.0	218.0
M3PFBS		104.4	50.0	150.0
M3PFHxS		105.9	50.0	150.0
M4PFHpA		114.3	50.0	150.0
M5PFHxA		102.7	50.0	150.0
M5PFPeA		104.9	50.0	150.0
M6PFDA		106.4	50.0	150.0
M7PFUnDA		98.9	50.0	150.0
M8FOSA		99.2	50.0	150.0
M8PFOA		109.0	50.0	150.0
M8PFOS		102.6	50.0	150.0
M9-PFNA		111.6	50.0	150.0
MPFBA		103.6	50.0	150.0
MPFDoDA		99.1	50.0	150.0
d3N-MeFOSAA		109.7	50.0	150.0
d5EtFOSAA		114.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200618W2

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

Blank (BLK)

Lab Sample ID: AK200622.BLK200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:20, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.8	50.0	150.0
M2-6:2FTSA		99.9	50.0	150.0
M2-8:2FTSA		106.2	50.0	150.0
M2PFTeDA		135.4	12.0	218.0
M3PFBS		110.7	50.0	150.0
M3PFHxS		114.7	50.0	150.0
M4PFHpA		110.1	50.0	150.0
M5PFHxA		114.7	50.0	150.0
M5PFPeA		111.8	50.0	150.0
M6PFDA		116.5	50.0	150.0
M7PFUnDA		98.3	50.0	150.0
M8FOSA		111.7	50.0	150.0
M8PFOA		114.0	50.0	150.0
M8PFOS		115.0	50.0	150.0
M9-PFNA		107.2	50.0	150.0
MPFBA		110.2	50.0	150.0
MPFDoDA		117.4	50.0	150.0
d3N-MeFOSAA		106.7	50.0	150.0
d5EtFOSAA		111.7	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 21:41, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		99.8	50.0	150.0
M2-6:2FTSA		100.9	50.0	150.0
M2-8:2FTSA		91.0	50.0	150.0
M2PFTeDA		129.5	12.0	218.0
M3PFBS		108.1	50.0	150.0
M3PFHxS		107.9	50.0	150.0
M4PFHpA		101.3	50.0	150.0
M5PFHxA		105.4	50.0	150.0
M5PFPeA		105.3	50.0	150.0
M6PFDA		105.9	50.0	150.0
M7PFUnDA		96.1	50.0	150.0
M8FOSA		107.4	50.0	150.0
M8PFOA		104.7	50.0	150.0
M8PFOS		113.9	50.0	150.0
M9-PFNA		109.0	50.0	150.0
MPFBA		106.3	50.0	150.0
MPFDoDA		104.3	50.0	150.0
d3N-MeFOSAA		106.0	50.0	150.0
d5EtFOSAA		113.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200622.LCSD200618B, Parent Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:01, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		100.2	50.0	150.0
M2-6:2FTSA		106.4	50.0	150.0
M2-8:2FTSA		93.3	50.0	150.0
M2PFTeDA		118.4	12.0	218.0
M3PFBS		108.1	50.0	150.0
M3PFHxS		101.6	50.0	150.0
M4PFHpA		109.1	50.0	150.0
M5PFHxA		109.7	50.0	150.0
M5PFPeA		104.2	50.0	150.0
M6PFDA		110.6	50.0	150.0
M7PFUnDA		93.2	50.0	150.0
M8FOSA		105.9	50.0	150.0
M8PFOA		108.6	50.0	150.0
M8PFOS		103.7	50.0	150.0
M9-PFNA		102.8	50.0	150.0
MPFBA		105.1	50.0	150.0
MPFDoDA		95.7	50.0	150.0
d3N-MeFOSAA		101.4	50.0	150.0
d5EtFOSAA		109.1	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200622.1494701M, Parent Sample ID: S14947.01

Run in Batch: AK200622, Run Date: 06/23/2020 03:32, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.9	50.0	150.0
M2-6:2FTSA		100.0	50.0	150.0
M2-8:2FTSA		115.4	50.0	150.0
M2PFTeDA		138.4	12.0	218.0
M3PFBS		108.3	50.0	150.0
M3PFHxS		111.1	50.0	150.0
M4PFHpA		105.4	50.0	150.0
M5PFHxA		113.2	50.0	150.0
M5PFPeA		105.5	50.0	150.0
M6PFDA		115.5	50.0	150.0
M7PFUnDA		101.5	50.0	150.0
M8FOSA		113.6	50.0	150.0
M8PFOA		113.1	50.0	150.0
M8PFOS		110.6	50.0	150.0
M9-PFNA		102.6	50.0	150.0
MPFBA		108.7	50.0	150.0
MPFDoDA		118.8	50.0	150.0
d3N-MeFOSAA		103.4	50.0	150.0
d5EtFOSAA		124.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200622.1494702D, Parent Sample ID: S14947.02

Run in Batch: AK200622, Run Date: 06/23/2020 04:11, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		98.6	50.0	150.0
M2-6:2FTSA		95.5	50.0	150.0
M2-8:2FTSA		111.9	50.0	150.0
M2PFTeDA		132.2	12.0	218.0
M3PFBS		110.4	50.0	150.0
M3PFHxS		121.3	50.0	150.0
M4PFHpA		108.4	50.0	150.0
M5PFHxA		113.4	50.0	150.0
M5PFPeA		109.7	50.0	150.0
M6PFDA		114.5	50.0	150.0
M7PFUnDA		105.4	50.0	150.0
M8FOSA		116.4	50.0	150.0
M8PFOA		112.3	50.0	150.0
M8PFOS		113.4	50.0	150.0
M9-PFNA		114.3	50.0	150.0
MPFBA		110.5	50.0	150.0
MPFDoDA		109.6	50.0	150.0
d3N-MeFOSAA		115.4	50.0	150.0
d5EtFOSAA		112.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.0	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		101.9	50.0	150.0
M2PFTeDA		126.7	12.0	218.0
M3PFBS		106.0	50.0	150.0
M3PFHxS		112.1	50.0	150.0
M4PFHpA		107.7	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		106.7	50.0	150.0
M7PFUnDA		107.3	50.0	150.0
M8FOSA		102.9	50.0	150.0
M8PFOA		107.8	50.0	150.0
M8PFOS		104.2	50.0	150.0
M9-PFNA		106.8	50.0	150.0
MPFBA		105.7	50.0	150.0
MPFDoDA		110.5	50.0	150.0
d3N-MeFOSAA		100.8	50.0	150.0
d5EtFOSAA		104.6	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.5	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		110.2	50.0	150.0
M2PFTeDA		131.9	12.0	218.0
M3PFBS		104.4	50.0	150.0
M3PFHxS		109.9	50.0	150.0
M4PFHpA		104.1	50.0	150.0
M5PFHxA		103.1	50.0	150.0
M5PFPeA		102.2	50.0	150.0
M6PFDA		109.0	50.0	150.0
M7PFUnDA		107.8	50.0	150.0
M8FOSA		102.7	50.0	150.0
M8PFOA		108.5	50.0	150.0
M8PFOS		109.6	50.0	150.0
M9-PFNA		102.1	50.0	150.0
MPFBA		101.0	50.0	150.0
MPFDoDA		116.0	50.0	150.0
d3N-MeFOSAA		106.1	50.0	150.0
d5EtFOSAA		100.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		109.2	50.0	150.0
M2-6:2FTSA		93.8	50.0	150.0
M2-8:2FTSA		95.3	50.0	150.0
M2PFTeDA		111.2	12.0	218.0
M3PFBS		97.8	50.0	150.0
M3PFHxS		100.6	50.0	150.0
M4PFHpA		108.3	50.0	150.0
M5PFHxA		98.2	50.0	150.0
M5PFPeA		102.5	50.0	150.0
M6PFDA		99.3	50.0	150.0
M7PFUnDA		106.7	50.0	150.0
M8FOSA		100.0	50.0	150.0
M8PFOA		103.7	50.0	150.0
M8PFOS		107.2	50.0	150.0
M9-PFNA		94.7	50.0	150.0
MPFBA		99.5	50.0	150.0
MPFDoDA		98.8	50.0	150.0
d3N-MeFOSAA		98.1	50.0	150.0
d5EtFOSAA		102.2	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		104.9	50.0	150.0
M2-6:2FTSA		102.1	50.0	150.0
M2-8:2FTSA		95.7	50.0	150.0
M2PFTeDA		108.0	12.0	218.0
M3PFBS		102.2	50.0	150.0
M3PFHxS		105.3	50.0	150.0
M4PFHpA		107.1	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		104.4	50.0	150.0
M6PFDA		107.5	50.0	150.0
M7PFUnDA		103.3	50.0	150.0
M8FOSA		105.4	50.0	150.0
M8PFOA		104.6	50.0	150.0
M8PFOS		104.9	50.0	150.0
M9-PFNA		105.3	50.0	150.0
MPFBA		103.4	50.0	150.0
MPFDoDA		102.1	50.0	150.0
d3N-MeFOSAA		107.0	50.0	150.0
d5EtFOSAA		103.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.4	50.0	150.0
M2-6:2FTSA		94.5	50.0	150.0
M2-8:2FTSA		102.3	50.0	150.0
M2PFTeDA		121.0	12.0	218.0
M3PFBS		100.8	50.0	150.0
M3PFHxS		105.7	50.0	150.0
M4PFHpA		111.7	50.0	150.0
M5PFHxA		102.8	50.0	150.0
M5PFPeA		100.0	50.0	150.0
M6PFDA		107.0	50.0	150.0
M7PFUnDA		102.5	50.0	150.0
M8FOSA		104.3	50.0	150.0
M8PFOA		105.2	50.0	150.0
M8PFOS		98.4	50.0	150.0
M9-PFNA		105.9	50.0	150.0
MPFBA		100.5	50.0	150.0
MPFDoDA		109.4	50.0	150.0
d3N-MeFOSAA		100.6	50.0	150.0
d5EtFOSAA		104.1	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2

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

Blank (BLK)

Lab Sample ID: AK200622.BLK200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:20, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA	*	127.8	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 21:41, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA	*	167.0	70.0	130.0
PFPeA		99.8	70.0	130.0
4:2 FTSA		101.0	70.0	130.0
PFHxA		104.0	70.0	130.0
PFBS		102.0	70.0	130.0
HFPO-DA		110.0	70.0	130.0
PFFHpA		100.0	70.0	130.0
ADONA		107.0	70.0	130.0
PFPeS		98.4	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 21:41, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		89.0	70.0	130.0
PFOA		112.0	70.0	130.0
PFHxS		95.2	70.0	130.0
PFNA		106.0	70.0	130.0
8:2 FTSA		89.7	70.0	130.0
PFHpS		100.0	70.0	130.0
N-MeFOSAA		108.0	70.0	130.0
PFDA		108.0	70.0	130.0
EtFOSAA		91.0	70.0	130.0
PFOS		101.0	70.0	130.0
PFUnDA		94.0	70.0	130.0
9CL-PF3ONS		108.0	70.0	130.0
PFNS		102.0	70.0	130.0
PFDODA		102.0	70.0	130.0
PFDS		112.0	70.0	130.0
FOSA		98.7	70.0	130.0
PFTTrDA		108.0	70.0	130.0
11CL-PF3OUdS		115.0	70.0	130.0
PFTeDA		89.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200622.LCSD200618B, Parent Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:01, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA	*	137.0	70.0	130.0	19.7	30.0
PFPeA		103.0	70.0	130.0	3.2	30.0
4:2 FTSA		101.0	70.0	130.0	0.0	30.0
PFHxA		102.0	70.0	130.0	1.9	30.0
PFBS		102.0	70.0	130.0	0.0	30.0
HFPO-DA		99.8	70.0	130.0	9.7	30.0
PFHpA		94.6	70.0	130.0	5.5	30.0
ADONA		105.0	70.0	130.0	1.9	30.0
PFPeS		103.0	70.0	130.0	4.6	30.0
6:2 FTSA		90.5	70.0	130.0	1.7	30.0
PFOA		108.0	70.0	130.0	3.6	30.0
PFHxS		102.0	70.0	130.0	6.9	30.0
PFNA		122.0	70.0	130.0	14.0	30.0
8:2 FTSA		90.9	70.0	130.0	1.3	30.0
PFHpS		105.0	70.0	130.0	4.9	30.0
N-MeFOSAA		113.0	70.0	130.0	4.5	30.0
PFDA		96.3	70.0	130.0	11.5	30.0
EtFOSAA		91.6	70.0	130.0	0.7	30.0
PFOS		112.0	70.0	130.0	10.3	30.0
PFUnDA		96.4	70.0	130.0	2.5	30.0
9CL-PF3ONS		116.0	70.0	130.0	7.1	30.0
PFNS		115.0	70.0	130.0	12.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200622.LCSD200618B, Parent Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:01, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		111.0	70.0	130.0	8.5	30.0
PFDS		126.0	70.0	130.0	11.8	30.0
FOSA		103.0	70.0	130.0	4.3	30.0
PFTTrDA		126.0	70.0	130.0	15.4	30.0
11CL-PF3OUdS		115.0	70.0	130.0	0.0	30.0
PFTeDA		97.5	70.0	130.0	8.7	30.0

Matrix Spike (MS)

Lab Sample ID: AK200622.1494701M, Parent Sample ID: S14947.01

Run in Batch: AK200622, Run Date: 06/23/2020 03:32, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		92.0	70.0	130.0
PFPeA		108.0	70.0	130.0
4:2 FTSA		102.0	70.0	130.0
PFHxA		102.0	70.0	130.0
PFBS		108.0	70.0	130.0
PFHpA		106.0	70.0	130.0
PFPeS		108.0	70.0	130.0
6:2 FTSA		102.0	70.0	130.0
PFOA		100.0	70.0	130.0
PFHxS		100.0	70.0	130.0
PFNA		126.0	70.0	130.0
8:2 FTSA		92.0	70.0	130.0
PFHpS		106.0	70.0	130.0
PFDA		104.0	70.0	130.0
N-MeFOSAA		118.0	70.0	130.0
EtFOSAA		90.0	70.0	130.0
PFOS		102.0	70.0	130.0
PFUnDA		102.0	70.0	130.0
PFNS		116.0	70.0	130.0
PFDODA		94.0	70.0	130.0
PFDS		128.0	70.0	130.0
PFTTrDA		120.0	70.0	130.0
FOSA		112.0	70.0	130.0
PFTeDA		102.0	70.0	130.0
11CL-PF3OUdS	*	132.0	70.0	130.0
9CL-PF3ONS		118.0	70.0	130.0
ADONA		108.0	70.0	130.0
HFPO-DA		110.0	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200622.1494702D, Parent Sample ID: S14947.02

Run in Batch: AK200622, Run Date: 06/23/2020 04:11, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	RPD	RPD CL
PFBA		14.3	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200622.1494702D, Parent Sample ID: S14947.02

Run in Batch: AK200622, Run Date: 06/23/2020 04:11, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		4.4	30.0
PFBS		0.0	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA	*	34.1	30.0
PFOA		NC	30.0
PFHxS		3.8	30.0
PFHxS-LN		4.7	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		19.1	30.0
PFOS-LN		NC	30.0
PFOS-BR		16.5	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

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		103.0	70.0	130.0
PFPeA		98.7	70.0	130.0
4:2 FTSA		97.9	70.0	130.0
PFHxA		92.1	70.0	130.0
PFBS		100.0	70.0	130.0
HFPO-DA		86.8	70.0	130.0
PFFHpA		90.1	70.0	130.0
PFPeS		107.0	70.0	130.0
ADONA		86.4	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		101.0	70.0	130.0
PFOA		100.0	70.0	130.0
PFHxS		85.9	70.0	130.0
PFNA		109.0	70.0	130.0
8:2 FTSA		76.6	70.0	130.0
PFHpS		85.3	70.0	130.0
N-MeFOSAA		117.0	70.0	130.0
PFDA		104.0	70.0	130.0
EtFOSAA		108.0	70.0	130.0
PFOS		99.0	70.0	130.0
PFUnDA		104.0	70.0	130.0
9CL-PF3ONS		95.3	70.0	130.0
PFNS		89.0	70.0	130.0
PFDODA		98.1	70.0	130.0
PFDS		98.8	70.0	130.0
PFTTrDA		102.0	70.0	130.0
FOSA		105.0	70.0	130.0
11CL-PF3OUdS		97.0	70.0	130.0
PFTeDA		113.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		103.0	70.0	130.0	0.0	30.0
PFPeA		98.7	70.0	130.0	0.0	30.0
4:2 FTSA		84.2	70.0	130.0	15.0	30.0
PFHxA		104.0	70.0	130.0	12.1	30.0
PFBS		98.7	70.0	130.0	1.3	30.0
HFPO-DA		87.3	70.0	130.0	0.6	30.0
PFHpA		88.1	70.0	130.0	2.2	30.0
PFPeS		108.0	70.0	130.0	0.9	30.0
ADONA		91.3	70.0	130.0	5.5	30.0
6:2 FTSA		111.0	70.0	130.0	9.4	30.0
PFOA		102.0	70.0	130.0	2.0	30.0
PFHxS		96.4	70.0	130.0	11.5	30.0
PFNA		117.0	70.0	130.0	7.1	30.0
8:2 FTSA		95.4	70.0	130.0	21.9	30.0
PFHpS		92.3	70.0	130.0	7.9	30.0
N-MeFOSAA		104.0	70.0	130.0	11.8	30.0
PFDA		110.0	70.0	130.0	5.6	30.0
EtFOSAA		91.5	70.0	130.0	16.5	30.0
PFOS		99.8	70.0	130.0	0.8	30.0
PFUnDA		92.9	70.0	130.0	11.3	30.0
9CL-PF3ONS		101.0	70.0	130.0	5.8	30.0
PFNS		91.4	70.0	130.0	2.7	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		109.0	70.0	130.0	10.5	30.0
PFDS		104.0	70.0	130.0	5.1	30.0
PFTTrDA		96.1	70.0	130.0	6.0	30.0
FOSA		103.0	70.0	130.0	1.9	30.0
11CL-PF3OUdS		103.0	70.0	130.0	6.0	30.0
PFTeDA		104.0	70.0	130.0	8.3	30.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Analyte	Flags	% Rec	LCL	UCL
PFBA		93.9	70.0	130.0
PFPeA		101.0	70.0	130.0
4:2 FTSA		94.9	70.0	130.0
PFHxA		99.0	70.0	130.0
PFBS		101.0	70.0	130.0
PFHpA		96.0	70.0	130.0
PFPeS		111.1	70.0	130.0
6:2 FTSA		101.0	70.0	130.0
PFOA		101.0	70.0	130.0
PFHxS		94.9	70.0	130.0
PFNA		111.1	70.0	130.0
8:2 FTSA		81.8	70.0	130.0
PFHpS		97.0	70.0	130.0
PFDA		100.0	70.0	130.0
N-MeFOSAA		111.1	70.0	130.0
EtFOSAA		92.9	70.0	130.0
PFOS		101.0	70.0	130.0
PFUnDA		93.9	70.0	130.0
PFNS		99.0	70.0	130.0
PFDODA		97.0	70.0	130.0
PFDS		101.0	70.0	130.0
PFTTrDA		99.0	70.0	130.0
FOSA		111.1	70.0	130.0
PFTeDA		111.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFBA		2.4	30.0
PFPeA		NC	30.0
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0



Analytical Laboratory Report

Report ID: S14970.01(01)
Generated on 07/10/2020

Report to

Attention: Clifford Yantz
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Report Summary

Lab Sample ID(s): S14970.01-S14970.06
Project: RACER Coldwater Rd
Collected Date(s): 06/17/2020 - 06/18/2020
Submitted Date/Time: 06/18/2020 14:40
Sampled by: Kevin Schneider
P.O. #: 12000277

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
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)

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
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-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S14970.01	B-24r	Groundwater	06/17/20 13:20
S14970.02	Dup-1	Groundwater	06/18/20 00:01
S14970.03	B-19Ar	Groundwater	06/18/20 09:55
S14970.04	Field Blank-061820	Water	06/18/20 11:45
S14970.05	B-18A	Groundwater	06/18/20 11:50
S14970.06	B-7	Groundwater	06/18/20 13:10



Analytical Laboratory Report

Lab Sample ID: S14970.01

Sample Tag: B-24r

Collected Date/Time: 06/17/2020 13:20

Matrix: Groundwater

COC Reference: 128652

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.34/6.72/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/07/20 23:56, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	18	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*	2.4	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*	3.3	2.0	1.6	ng/L	1.96	355-46-4	
PFHxS-LN*	2.4	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*	3.8	2.0	1.9	ng/L	1.96	1763-23-1	
PFOS-LN*	3.3	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	2.0	2.0	ng/L	1.96	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S14970.02

Sample Tag: Dup-1

Collected Date/Time: 06/18/2020 00:01

Matrix: Groundwater

COC Reference: 128652

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.45/6.76/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 00:16, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.7	9.7	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	2.3	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S14970.03

Sample Tag: B-19Ar

Collected Date/Time: 06/18/2020 09:55

Matrix: Groundwater

COC Reference: 128652

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.05/6.75/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 00:35, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	14	9.5	9.5	ng/L	1.89	375-22-4	
PFPeA*	Not detected	3.8	0.95	ng/L	1.89	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.89	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.89	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.89	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.89	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.89	2706-91-4	
6:2 FTSA*	5.7	1.9	1.9	ng/L	1.89	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.89	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.89	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.89	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.89	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.89	375-95-1	
8:2 FTSA*	Not detected	1.9	0.95	ng/L	1.89	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.89	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.89	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.89	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.89	2991-50-6	
PFOS*	3.2	1.9	1.9	ng/L	1.89	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.89	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.89	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.89	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.89	68259-12-1	
PfDoDA*	Not detected	1.9	1.5	ng/L	1.89	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.89	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.89	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.89	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.89	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.89	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.89	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.89	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.89	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S14970.04

Sample Tag: Field Blank-061820

Collected Date/Time: 06/18/2020 11:45

Matrix: Water

COC Reference: 128652

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.96/6.76/10	ASTMD7979-19M	06/18/20 16:30	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 06/23/20 06:08, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	19	9.6	9.6	ng/L	1.92	375-22-4	B
PFPeA*	Not detected	3.8	0.96	ng/L	1.92	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.92	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.92	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.92	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.92	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.92	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.92	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.92	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.92	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.92	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.92	39108-34-4	I
PFHpS*	Not detected	1.9	1.9	ng/L	1.92	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.92	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.92	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.92	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.92	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.92	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.92	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.92	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.92	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.92	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.92	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.92	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.92	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.92	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.92	13252-13-6	

B-Compound also found in associated method blank

I-Matrix interference with internal standard



Analytical Laboratory Report

Lab Sample ID: S14970.05

Sample Tag: B-18A

Collected Date/Time: 06/18/2020 11:50

Matrix: Groundwater

COC Reference: 128652

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.79/6.72/12	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 00:55, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	12	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*	2.1	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*	Not detected	2.0	1.9	ng/L	1.98	1763-23-1	
PFOS-LN*	Not detected	2.0	1.9	ng/L	1.98	1763-23-1-LN	
PFOS-BR*	Not detected	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	
PFTDA*	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	2.0	2.0	ng/L	1.98	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S14970.06

Sample Tag: B-7

Collected Date/Time: 06/18/2020 13:10

Matrix: Groundwater

COC Reference: 128652

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.62/6.72/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 01:14, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	10	10	10	ng/L	2.04	375-22-4	
PFPeA*	1.2	4.1	1.0	ng/L	2.04	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	2.0	2.0	1.4	ng/L	2.04	307-24-4	J
PFBS*	4.8	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	5.1	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	
PFOA*	5.6	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	17	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	13	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	3.3	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	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*	2.4	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*	140	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	84	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	57	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*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	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	2.0	2.0	ng/L	2.04	13252-13-6	

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

Merit Laboratories Login Checklist

Lab Set ID:S14970

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted:06/18/2020 14:40 Login User: SRS

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.8
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☐ Yes ☐ No ☒ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Clifford Yantz			
COMPANY O'Brien & Gere, A Ramboll Company			
ADDRESS 2260 East Saginaw			
CITY East Lansing		STATE MI	ZIP CODE 48823
PHONE NO. 313-333-0211		FAX NO.	P.O. NO.
E-MAIL ADDRESS clifford.yantz@ramboll.com		QUOTE NO.	

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME	RACER Coldwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME	Ben S. S. S. S.

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

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

Containers & Preservatives

[illegible][illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	☒ Sampler	DATE 6/18/00	TIME 1:40
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/18/00	TIME 1:40
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/18/00	TIME 1:40
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/18/00	TIME 1:40

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL _____ 38
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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



Quality Control Report

Report ID: QC-S14970-01
Generated on 07/10/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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): S14970.01-S14970.06
Project: RACER Coldwater Rd
Submitted Date/Time: 06/18/2020 14:40
Sampled by: Kevin Schneider
P.O. #: 12000277

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-7)
Prep Batch Summary (Page 8)
Internal Standards per Lab Sample (Pages 9-14)
Internal Standards per QC Sample (Pages 15-20)
Batch QC Results (Pages 21-28)

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: S14970.01

Sample Tag: B-24r

Collected Date/Time: 06/17/2020 13:20

Matrix: Groundwater

COC Reference: 128652

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/07/20 23:56	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14970.02

Sample Tag: Dup-1

Collected Date/Time: 06/18/2020 00:01

Matrix: Groundwater

COC Reference: 128652

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 00:16	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14970.03

Sample Tag: B-19Ar

Collected Date/Time: 06/18/2020 09:55

Matrix: Groundwater

COC Reference: 128652

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 00:35	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14970.04

Sample Tag: Field Blank-061820

Collected Date/Time: 06/18/2020 11:45

Matrix: Water

COC Reference: 128652

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	06/23/20 06:08	AK200622	PF200618W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14970.05

Sample Tag: B-18A

Collected Date/Time: 06/18/2020 11:50

Matrix: Groundwater

COC Reference: 128652

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 00:55	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S14970.06

Sample Tag: B-7

Collected Date/Time: 06/18/2020 13:10

Matrix: Groundwater

COC Reference: 128652

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 01:14	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200618W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14970.04	28 PFAs	ASTMD7979-19M	06/23/20 06:08	AK200622

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14970.01	28 PFAs	ASTMD7979-19M	07/07/20 23:56	AK200707A
S14970.02	28 PFAs	ASTMD7979-19M	07/08/20 00:16	AK200707A
S14970.03	28 PFAs	ASTMD7979-19M	07/08/20 00:35	AK200707A
S14970.05	28 PFAs	ASTMD7979-19M	07/08/20 00:55	AK200707A
S14970.06	28 PFAs	ASTMD7979-19M	07/08/20 01:14	AK200707A

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14970.01

Sample Tag: B-24r

Collected Date/Time: 06/17/2020 13:20

Matrix: Groundwater

COC Reference: 128652

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/07/2020 23:56, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		103.5	50.0	150.0
M2-6:2FTSA		100.9	50.0	150.0
M2-8:2FTSA		100.7	50.0	150.0
M2PFTeDA		100.9	12.0	218.0
M3PFBS		106.7	50.0	150.0
M3PFHxS		106.4	50.0	150.0
M4PFHpA		108.3	50.0	150.0
M5PFHxA		101.2	50.0	150.0
M5PFPeA		105.5	50.0	150.0
M6PFDA		106.5	50.0	150.0
M7PFUnDA		97.1	50.0	150.0
M8FOSA		103.4	50.0	150.0
M8PFOA		107.9	50.0	150.0
M8PFOS		104.5	50.0	150.0
M9-PFNA		110.9	50.0	150.0
MPFBA		107.1	50.0	150.0
MPFDoDA		104.1	50.0	150.0
d3N-MeFOSAA		105.0	50.0	150.0
d5EtFOSAA		101.8	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14970.02

Sample Tag: Dup-1

Collected Date/Time: 06/18/2020 00:01

Matrix: Groundwater

COC Reference: 128652

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 00:16, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		95.9	50.0	150.0
M2-6:2FTSA		95.9	50.0	150.0
M2-8:2FTSA		99.8	50.0	150.0
M2PFTeDA		113.3	12.0	218.0
M3PFBS		99.7	50.0	150.0
M3PFHxS		101.2	50.0	150.0
M4PFHpA		104.7	50.0	150.0
M5PFHxA		104.3	50.0	150.0
M5PFPeA		100.6	50.0	150.0
M6PFDA		106.7	50.0	150.0
M7PFUnDA		106.3	50.0	150.0
M8FOSA		97.2	50.0	150.0
M8PFOA		106.7	50.0	150.0
M8PFOS		104.8	50.0	150.0
M9-PFNA		107.8	50.0	150.0
MPFBA		100.1	50.0	150.0
MPFDoDA		110.4	50.0	150.0
d3N-MeFOSAA		102.2	50.0	150.0
d5EtFOSAA		113.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14970.03

Sample Tag: B-19Ar

Collected Date/Time: 06/18/2020 09:55

Matrix: Groundwater

COC Reference: 128652

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 00:35, Matrix: WW, Dilution: 1.89

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		98.6	50.0	150.0
M2-6:2FTSA		98.7	50.0	150.0
M2-8:2FTSA		107.7	50.0	150.0
M2PFTeDA		142.4	12.0	218.0
M3PFBS		108.9	50.0	150.0
M3PFHxS		100.3	50.0	150.0
M4PFHpA		110.6	50.0	150.0
M5PFHxA		108.6	50.0	150.0
M5PFPeA		107.4	50.0	150.0
M6PFDA		115.4	50.0	150.0
M7PFUnDA		118.2	50.0	150.0
M8FOSA		113.3	50.0	150.0
M8PFOA		107.5	50.0	150.0
M8PFOS		113.1	50.0	150.0
M9-PFNA		122.2	50.0	150.0
MPFBA		106.9	50.0	150.0
MPFDoDA		114.6	50.0	150.0
d3N-MeFOSAA		111.5	50.0	150.0
d5EtFOSAA		113.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14970.04

Sample Tag: Field Blank-061820

Collected Date/Time: 06/18/2020 11:45

Matrix: Water

COC Reference: 128652

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200622, Run Date: 06/23/2020 06:08, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		100.4	50.0	150.0
M2-6:2FTSA		104.4	50.0	150.0
M2-8:2FTSA	*	180.6	50.0	150.0
M2PFTeDA		145.0	12.0	218.0
M3PFBS		113.0	50.0	150.0
M3PFHxS		111.1	50.0	150.0
M4PFHpA		110.1	50.0	150.0
M5PFHxA		112.6	50.0	150.0
M5PFPeA		111.3	50.0	150.0
M6PFDA		114.8	50.0	150.0
M7PFUnDA		101.1	50.0	150.0
M8FOSA		115.0	50.0	150.0
M8PFOA		116.5	50.0	150.0
M8PFOS		119.0	50.0	150.0
M9-PFNA		113.9	50.0	150.0
MPFBA		110.9	50.0	150.0
MPFDoDA		115.4	50.0	150.0
d3N-MeFOSAA		116.2	50.0	150.0
d5EtFOSAA		123.3	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14970.05

Sample Tag: B-18A

Collected Date/Time: 06/18/2020 11:50

Matrix: Groundwater

COC Reference: 128652

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 00:55, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		97.5	50.0	150.0
M2-6:2FTSA		99.1	50.0	150.0
M2-8:2FTSA		96.6	50.0	150.0
M2PFTeDA		110.5	12.0	218.0
M3PFBS		105.1	50.0	150.0
M3PFHxS		108.4	50.0	150.0
M4PFHpA		106.9	50.0	150.0
M5PFHxA		101.1	50.0	150.0
M5PFPeA		101.7	50.0	150.0
M6PFDA		107.4	50.0	150.0
M7PFUnDA		103.1	50.0	150.0
M8FOSA		98.8	50.0	150.0
M8PFOA		103.7	50.0	150.0
M8PFOS		107.4	50.0	150.0
M9-PFNA		111.9	50.0	150.0
MPFBA		103.5	50.0	150.0
MPFDoDA		106.8	50.0	150.0
d3N-MeFOSAA		110.1	50.0	150.0
d5EtFOSAA		104.9	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S14970.06

Sample Tag: B-7

Collected Date/Time: 06/18/2020 13:10

Matrix: Groundwater

COC Reference: 128652

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 01:14, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		98.7	50.0	150.0
M2-6:2FTSA		94.3	50.0	150.0
M2-8:2FTSA		94.6	50.0	150.0
M2PFTeDA		121.4	12.0	218.0
M3PFBS		103.2	50.0	150.0
M3PFHxS		106.9	50.0	150.0
M4PFHpA		105.4	50.0	150.0
M5PFHxA		97.5	50.0	150.0
M5PFPeA		104.4	50.0	150.0
M6PFDA		103.9	50.0	150.0
M7PFUnDA		101.2	50.0	150.0
M8FOSA		102.4	50.0	150.0
M8PFOA		108.9	50.0	150.0
M8PFOS		102.6	50.0	150.0
M9-PFNA		107.4	50.0	150.0
MPFBA		103.9	50.0	150.0
MPFDoDA		108.4	50.0	150.0
d3N-MeFOSAA		106.5	50.0	150.0
d5EtFOSAA		114.0	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200618W2

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

Blank (BLK)

Lab Sample ID: AK200622.BLK200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:20, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.8	50.0	150.0
M2-6:2FTSA		99.9	50.0	150.0
M2-8:2FTSA		106.2	50.0	150.0
M2PFTeDA		135.4	12.0	218.0
M3PFBS		110.7	50.0	150.0
M3PFHxS		114.7	50.0	150.0
M4PFHpA		110.1	50.0	150.0
M5PFHxA		114.7	50.0	150.0
M5PFPeA		111.8	50.0	150.0
M6PFDA		116.5	50.0	150.0
M7PFUnDA		98.3	50.0	150.0
M8FOSA		111.7	50.0	150.0
M8PFOA		114.0	50.0	150.0
M8PFOS		115.0	50.0	150.0
M9-PFNA		107.2	50.0	150.0
MPFBA		110.2	50.0	150.0
MPFDoDA		117.4	50.0	150.0
d3N-MeFOSAA		106.7	50.0	150.0
d5EtFOSAA		111.7	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 21:41, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		99.8	50.0	150.0
M2-6:2FTSA		100.9	50.0	150.0
M2-8:2FTSA		91.0	50.0	150.0
M2PFTeDA		129.5	12.0	218.0
M3PFBS		108.1	50.0	150.0
M3PFHxS		107.9	50.0	150.0
M4PFHpA		101.3	50.0	150.0
M5PFHxA		105.4	50.0	150.0
M5PFPeA		105.3	50.0	150.0
M6PFDA		105.9	50.0	150.0
M7PFUnDA		96.1	50.0	150.0
M8FOSA		107.4	50.0	150.0
M8PFOA		104.7	50.0	150.0
M8PFOS		113.9	50.0	150.0
M9-PFNA		109.0	50.0	150.0
MPFBA		106.3	50.0	150.0
MPFDoDA		104.3	50.0	150.0
d3N-MeFOSAA		106.0	50.0	150.0
d5EtFOSAA		113.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200622.LCSD200618B, Parent Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:01, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		100.2	50.0	150.0
M2-6:2FTSA		106.4	50.0	150.0
M2-8:2FTSA		93.3	50.0	150.0
M2PFTeDA		118.4	12.0	218.0
M3PFBS		108.1	50.0	150.0
M3PFHxS		101.6	50.0	150.0
M4PFHpA		109.1	50.0	150.0
M5PFHxA		109.7	50.0	150.0
M5PFPeA		104.2	50.0	150.0
M6PFDA		110.6	50.0	150.0
M7PFUnDA		93.2	50.0	150.0
M8FOSA		105.9	50.0	150.0
M8PFOA		108.6	50.0	150.0
M8PFOS		103.7	50.0	150.0
M9-PFNA		102.8	50.0	150.0
MPFBA		105.1	50.0	150.0
MPFDoDA		95.7	50.0	150.0
d3N-MeFOSAA		101.4	50.0	150.0
d5EtFOSAA		109.1	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200622.1494701M, Parent Sample ID: S14947.01

Run in Batch: AK200622, Run Date: 06/23/2020 03:32, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.9	50.0	150.0
M2-6:2FTSA		100.0	50.0	150.0
M2-8:2FTSA		115.4	50.0	150.0
M2PFTeDA		138.4	12.0	218.0
M3PFBS		108.3	50.0	150.0
M3PFHxS		111.1	50.0	150.0
M4PFHpA		105.4	50.0	150.0
M5PFHxA		113.2	50.0	150.0
M5PFPeA		105.5	50.0	150.0
M6PFDA		115.5	50.0	150.0
M7PFUnDA		101.5	50.0	150.0
M8FOSA		113.6	50.0	150.0
M8PFOA		113.1	50.0	150.0
M8PFOS		110.6	50.0	150.0
M9-PFNA		102.6	50.0	150.0
MPFBA		108.7	50.0	150.0
MPFDoDA		118.8	50.0	150.0
d3N-MeFOSAA		103.4	50.0	150.0
d5EtFOSAA		124.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200622.1494702D, Parent Sample ID: S14947.02

Run in Batch: AK200622, Run Date: 06/23/2020 04:11, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		98.6	50.0	150.0
M2-6:2FTSA		95.5	50.0	150.0
M2-8:2FTSA		111.9	50.0	150.0
M2PFTeDA		132.2	12.0	218.0
M3PFBS		110.4	50.0	150.0
M3PFHxS		121.3	50.0	150.0
M4PFHpA		108.4	50.0	150.0
M5PFHxA		113.4	50.0	150.0
M5PFPeA		109.7	50.0	150.0
M6PFDA		114.5	50.0	150.0
M7PFUnDA		105.4	50.0	150.0
M8FOSA		116.4	50.0	150.0
M8PFOA		112.3	50.0	150.0
M8PFOS		113.4	50.0	150.0
M9-PFNA		114.3	50.0	150.0
MPFBA		110.5	50.0	150.0
MPFDoDA		109.6	50.0	150.0
d3N-MeFOSAA		115.4	50.0	150.0
d5EtFOSAA		112.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.0	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		101.9	50.0	150.0
M2PFTeDA		126.7	12.0	218.0
M3PFBS		106.0	50.0	150.0
M3PFHxS		112.1	50.0	150.0
M4PFHpA		107.7	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		106.7	50.0	150.0
M7PFUnDA		107.3	50.0	150.0
M8FOSA		102.9	50.0	150.0
M8PFOA		107.8	50.0	150.0
M8PFOS		104.2	50.0	150.0
M9-PFNA		106.8	50.0	150.0
MPFBA		105.7	50.0	150.0
MPFDoDA		110.5	50.0	150.0
d3N-MeFOSAA		100.8	50.0	150.0
d5EtFOSAA		104.6	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.5	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		110.2	50.0	150.0
M2PFTeDA		131.9	12.0	218.0
M3PFBS		104.4	50.0	150.0
M3PFHxS		109.9	50.0	150.0
M4PFHpA		104.1	50.0	150.0
M5PFHxA		103.1	50.0	150.0
M5PFPeA		102.2	50.0	150.0
M6PFDA		109.0	50.0	150.0
M7PFUnDA		107.8	50.0	150.0
M8FOSA		102.7	50.0	150.0
M8PFOA		108.5	50.0	150.0
M8PFOS		109.6	50.0	150.0
M9-PFNA		102.1	50.0	150.0
MPFBA		101.0	50.0	150.0
MPFDoDA		116.0	50.0	150.0
d3N-MeFOSAA		106.1	50.0	150.0
d5EtFOSAA		100.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		109.2	50.0	150.0
M2-6:2FTSA		93.8	50.0	150.0
M2-8:2FTSA		95.3	50.0	150.0
M2PFTeDA		111.2	12.0	218.0
M3PFBS		97.8	50.0	150.0
M3PFHxS		100.6	50.0	150.0
M4PFHpA		108.3	50.0	150.0
M5PFHxA		98.2	50.0	150.0
M5PFPeA		102.5	50.0	150.0
M6PFDA		99.3	50.0	150.0
M7PFUnDA		106.7	50.0	150.0
M8FOSA		100.0	50.0	150.0
M8PFOA		103.7	50.0	150.0
M8PFOS		107.2	50.0	150.0
M9-PFNA		94.7	50.0	150.0
MPFBA		99.5	50.0	150.0
MPFDoDA		98.8	50.0	150.0
d3N-MeFOSAA		98.1	50.0	150.0
d5EtFOSAA		102.2	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		104.9	50.0	150.0
M2-6:2FTSA		102.1	50.0	150.0
M2-8:2FTSA		95.7	50.0	150.0
M2PFTeDA		108.0	12.0	218.0
M3PFBS		102.2	50.0	150.0
M3PFHxS		105.3	50.0	150.0
M4PFHpA		107.1	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		104.4	50.0	150.0
M6PFDA		107.5	50.0	150.0
M7PFUnDA		103.3	50.0	150.0
M8FOSA		105.4	50.0	150.0
M8PFOA		104.6	50.0	150.0
M8PFOS		104.9	50.0	150.0
M9-PFNA		105.3	50.0	150.0
MPFBA		103.4	50.0	150.0
MPFDoDA		102.1	50.0	150.0
d3N-MeFOSAA		107.0	50.0	150.0
d5EtFOSAA		103.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.4	50.0	150.0
M2-6:2FTSA		94.5	50.0	150.0
M2-8:2FTSA		102.3	50.0	150.0
M2PFTeDA		121.0	12.0	218.0
M3PFBS		100.8	50.0	150.0
M3PFHxS		105.7	50.0	150.0
M4PFHpA		111.7	50.0	150.0
M5PFHxA		102.8	50.0	150.0
M5PFPeA		100.0	50.0	150.0
M6PFDA		107.0	50.0	150.0
M7PFUnDA		102.5	50.0	150.0
M8FOSA		104.3	50.0	150.0
M8PFOA		105.2	50.0	150.0
M8PFOS		98.4	50.0	150.0
M9-PFNA		105.9	50.0	150.0
MPFBA		100.5	50.0	150.0
MPFDoDA		109.4	50.0	150.0
d3N-MeFOSAA		100.6	50.0	150.0
d5EtFOSAA		104.1	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2

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

Blank (BLK)

Lab Sample ID: AK200622.BLK200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:20, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA	*	127.8	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDoDA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 21:41, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA	*	167.0	70.0	130.0
PFPeA		99.8	70.0	130.0
4:2 FTSA		101.0	70.0	130.0
PFHxA		104.0	70.0	130.0
PFBS		102.0	70.0	130.0
HFPO-DA		110.0	70.0	130.0
PFFHpA		100.0	70.0	130.0
ADONA		107.0	70.0	130.0
PFPeS		98.4	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 21:41, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		89.0	70.0	130.0
PFOA		112.0	70.0	130.0
PFHxS		95.2	70.0	130.0
PFNA		106.0	70.0	130.0
8:2 FTSA		89.7	70.0	130.0
PFHpS		100.0	70.0	130.0
N-MeFOSAA		108.0	70.0	130.0
PFDA		108.0	70.0	130.0
EtFOSAA		91.0	70.0	130.0
PFOS		101.0	70.0	130.0
PFUnDA		94.0	70.0	130.0
9CL-PF3ONS		108.0	70.0	130.0
PFNS		102.0	70.0	130.0
PFDODA		102.0	70.0	130.0
PFDS		112.0	70.0	130.0
FOSA		98.7	70.0	130.0
PFTTrDA		108.0	70.0	130.0
11CL-PF3OUdS		115.0	70.0	130.0
PFTeDA		89.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200622.LCSD200618B, Parent Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:01, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA	*	137.0	70.0	130.0	19.7	30.0
PFPeA		103.0	70.0	130.0	3.2	30.0
4:2 FTSA		101.0	70.0	130.0	0.0	30.0
PFHxA		102.0	70.0	130.0	1.9	30.0
PFBS		102.0	70.0	130.0	0.0	30.0
HFPO-DA		99.8	70.0	130.0	9.7	30.0
PFHpA		94.6	70.0	130.0	5.5	30.0
ADONA		105.0	70.0	130.0	1.9	30.0
PFPeS		103.0	70.0	130.0	4.6	30.0
6:2 FTSA		90.5	70.0	130.0	1.7	30.0
PFOA		108.0	70.0	130.0	3.6	30.0
PFHxS		102.0	70.0	130.0	6.9	30.0
PFNA		122.0	70.0	130.0	14.0	30.0
8:2 FTSA		90.9	70.0	130.0	1.3	30.0
PFHpS		105.0	70.0	130.0	4.9	30.0
N-MeFOSAA		113.0	70.0	130.0	4.5	30.0
PFDA		96.3	70.0	130.0	11.5	30.0
EtFOSAA		91.6	70.0	130.0	0.7	30.0
PFOS		112.0	70.0	130.0	10.3	30.0
PFUnDA		96.4	70.0	130.0	2.5	30.0
9CL-PF3ONS		116.0	70.0	130.0	7.1	30.0
PFNS		115.0	70.0	130.0	12.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200622.LCSD200618B, Parent Sample ID: AK200622.LCS200618B

Run in Batch: AK200622, Run Date: 06/22/2020 22:01, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		111.0	70.0	130.0	8.5	30.0
PFDS		126.0	70.0	130.0	11.8	30.0
FOSA		103.0	70.0	130.0	4.3	30.0
PFTTrDA		126.0	70.0	130.0	15.4	30.0
11CL-PF3OUdS		115.0	70.0	130.0	0.0	30.0
PFTeDA		97.5	70.0	130.0	8.7	30.0

Matrix Spike (MS)

Lab Sample ID: AK200622.1494701M, Parent Sample ID: S14947.01

Run in Batch: AK200622, Run Date: 06/23/2020 03:32, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		92.0	70.0	130.0
PFPeA		108.0	70.0	130.0
4:2 FTSA		102.0	70.0	130.0
PFHxA		102.0	70.0	130.0
PFBS		108.0	70.0	130.0
PFHpA		106.0	70.0	130.0
PFPeS		108.0	70.0	130.0
6:2 FTSA		102.0	70.0	130.0
PFOA		100.0	70.0	130.0
PFHxS		100.0	70.0	130.0
PFNA		126.0	70.0	130.0
8:2 FTSA		92.0	70.0	130.0
PFHpS		106.0	70.0	130.0
PFDA		104.0	70.0	130.0
N-MeFOSAA		118.0	70.0	130.0
EtFOSAA		90.0	70.0	130.0
PFOS		102.0	70.0	130.0
PFUnDA		102.0	70.0	130.0
PFNS		116.0	70.0	130.0
PFDODA		94.0	70.0	130.0
PFDS		128.0	70.0	130.0
PFTTrDA		120.0	70.0	130.0
FOSA		112.0	70.0	130.0
PFTeDA		102.0	70.0	130.0
11CL-PF3OUdS	*	132.0	70.0	130.0
9CL-PF3ONS		118.0	70.0	130.0
ADONA		108.0	70.0	130.0
HFPO-DA		110.0	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200622.1494702D, Parent Sample ID: S14947.02

Run in Batch: AK200622, Run Date: 06/23/2020 04:11, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	RPD	RPD CL
PFBA		14.3	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200618W2 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200622.1494702D, Parent Sample ID: S14947.02

Run in Batch: AK200622, Run Date: 06/23/2020 04:11, Prep Date: 06/18/2020, Matrix: WW, Dilution: 1

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		4.4	30.0
PFBS		0.0	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA	*	34.1	30.0
PFOA		NC	30.0
PFHxS		3.8	30.0
PFHxS-LN		4.7	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		19.1	30.0
PFOS-LN		NC	30.0
PFOS-BR		16.5	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

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		103.0	70.0	130.0
PFPeA		98.7	70.0	130.0
4:2 FTSA		97.9	70.0	130.0
PFHxA		92.1	70.0	130.0
PFBS		100.0	70.0	130.0
HFPO-DA		86.8	70.0	130.0
PFFHpA		90.1	70.0	130.0
PFPeS		107.0	70.0	130.0
ADONA		86.4	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		101.0	70.0	130.0
PFOA		100.0	70.0	130.0
PFHxS		85.9	70.0	130.0
PFNA		109.0	70.0	130.0
8:2 FTSA		76.6	70.0	130.0
PFHpS		85.3	70.0	130.0
N-MeFOSAA		117.0	70.0	130.0
PFDA		104.0	70.0	130.0
EtFOSAA		108.0	70.0	130.0
PFOS		99.0	70.0	130.0
PFUnDA		104.0	70.0	130.0
9CL-PF3ONS		95.3	70.0	130.0
PFNS		89.0	70.0	130.0
PFDODA		98.1	70.0	130.0
PFDS		98.8	70.0	130.0
PFTTrDA		102.0	70.0	130.0
FOSA		105.0	70.0	130.0
11CL-PF3OUdS		97.0	70.0	130.0
PFTeDA		113.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		103.0	70.0	130.0	0.0	30.0
PFPeA		98.7	70.0	130.0	0.0	30.0
4:2 FTSA		84.2	70.0	130.0	15.0	30.0
PFHxA		104.0	70.0	130.0	12.1	30.0
PFBS		98.7	70.0	130.0	1.3	30.0
HFPO-DA		87.3	70.0	130.0	0.6	30.0
PFHpA		88.1	70.0	130.0	2.2	30.0
PFPeS		108.0	70.0	130.0	0.9	30.0
ADONA		91.3	70.0	130.0	5.5	30.0
6:2 FTSA		111.0	70.0	130.0	9.4	30.0
PFOA		102.0	70.0	130.0	2.0	30.0
PFHxS		96.4	70.0	130.0	11.5	30.0
PFNA		117.0	70.0	130.0	7.1	30.0
8:2 FTSA		95.4	70.0	130.0	21.9	30.0
PFHpS		92.3	70.0	130.0	7.9	30.0
N-MeFOSAA		104.0	70.0	130.0	11.8	30.0
PFDA		110.0	70.0	130.0	5.6	30.0
EtFOSAA		91.5	70.0	130.0	16.5	30.0
PFOS		99.8	70.0	130.0	0.8	30.0
PFUnDA		92.9	70.0	130.0	11.3	30.0
9CL-PF3ONS		101.0	70.0	130.0	5.8	30.0
PFNS		91.4	70.0	130.0	2.7	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		109.0	70.0	130.0	10.5	30.0
PFDS		104.0	70.0	130.0	5.1	30.0
PFTTrDA		96.1	70.0	130.0	6.0	30.0
FOSA		103.0	70.0	130.0	1.9	30.0
11CL-PF3OUdS		103.0	70.0	130.0	6.0	30.0
PFTeDA		104.0	70.0	130.0	8.3	30.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Analyte	Flags	% Rec	LCL	UCL
PFBA		93.9	70.0	130.0
PFPeA		101.0	70.0	130.0
4:2 FTSA		94.9	70.0	130.0
PFHxA		99.0	70.0	130.0
PFBS		101.0	70.0	130.0
PFHpA		96.0	70.0	130.0
PFPeS		111.1	70.0	130.0
6:2 FTSA		101.0	70.0	130.0
PFOA		101.0	70.0	130.0
PFHxS		94.9	70.0	130.0
PFNA		111.1	70.0	130.0
8:2 FTSA		81.8	70.0	130.0
PFHpS		97.0	70.0	130.0
PFDA		100.0	70.0	130.0
N-MeFOSAA		111.1	70.0	130.0
EtFOSAA		92.9	70.0	130.0
PFOS		101.0	70.0	130.0
PFUnDA		93.9	70.0	130.0
PFNS		99.0	70.0	130.0
PFDODA		97.0	70.0	130.0
PFDS		101.0	70.0	130.0
PFTTrDA		99.0	70.0	130.0
FOSA		111.1	70.0	130.0
PFTeDA		111.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFBA		2.4	30.0
PFPeA		NC	30.0
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Clifford Yantz			
COMPANY O'Brien & Gere, A Ramboll Company			
ADDRESS 2260 East Saginaw			
CITY East Lansing		STATE MI	ZIP CODE 48823
PHONE NO. 313-333-0211		FAX NO.	P.O. NO.
E-MAIL ADDRESS clifford.yantz@ramboll.com		QUOTE NO.	

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME	RACER Coldwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME	Ben S. [Signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

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

Containers & Preservatives

[illegible]

RELINQUISHED BY:	<i>[Signature]</i>	☒ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			6/13/00	1340
RECEIVED BY:	<i>[Signature]</i>		DATE	TIME
SIGNATURE/ORGANIZATION			6/18/00	1340
RELINQUISHED BY:	<i>[Signature]</i>		DATE	TIME
SIGNATURE/ORGANIZATION			6/18/00	1440
RECEIVED BY:	<i>[Signature]</i>		DATE	TIME
SIGNATURE/ORGANIZATION			6/18/00	1440

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL _____ 38	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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



Report ID: S15056.01(02)
Generated on 07/14/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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

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)

Report Summary

Lab Sample ID(s): S15056.01-S15056.10
Project: RACER Coldwater Rd
Collected Date(s): 06/18/2020 - 06/19/2020
Submitted Date/Time: 06/19/2020 14:40
Sampled by: Kevin Schneider
P.O. #: 12000277

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Maya Murshak
Technical Director



General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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

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

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

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

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)

Report Narrative

Sample tag for .08 corrected.

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

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
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-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S15056.01	Equipment Blank-1	Water	06/18/20 19:20
S15056.02	OBG MW-16D	Groundwater	06/18/20 15:50
S15056.03	OBG MW-21	Groundwater	06/18/20 16:38
S15056.04	OBG MW-15D	Groundwater	06/19/20 10:23
S15056.05	Field Blank-061920	Water	06/19/20 10:33
S15056.06	OBG MW-9	Groundwater	06/19/20 10:28
S15056.07	OBG MW-18S	Groundwater	06/19/20 12:00
S15056.08	OBG MW-13	Groundwater	06/19/20 13:18
S15056.09	MW-16-10	Groundwater	06/19/20 13:30
S15056.10	MW-15-10	Groundwater	06/19/20 12:03



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.01

Sample Tag: Equipment Blank-1

Collected Date/Time: 06/18/2020 19:20

Matrix: Water

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.95/6.74/12	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 01:34, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	11	9.7	9.7	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.02

Sample Tag: OBG MW-16D

Collected Date/Time: 06/18/2020 15:50

Matrix: Groundwater

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.28/6.70/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 01:53, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	16	9.9	9.9	ng/L	1.97	375-22-4	
PFPeA*	Not detected	3.9	0.99	ng/L	1.97	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.97	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.97	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.97	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.97	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.97	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.97	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.97	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.97	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.97	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.97	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.97	375-95-1	
8:2 FTSA*	Not detected	2.0	0.99	ng/L	1.97	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.97	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.97	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.97	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.97	2991-50-6	
PFOS*	Not detected	2.0	1.9	ng/L	1.97	1763-23-1	
PFOS-LN*	Not detected	2.0	1.9	ng/L	1.97	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.9	ng/L	1.97	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.97	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.97	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.97	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.97	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	1.97	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.97	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.97	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.97	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.97	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.97	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.97	13252-13-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.03

Sample Tag: OBG MW-21

Collected Date/Time: 06/18/2020 16:38

Matrix: Groundwater

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.56/6.73/12	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 02:13, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	24	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*	8.9	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*	2.2	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*	3.2	2.1	1.6	ng/L	2.06	355-46-4	
PFHxS-LN*	1.6	2.1	1.6	ng/L	2.06	355-46-4-LN	J
PFHxS-BR*	1.8	2.1	1.6	ng/L	2.06	355-46-4-BR	J
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	2.1	2.1	ng/L	2.06	13252-13-6	

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



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.04

Sample Tag: OBG MW-15D

Collected Date/Time: 06/19/2020 10:23

Matrix: Groundwater

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.22/6.73/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 02:32, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2	13252-13-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.05

Sample Tag: Field Blank-061920

Collected Date/Time: 06/19/2020 10:33

Matrix: Water

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.09/6.70/11	ASTMD7979-19M	06/26/20 16:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/01/20 05:04, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	13	10	10	ng/L	2.04	375-22-4	B
PFPeA*	Not detected	4.1	1.0	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	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*	Not detected	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*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	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*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	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	
PFTDA*	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	2.0	2.0	ng/L	2.04	13252-13-6	

B-Compound also found in associated method blank



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.06

Sample Tag: OBG MW-9

Collected Date/Time: 06/19/2020 10:28

Matrix: Groundwater

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.96/6.75/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 02:52, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	24	9.6	9.6	ng/L	1.92	375-22-4	
PFPeA*	Not detected	3.8	0.96	ng/L	1.92	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.92	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.92	307-24-4	
PFBS*	1.7	1.9	1.3	ng/L	1.92	375-73-5	J
PFHpA*	Not detected	1.9	1.3	ng/L	1.92	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.92	2706-91-4	
6:2 FTSA*	6.4	1.9	1.9	ng/L	1.92	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.92	335-67-1	
PFHxS*	3.2	1.9	1.5	ng/L	1.92	355-46-4	
PFHxS-LN*	2.5	1.9	1.5	ng/L	1.92	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.92	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.92	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.92	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.92	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.92	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.92	2991-50-6	
PFOS*	11	1.9	1.9	ng/L	1.92	1763-23-1	
PFOS-LN*	6.4	1.9	1.9	ng/L	1.92	1763-23-1-LN	
PFOS-BR*	3.7	1.9	1.9	ng/L	1.92	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.92	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.92	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.92	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.92	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.92	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.92	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.92	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.92	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.92	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.92	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.92	13252-13-6	

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



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.07

Sample Tag: OBG MW-18S

Collected Date/Time: 06/19/2020 12:00

Matrix: Groundwater

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.19/6.82/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 03:11, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	16	10	10	ng/L	2.05	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.05	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.6	ng/L	2.05	757124-72-4	
PFHxA*	Not detected	2.1	1.4	ng/L	2.05	307-24-4	
PFBS*	Not detected	2.1	1.4	ng/L	2.05	375-73-5	
PFHpA*	Not detected	2.1	1.4	ng/L	2.05	375-85-9	
PFPeS*	Not detected	2.1	1.8	ng/L	2.05	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.05	27619-97-2	
PFOA*	Not detected	2.1	1.6	ng/L	2.05	335-67-1	
PFHxS*	1.9	2.1	1.6	ng/L	2.05	355-46-4	J
PFHxS-LN*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-BR	
PFNA*	Not detected	2.1	1.8	ng/L	2.05	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.05	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.05	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.05	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.05	2355-31-9	
EtFOSAA*	Not detected	4.1	2.1	ng/L	2.05	2991-50-6	
PFOS*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1	
PFOS-LN*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-LN	
PFOS-BR*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.4	ng/L	2.05	2058-94-8	
PFNS*	Not detected	2.1	1.4	ng/L	2.05	68259-12-1	
PFDODA*	Not detected	2.1	1.6	ng/L	2.05	307-55-1	
PFDS*	Not detected	2.1	1.4	ng/L	2.05	335-77-3	
PFTTrDA*	Not detected	2.1	1.2	ng/L	2.05	72629-94-8	
FOSA*	Not detected	2.1	1.8	ng/L	2.05	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.05	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.8	ng/L	2.05	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.4	ng/L	2.05	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.05	919005-14-4	
HFPO-DA*	Not detected	2.1	2.1	ng/L	2.05	13252-13-6	

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



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.08

Sample Tag: OBG MW-13

Collected Date/Time: 06/19/2020 13:18

Matrix: Groundwater

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.08/6.78/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 03:31, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	13	9.5	9.5	ng/L	1.89	375-22-4	
PFPeA*	Not detected	3.8	0.95	ng/L	1.89	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.89	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.89	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.89	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.89	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.89	2706-91-4	
6:2 FTSA*	2.3	1.9	1.9	ng/L	1.89	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.89	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.89	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.89	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.89	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.89	375-95-1	
8:2 FTSA*	Not detected	1.9	0.95	ng/L	1.89	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.89	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.89	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.89	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.89	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.89	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.89	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.89	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.89	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.89	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.89	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.89	335-77-3	
PFTDA*	Not detected	1.9	1.1	ng/L	1.89	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.89	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.89	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.89	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.89	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.89	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.89	13252-13-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.09

Sample Tag: MW-16-10

Collected Date/Time: 06/19/2020 13:30

Matrix: Groundwater

COC Reference: 115119

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.91/6.75/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 03:50, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.7	9.7	ng/L	1.94	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.94	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.6	ng/L	1.94	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.94	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.94	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.94	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.94	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.94	27619-97-2	
PFOA*	Not detected	1.9	1.6	ng/L	1.94	335-67-1	
PFHxS*	Not detected	1.9	1.6	ng/L	1.94	355-46-4	
PFHxS-LN*	Not detected	1.9	1.6	ng/L	1.94	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.6	ng/L	1.94	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.94	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.94	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.94	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.94	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.94	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.94	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.94	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.94	68259-12-1	
PFDODA*	Not detected	1.9	1.6	ng/L	1.94	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.94	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.94	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.94	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.94	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.94	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.94	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.94	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.94	13252-13-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S15056.10

Sample Tag: MW-15-10

Collected Date/Time: 06/19/2020 12:03

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.68/6.74/12	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 04:10, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	21	10	10	ng/L	2.02	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2.02	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.02	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.02	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.02	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.02	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.02	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.02	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.02	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.02	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.02	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.02	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.02	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.02	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.02	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.02	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.02	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	2.02	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.02	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.02	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.02	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.02	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.02	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.02	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S15056

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted:06/19/2020 14:40 Login User: SRS

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.3
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☐ Yes ☐ No ☒ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



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

C.O.C. PAGE # 1 OF 1

115119

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <i>clifford yantz</i>		
COMPANY <i>O'Brien & Gere, A Ramboll Company</i>		
ADDRESS <i>2260 East Saginaw</i>		
CITY <i>East Lansing</i>	STATE <i>MI</i>	ZIP CODE <i>48823</i>
PHONE NO. <i>517-332-0211</i>	FAX NO.	P.O. NO.
E-MAIL ADDRESS <i>clifford.yantz@ramboll.com</i>		QUOTE NO.

CONTACT NAME <i>[Signature]</i>		
COMPANY		
ADDRESS		
CITY	STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME <i>RACER Coldwater Rd</i>	SAMPLER(S) - PLEASE PRINT SIGN NAME <i>[Signature]</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

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

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	PFAS (ASTM D7979)	Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☐ Other Special Instructions
	DATE	TIME												
<i>150520.01</i>	<i>6/18/20</i>	<i>1420</i>	<i>Equipment Blank-1</i>	<i>QC</i>	<i>3</i>	<i>3</i>							<i>X</i>	<i>ASTM D7979</i> <i>low level Reporting</i> <i>limit with estimated</i> <i>values</i>
<i>.02</i>	<i>6/18/20</i>	<i>1550</i>	<i>OBG MW-16D</i>	<i>GW</i>	<i>3</i>	<i>3</i>							<i>X</i>	
<i>.03</i>	<i>6/18/20</i>	<i>1638</i>	<i>OBG MW-21</i>	<i>GW</i>	<i>3</i>	<i>3</i>							<i>X</i>	
<i>.04</i>	<i>6/19/20</i>	<i>1023</i>	<i>OBG MW-15D</i>	<i>GW</i>	<i>3</i>	<i>3</i>							<i>X</i>	
<i>.05</i>	<i>6/19/20</i>	<i>1033</i>	<i>Field Blank-061920</i>	<i>QC</i>	<i>1</i>	<i>1</i>							<i>X</i>	
<i>.06</i>	<i>6/19/20</i>	<i>1028</i>	<i>OBG MW-9</i>	<i>GW</i>	<i>3</i>	<i>3</i>							<i>X</i>	
<i>.07</i>	<i>6/19/20</i>	<i>1200</i>	<i>OBG MW-18S</i>	<i>GW</i>	<i>3</i>	<i>3</i>							<i>X</i>	
<i>.08</i>	<i>6/19/20</i>	<i>1318</i>	<i>OBG MW-13</i>	<i>GW</i>	<i>3</i>	<i>3</i>							<i>X</i>	
<i>.09</i>	<i>6/19/20</i>	<i>1330</i>	<i>MW-1610</i>	<i>GW</i>	<i>3</i>	<i>3</i>							<i>X</i>	
<i>110</i>														

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>[Signature]</i>	DATE <i>6/19/20</i> TIME <i>1348</i>
RECEIVED BY: SIGNATURE/ORGANIZATION <i>[Signature]</i>	DATE <i>6/19/20</i> TIME <i>1348</i>
RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>[Signature]</i>	DATE <i>6/19/20</i> TIME <i>1440</i>
RECEIVED BY: SIGNATURE/ORGANIZATION <i>[Signature]</i>	DATE <i>6/19/20</i> TIME <i>1440</i>

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL <i>2.3</i>

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



Quality Control Report

Report ID: QC-S15056-01
Generated on 07/13/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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): S15056.01-S15056.10
Project: RACER Coldwater Rd
Submitted Date/Time: 06/19/2020 14:40
Sampled by: Kevin Schneider
P.O. #: 12000277

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-11)
Prep Batch Summary (Page 12)
Internal Standards per Lab Sample (Pages 13-22)
Internal Standards per QC Sample (Pages 23-28)
Batch QC Results (Pages 29-36)

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: S15056.01

Sample Tag: Equipment Blank-1

Collected Date/Time: 06/18/2020 19:20

Matrix: Water

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 01:34	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.02

Sample Tag: OBG MW-16D

Collected Date/Time: 06/18/2020 15:50

Matrix: Groundwater

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 01:53	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.03

Sample Tag: OBG MW-21

Collected Date/Time: 06/18/2020 16:38

Matrix: Groundwater

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 02:13	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.04

Sample Tag: OBG MW-15D

Collected Date/Time: 06/19/2020 10:23

Matrix: Groundwater

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/08/20 02:32	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.05

Sample Tag: Field Blank-061920

Collected Date/Time: 06/19/2020 10:33

Matrix: Water

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/01/20 05:04	AK200630A	PF200626W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.06

Sample Tag: OBG MW-9

Collected Date/Time: 06/19/2020 10:28

Matrix: Groundwater

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 02:52	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.07

Sample Tag: OBG MW-18S

Collected Date/Time: 06/19/2020 12:00

Matrix: Groundwater

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 03:11	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.08

Sample Tag: OBG MW-1

Collected Date/Time: 06/19/2020 13:18

Matrix: Groundwater

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 03:31	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.09

Sample Tag: MW-16-10

Collected Date/Time: 06/19/2020 13:30

Matrix: Groundwater

COC Reference: 115119

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 03:50	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15056.10

Sample Tag: MW-15-10

Collected Date/Time: 06/19/2020 12:03

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/08/20 04:10	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200626W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15056.05	28 PFAs	ASTMD7979-19M	07/01/20 05:04	AK200630A

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15056.01	28 PFAs	ASTMD7979-19M	07/08/20 01:34	AK200707A
S15056.02	28 PFAs	ASTMD7979-19M	07/08/20 01:53	AK200707A
S15056.03	28 PFAs	ASTMD7979-19M	07/08/20 02:13	AK200707A
S15056.04	28 PFAs	ASTMD7979-19M	07/08/20 02:32	AK200707A
S15056.06	28 PFAs	ASTMD7979-19M	07/08/20 02:52	AK200707A
S15056.07	28 PFAs	ASTMD7979-19M	07/08/20 03:11	AK200707A
S15056.08	28 PFAs	ASTMD7979-19M	07/08/20 03:31	AK200707A
S15056.09	28 PFAs	ASTMD7979-19M	07/08/20 03:50	AK200707A
S15056.10	28 PFAs	ASTMD7979-19M	07/08/20 04:10	AK200707A

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.01

Sample Tag: Equipment Blank-1

Collected Date/Time: 06/18/2020 19:20

Matrix: Water

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 01:34, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.0	50.0	150.0
M2-6:2FTSA		103.0	50.0	150.0
M2-8:2FTSA		102.1	50.0	150.0
M2PFTeDA		147.2	12.0	218.0
M3PFBS		103.2	50.0	150.0
M3PFHxS		110.8	50.0	150.0
M4PFHpA		113.7	50.0	150.0
M5PFHxA		103.5	50.0	150.0
M5PFPeA		106.7	50.0	150.0
M6PFDA		110.5	50.0	150.0
M7PFUnDA		109.9	50.0	150.0
M8FOSA		107.0	50.0	150.0
M8PFOA		113.7	50.0	150.0
M8PFOS		105.3	50.0	150.0
M9-PFNA		104.7	50.0	150.0
MPFBA		103.3	50.0	150.0
MPFDoDA		125.8	50.0	150.0
d3N-MeFOSAA		111.8	50.0	150.0
d5EtFOSAA		110.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.02

Sample Tag: OBG MW-16D

Collected Date/Time: 06/18/2020 15:50

Matrix: Groundwater

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 01:53, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.9	50.0	150.0
M2-6:2FTSA		113.0	50.0	150.0
M2-8:2FTSA		117.6	50.0	150.0
M2PFTeDA		112.6	12.0	218.0
M3PFBS		114.6	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		120.5	50.0	150.0
M5PFHxA		107.6	50.0	150.0
M5PFPeA		113.4	50.0	150.0
M6PFDA		109.8	50.0	150.0
M7PFUnDA		118.9	50.0	150.0
M8FOSA		108.9	50.0	150.0
M8PFOA		118.6	50.0	150.0
M8PFOS		115.7	50.0	150.0
M9-PFNA		114.7	50.0	150.0
MPFBA		110.2	50.0	150.0
MPFDoDA		115.9	50.0	150.0
d3N-MeFOSAA		116.6	50.0	150.0
d5EtFOSAA		122.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.03

Sample Tag: OBG MW-21

Collected Date/Time: 06/18/2020 16:38

Matrix: Groundwater

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 02:13, Matrix: WW, Dilution: 2.06

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		104.7	50.0	150.0
M2-6:2FTSA		100.4	50.0	150.0
M2-8:2FTSA		117.3	50.0	150.0
M2PFTeDA		119.6	12.0	218.0
M3PFBS		107.4	50.0	150.0
M3PFHxS		110.7	50.0	150.0
M4PFHpA		106.5	50.0	150.0
M5PFHxA		107.3	50.0	150.0
M5PFPeA		104.6	50.0	150.0
M6PFDA		112.3	50.0	150.0
M7PFUnDA		105.1	50.0	150.0
M8FOSA		104.4	50.0	150.0
M8PFOA		114.3	50.0	150.0
M8PFOS		110.3	50.0	150.0
M9-PFNA		112.3	50.0	150.0
MPFBA		106.4	50.0	150.0
MPFDoDA		98.1	50.0	150.0
d3N-MeFOSAA		92.9	50.0	150.0
d5EtFOSAA		106.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.04

Sample Tag: OBG MW-15D

Collected Date/Time: 06/19/2020 10:23

Matrix: Groundwater

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 02:32, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		107.1	50.0	150.0
M2-6:2FTSA		91.2	50.0	150.0
M2-8:2FTSA		99.5	50.0	150.0
M2PFTeDA		103.3	12.0	218.0
M3PFBS		113.0	50.0	150.0
M3PFHxS		114.3	50.0	150.0
M4PFHpA		116.4	50.0	150.0
M5PFHxA		109.3	50.0	150.0
M5PFPeA		111.0	50.0	150.0
M6PFDA		104.8	50.0	150.0
M7PFUnDA		109.2	50.0	150.0
M8FOSA		112.2	50.0	150.0
M8PFOA		115.0	50.0	150.0
M8PFOS		117.2	50.0	150.0
M9-PFNA		116.1	50.0	150.0
MPFBA		111.1	50.0	150.0
MPFDoDA		108.8	50.0	150.0
d3N-MeFOSAA		111.7	50.0	150.0
d5EtFOSAA		105.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.05

Sample Tag: Field Blank-061920

Collected Date/Time: 06/19/2020 10:33

Matrix: Water

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200630A, Run Date: 07/01/2020 05:04, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		129.0	50.0	150.0
M2-6:2FTSA		120.2	50.0	150.0
M2-8:2FTSA		117.2	50.0	150.0
M2PFTeDA		142.1	12.0	218.0
M3PFBS		100.8	50.0	150.0
M3PFHxS		111.3	50.0	150.0
M4PFHpA		105.9	50.0	150.0
M5PFHxA		101.2	50.0	150.0
M5PFPeA		100.6	50.0	150.0
M6PFDA		113.0	50.0	150.0
M7PFUnDA		96.1	50.0	150.0
M8FOSA		114.6	50.0	150.0
M8PFOA		109.5	50.0	150.0
M8PFOS		105.2	50.0	150.0
M9-PFNA		108.7	50.0	150.0
MPFBA		101.6	50.0	150.0
MPFDoDA		110.1	50.0	150.0
d3N-MeFOSAA		106.0	50.0	150.0
d5EtFOSAA		102.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.06

Sample Tag: OBG MW-9

Collected Date/Time: 06/19/2020 10:28

Matrix: Groundwater

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 02:52, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		104.8	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		84.9	50.0	150.0
M2PFTeDA		87.6	12.0	218.0
M3PFBS		103.6	50.0	150.0
M3PFHxS		114.0	50.0	150.0
M4PFHpA		103.1	50.0	150.0
M5PFHxA		104.0	50.0	150.0
M5PFPeA		104.7	50.0	150.0
M6PFDA		119.8	50.0	150.0
M7PFUnDA		108.3	50.0	150.0
M8FOSA		103.2	50.0	150.0
M8PFOA		107.6	50.0	150.0
M8PFOS		105.7	50.0	150.0
M9-PFNA		113.7	50.0	150.0
MPFBA		105.5	50.0	150.0
MPFDoDA		105.9	50.0	150.0
d3N-MeFOSAA		102.3	50.0	150.0
d5EtFOSAA		106.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.07

Sample Tag: OBG MW-18S

Collected Date/Time: 06/19/2020 12:00

Matrix: Groundwater

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 03:11, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		103.4	50.0	150.0
M2-6:2FTSA		103.0	50.0	150.0
M2-8:2FTSA		104.7	50.0	150.0
M2PFTeDA		134.7	12.0	218.0
M3PFBS		111.2	50.0	150.0
M3PFHxS		107.2	50.0	150.0
M4PFHpA		122.7	50.0	150.0
M5PFHxA		114.9	50.0	150.0
M5PFPeA		114.4	50.0	150.0
M6PFDA		123.6	50.0	150.0
M7PFUnDA		116.2	50.0	150.0
M8FOSA		115.2	50.0	150.0
M8PFOA		114.3	50.0	150.0
M8PFOS		115.0	50.0	150.0
M9-PFNA		125.7	50.0	150.0
MPFBA		113.3	50.0	150.0
MPFDoDA		116.9	50.0	150.0
d3N-MeFOSAA		110.5	50.0	150.0
d5EtFOSAA		112.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.08

Sample Tag: OBG MW-1

Collected Date/Time: 06/19/2020 13:18

Matrix: Groundwater

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 03:31, Matrix: WW, Dilution: 1.89

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		107.1	50.0	150.0
M2-6:2FTSA		104.7	50.0	150.0
M2-8:2FTSA		106.3	50.0	150.0
M2PFTeDA		89.2	12.0	218.0
M3PFBS		112.7	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		116.2	50.0	150.0
M5PFHxA		106.1	50.0	150.0
M5PFPeA		110.2	50.0	150.0
M6PFDA		119.9	50.0	150.0
M7PFUnDA		103.1	50.0	150.0
M8FOSA		108.1	50.0	150.0
M8PFOA		109.0	50.0	150.0
M8PFOS		108.9	50.0	150.0
M9-PFNA		115.8	50.0	150.0
MPFBA		109.1	50.0	150.0
MPFDoDA		107.3	50.0	150.0
d3N-MeFOSAA		118.3	50.0	150.0
d5EtFOSAA		109.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.09

Sample Tag: MW-16-10

Collected Date/Time: 06/19/2020 13:30

Matrix: Groundwater

COC Reference: 115119

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 03:50, Matrix: WW, Dilution: 1.94

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		99.9	50.0	150.0
M2-6:2FTSA		99.2	50.0	150.0
M2-8:2FTSA		91.9	50.0	150.0
M2PFTeDA		113.0	12.0	218.0
M3PFBS		103.7	50.0	150.0
M3PFHxS		102.4	50.0	150.0
M4PFHpA		104.6	50.0	150.0
M5PFHxA		100.5	50.0	150.0
M5PFPeA		102.2	50.0	150.0
M6PFDA		99.0	50.0	150.0
M7PFUnDA		106.3	50.0	150.0
M8FOSA		98.6	50.0	150.0
M8PFOA		102.2	50.0	150.0
M8PFOS		101.3	50.0	150.0
M9-PFNA		110.4	50.0	150.0
MPFBA		101.8	50.0	150.0
MPFDoDA		101.8	50.0	150.0
d3N-MeFOSAA		97.0	50.0	150.0
d5EtFOSAA		102.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15056.10

Sample Tag: MW-15-10

Collected Date/Time: 06/19/2020 12:03

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 04:10, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		103.9	50.0	150.0
M2-6:2FTSA		105.7	50.0	150.0
M2-8:2FTSA		100.1	50.0	150.0
M2PFTeDA		115.3	12.0	218.0
M3PFBS		105.9	50.0	150.0
M3PFHxS		114.5	50.0	150.0
M4PFHpA		106.7	50.0	150.0
M5PFHxA		104.0	50.0	150.0
M5PFPeA		106.5	50.0	150.0
M6PFDA		107.0	50.0	150.0
M7PFUnDA		107.0	50.0	150.0
M8FOSA		109.1	50.0	150.0
M8PFOA		112.9	50.0	150.0
M8PFOS		110.5	50.0	150.0
M9-PFNA		111.0	50.0	150.0
MPFBA		107.0	50.0	150.0
MPFDoDA		104.1	50.0	150.0
d3N-MeFOSAA		110.8	50.0	150.0
d5EtFOSAA		122.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200626W1

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

Blank (BLK)

Lab Sample ID: AK200630A.BLK200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:27, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		132.7	50.0	150.0
M2-6:2FTSA		134.9	50.0	150.0
M2-8:2FTSA		127.9	50.0	150.0
M2PFTeDA		114.1	12.0	218.0
M3PFBS		110.2	50.0	150.0
M3PFHxS		101.6	50.0	150.0
M4PFHpA		103.7	50.0	150.0
M5PFHxA		105.6	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		112.9	50.0	150.0
M7PFUnDA		95.5	50.0	150.0
M8FOSA		116.8	50.0	150.0
M8PFOA		110.6	50.0	150.0
M8PFOS		99.5	50.0	150.0
M9-PFNA		110.8	50.0	150.0
MPFBA		107.3	50.0	150.0
MPFDoDA		106.0	50.0	150.0
d3N-MeFOSAA		98.7	50.0	150.0
d5EtFOSAA		111.0	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 02:48, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		117.1	50.0	150.0
M2-6:2FTSA		126.2	50.0	150.0
M2-8:2FTSA		103.5	50.0	150.0
M2PFTeDA		125.3	12.0	218.0
M3PFBS		97.4	50.0	150.0
M3PFHxS		96.3	50.0	150.0
M4PFHpA		95.3	50.0	150.0
M5PFHxA		98.2	50.0	150.0
M5PFPeA		97.6	50.0	150.0
M6PFDA		101.4	50.0	150.0
M7PFUnDA		93.9	50.0	150.0
M8FOSA		111.7	50.0	150.0
M8PFOA		94.1	50.0	150.0
M8PFOS		99.6	50.0	150.0
M9-PFNA		100.1	50.0	150.0
MPFBA		97.0	50.0	150.0
MPFDoDA		99.1	50.0	150.0
d3N-MeFOSAA		100.8	50.0	150.0
d5EtFOSAA		102.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200630A.LCSD200626, Parent Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:07, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		127.0	50.0	150.0
M2-6:2FTSA		122.4	50.0	150.0
M2-8:2FTSA		111.0	50.0	150.0
M2PFTeDA		158.2	12.0	218.0
M3PFBS		105.4	50.0	150.0
M3PFHxS		109.5	50.0	150.0
M4PFHpA		101.5	50.0	150.0
M5PFHxA		102.5	50.0	150.0
M5PFPeA		100.0	50.0	150.0
M6PFDA		111.5	50.0	150.0
M7PFUnDA		93.8	50.0	150.0
M8FOSA		109.0	50.0	150.0
M8PFOA		100.8	50.0	150.0
M8PFOS		109.7	50.0	150.0
M9-PFNA		107.8	50.0	150.0
MPFBA		100.8	50.0	150.0
MPFDoDA		108.6	50.0	150.0
d3N-MeFOSAA		109.4	50.0	150.0
d5EtFOSAA		106.1	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200630A.1523601M, Parent Sample ID: S15236.01

Run in Batch: AK200630A, Run Date: 07/01/2020 10:36, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		124.6	50.0	150.0
M2-6:2FTSA		131.3	50.0	150.0
M2-8:2FTSA		130.4	50.0	150.0
M2PFTeDA		147.9	12.0	218.0
M3PFBS		111.1	50.0	150.0
M3PFHxS		109.9	50.0	150.0
M4PFHpA		107.9	50.0	150.0
M5PFHxA		110.3	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		114.1	50.0	150.0
M7PFUnDA		99.9	50.0	150.0
M8FOSA		121.6	50.0	150.0
M8PFOA		115.5	50.0	150.0
M8PFOS		107.7	50.0	150.0
M9-PFNA		111.5	50.0	150.0
MPFBA		106.6	50.0	150.0
MPFDoDA		116.9	50.0	150.0
d3N-MeFOSAA		106.1	50.0	150.0
d5EtFOSAA		111.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200630A.1523701D, Parent Sample ID: S15237.01

Run in Batch: AK200630A, Run Date: 07/01/2020 11:15, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		132.2	50.0	150.0
M2-6:2FTSA		133.0	50.0	150.0
M2-8:2FTSA		115.6	50.0	150.0
M2PFTeDA		119.5	12.0	218.0
M3PFBS		109.7	50.0	150.0
M3PFHxS		110.1	50.0	150.0
M4PFHpA		108.2	50.0	150.0
M5PFHxA		105.3	50.0	150.0
M5PFPeA		106.6	50.0	150.0
M6PFDA		105.6	50.0	150.0
M7PFUnDA		102.2	50.0	150.0
M8FOSA		117.0	50.0	150.0
M8PFOA		114.8	50.0	150.0
M8PFOS		110.8	50.0	150.0
M9-PFNA		113.3	50.0	150.0
MPFBA		108.5	50.0	150.0
MPFDoDA		112.8	50.0	150.0
d3N-MeFOSAA		106.8	50.0	150.0
d5EtFOSAA		103.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.0	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		101.9	50.0	150.0
M2PFTeDA		126.7	12.0	218.0
M3PFBS		106.0	50.0	150.0
M3PFHxS		112.1	50.0	150.0
M4PFHpA		107.7	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		106.7	50.0	150.0
M7PFUnDA		107.3	50.0	150.0
M8FOSA		102.9	50.0	150.0
M8PFOA		107.8	50.0	150.0
M8PFOS		104.2	50.0	150.0
M9-PFNA		106.8	50.0	150.0
MPFBA		105.7	50.0	150.0
MPFDoDA		110.5	50.0	150.0
d3N-MeFOSAA		100.8	50.0	150.0
d5EtFOSAA		104.6	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.5	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		110.2	50.0	150.0
M2PFTeDA		131.9	12.0	218.0
M3PFBS		104.4	50.0	150.0
M3PFHxS		109.9	50.0	150.0
M4PFHpA		104.1	50.0	150.0
M5PFHxA		103.1	50.0	150.0
M5PFPeA		102.2	50.0	150.0
M6PFDA		109.0	50.0	150.0
M7PFUnDA		107.8	50.0	150.0
M8FOSA		102.7	50.0	150.0
M8PFOA		108.5	50.0	150.0
M8PFOS		109.6	50.0	150.0
M9-PFNA		102.1	50.0	150.0
MPFBA		101.0	50.0	150.0
MPFDoDA		116.0	50.0	150.0
d3N-MeFOSAA		106.1	50.0	150.0
d5EtFOSAA		100.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		109.2	50.0	150.0
M2-6:2FTSA		93.8	50.0	150.0
M2-8:2FTSA		95.3	50.0	150.0
M2PFTeDA		111.2	12.0	218.0
M3PFBS		97.8	50.0	150.0
M3PFHxS		100.6	50.0	150.0
M4PFHpA		108.3	50.0	150.0
M5PFHxA		98.2	50.0	150.0
M5PFPeA		102.5	50.0	150.0
M6PFDA		99.3	50.0	150.0
M7PFUnDA		106.7	50.0	150.0
M8FOSA		100.0	50.0	150.0
M8PFOA		103.7	50.0	150.0
M8PFOS		107.2	50.0	150.0
M9-PFNA		94.7	50.0	150.0
MPFBA		99.5	50.0	150.0
MPFDoDA		98.8	50.0	150.0
d3N-MeFOSAA		98.1	50.0	150.0
d5EtFOSAA		102.2	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		104.9	50.0	150.0
M2-6:2FTSA		102.1	50.0	150.0
M2-8:2FTSA		95.7	50.0	150.0
M2PFTeDA		108.0	12.0	218.0
M3PFBS		102.2	50.0	150.0
M3PFHxS		105.3	50.0	150.0
M4PFHpA		107.1	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		104.4	50.0	150.0
M6PFDA		107.5	50.0	150.0
M7PFUnDA		103.3	50.0	150.0
M8FOSA		105.4	50.0	150.0
M8PFOA		104.6	50.0	150.0
M8PFOS		104.9	50.0	150.0
M9-PFNA		105.3	50.0	150.0
MPFBA		103.4	50.0	150.0
MPFDoDA		102.1	50.0	150.0
d3N-MeFOSAA		107.0	50.0	150.0
d5EtFOSAA		103.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.4	50.0	150.0
M2-6:2FTSA		94.5	50.0	150.0
M2-8:2FTSA		102.3	50.0	150.0
M2PFTeDA		121.0	12.0	218.0
M3PFBS		100.8	50.0	150.0
M3PFHxS		105.7	50.0	150.0
M4PFHpA		111.7	50.0	150.0
M5PFHxA		102.8	50.0	150.0
M5PFPeA		100.0	50.0	150.0
M6PFDA		107.0	50.0	150.0
M7PFUnDA		102.5	50.0	150.0
M8FOSA		104.3	50.0	150.0
M8PFOA		105.2	50.0	150.0
M8PFOS		98.4	50.0	150.0
M9-PFNA		105.9	50.0	150.0
MPFBA		100.5	50.0	150.0
MPFDoDA		109.4	50.0	150.0
d3N-MeFOSAA		100.6	50.0	150.0
d5EtFOSAA		104.1	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1

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

Blank (BLK)

Lab Sample ID: AK200630A.BLK200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:27, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 02:48, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA	*	143.0	70.0	130.0
PFPeA		106.0	70.0	130.0
4:2 FTSA		119.0	70.0	130.0
PFHxA		111.0	70.0	130.0
PFBS		106.0	70.0	130.0
HFPO-DA		110.0	70.0	130.0
PFFHpA		108.0	70.0	130.0
PFPeS		103.0	70.0	130.0
ADONA		128.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 02:48, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		90.5	70.0	130.0
PFOA		116.0	70.0	130.0
PFHxS		106.0	70.0	130.0
PFNA		116.0	70.0	130.0
8:2 FTSA		108.0	70.0	130.0
PFHpS		113.0	70.0	130.0
N-MeFOSAA		109.0	70.0	130.0
PFDA		101.0	70.0	130.0
EtFOSAA		107.0	70.0	130.0
PFOS		114.0	70.0	130.0
PFUnDA		106.0	70.0	130.0
9CL-PF3ONS		116.0	70.0	130.0
PFNS		116.0	70.0	130.0
PFDODA		107.0	70.0	130.0
PFDS	*	134.0	70.0	130.0
PFTTrDA	*	131.0	70.0	130.0
FOSA		107.0	70.0	130.0
11CL-PF3OUdS		127.0	70.0	130.0
PFTeDA		102.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200630A.LCSD200626, Parent Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:07, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA	*	136.0	70.0	130.0	5.0	30.0
PFPeA		101.0	70.0	130.0	4.8	30.0
4:2 FTSA		106.0	70.0	130.0	11.6	30.0
PFHxA		103.0	70.0	130.0	7.5	30.0
PFBS		101.0	70.0	130.0	4.8	30.0
HFPO-DA		87.4	70.0	130.0	22.9	30.0
PFHpA		101.0	70.0	130.0	6.7	30.0
PFPeS		94.6	70.0	130.0	8.5	30.0
ADONA		105.0	70.0	130.0	19.7	30.0
6:2 FTSA		105.0	70.0	130.0	14.8	30.0
PFOA		114.0	70.0	130.0	1.7	30.0
PFHxS		92.2	70.0	130.0	13.9	30.0
PFNA		108.0	70.0	130.0	7.1	30.0
8:2 FTSA		88.0	70.0	130.0	20.4	30.0
PFHpS		90.1	70.0	130.0	22.6	30.0
N-MeFOSAA		110.0	70.0	130.0	0.9	30.0
PFDA		96.8	70.0	130.0	4.2	30.0
EtFOSAA		107.0	70.0	130.0	0.0	30.0
PFOS		98.1	70.0	130.0	15.0	30.0
PFUnDA		105.0	70.0	130.0	0.9	30.0
9CL-PF3ONS		101.0	70.0	130.0	13.8	30.0
PFNS		98.7	70.0	130.0	16.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200630A.LCSD200626, Parent Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:07, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		110.0	70.0	130.0	2.8	30.0
PFDS		115.0	70.0	130.0	15.3	30.0
PFTTrDA		127.0	70.0	130.0	3.1	30.0
FOSA		113.0	70.0	130.0	5.5	30.0
11CL-PF3OUdS		118.0	70.0	130.0	7.3	30.0
PFTeDA		92.5	70.0	130.0	9.8	30.0

Matrix Spike (MS)

Lab Sample ID: AK200630A.1523601M, Parent Sample ID: S15236.01

Run in Batch: AK200630A, Run Date: 07/01/2020 10:36, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.92

Analyte	Flags	% Rec	LCL	UCL
PFBA		93.8	70.0	130.0
PFPeA		99.0	70.0	130.0
4:2 FTSA		114.6	70.0	130.0
PFHxA		101.0	70.0	130.0
PFBS		104.2	70.0	130.0
PFHpA		103.1	70.0	130.0
PFPeS		97.9	70.0	130.0
6:2 FTSA		90.6	70.0	130.0
PFOA		90.6	70.0	130.0
PFHxS		99.0	70.0	130.0
PFNA		114.6	70.0	130.0
8:2 FTSA		87.5	70.0	130.0
PFHpS		99.0	70.0	130.0
PFDA		104.2	70.0	130.0
N-MeFOSAA		114.6	70.0	130.0
EtFOSAA		101.0	70.0	130.0
PFOS		114.6	70.0	130.0
PFUnDA		101.0	70.0	130.0
PFNS		114.6	70.0	130.0
PFDODA		104.2	70.0	130.0
PFDS		125.0	70.0	130.0
PFTTrDA		125.0	70.0	130.0
FOSA		102.1	70.0	130.0
PFTeDA		97.9	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200630A.1523701D, Parent Sample ID: S15237.01

Run in Batch: AK200630A, Run Date: 07/01/2020 11:15, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.93

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

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200630A.1523701D, Parent Sample ID: S15237.01

Run in Batch: AK200630A, Run Date: 07/01/2020 11:15, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.93

Analyte	Flags	RPD	RPD CL
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		103.0	70.0	130.0
PFPeA		98.7	70.0	130.0
4:2 FTSA		97.9	70.0	130.0
PFHxA		92.1	70.0	130.0
PFBS		100.0	70.0	130.0
HFPO-DA		86.8	70.0	130.0
PFFHpA		90.1	70.0	130.0
PFPeS		107.0	70.0	130.0
ADONA		86.4	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		101.0	70.0	130.0
PFOA		100.0	70.0	130.0
PFHxS		85.9	70.0	130.0
PFNA		109.0	70.0	130.0
8:2 FTSA		76.6	70.0	130.0
PFHpS		85.3	70.0	130.0
N-MeFOSAA		117.0	70.0	130.0
PFDA		104.0	70.0	130.0
EtFOSAA		108.0	70.0	130.0
PFOS		99.0	70.0	130.0
PFUnDA		104.0	70.0	130.0
9CL-PF3ONS		95.3	70.0	130.0
PFNS		89.0	70.0	130.0
PFDODA		98.1	70.0	130.0
PFDS		98.8	70.0	130.0
PFTTrDA		102.0	70.0	130.0
FOSA		105.0	70.0	130.0
11CL-PF3OUdS		97.0	70.0	130.0
PFTeDA		113.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		103.0	70.0	130.0	0.0	30.0
PFPeA		98.7	70.0	130.0	0.0	30.0
4:2 FTSA		84.2	70.0	130.0	15.0	30.0
PFHxA		104.0	70.0	130.0	12.1	30.0
PFBS		98.7	70.0	130.0	1.3	30.0
HFPO-DA		87.3	70.0	130.0	0.6	30.0
PFHpA		88.1	70.0	130.0	2.2	30.0
PFPeS		108.0	70.0	130.0	0.9	30.0
ADONA		91.3	70.0	130.0	5.5	30.0
6:2 FTSA		111.0	70.0	130.0	9.4	30.0
PFOA		102.0	70.0	130.0	2.0	30.0
PFHxS		96.4	70.0	130.0	11.5	30.0
PFNA		117.0	70.0	130.0	7.1	30.0
8:2 FTSA		95.4	70.0	130.0	21.9	30.0
PFHpS		92.3	70.0	130.0	7.9	30.0
N-MeFOSAA		104.0	70.0	130.0	11.8	30.0
PFDA		110.0	70.0	130.0	5.6	30.0
EtFOSAA		91.5	70.0	130.0	16.5	30.0
PFOS		99.8	70.0	130.0	0.8	30.0
PFUnDA		92.9	70.0	130.0	11.3	30.0
9CL-PF3ONS		101.0	70.0	130.0	5.8	30.0
PFNS		91.4	70.0	130.0	2.7	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		109.0	70.0	130.0	10.5	30.0
PFDS		104.0	70.0	130.0	5.1	30.0
PFTTrDA		96.1	70.0	130.0	6.0	30.0
FOSA		103.0	70.0	130.0	1.9	30.0
11CL-PF3OUdS		103.0	70.0	130.0	6.0	30.0
PFTeDA		104.0	70.0	130.0	8.3	30.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Analyte	Flags	% Rec	LCL	UCL
PFBA		93.9	70.0	130.0
PFPeA		101.0	70.0	130.0
4:2 FTSA		94.9	70.0	130.0
PFHxA		99.0	70.0	130.0
PFBS		101.0	70.0	130.0
PFHpA		96.0	70.0	130.0
PFPeS		111.1	70.0	130.0
6:2 FTSA		101.0	70.0	130.0
PFOA		101.0	70.0	130.0
PFHxS		94.9	70.0	130.0
PFNA		111.1	70.0	130.0
8:2 FTSA		81.8	70.0	130.0
PFHpS		97.0	70.0	130.0
PFDA		100.0	70.0	130.0
N-MeFOSAA		111.1	70.0	130.0
EtFOSAA		92.9	70.0	130.0
PFOS		101.0	70.0	130.0
PFUnDA		93.9	70.0	130.0
PFNS		99.0	70.0	130.0
PFDODA		97.0	70.0	130.0
PFDS		101.0	70.0	130.0
PFTTrDA		99.0	70.0	130.0
FOSA		111.1	70.0	130.0
PFTeDA		111.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFBA		2.4	30.0
PFPeA		NC	30.0
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME clifford yantz			
COMPANY O'Brien & Gere, A Ramboll Company			
ADDRESS 2260 East Saguaw			
CITY East Lansing		STATE MI	ZIP CODE 48823
PHONE NO. 313-537-0211		FAX NO.	P.O. NO.
E-MAIL ADDRESS clifford.yantz@Ramboll.com		QUOTE NO.	

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Coldwater Rd	SAMPLER(S) - PLEASE PRINT SIGN NAME Don Silvano 2-LL
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL I ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____	

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

Containers & Preservatives

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York
☐ Other _____

Special Instructions

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	☒ Sampler	DATE 6/19/20	TIME 13:48
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/19/20	TIME 13:48
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/19/20	TIME 14:40
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/19/20	TIME 14:40

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL _____ 2.3	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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



Analytical Laboratory Report

Report ID: S15100.01(01)
Generated on 07/15/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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

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)

Report Summary

Lab Sample ID(s): S15100.01-S15100.10
Project: RACER Coldwater Rd
Collected Date(s): 06/22/2020 - 06/23/2020
Submitted Date/Time: 06/23/2020 15:40
Sampled by: Will Laughner
P.O. #: 12000277

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
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)

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
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-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S15100.01	OBG MW-12S	Groundwater	06/22/20 12:08
S15100.02	OBG MW-12D	Groundwater	06/22/20 13:00
S15100.03	Field Blank - 062220	Water	06/22/20 15:47
S15100.04	OBG MW-17D	Groundwater	06/22/20 16:00
S15100.05	OBG MW-17S	Groundwater	06/22/20 16:04
S15100.06	OBG MW-25	Groundwater	06/22/20 17:51
S15100.07	DUP-2	Groundwater	06/22/20 00:01
S15100.08	PZ1	Groundwater	06/23/20 11:20
S15100.09	PFW-1	Groundwater	06/23/20 12:15
S15100.10	OBG MW-23	Groundwater	06/23/20 13:08



Analytical Laboratory Report

Lab Sample ID: S15100.01

Sample Tag: OBG MW-12S

Collected Date/Time: 06/22/2020 12:08

Matrix: Groundwater

COC Reference: 125014

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)*	12.33/6.75/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 04:29, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	19	9.9	9.9	ng/L	1.97	375-22-4	
PFPeA*	Not detected	3.9	0.99	ng/L	1.97	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.97	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.97	307-24-4	
PFBS*	3.7	2.0	1.4	ng/L	1.97	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.97	375-85-9	
PFPeS*	5.1	2.0	1.8	ng/L	1.97	2706-91-4	
6:2 FTSA*	5.6	2.0	2.0	ng/L	1.97	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.97	335-67-1	
PFHxS*	17	2.0	1.6	ng/L	1.97	355-46-4	
PFHxS-LN*	15	2.0	1.6	ng/L	1.97	355-46-4-LN	
PFHxS-BR*	2.4	2.0	1.6	ng/L	1.97	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.97	375-95-1	
8:2 FTSA*	Not detected	2.0	0.99	ng/L	1.97	39108-34-4	
PFHpS*	4.9	2.0	2.0	ng/L	1.97	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.97	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.97	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.97	2991-50-6	
PFOS*	220	2.0	1.9	ng/L	1.97	1763-23-1	
PFOS-LN*	42	2.0	1.9	ng/L	1.97	1763-23-1-LN	
PFOS-BR*	180	2.0	1.9	ng/L	1.97	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.97	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.97	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.97	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.97	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	1.97	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.97	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.97	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.97	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.97	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.97	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.97	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15100.02

Sample Tag: OBG MW-12D

Collected Date/Time: 06/22/2020 13:00

Matrix: Groundwater

COC Reference: 125014

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)*	12.45/6.74/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 07:44, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	9.9	9.7	9.7	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15100.03

Sample Tag: Field Blank - 062220

Collected Date/Time: 06/22/2020 15:47

Matrix: Water

COC Reference: 125014

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)*	11.97/6.78/10	ASTMD7979-19M	06/26/20 16:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/01/20 07:40, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	14	9.7	9.7	ng/L	1.93	375-22-4	B
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S15100.04

Sample Tag: OBG MW-17D

Collected Date/Time: 06/22/2020 16:00

Matrix: Groundwater

COC Reference: 125014

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)*	12.01/6.79/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 08:04, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	17	9.6	9.6	ng/L	1.92	375-22-4	
PFPeA*	Not detected	3.8	0.96	ng/L	1.92	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.92	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.92	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.92	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.92	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.92	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.92	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.92	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.92	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.92	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.92	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.92	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.92	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.92	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.92	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.92	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.92	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.92	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.92	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.92	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.92	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.92	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.92	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.92	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.92	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.92	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15100.05

Sample Tag: OBG MW-17S

Collected Date/Time: 06/22/2020 16:04

Matrix: Groundwater

COC Reference: 125014

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)*	11.94/6.75/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 08:23, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	26	9.7	9.7	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	2.0	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	1.7	1.9	1.7	ng/L	1.93	2706-91-4	J
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	1.6	1.9	1.5	ng/L	1.93	335-67-1	J
PFHxS*	9.7	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	8.5	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	5.2	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	580	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	310	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	290	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S15100.06

Sample Tag: OBG MW-25

Collected Date/Time: 06/22/2020 17:51

Matrix: Groundwater

COC Reference: 125014

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)*	11.96/6.77/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 08:43, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	17	9.7	9.7	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15100.07

Sample Tag: DUP-2

Collected Date/Time: 06/22/2020 00:01

Matrix: Groundwater

COC Reference: 125014

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)*	12.41/6.75/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 09:02, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	27	9.7	9.7	ng/L	1.94	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.94	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.6	ng/L	1.94	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.94	307-24-4	
PFBS*	1.9	1.9	1.4	ng/L	1.94	375-73-5	J
PFHpA*	Not detected	1.9	1.4	ng/L	1.94	375-85-9	
PFPeS*	1.8	1.9	1.7	ng/L	1.94	2706-91-4	J
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.94	27619-97-2	
PFOA*	Not detected	1.9	1.6	ng/L	1.94	335-67-1	
PFHxS*	8.7	1.9	1.6	ng/L	1.94	355-46-4	
PFHxS-LN*	7.1	1.9	1.6	ng/L	1.94	355-46-4-LN	
PFHxS-BR*	1.8	1.9	1.6	ng/L	1.94	355-46-4-BR	J
PFNA*	Not detected	1.9	1.7	ng/L	1.94	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.94	39108-34-4	
PFHpS*	4.7	1.9	1.9	ng/L	1.94	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.94	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.94	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.94	2991-50-6	
PFOS*	590	1.9	1.9	ng/L	1.94	1763-23-1	
PFOS-LN*	330	1.9	1.9	ng/L	1.94	1763-23-1-LN	
PFOS-BR*	280	1.9	1.9	ng/L	1.94	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.94	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.94	68259-12-1	
PFDODA*	Not detected	1.9	1.6	ng/L	1.94	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.94	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.94	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.94	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.94	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.94	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.94	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.94	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.94	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S15100.08

Sample Tag: PZ1

Collected Date/Time: 06/23/2020 11:20

Matrix: Groundwater

COC Reference: 125014

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)*	12.48/6.74/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 09:22, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	17	9.6	9.6	ng/L	1.92	375-22-4	
PFPeA*	Not detected	3.8	0.96	ng/L	1.92	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.92	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.92	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.92	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.92	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.92	2706-91-4	
6:2 FTSA*	2.6	1.9	1.9	ng/L	1.92	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.92	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.92	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.92	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.92	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.92	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.92	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.92	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.92	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.92	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.92	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.92	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.92	335-77-3	
PFTDA*	Not detected	1.9	1.2	ng/L	1.92	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.92	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.92	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.92	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.92	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.92	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.92	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15100.09

Sample Tag: PFW-1

Collected Date/Time: 06/23/2020 12:15

Matrix: Groundwater

COC Reference: 125014

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)*	12.25/6.79/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 09:41, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	18	10	10	ng/L	2.01	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2.01	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.01	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.01	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.01	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.01	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.01	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.01	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.01	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.01	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.01	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.01	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.01	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.01	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.01	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.01	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.01	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.01	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.01	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.01	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.01	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.01	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.01	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.01	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.01	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.01	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.01	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.01	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.01	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.01	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.01	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.01	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15100.10

Sample Tag: OBG MW-23

Collected Date/Time: 06/23/2020 13:08

Matrix: Groundwater

COC Reference: 125014

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)*	12.14/6.78/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 10:01, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	22	10	10	ng/L	2.05	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.05	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.6	ng/L	2.05	757124-72-4	
PFHxA*	Not detected	2.1	1.4	ng/L	2.05	307-24-4	
PFBS*	Not detected	2.1	1.4	ng/L	2.05	375-73-5	
PFHpA*	Not detected	2.1	1.4	ng/L	2.05	375-85-9	
PFPeS*	Not detected	2.1	1.8	ng/L	2.05	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.05	27619-97-2	
PFOA*	Not detected	2.1	1.6	ng/L	2.05	335-67-1	
PFHxS*	Not detected	2.1	1.6	ng/L	2.05	355-46-4	
PFHxS-LN*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-BR	
PFNA*	Not detected	2.1	1.8	ng/L	2.05	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.05	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.05	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.05	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.05	2355-31-9	
EtFOSAA*	Not detected	4.1	2.1	ng/L	2.05	2991-50-6	
PFOS*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1	
PFOS-LN*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-LN	
PFOS-BR*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.4	ng/L	2.05	2058-94-8	
PFNS*	Not detected	2.1	1.4	ng/L	2.05	68259-12-1	
PFDODA*	Not detected	2.1	1.6	ng/L	2.05	307-55-1	
PFDS*	Not detected	2.1	1.4	ng/L	2.05	335-77-3	
PFTDA*	Not detected	2.1	1.2	ng/L	2.05	72629-94-8	
FOSA*	Not detected	2.1	1.8	ng/L	2.05	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.05	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.8	ng/L	2.05	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.4	ng/L	2.05	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.05	919005-14-4	
HFPO-DA*	Not detected	2.1	2.1	ng/L	2.05	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S15100

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted:06/23/2020 15:40 Login User: REJ

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ 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-S15100-01
Generated on 07/15/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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): S15100.01-S15100.10
Project: RACER Coldwater Rd
Submitted Date/Time: 06/23/2020 15:40
Sampled by: Will Laughner
P.O. #: 12000277

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-11)
Prep Batch Summary (Page 12)
Internal Standards per Lab Sample (Pages 13-22)
Internal Standards per QC Sample (Pages 23-31)
Batch QC Results (Pages 32-43)

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: S15100.01

Sample Tag: OBG MW-12S

Collected Date/Time: 06/22/2020 12:08

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/08/20 04:29	AK200707A	PF200707W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.02

Sample Tag: OBG MW-12D

Collected Date/Time: 06/22/2020 13:00

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 07:44	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.03

Sample Tag: Field Blank - 062220

Collected Date/Time: 06/22/2020 15:47

Matrix: Water

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/01/20 07:40	AK200630A	PF200626W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.04

Sample Tag: OBG MW-17D

Collected Date/Time: 06/22/2020 16:00

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 08:04	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.05

Sample Tag: OBG MW-17S

Collected Date/Time: 06/22/2020 16:04

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 08:23	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.06

Sample Tag: OBG MW-25

Collected Date/Time: 06/22/2020 17:51

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 08:43	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.07

Sample Tag: DUP-2

Collected Date/Time: 06/22/2020 00:01

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 09:02	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.08

Sample Tag: PZ1

Collected Date/Time: 06/23/2020 11:20

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 09:22	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.09

Sample Tag: PFW-1

Collected Date/Time: 06/23/2020 12:15

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 09:41	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15100.10

Sample Tag: OBG MW-23

Collected Date/Time: 06/23/2020 13:08

Matrix: Groundwater

COC Reference: 125014

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/08/20 10:01	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200626W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15100.03	28 PFAs	ASTMD7979-19M	07/01/20 07:40	AK200630A

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15100.01	28 PFAs	ASTMD7979-19M	07/08/20 04:29	AK200707A

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15100.02	28 PFAs	ASTMD7979-19M	07/08/20 07:44	AK200707B
S15100.04	28 PFAs	ASTMD7979-19M	07/08/20 08:04	AK200707B
S15100.05	28 PFAs	ASTMD7979-19M	07/08/20 08:23	AK200707B
S15100.06	28 PFAs	ASTMD7979-19M	07/08/20 08:43	AK200707B
S15100.07	28 PFAs	ASTMD7979-19M	07/08/20 09:02	AK200707B
S15100.08	28 PFAs	ASTMD7979-19M	07/08/20 09:22	AK200707B
S15100.09	28 PFAs	ASTMD7979-19M	07/08/20 09:41	AK200707B
S15100.10	28 PFAs	ASTMD7979-19M	07/08/20 10:01	AK200707B

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.01

Sample Tag: OBG MW-12S

Collected Date/Time: 06/22/2020 12:08

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707A, Run Date: 07/08/2020 04:29, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		106.3	50.0	150.0
M2-6:2FTSA		101.5	50.0	150.0
M2-8:2FTSA		99.2	50.0	150.0
M2PFTeDA		133.7	12.0	218.0
M3PFBS		111.9	50.0	150.0
M3PFHxS		111.9	50.0	150.0
M4PFHpA		112.7	50.0	150.0
M5PFHxA		115.4	50.0	150.0
M5PFPeA		111.3	50.0	150.0
M6PFDA		116.6	50.0	150.0
M7PFUnDA		114.0	50.0	150.0
M8FOSA		116.8	50.0	150.0
M8PFOA		120.2	50.0	150.0
M8PFOS		119.0	50.0	150.0
M9-PFNA		108.9	50.0	150.0
MPFBA		113.5	50.0	150.0
MPFDoDA		107.6	50.0	150.0
d3N-MeFOSAA		110.2	50.0	150.0
d5EtFOSAA		114.8	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.02

Sample Tag: OBG MW-12D

Collected Date/Time: 06/22/2020 13:00

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 07:44, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		118.1	50.0	150.0
M2-6:2FTSA		115.3	50.0	150.0
M2-8:2FTSA		122.8	50.0	150.0
M2PFTeDA		90.9	12.0	218.0
M3PFBS		122.1	50.0	150.0
M3PFHxS		114.8	50.0	150.0
M4PFHpA		118.9	50.0	150.0
M5PFHxA		117.8	50.0	150.0
M5PFPeA		121.6	50.0	150.0
M6PFDA		119.8	50.0	150.0
M7PFUnDA		107.8	50.0	150.0
M8FOSA		120.5	50.0	150.0
M8PFOA		126.7	50.0	150.0
M8PFOS		116.7	50.0	150.0
M9-PFNA		121.0	50.0	150.0
MPFBA		120.3	50.0	150.0
MPFDoDA		116.4	50.0	150.0
d3N-MeFOSAA		118.6	50.0	150.0
d5EtFOSAA		133.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.03

Sample Tag: Field Blank - 062220

Collected Date/Time: 06/22/2020 15:47

Matrix: Water

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200630A, Run Date: 07/01/2020 07:40, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		125.1	50.0	150.0
M2-6:2FTSA		127.5	50.0	150.0
M2-8:2FTSA		139.7	50.0	150.0
M2PFTeDA		143.3	12.0	218.0
M3PFBS		101.5	50.0	150.0
M3PFHxS		105.5	50.0	150.0
M4PFHpA		104.5	50.0	150.0
M5PFHxA		106.8	50.0	150.0
M5PFPeA		101.9	50.0	150.0
M6PFDA		114.1	50.0	150.0
M7PFUnDA		115.4	50.0	150.0
M8FOSA		113.8	50.0	150.0
M8PFOA		102.3	50.0	150.0
M8PFOS		107.0	50.0	150.0
M9-PFNA		101.1	50.0	150.0
MPFBA		103.2	50.0	150.0
MPFDoDA		135.4	50.0	150.0
d3N-MeFOSAA		100.1	50.0	150.0
d5EtFOSAA		101.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.04

Sample Tag: OBG MW-17D

Collected Date/Time: 06/22/2020 16:00

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 08:04, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		118.3	50.0	150.0
M2-6:2FTSA		112.3	50.0	150.0
M2-8:2FTSA		122.3	50.0	150.0
M2PFTeDA		109.3	12.0	218.0
M3PFBS		117.9	50.0	150.0
M3PFHxS		122.4	50.0	150.0
M4PFHpA		130.6	50.0	150.0
M5PFHxA		119.6	50.0	150.0
M5PFPeA		120.6	50.0	150.0
M6PFDA		117.5	50.0	150.0
M7PFUnDA		117.3	50.0	150.0
M8FOSA		117.9	50.0	150.0
M8PFOA		127.3	50.0	150.0
M8PFOS		139.1	50.0	150.0
M9-PFNA		113.9	50.0	150.0
MPFBA		119.7	50.0	150.0
MPFDoDA		110.5	50.0	150.0
d3N-MeFOSAA		119.5	50.0	150.0
d5EtFOSAA		126.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.05

Sample Tag: OBG MW-17S

Collected Date/Time: 06/22/2020 16:04

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 08:23, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.8	50.0	150.0
M2-6:2FTSA		107.5	50.0	150.0
M2-8:2FTSA		112.3	50.0	150.0
M2PFTeDA		112.1	12.0	218.0
M3PFBS		120.3	50.0	150.0
M3PFHxS		113.3	50.0	150.0
M4PFHpA		123.2	50.0	150.0
M5PFHxA		115.1	50.0	150.0
M5PFPeA		114.4	50.0	150.0
M6PFDA		114.5	50.0	150.0
M7PFUnDA		121.6	50.0	150.0
M8FOSA		111.8	50.0	150.0
M8PFOA		120.6	50.0	150.0
M8PFOS		117.1	50.0	150.0
M9-PFNA		123.3	50.0	150.0
MPFBA		114.4	50.0	150.0
MPFDoDA		111.7	50.0	150.0
d3N-MeFOSAA		118.7	50.0	150.0
d5EtFOSAA		120.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.06

Sample Tag: OBG MW-25

Collected Date/Time: 06/22/2020 17:51

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 08:43, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		107.4	50.0	150.0
M2-6:2FTSA		103.1	50.0	150.0
M2-8:2FTSA		114.2	50.0	150.0
M2PFTeDA		115.6	12.0	218.0
M3PFBS		109.7	50.0	150.0
M3PFHxS		122.8	50.0	150.0
M4PFHpA		111.6	50.0	150.0
M5PFHxA		111.4	50.0	150.0
M5PFPeA		112.6	50.0	150.0
M6PFDA		113.6	50.0	150.0
M7PFUnDA		113.0	50.0	150.0
M8FOSA		110.1	50.0	150.0
M8PFOA		118.9	50.0	150.0
M8PFOS		116.1	50.0	150.0
M9-PFNA		110.0	50.0	150.0
MPFBA		112.4	50.0	150.0
MPFDoDA		113.4	50.0	150.0
d3N-MeFOSAA		113.0	50.0	150.0
d5EtFOSAA		114.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.07

Sample Tag: DUP-2

Collected Date/Time: 06/22/2020 00:01

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 09:02, Matrix: WW, Dilution: 1.94

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		111.3	50.0	150.0
M2-6:2FTSA		111.3	50.0	150.0
M2-8:2FTSA		105.0	50.0	150.0
M2PFTeDA		161.3	12.0	218.0
M3PFBS		110.5	50.0	150.0
M3PFHxS		117.3	50.0	150.0
M4PFHpA		115.6	50.0	150.0
M5PFHxA		114.4	50.0	150.0
M5PFPeA		114.0	50.0	150.0
M6PFDA		114.8	50.0	150.0
M7PFUnDA		127.4	50.0	150.0
M8FOSA		116.4	50.0	150.0
M8PFOA		120.8	50.0	150.0
M8PFOS		116.7	50.0	150.0
M9-PFNA		117.8	50.0	150.0
MPFBA		111.2	50.0	150.0
MPFDoDA		128.0	50.0	150.0
d3N-MeFOSAA		111.5	50.0	150.0
d5EtFOSAA		124.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.08

Sample Tag: PZ1

Collected Date/Time: 06/23/2020 11:20

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 09:22, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		114.4	50.0	150.0
M2-6:2FTSA		102.6	50.0	150.0
M2-8:2FTSA		104.2	50.0	150.0
M2PFTeDA		113.4	12.0	218.0
M3PFBS		114.3	50.0	150.0
M3PFHxS		121.4	50.0	150.0
M4PFHpA		112.7	50.0	150.0
M5PFHxA		114.3	50.0	150.0
M5PFPeA		113.1	50.0	150.0
M6PFDA		109.7	50.0	150.0
M7PFUnDA		107.2	50.0	150.0
M8FOSA		109.6	50.0	150.0
M8PFOA		120.4	50.0	150.0
M8PFOS		122.2	50.0	150.0
M9-PFNA		113.4	50.0	150.0
MPFBA		112.9	50.0	150.0
MPFDoDA		121.3	50.0	150.0
d3N-MeFOSAA		108.6	50.0	150.0
d5EtFOSAA		110.8	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.09

Sample Tag: PFW-1

Collected Date/Time: 06/23/2020 12:15

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 09:41, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		110.1	50.0	150.0
M2-6:2FTSA		112.1	50.0	150.0
M2-8:2FTSA		118.7	50.0	150.0
M2PFTeDA		132.7	12.0	218.0
M3PFBS		115.0	50.0	150.0
M3PFHxS		117.6	50.0	150.0
M4PFHpA		123.3	50.0	150.0
M5PFHxA		114.6	50.0	150.0
M5PFPeA		114.7	50.0	150.0
M6PFDA		115.9	50.0	150.0
M7PFUnDA		126.8	50.0	150.0
M8FOSA		113.6	50.0	150.0
M8PFOA		120.8	50.0	150.0
M8PFOS		125.3	50.0	150.0
M9-PFNA		122.4	50.0	150.0
MPFBA		113.4	50.0	150.0
MPFDoDA		121.5	50.0	150.0
d3N-MeFOSAA		120.7	50.0	150.0
d5EtFOSAA		115.3	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15100.10

Sample Tag: OBG MW-23

Collected Date/Time: 06/23/2020 13:08

Matrix: Groundwater

COC Reference: 125014

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 10:01, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.9	50.0	150.0
M2-6:2FTSA		95.3	50.0	150.0
M2-8:2FTSA		110.9	50.0	150.0
M2PFTeDA		132.6	12.0	218.0
M3PFBS		110.5	50.0	150.0
M3PFHxS		121.7	50.0	150.0
M4PFHpA		119.4	50.0	150.0
M5PFHxA		109.2	50.0	150.0
M5PFPeA		111.2	50.0	150.0
M6PFDA		105.5	50.0	150.0
M7PFUnDA		114.5	50.0	150.0
M8FOSA		114.0	50.0	150.0
M8PFOA		120.0	50.0	150.0
M8PFOS		113.6	50.0	150.0
M9-PFNA		118.5	50.0	150.0
MPFBA		111.9	50.0	150.0
MPFDoDA		120.5	50.0	150.0
d3N-MeFOSAA		115.9	50.0	150.0
d5EtFOSAA		113.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200626W1

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

Blank (BLK)

Lab Sample ID: AK200630A.BLK200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:27, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		132.7	50.0	150.0
M2-6:2FTSA		134.9	50.0	150.0
M2-8:2FTSA		127.9	50.0	150.0
M2PFTeDA		114.1	12.0	218.0
M3PFBS		110.2	50.0	150.0
M3PFHxS		101.6	50.0	150.0
M4PFHpA		103.7	50.0	150.0
M5PFHxA		105.6	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		112.9	50.0	150.0
M7PFUnDA		95.5	50.0	150.0
M8FOSA		116.8	50.0	150.0
M8PFOA		110.6	50.0	150.0
M8PFOS		99.5	50.0	150.0
M9-PFNA		110.8	50.0	150.0
MPFBA		107.3	50.0	150.0
MPFDoDA		106.0	50.0	150.0
d3N-MeFOSAA		98.7	50.0	150.0
d5EtFOSAA		111.0	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 02:48, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		117.1	50.0	150.0
M2-6:2FTSA		126.2	50.0	150.0
M2-8:2FTSA		103.5	50.0	150.0
M2PFTeDA		125.3	12.0	218.0
M3PFBS		97.4	50.0	150.0
M3PFHxS		96.3	50.0	150.0
M4PFHpA		95.3	50.0	150.0
M5PFHxA		98.2	50.0	150.0
M5PFPeA		97.6	50.0	150.0
M6PFDA		101.4	50.0	150.0
M7PFUnDA		93.9	50.0	150.0
M8FOSA		111.7	50.0	150.0
M8PFOA		94.1	50.0	150.0
M8PFOS		99.6	50.0	150.0
M9-PFNA		100.1	50.0	150.0
MPFBA		97.0	50.0	150.0
MPFDoDA		99.1	50.0	150.0
d3N-MeFOSAA		100.8	50.0	150.0
d5EtFOSAA		102.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200630A.LCSD200626, Parent Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:07, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		127.0	50.0	150.0
M2-6:2FTSA		122.4	50.0	150.0
M2-8:2FTSA		111.0	50.0	150.0
M2PFTeDA		158.2	12.0	218.0
M3PFBS		105.4	50.0	150.0
M3PFHxS		109.5	50.0	150.0
M4PFHpA		101.5	50.0	150.0
M5PFHxA		102.5	50.0	150.0
M5PFPeA		100.0	50.0	150.0
M6PFDA		111.5	50.0	150.0
M7PFUnDA		93.8	50.0	150.0
M8FOSA		109.0	50.0	150.0
M8PFOA		100.8	50.0	150.0
M8PFOS		109.7	50.0	150.0
M9-PFNA		107.8	50.0	150.0
MPFBA		100.8	50.0	150.0
MPFDoDA		108.6	50.0	150.0
d3N-MeFOSAA		109.4	50.0	150.0
d5EtFOSAA		106.1	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200630A.1523601M, Parent Sample ID: S15236.01

Run in Batch: AK200630A, Run Date: 07/01/2020 10:36, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		124.6	50.0	150.0
M2-6:2FTSA		131.3	50.0	150.0
M2-8:2FTSA		130.4	50.0	150.0
M2PFTeDA		147.9	12.0	218.0
M3PFBS		111.1	50.0	150.0
M3PFHxS		109.9	50.0	150.0
M4PFHpA		107.9	50.0	150.0
M5PFHxA		110.3	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		114.1	50.0	150.0
M7PFUnDA		99.9	50.0	150.0
M8FOSA		121.6	50.0	150.0
M8PFOA		115.5	50.0	150.0
M8PFOS		107.7	50.0	150.0
M9-PFNA		111.5	50.0	150.0
MPFBA		106.6	50.0	150.0
MPFDoDA		116.9	50.0	150.0
d3N-MeFOSAA		106.1	50.0	150.0
d5EtFOSAA		111.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200630A.1523701D, Parent Sample ID: S15237.01

Run in Batch: AK200630A, Run Date: 07/01/2020 11:15, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		132.2	50.0	150.0
M2-6:2FTSA		133.0	50.0	150.0
M2-8:2FTSA		115.6	50.0	150.0
M2PFTeDA		119.5	12.0	218.0
M3PFBS		109.7	50.0	150.0
M3PFHxS		110.1	50.0	150.0
M4PFHpA		108.2	50.0	150.0
M5PFHxA		105.3	50.0	150.0
M5PFPeA		106.6	50.0	150.0
M6PFDA		105.6	50.0	150.0
M7PFUnDA		102.2	50.0	150.0
M8FOSA		117.0	50.0	150.0
M8PFOA		114.8	50.0	150.0
M8PFOS		110.8	50.0	150.0
M9-PFNA		113.3	50.0	150.0
MPFBA		108.5	50.0	150.0
MPFDoDA		112.8	50.0	150.0
d3N-MeFOSAA		106.8	50.0	150.0
d5EtFOSAA		103.5	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.0	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		101.9	50.0	150.0
M2PFTeDA		126.7	12.0	218.0
M3PFBS		106.0	50.0	150.0
M3PFHxS		112.1	50.0	150.0
M4PFHpA		107.7	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		107.1	50.0	150.0
M6PFDA		106.7	50.0	150.0
M7PFUnDA		107.3	50.0	150.0
M8FOSA		102.9	50.0	150.0
M8PFOA		107.8	50.0	150.0
M8PFOS		104.2	50.0	150.0
M9-PFNA		106.8	50.0	150.0
MPFBA		105.7	50.0	150.0
MPFDoDA		110.5	50.0	150.0
d3N-MeFOSAA		100.8	50.0	150.0
d5EtFOSAA		104.6	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.5	50.0	150.0
M2-6:2FTSA		101.1	50.0	150.0
M2-8:2FTSA		110.2	50.0	150.0
M2PFTeDA		131.9	12.0	218.0
M3PFBS		104.4	50.0	150.0
M3PFHxS		109.9	50.0	150.0
M4PFHpA		104.1	50.0	150.0
M5PFHxA		103.1	50.0	150.0
M5PFPeA		102.2	50.0	150.0
M6PFDA		109.0	50.0	150.0
M7PFUnDA		107.8	50.0	150.0
M8FOSA		102.7	50.0	150.0
M8PFOA		108.5	50.0	150.0
M8PFOS		109.6	50.0	150.0
M9-PFNA		102.1	50.0	150.0
MPFBA		101.0	50.0	150.0
MPFDoDA		116.0	50.0	150.0
d3N-MeFOSAA		106.1	50.0	150.0
d5EtFOSAA		100.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		109.2	50.0	150.0
M2-6:2FTSA		93.8	50.0	150.0
M2-8:2FTSA		95.3	50.0	150.0
M2PFTeDA		111.2	12.0	218.0
M3PFBS		97.8	50.0	150.0
M3PFHxS		100.6	50.0	150.0
M4PFHpA		108.3	50.0	150.0
M5PFHxA		98.2	50.0	150.0
M5PFPeA		102.5	50.0	150.0
M6PFDA		99.3	50.0	150.0
M7PFUnDA		106.7	50.0	150.0
M8FOSA		100.0	50.0	150.0
M8PFOA		103.7	50.0	150.0
M8PFOS		107.2	50.0	150.0
M9-PFNA		94.7	50.0	150.0
MPFBA		99.5	50.0	150.0
MPFDoDA		98.8	50.0	150.0
d3N-MeFOSAA		98.1	50.0	150.0
d5EtFOSAA		102.2	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		104.9	50.0	150.0
M2-6:2FTSA		102.1	50.0	150.0
M2-8:2FTSA		95.7	50.0	150.0
M2PFTeDA		108.0	12.0	218.0
M3PFBS		102.2	50.0	150.0
M3PFHxS		105.3	50.0	150.0
M4PFHpA		107.1	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		104.4	50.0	150.0
M6PFDA		107.5	50.0	150.0
M7PFUnDA		103.3	50.0	150.0
M8FOSA		105.4	50.0	150.0
M8PFOA		104.6	50.0	150.0
M8PFOS		104.9	50.0	150.0
M9-PFNA		105.3	50.0	150.0
MPFBA		103.4	50.0	150.0
MPFDoDA		102.1	50.0	150.0
d3N-MeFOSAA		107.0	50.0	150.0
d5EtFOSAA		103.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.4	50.0	150.0
M2-6:2FTSA		94.5	50.0	150.0
M2-8:2FTSA		102.3	50.0	150.0
M2PFTeDA		121.0	12.0	218.0
M3PFBS		100.8	50.0	150.0
M3PFHxS		105.7	50.0	150.0
M4PFHpA		111.7	50.0	150.0
M5PFHxA		102.8	50.0	150.0
M5PFPeA		100.0	50.0	150.0
M6PFDA		107.0	50.0	150.0
M7PFUnDA		102.5	50.0	150.0
M8FOSA		104.3	50.0	150.0
M8PFOA		105.2	50.0	150.0
M8PFOS		98.4	50.0	150.0
M9-PFNA		105.9	50.0	150.0
MPFBA		100.5	50.0	150.0
MPFDoDA		109.4	50.0	150.0
d3N-MeFOSAA		100.6	50.0	150.0
d5EtFOSAA		104.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Blank (BLK)

Lab Sample ID: AK200707B.BLK200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:25, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		112.2	50.0	150.0
M2-6:2FTSA		112.0	50.0	150.0
M2-8:2FTSA		125.1	50.0	150.0
M2PFTeDA		143.1	12.0	218.0
M3PFBS		115.4	50.0	150.0
M3PFHxS		128.1	50.0	150.0
M4PFHpA		123.6	50.0	150.0
M5PFHxA		111.9	50.0	150.0
M5PFPeA		114.8	50.0	150.0
M6PFDA		123.0	50.0	150.0
M7PFUnDA		116.0	50.0	150.0
M8FOSA		117.9	50.0	150.0
M8PFOA		121.2	50.0	150.0
M8PFOS		131.0	50.0	150.0
M9-PFNA		114.0	50.0	150.0
MPFBA		114.3	50.0	150.0
MPFDoDA		130.2	50.0	150.0
d3N-MeFOSAA		125.3	50.0	150.0
d5EtFOSAA		121.8	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		111.0	50.0	150.0
M2-6:2FTSA		108.7	50.0	150.0
M2-8:2FTSA		104.7	50.0	150.0
M2PFTeDA		135.8	12.0	218.0
M3PFBS		111.7	50.0	150.0
M3PFHxS		118.5	50.0	150.0
M4PFHpA		114.6	50.0	150.0
M5PFHxA		112.6	50.0	150.0
M5PFPeA		112.5	50.0	150.0
M6PFDA		114.7	50.0	150.0
M7PFUnDA		115.9	50.0	150.0
M8FOSA		111.4	50.0	150.0
M8PFOA		118.5	50.0	150.0
M8PFOS		118.1	50.0	150.0
M9-PFNA		123.6	50.0	150.0
MPFBA		110.1	50.0	150.0
MPFDoDA		117.3	50.0	150.0
d3N-MeFOSAA		114.1	50.0	150.0
d5EtFOSAA		122.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.8	50.0	150.0
M2-6:2FTSA		102.2	50.0	150.0
M2-8:2FTSA		112.1	50.0	150.0
M2PFTeDA		129.3	12.0	218.0
M3PFBS		113.6	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		118.6	50.0	150.0
M5PFHxA		105.1	50.0	150.0
M5PFPeA		109.0	50.0	150.0
M6PFDA		112.1	50.0	150.0
M7PFUnDA		124.3	50.0	150.0
M8FOSA		108.8	50.0	150.0
M8PFOA		121.7	50.0	150.0
M8PFOS		107.4	50.0	150.0
M9-PFNA		122.4	50.0	150.0
MPFBA		108.1	50.0	150.0
MPFDoDA		115.7	50.0	150.0
d3N-MeFOSAA		106.6	50.0	150.0
d5EtFOSAA		113.3	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200707B.1520802M, Parent Sample ID: S15208.02

Run in Batch: AK200707B, Run Date: 07/08/2020 10:40, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.89

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		114.8	50.0	150.0
M2-6:2FTSA		113.7	50.0	150.0
M2-8:2FTSA		117.2	50.0	150.0
M2PFTeDA		128.0	12.0	218.0
M3PFBS		122.6	50.0	150.0
M3PFHxS		123.6	50.0	150.0
M4PFHpA		121.0	50.0	150.0
M5PFHxA		121.9	50.0	150.0
M5PFPeA		121.1	50.0	150.0
M6PFDA		113.2	50.0	150.0
M7PFUnDA		123.5	50.0	150.0
M8FOSA		120.3	50.0	150.0
M8PFOA		118.6	50.0	150.0
M8PFOS		119.6	50.0	150.0
M9-PFNA		126.1	50.0	150.0
MPFBA		120.1	50.0	150.0
MPFDoDA		120.7	50.0	150.0
d3N-MeFOSAA		121.1	50.0	150.0
d5EtFOSAA		122.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		106.8	50.0	150.0
M2-6:2FTSA		105.5	50.0	150.0
M2-8:2FTSA		104.4	50.0	150.0
M2PFTeDA		167.0	12.0	218.0
M3PFBS		116.0	50.0	150.0
M3PFHxS		115.0	50.0	150.0
M4PFHpA		114.5	50.0	150.0
M5PFHxA		117.9	50.0	150.0
M5PFPeA		112.3	50.0	150.0
M6PFDA		122.3	50.0	150.0
M7PFUnDA		123.4	50.0	150.0
M8FOSA		114.3	50.0	150.0
M8PFOA		121.4	50.0	150.0
M8PFOS		119.8	50.0	150.0
M9-PFNA		124.6	50.0	150.0
MPFBA		112.7	50.0	150.0
MPFDoDA		126.6	50.0	150.0
d3N-MeFOSAA		124.3	50.0	150.0
d5EtFOSAA		115.2	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1

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

Blank (BLK)

Lab Sample ID: AK200630A.BLK200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:27, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 02:48, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA	*	143.0	70.0	130.0
PFPeA		106.0	70.0	130.0
4:2 FTSA		119.0	70.0	130.0
PFHxA		111.0	70.0	130.0
PFBS		106.0	70.0	130.0
HFPO-DA		110.0	70.0	130.0
PFFHpA		108.0	70.0	130.0
PFPeS		103.0	70.0	130.0
ADONA		128.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 02:48, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		90.5	70.0	130.0
PFOA		116.0	70.0	130.0
PFHxS		106.0	70.0	130.0
PFNA		116.0	70.0	130.0
8:2 FTSA		108.0	70.0	130.0
PFHpS		113.0	70.0	130.0
N-MeFOSAA		109.0	70.0	130.0
PFDA		101.0	70.0	130.0
EtFOSAA		107.0	70.0	130.0
PFOS		114.0	70.0	130.0
PFUnDA		106.0	70.0	130.0
9CL-PF3ONS		116.0	70.0	130.0
PFNS		116.0	70.0	130.0
PFDODA		107.0	70.0	130.0
PFDS	*	134.0	70.0	130.0
PFTTrDA	*	131.0	70.0	130.0
FOSA		107.0	70.0	130.0
11CL-PF3OUdS		127.0	70.0	130.0
PFTeDA		102.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200630A.LCSD200626, Parent Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:07, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA	*	136.0	70.0	130.0	5.0	30.0
PFPeA		101.0	70.0	130.0	4.8	30.0
4:2 FTSA		106.0	70.0	130.0	11.6	30.0
PFHxA		103.0	70.0	130.0	7.5	30.0
PFBS		101.0	70.0	130.0	4.8	30.0
HFPO-DA		87.4	70.0	130.0	22.9	30.0
PFHpA		101.0	70.0	130.0	6.7	30.0
PFPeS		94.6	70.0	130.0	8.5	30.0
ADONA		105.0	70.0	130.0	19.7	30.0
6:2 FTSA		105.0	70.0	130.0	14.8	30.0
PFOA		114.0	70.0	130.0	1.7	30.0
PFHxS		92.2	70.0	130.0	13.9	30.0
PFNA		108.0	70.0	130.0	7.1	30.0
8:2 FTSA		88.0	70.0	130.0	20.4	30.0
PFHpS		90.1	70.0	130.0	22.6	30.0
N-MeFOSAA		110.0	70.0	130.0	0.9	30.0
PFDA		96.8	70.0	130.0	4.2	30.0
EtFOSAA		107.0	70.0	130.0	0.0	30.0
PFOS		98.1	70.0	130.0	15.0	30.0
PFUnDA		105.0	70.0	130.0	0.9	30.0
9CL-PF3ONS		101.0	70.0	130.0	13.8	30.0
PFNS		98.7	70.0	130.0	16.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200630A.LCSD200626, Parent Sample ID: AK200630A.LCS200626

Run in Batch: AK200630A, Run Date: 07/01/2020 03:07, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		110.0	70.0	130.0	2.8	30.0
PFDS		115.0	70.0	130.0	15.3	30.0
PFTTrDA		127.0	70.0	130.0	3.1	30.0
FOSA		113.0	70.0	130.0	5.5	30.0
11CL-PF3OUdS		118.0	70.0	130.0	7.3	30.0
PFTeDA		92.5	70.0	130.0	9.8	30.0

Matrix Spike (MS)

Lab Sample ID: AK200630A.1523601M, Parent Sample ID: S15236.01

Run in Batch: AK200630A, Run Date: 07/01/2020 10:36, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.92

Analyte	Flags	% Rec	LCL	UCL
PFBA		93.8	70.0	130.0
PFPeA		99.0	70.0	130.0
4:2 FTSA		114.6	70.0	130.0
PFHxA		101.0	70.0	130.0
PFBS		104.2	70.0	130.0
PFHpA		103.1	70.0	130.0
PFPeS		97.9	70.0	130.0
6:2 FTSA		90.6	70.0	130.0
PFOA		90.6	70.0	130.0
PFHxS		99.0	70.0	130.0
PFNA		114.6	70.0	130.0
8:2 FTSA		87.5	70.0	130.0
PFHpS		99.0	70.0	130.0
PFDA		104.2	70.0	130.0
N-MeFOSAA		114.6	70.0	130.0
EtFOSAA		101.0	70.0	130.0
PFOS		114.6	70.0	130.0
PFUnDA		101.0	70.0	130.0
PFNS		114.6	70.0	130.0
PFDODA		104.2	70.0	130.0
PFDS		125.0	70.0	130.0
PFTTrDA		125.0	70.0	130.0
FOSA		102.1	70.0	130.0
PFTeDA		97.9	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200630A.1523701D, Parent Sample ID: S15237.01

Run in Batch: AK200630A, Run Date: 07/01/2020 11:15, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.93

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

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200626W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200630A.1523701D, Parent Sample ID: S15237.01

Run in Batch: AK200630A, Run Date: 07/01/2020 11:15, Prep Date: 06/26/2020, Matrix: WW, Dilution: 1.93

Analyte	Flags	RPD	RPD CL
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1

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

Blank (BLK)

Lab Sample ID: AK200707A.BLK200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:21, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		103.0	70.0	130.0
PFPeA		98.7	70.0	130.0
4:2 FTSA		97.9	70.0	130.0
PFHxA		92.1	70.0	130.0
PFBS		100.0	70.0	130.0
HFPO-DA		86.8	70.0	130.0
PFFHpA		90.1	70.0	130.0
PFPeS		107.0	70.0	130.0
ADONA		86.4	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 20:42, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		101.0	70.0	130.0
PFOA		100.0	70.0	130.0
PFHxS		85.9	70.0	130.0
PFNA		109.0	70.0	130.0
8:2 FTSA		76.6	70.0	130.0
PFHpS		85.3	70.0	130.0
N-MeFOSAA		117.0	70.0	130.0
PFDA		104.0	70.0	130.0
EtFOSAA		108.0	70.0	130.0
PFOS		99.0	70.0	130.0
PFUnDA		104.0	70.0	130.0
9CL-PF3ONS		95.3	70.0	130.0
PFNS		89.0	70.0	130.0
PFDODA		98.1	70.0	130.0
PFDS		98.8	70.0	130.0
PFTTrDA		102.0	70.0	130.0
FOSA		105.0	70.0	130.0
11CL-PF3OUdS		97.0	70.0	130.0
PFTeDA		113.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		103.0	70.0	130.0	0.0	30.0
PFPeA		98.7	70.0	130.0	0.0	30.0
4:2 FTSA		84.2	70.0	130.0	15.0	30.0
PFHxA		104.0	70.0	130.0	12.1	30.0
PFBS		98.7	70.0	130.0	1.3	30.0
HFPO-DA		87.3	70.0	130.0	0.6	30.0
PFHpA		88.1	70.0	130.0	2.2	30.0
PFPeS		108.0	70.0	130.0	0.9	30.0
ADONA		91.3	70.0	130.0	5.5	30.0
6:2 FTSA		111.0	70.0	130.0	9.4	30.0
PFOA		102.0	70.0	130.0	2.0	30.0
PFHxS		96.4	70.0	130.0	11.5	30.0
PFNA		117.0	70.0	130.0	7.1	30.0
8:2 FTSA		95.4	70.0	130.0	21.9	30.0
PFHpS		92.3	70.0	130.0	7.9	30.0
N-MeFOSAA		104.0	70.0	130.0	11.8	30.0
PFDA		110.0	70.0	130.0	5.6	30.0
EtFOSAA		91.5	70.0	130.0	16.5	30.0
PFOS		99.8	70.0	130.0	0.8	30.0
PFUnDA		92.9	70.0	130.0	11.3	30.0
9CL-PF3ONS		101.0	70.0	130.0	5.8	30.0
PFNS		91.4	70.0	130.0	2.7	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200707A.LCSD200707A, Parent Sample ID: AK200707A.LCS200707A

Run in Batch: AK200707A, Run Date: 07/07/2020 21:01, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		109.0	70.0	130.0	10.5	30.0
PFDS		104.0	70.0	130.0	5.1	30.0
PFTTrDA		96.1	70.0	130.0	6.0	30.0
FOSA		103.0	70.0	130.0	1.9	30.0
11CL-PF3OUdS		103.0	70.0	130.0	6.0	30.0
PFTeDA		104.0	70.0	130.0	8.3	30.0

Matrix Spike (MS)

Lab Sample ID: AK200707A.1539301M, Parent Sample ID: S15393.01

Run in Batch: AK200707A, Run Date: 07/07/2020 21:59, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.98

Analyte	Flags	% Rec	LCL	UCL
PFBA		93.9	70.0	130.0
PFPeA		101.0	70.0	130.0
4:2 FTSA		94.9	70.0	130.0
PFHxA		99.0	70.0	130.0
PFBS		101.0	70.0	130.0
PFHpA		96.0	70.0	130.0
PFPeS		111.1	70.0	130.0
6:2 FTSA		101.0	70.0	130.0
PFOA		101.0	70.0	130.0
PFHxS		94.9	70.0	130.0
PFNA		111.1	70.0	130.0
8:2 FTSA		81.8	70.0	130.0
PFHpS		97.0	70.0	130.0
PFDA		100.0	70.0	130.0
N-MeFOSAA		111.1	70.0	130.0
EtFOSAA		92.9	70.0	130.0
PFOS		101.0	70.0	130.0
PFUnDA		93.9	70.0	130.0
PFNS		99.0	70.0	130.0
PFDODA		97.0	70.0	130.0
PFDS		101.0	70.0	130.0
PFTTrDA		99.0	70.0	130.0
FOSA		111.1	70.0	130.0
PFTeDA		111.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFBA		2.4	30.0
PFPeA		NC	30.0
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200707A.1539401D, Parent Sample ID: S15394.01

Run in Batch: AK200707A, Run Date: 07/07/2020 22:38, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.11

Analyte	Flags	RPD	RPD CL
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Blank (BLK)

Lab Sample ID: AK200707B.BLK200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:25, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		110.0	70.0	130.0
PFPeA		108.0	70.0	130.0
4:2 FTSA		104.0	70.0	130.0
PFHxA		103.0	70.0	130.0
PFBS		108.0	70.0	130.0
HFPO-DA		99.5	70.0	130.0
PFFHpA		101.0	70.0	130.0
PFPeS		112.0	70.0	130.0
ADONA		95.6	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		107.0	70.0	130.0
PFOA		101.0	70.0	130.0
PFHxS		93.1	70.0	130.0
PFNA		107.0	70.0	130.0
8:2 FTSA		102.0	70.0	130.0
PFHpS		99.6	70.0	130.0
N-MeFOSAA		108.0	70.0	130.0
PFDA		113.0	70.0	130.0
EtFOSAA		97.3	70.0	130.0
PFOS		107.0	70.0	130.0
PFUnDA		105.0	70.0	130.0
9CL-PF3ONS		107.0	70.0	130.0
PFNS		109.0	70.0	130.0
PFDODA		104.0	70.0	130.0
PFDS		119.0	70.0	130.0
PFTTrDA		107.0	70.0	130.0
FOSA		113.0	70.0	130.0
11CL-PF3OUdS		111.0	70.0	130.0
PFTeDA		115.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		110.0	70.0	130.0	0.0	30.0
PFPeA		107.0	70.0	130.0	0.9	30.0
4:2 FTSA		106.0	70.0	130.0	1.9	30.0
PFHxA		109.0	70.0	130.0	5.7	30.0
PFBS		102.0	70.0	130.0	5.7	30.0
HFPO-DA		99.6	70.0	130.0	0.1	30.0
PFHpA		101.0	70.0	130.0	0.0	30.0
PFPeS		112.0	70.0	130.0	0.0	30.0
ADONA		88.3	70.0	130.0	7.9	30.0
6:2 FTSA		111.0	70.0	130.0	3.7	30.0
PFOA		99.1	70.0	130.0	1.9	30.0
PFHxS		101.0	70.0	130.0	8.1	30.0
PFNA		104.0	70.0	130.0	2.8	30.0
8:2 FTSA		91.9	70.0	130.0	10.4	30.0
PFHpS		99.3	70.0	130.0	0.3	30.0
N-MeFOSAA		117.0	70.0	130.0	8.0	30.0
PFDA		118.0	70.0	130.0	4.3	30.0
EtFOSAA		101.0	70.0	130.0	3.7	30.0
PFOS		113.0	70.0	130.0	5.5	30.0
PFUnDA		95.2	70.0	130.0	9.8	30.0
9CL-PF3ONS		120.0	70.0	130.0	11.5	30.0
PFNS		110.0	70.0	130.0	0.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		107.0	70.0	130.0	2.8	30.0
PFDS		113.0	70.0	130.0	5.2	30.0
PFTTrDA		109.0	70.0	130.0	1.9	30.0
FOSA		120.0	70.0	130.0	6.0	30.0
11CL-PF3OUdS		120.0	70.0	130.0	7.8	30.0
PFTeDA		117.0	70.0	130.0	1.7	30.0

Matrix Spike (MS)

Lab Sample ID: AK200707B.1520802M, Parent Sample ID: S15208.02

Run in Batch: AK200707B, Run Date: 07/08/2020 10:40, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.89

Analyte	Flags	% Rec	LCL	UCL
PFBA		101.6	70.0	130.0
PFPeA		100.5	70.0	130.0
4:2 FTSA		94.2	70.0	130.0
PFHxA		100.5	70.0	130.0
PFBS		101.6	70.0	130.0
PFHpA		103.7	70.0	130.0
PFPeS		104.8	70.0	130.0
6:2 FTSA		103.7	70.0	130.0
PFOA		116.4	70.0	130.0
PFHxS		96.3	70.0	130.0
PFNA		116.4	70.0	130.0
8:2 FTSA		80.4	70.0	130.0
PFHpS		87.8	70.0	130.0
PFDA		116.4	70.0	130.0
N-MeFOSAA		101.6	70.0	130.0
EtFOSAA		94.2	70.0	130.0
PFOS		116.4	70.0	130.0
PFUnDA		100.5	70.0	130.0
PFNS		98.4	70.0	130.0
PFDODA		116.4	70.0	130.0
PFDS		105.8	70.0	130.0
PFTTrDA		102.6	70.0	130.0
FOSA		105.8	70.0	130.0
PFTeDA		105.8	70.0	130.0
11CL-PF3OUdS		116.4	70.0	130.0
9CL-PF3ONS		116.4	70.0	130.0
ADONA		99.5	70.0	130.0
HFPO-DA		92.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Analyte	Flags	RPD	RPD CL
PFBA		10.5	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME				Clifford Yantz			
COMPANY				O'Brien + Gere, A Ramboll Company			
ADDRESS				2260 East Saginaw			
CITY				STATE		ZIP CODE	
East Lansing				MI		48823	
PHONE NO.		FAX NO.		P.O. NO.			
313-333-0211							
E-MAIL ADDRESS				QUOTE NO.			
Clifford.Yantz@ramboll.com							

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Coldwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME Will Laughner Will JL
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____	

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

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
15100.01	6/22/20	1208	OBG MW-125	GW	3	3						
.02	6/22/20	1300	OBG MW-120	GW	3	3						
.03	6/22/20	1547	Field Blank - 062220	QC	1	1						
.04	6/22/20	1600	OBG MW-170	GW	3	3						
.05	6/22/20	1604	OBG MW-175	GW	3	3						
.06	6/22/20	1751	OBG MW-25	GW	3	3						
.07	6/22/20	-	DUP-2	GW	3	3						
.08	6/23/20	1120	PZ1	GW	3	3						
.09	6/23/20	1215	PFW-1	GW	3	3						
.10	6/23/20	1308	OBG MW-23	GW	3	3						
UPL												

PEAS (ASTM 2979)

Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

RELINQUISHED BY: SIGNATURE/ORGANIZATION		☒ Sampler	DATE 6/23/20	TIME 14:45
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE 6/23/20	TIME 14:45
RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE 6/23/20	TIME 15:40
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE 6/23/20	TIME 15:40

RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL _____ 47	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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



Analytical Laboratory Report

Report ID: S15172.01(01)
Generated on 07/16/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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

Report produced by

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

Report Summary

Lab Sample ID(s): S15172.01-S15172.10
Project: RACER Coldwater Rd
Collected Date(s): 06/23/2020 - 06/24/2020
Submitted Date/Time: 06/24/2020 16:00
Sampled by: Will Laughner
P.O. #: 12000277

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
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)

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
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-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S15172.01	OBG MW-19D	Groundwater	06/23/20 15:00
S15172.02	OBG MW-24	Groundwater	06/23/20 15:38
S15172.03	Equipment Blank-02	Water	06/23/20 15:40
S15172.04	PZ2	Groundwater	06/23/20 17:27
S15172.05	OBG MW-18D	Groundwater	06/23/20 17:35
S15172.06	OBG MW-11	Groundwater	06/24/20 10:27
S15172.07	OBG MW-28	Groundwater	06/24/20 12:18
S15172.08	OBG MW-22	Groundwater	06/24/20 13:00
S15172.09	Field Blank-062420	Water	06/24/20 13:05
S15172.10	DUP-3	Groundwater	06/24/20 00:01



Analytical Laboratory Report

Lab Sample ID: S15172.01

Sample Tag: OBG MW-19D

Collected Date/Time: 06/23/2020 15:00

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.41/6.71/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 01:40, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.7	9.7	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15172.02

Sample Tag: OBG MW-24

Collected Date/Time: 06/23/2020 15:38

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.24/6.75/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 02:19, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15172.03

Sample Tag: Equipment Blank-02

Collected Date/Time: 06/23/2020 15:40

Matrix: Water

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.20/6.79/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 21:02, 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	I
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*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1	
PFOS-LN*	Not detected	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	2.0	2.0	ng/L	2.03	13252-13-6	

I-Matrix interference with internal standard



Analytical Laboratory Report

Lab Sample ID: S15172.04

Sample Tag: PZ2

Collected Date/Time: 06/23/2020 17:27

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.18/6.77/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 03:17, 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	4.1	1.4	ng/L	2.03	375-73-5	X
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*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1	
PFOS-LN*	Not detected	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	2.0	2.0	ng/L	2.03	13252-13-6	

X-Elevated reporting limit due to matrix interference



Analytical Laboratory Report

Lab Sample ID: S15172.05

Sample Tag: OBG MW-18D

Collected Date/Time: 06/23/2020 17:35

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.17/6.73/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 03:37, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	11	10	10	ng/L	2.02	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2.02	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.02	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.02	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.02	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.02	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.02	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.02	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.02	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.02	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.02	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.02	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.02	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.02	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.02	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.02	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.02	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	2.02	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.02	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.02	376-06-7	
11CI-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.02	763051-92-9	
9CI-PF3ONS*	Not detected	2.0	1.4	ng/L	2.02	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.02	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.02	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15172.06

Sample Tag: OBG MW-11

Collected Date/Time: 06/24/2020 10:27

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.84/6.72/10	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 03:56, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	34	9.8	9.8	ng/L	1.95	375-22-4	
PFPeA*	6.6	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*	19	2.0	1.4	ng/L	1.95	307-24-4	
PFBS*	190	2.0	1.4	ng/L	1.95	375-73-5	
PFHpA*	8.8	2.0	1.4	ng/L	1.95	375-85-9	
PFPeS*	98	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*	25	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	440	2.0	1.6	ng/L	1.95	355-46-4	
PFHxS-LN*	370	2.0	1.6	ng/L	1.95	355-46-4-LN	
PFHxS-BR*	71	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*	13	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*	160	2.0	1.9	ng/L	1.95	1763-23-1	
PFOS-LN*	26	2.0	1.9	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	130	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	
PFTDA*	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	2.0	2.0	ng/L	1.95	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15172.07

Sample Tag: OBG MW-28

Collected Date/Time: 06/24/2020 12:18

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.96/6.75/10	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 04:16, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	14	9.6	9.6	ng/L	1.92	375-22-4	
PFPeA*	Not detected	3.8	0.96	ng/L	1.92	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.92	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.92	307-24-4	
PFBS*	1.9	1.9	1.3	ng/L	1.92	375-73-5	J
PFHpA*	Not detected	1.9	1.3	ng/L	1.92	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.92	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.92	27619-97-2	
PFOA*	7.2	1.9	1.5	ng/L	1.92	335-67-1	
PFHxS*	2.3	1.9	1.5	ng/L	1.92	355-46-4	
PFHxS-LN*	1.9	1.9	1.5	ng/L	1.92	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.92	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.92	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.92	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.92	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.92	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.92	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.92	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.92	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.92	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.92	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.92	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.92	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.92	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.92	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.92	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.92	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.92	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.92	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.92	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S15172.08

Sample Tag: OBG MW-22

Collected Date/Time: 06/24/2020 13:00

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.38/6.75/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 04:35, 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*	5.1	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*	6.9	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*	7.2	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	38	2.0	1.6	ng/L	1.95	355-46-4	
PFHxS-LN*	34	2.0	1.6	ng/L	1.95	355-46-4-LN	
PFHxS-BR*	3.8	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*	30	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*	2,300	2.0	1.9	ng/L	1.95	1763-23-1	
PFOS-LN*	1,200	2.0	1.9	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	1,200	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	
PFTDA*	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	2.0	2.0	ng/L	1.95	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15172.09

Sample Tag: Field Blank-062420

Collected Date/Time: 06/24/2020 13:05

Matrix: Water

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.63/6.73/10	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 04:55, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	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*	Not detected	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*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	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*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	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	
PFTDA*	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	2.0	2.0	ng/L	2.04	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15172.10

Sample Tag: DUP-3

Collected Date/Time: 06/24/2020 00:01

Matrix: Groundwater

COC Reference: 128646

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.99/6.73/10	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 05:14, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	12	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*	2.4	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*	6.1	1.9	1.5	ng/L	1.9	335-67-1	
PFHxS*	2.1	1.9	1.5	ng/L	1.9	355-46-4	
PFHxS-LN*	1.8	1.9	1.5	ng/L	1.9	355-46-4-LN	J
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*	Not detected	1.9	1.9	ng/L	1.9	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.9	1763-23-1-LN	
PFOS-BR*	Not detected	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	
PFTDA*	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	1.9	1.9	ng/L	1.9	13252-13-6	

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

Merit Laboratories Login Checklist

Lab Set ID:S15172

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted:06/24/2020 16:00 Login User: SRS

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.3
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☐ Yes ☐ No ☒ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Clifford Yantz.			
COMPANY O'Brien & Gere, A Ramboll Company			
ADDRESS 2260 East Saginaw			
CITY East Lansing		STATE MI	ZIP CODE 48823
PHONE NO. 313-333-0211		FAX NO.	P.O. NO.
E-MAIL ADDRESS Clifford.Yantz@ramboll.com		QUOTE NO.	

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

PROJECT NO./NAME RACER Coldwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME Will Loughner <i>Will Loughner</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

MATRIX CODE:	GW=GROUNDWATER SL=SLUDGE	WW=WASTEWATER DW=DRINKING WATER	S=SOIL O=OIL	L=LIQUID WP=WIPES	SD=SOLID A=AIR W=WASTE	# Containers & Preservatives

[illegible]

PEAS (ASTM D79A)

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Will L...</i>	☒ Sampler	DATE 6/24/20	TIME 14:58
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/24/20	TIME 14:30
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/24/20	TIME 16:00
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 6/24/20	TIME 16:00

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL <u>3.3</u>	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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



Quality Control Report

Report ID: QC-S15172-01
Generated on 07/20/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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): S15172.01-S15172.10
Project: RACER Coldwater Rd
Submitted Date/Time: 06/24/2020 16:00
Sampled by: Will Laughner
P.O. #: 12000277

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-11)
Prep Batch Summary (Page 12)
Internal Standards per Lab Sample (Pages 13-22)
Internal Standards per QC Sample (Pages 23-25)
Batch QC Results (Pages 26-29)

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: S15172.01

Sample Tag: OBG MW-19D

Collected Date/Time: 06/23/2020 15:00

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 01:40	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.02

Sample Tag: OBG MW-24

Collected Date/Time: 06/23/2020 15:38

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/02/20 02:19	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.03

Sample Tag: Equipment Blank-02

Collected Date/Time: 06/23/2020 15:40

Matrix: Water

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 21:02	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.04

Sample Tag: PZ2

Collected Date/Time: 06/23/2020 17:27

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 03:17	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.05

Sample Tag: OBG MW-18D

Collected Date/Time: 06/23/2020 17:35

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 03:37	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.06

Sample Tag: OBG MW-11

Collected Date/Time: 06/24/2020 10:27

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 03:56	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.07

Sample Tag: OBG MW-28

Collected Date/Time: 06/24/2020 12:18

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 04:16	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.08

Sample Tag: OBG MW-22

Collected Date/Time: 06/24/2020 13:00

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/02/20 04:35	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.09

Sample Tag: Field Blank-062420

Collected Date/Time: 06/24/2020 13:05

Matrix: Water

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 04:55	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15172.10

Sample Tag: DUP-3

Collected Date/Time: 06/24/2020 00:01

Matrix: Groundwater

COC Reference: 128646

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/02/20 05:14	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15172.01	28 PFAs	ASTMD7979-19M	07/02/20 01:40	AK200701
S15172.02	28 PFAs	ASTMD7979-19M	07/02/20 02:19	AK200701
S15172.03	28 PFAs	ASTMD7979-19M	07/02/20 21:02	AK200701
S15172.04	28 PFAs	ASTMD7979-19M	07/02/20 03:17	AK200701
S15172.05	28 PFAs	ASTMD7979-19M	07/02/20 03:37	AK200701
S15172.06	28 PFAs	ASTMD7979-19M	07/02/20 03:56	AK200701
S15172.07	28 PFAs	ASTMD7979-19M	07/02/20 04:16	AK200701
S15172.08	28 PFAs	ASTMD7979-19M	07/02/20 04:35	AK200701
S15172.09	28 PFAs	ASTMD7979-19M	07/02/20 04:55	AK200701
S15172.10	28 PFAs	ASTMD7979-19M	07/02/20 05:14	AK200701

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.01

Sample Tag: OBG MW-19D

Collected Date/Time: 06/23/2020 15:00

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 01:40, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		139.2	50.0	150.0
M2-6:2FTSA		138.8	50.0	150.0
M2-8:2FTSA		110.4	50.0	150.0
M2PFTeDA		135.9	12.0	218.0
M3PFBS		108.4	50.0	150.0
M3PFHxS		103.2	50.0	150.0
M4PFHpA		110.9	50.0	150.0
M5PFHxA		103.2	50.0	150.0
M5PFPeA		104.3	50.0	150.0
M6PFDA		110.5	50.0	150.0
M7PFUnDA		98.8	50.0	150.0
M8FOSA		119.0	50.0	150.0
M8PFOA		108.4	50.0	150.0
M8PFOS		106.8	50.0	150.0
M9-PFNA		119.8	50.0	150.0
MPFBA		103.4	50.0	150.0
MPFDoDA		126.3	50.0	150.0
d3N-MeFOSAA		109.5	50.0	150.0
d5EtFOSAA		113.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.02

Sample Tag: OBG MW-24

Collected Date/Time: 06/23/2020 15:38

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 02:19, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		137.4	50.0	150.0
M2-6:2FTSA		130.2	50.0	150.0
M2-8:2FTSA		133.9	50.0	150.0
M2PFTeDA		150.0	12.0	218.0
M3PFBS		108.8	50.0	150.0
M3PFHxS		110.8	50.0	150.0
M4PFHpA		102.4	50.0	150.0
M5PFHxA		106.5	50.0	150.0
M5PFPeA		103.9	50.0	150.0
M6PFDA		121.9	50.0	150.0
M7PFUnDA		103.1	50.0	150.0
M8FOSA		121.8	50.0	150.0
M8PFOA		107.7	50.0	150.0
M8PFOS		106.6	50.0	150.0
M9-PFNA		108.0	50.0	150.0
MPFBA		104.5	50.0	150.0
MPFDoDA		115.3	50.0	150.0
d3N-MeFOSAA		108.5	50.0	150.0
d5EtFOSAA		117.8	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.03

Sample Tag: Equipment Blank-02

Collected Date/Time: 06/23/2020 15:40

Matrix: Water

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 21:02, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		132.6	50.0	150.0
M2-6:2FTSA	*	186.5	50.0	150.0
M2-8:2FTSA		125.2	50.0	150.0
M2PFTeDA		176.9	12.0	218.0
M3PFBS		110.8	50.0	150.0
M3PFHxS		106.8	50.0	150.0
M4PFHpA		109.8	50.0	150.0
M5PFHxA		109.3	50.0	150.0
M5PFPeA		109.9	50.0	150.0
M6PFDA		110.2	50.0	150.0
M7PFUnDA		124.0	50.0	150.0
M8FOSA		120.6	50.0	150.0
M8PFOA		110.4	50.0	150.0
M8PFOS		117.0	50.0	150.0
M9-PFNA		119.2	50.0	150.0
MPFBA		111.0	50.0	150.0
MPFDoDA		135.7	50.0	150.0
d3N-MeFOSAA		113.9	50.0	150.0
d5EtFOSAA		108.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.04

Sample Tag: PZ2

Collected Date/Time: 06/23/2020 17:27

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 03:17, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		131.4	50.0	150.0
M2-6:2FTSA		137.3	50.0	150.0
M2-8:2FTSA		130.5	50.0	150.0
M2PFTeDA		166.3	12.0	218.0
M3PFBS		111.3	50.0	150.0
M3PFHxS		112.3	50.0	150.0
M4PFHpA		110.0	50.0	150.0
M5PFHxA		107.7	50.0	150.0
M5PFPeA		107.6	50.0	150.0
M6PFDA		115.4	50.0	150.0
M7PFUnDA		104.4	50.0	150.0
M8FOSA		121.0	50.0	150.0
M8PFOA		114.5	50.0	150.0
M8PFOS		112.3	50.0	150.0
M9-PFNA		117.7	50.0	150.0
MPFBA		108.4	50.0	150.0
MPFDoDA		127.7	50.0	150.0
d3N-MeFOSAA		117.8	50.0	150.0
d5EtFOSAA		126.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.05

Sample Tag: OBG MW-18D

Collected Date/Time: 06/23/2020 17:35

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 03:37, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		125.0	50.0	150.0
M2-6:2FTSA		122.5	50.0	150.0
M2-8:2FTSA		116.7	50.0	150.0
M2PFTeDA		113.8	12.0	218.0
M3PFBS		110.3	50.0	150.0
M3PFHxS		98.6	50.0	150.0
M4PFHpA		106.0	50.0	150.0
M5PFHxA		104.2	50.0	150.0
M5PFPeA		102.3	50.0	150.0
M6PFDA		112.1	50.0	150.0
M7PFUnDA		92.5	50.0	150.0
M8FOSA		106.7	50.0	150.0
M8PFOA		107.5	50.0	150.0
M8PFOS		109.4	50.0	150.0
M9-PFNA		111.8	50.0	150.0
MPFBA		103.2	50.0	150.0
MPFDoDA		106.0	50.0	150.0
d3N-MeFOSAA		105.6	50.0	150.0
d5EtFOSAA		118.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.06

Sample Tag: OBG MW-11

Collected Date/Time: 06/24/2020 10:27

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 03:56, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		138.8	50.0	150.0
M2-6:2FTSA		111.8	50.0	150.0
M2-8:2FTSA		113.5	50.0	150.0
M2PFTeDA		139.5	12.0	218.0
M3PFBS		104.5	50.0	150.0
M3PFHxS		98.4	50.0	150.0
M4PFHpA		99.9	50.0	150.0
M5PFHxA		101.0	50.0	150.0
M5PFPeA		102.6	50.0	150.0
M6PFDA		106.6	50.0	150.0
M7PFUnDA		98.8	50.0	150.0
M8FOSA		111.5	50.0	150.0
M8PFOA		105.2	50.0	150.0
M8PFOS		98.2	50.0	150.0
M9-PFNA		102.1	50.0	150.0
MPFBA		105.0	50.0	150.0
MPFDoDA		113.0	50.0	150.0
d3N-MeFOSAA		101.4	50.0	150.0
d5EtFOSAA		108.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.07

Sample Tag: OBG MW-28

Collected Date/Time: 06/24/2020 12:18

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 04:16, Matrix: WW, Dilution: 1.92

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		137.4	50.0	150.0
M2-6:2FTSA		129.9	50.0	150.0
M2-8:2FTSA		131.9	50.0	150.0
M2PFTeDA		111.3	12.0	218.0
M3PFBS		108.0	50.0	150.0
M3PFHxS		107.6	50.0	150.0
M4PFHpA		110.2	50.0	150.0
M5PFHxA		105.0	50.0	150.0
M5PFPeA		103.0	50.0	150.0
M6PFDA		108.3	50.0	150.0
M7PFUnDA		101.5	50.0	150.0
M8FOSA		104.8	50.0	150.0
M8PFOA		104.2	50.0	150.0
M8PFOS		103.5	50.0	150.0
M9-PFNA		99.6	50.0	150.0
MPFBA		103.3	50.0	150.0
MPFDoDA		104.9	50.0	150.0
d3N-MeFOSAA		109.0	50.0	150.0
d5EtFOSAA		111.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.08

Sample Tag: OBG MW-22

Collected Date/Time: 06/24/2020 13:00

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 04:35, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		144.0	50.0	150.0
M2-6:2FTSA		124.3	50.0	150.0
M2-8:2FTSA		123.3	50.0	150.0
M2PFTeDA		118.4	12.0	218.0
M3PFBS		117.5	50.0	150.0
M3PFHxS		119.2	50.0	150.0
M4PFHpA		110.4	50.0	150.0
M5PFHxA		111.5	50.0	150.0
M5PFPeA		112.0	50.0	150.0
M6PFDA		106.3	50.0	150.0
M7PFUnDA		108.9	50.0	150.0
M8FOSA		118.8	50.0	150.0
M8PFOA		115.3	50.0	150.0
M8PFOS		112.3	50.0	150.0
M9-PFNA		120.6	50.0	150.0
MPFBA		112.6	50.0	150.0
MPFDoDA		116.5	50.0	150.0
d3N-MeFOSAA		116.4	50.0	150.0
d5EtFOSAA		122.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.09

Sample Tag: Field Blank-062420

Collected Date/Time: 06/24/2020 13:05

Matrix: Water

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 04:55, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		124.8	50.0	150.0
M2-6:2FTSA		142.6	50.0	150.0
M2-8:2FTSA		120.4	50.0	150.0
M2PFTeDA		130.0	12.0	218.0
M3PFBS		105.6	50.0	150.0
M3PFHxS		111.4	50.0	150.0
M4PFHpA		104.0	50.0	150.0
M5PFHxA		106.9	50.0	150.0
M5PFPeA		103.1	50.0	150.0
M6PFDA		108.0	50.0	150.0
M7PFUnDA		102.1	50.0	150.0
M8FOSA		113.8	50.0	150.0
M8PFOA		110.8	50.0	150.0
M8PFOS		100.7	50.0	150.0
M9-PFNA		106.2	50.0	150.0
MPFBA		103.4	50.0	150.0
MPFDoDA		108.7	50.0	150.0
d3N-MeFOSAA		105.6	50.0	150.0
d5EtFOSAA		116.9	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15172.10

Sample Tag: DUP-3

Collected Date/Time: 06/24/2020 00:01

Matrix: Groundwater

COC Reference: 128646

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 05:14, Matrix: WW, Dilution: 1.9

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		136.4	50.0	150.0
M2-6:2FTSA		136.7	50.0	150.0
M2-8:2FTSA		125.8	50.0	150.0
M2PFTeDA		120.9	12.0	218.0
M3PFBS		102.3	50.0	150.0
M3PFHxS		103.9	50.0	150.0
M4PFHpA		110.6	50.0	150.0
M5PFHxA		107.1	50.0	150.0
M5PFPeA		103.9	50.0	150.0
M6PFDA		108.0	50.0	150.0
M7PFUnDA		99.9	50.0	150.0
M8FOSA		111.9	50.0	150.0
M8PFOA		114.2	50.0	150.0
M8PFOS		105.8	50.0	150.0
M9-PFNA		99.8	50.0	150.0
MPFBA		104.5	50.0	150.0
MPFDoDA		116.3	50.0	150.0
d3N-MeFOSAA		100.6	50.0	150.0
d5EtFOSAA		98.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Blank (BLK)

Lab Sample ID: AK200701.BLK200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:41, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		141.8	50.0	150.0
M2-6:2FTSA		136.7	50.0	150.0
M2-8:2FTSA		122.5	50.0	150.0
M2PFTeDA		120.2	12.0	218.0
M3PFBS		115.2	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		114.6	50.0	150.0
M5PFHxA		108.6	50.0	150.0
M5PFPeA		111.1	50.0	150.0
M6PFDA		113.6	50.0	150.0
M7PFUnDA		104.1	50.0	150.0
M8FOSA		120.6	50.0	150.0
M8PFOA		114.8	50.0	150.0
M8PFOS		114.3	50.0	150.0
M9-PFNA		112.0	50.0	150.0
MPFBA		108.7	50.0	150.0
MPFDoDA		109.6	50.0	150.0
d3N-MeFOSAA		100.3	50.0	150.0
d5EtFOSAA		124.3	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		129.6	50.0	150.0
M2-6:2FTSA		127.9	50.0	150.0
M2-8:2FTSA		121.1	50.0	150.0
M2PFTeDA		133.9	12.0	218.0
M3PFBS		109.1	50.0	150.0
M3PFHxS		112.4	50.0	150.0
M4PFHpA		105.5	50.0	150.0
M5PFHxA		106.8	50.0	150.0
M5PFPeA		107.5	50.0	150.0
M6PFDA		115.4	50.0	150.0
M7PFUnDA		103.1	50.0	150.0
M8FOSA		113.3	50.0	150.0
M8PFOA		111.2	50.0	150.0
M8PFOS		118.2	50.0	150.0
M9-PFNA		108.1	50.0	150.0
MPFBA		104.2	50.0	150.0
MPFDoDA		110.3	50.0	150.0
d3N-MeFOSAA		114.4	50.0	150.0
d5EtFOSAA		112.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		128.4	50.0	150.0
M2-6:2FTSA		126.1	50.0	150.0
M2-8:2FTSA		127.4	50.0	150.0
M2PFTeDA		141.0	12.0	218.0
M3PFBS		105.9	50.0	150.0
M3PFHxS		109.6	50.0	150.0
M4PFHpA		107.9	50.0	150.0
M5PFHxA		105.4	50.0	150.0
M5PFPeA		102.6	50.0	150.0
M6PFDA		105.9	50.0	150.0
M7PFUnDA		106.9	50.0	150.0
M8FOSA		115.0	50.0	150.0
M8PFOA		105.8	50.0	150.0
M8PFOS		110.1	50.0	150.0
M9-PFNA		110.7	50.0	150.0
MPFBA		101.1	50.0	150.0
MPFDoDA		124.4	50.0	150.0
d3N-MeFOSAA		113.8	50.0	150.0
d5EtFOSAA		110.1	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200701.1517201M, Parent Sample ID: S15172.01

Run in Batch: AK200701, Run Date: 07/02/2020 01:59, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		143.7	50.0	150.0
M2-6:2FTSA		142.1	50.0	150.0
M2-8:2FTSA		125.3	50.0	150.0
M2PFTeDA		155.7	12.0	218.0
M3PFBS		110.5	50.0	150.0
M3PFHxS		108.0	50.0	150.0
M4PFHpA		110.4	50.0	150.0
M5PFHxA		111.4	50.0	150.0
M5PFPeA		107.3	50.0	150.0
M6PFDA		116.6	50.0	150.0
M7PFUnDA		114.6	50.0	150.0
M8FOSA		122.2	50.0	150.0
M8PFOA		111.7	50.0	150.0
M8PFOS		108.8	50.0	150.0
M9-PFNA		113.6	50.0	150.0
MPFBA		107.6	50.0	150.0
MPFDoDA		129.3	50.0	150.0
d3N-MeFOSAA		128.8	50.0	150.0
d5EtFOSAA		115.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		138.8	50.0	150.0
M2-6:2FTSA		137.2	50.0	150.0
M2-8:2FTSA		129.8	50.0	150.0
M2PFTeDA		153.5	12.0	218.0
M3PFBS		112.7	50.0	150.0
M3PFHxS		105.2	50.0	150.0
M4PFHpA		109.6	50.0	150.0
M5PFHxA		107.1	50.0	150.0
M5PFPeA		104.2	50.0	150.0
M6PFDA		117.2	50.0	150.0
M7PFUnDA		104.7	50.0	150.0
M8FOSA		117.2	50.0	150.0
M8PFOA		113.7	50.0	150.0
M8PFOS		109.2	50.0	150.0
M9-PFNA		112.6	50.0	150.0
MPFBA		106.5	50.0	150.0
MPFDoDA		129.0	50.0	150.0
d3N-MeFOSAA		106.9	50.0	150.0
d5EtFOSAA		118.4	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Blank (BLK)

Lab Sample ID: AK200701.BLK200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:41, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		90.2	70.0	130.0
PFPeA		94.9	70.0	130.0
4:2 FTSA		111.0	70.0	130.0
PFHxA		97.7	70.0	130.0
PFBS		101.0	70.0	130.0
HFPO-DA		98.8	70.0	130.0
PFFHpA		92.5	70.0	130.0
ADONA		103.0	70.0	130.0
PFPeS		103.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		96.7	70.0	130.0
PFOA		99.7	70.0	130.0
PFHxS		94.2	70.0	130.0
PFNA		111.0	70.0	130.0
8:2 FTSA		89.1	70.0	130.0
PFHpS		94.7	70.0	130.0
N-MeFOSAA		93.4	70.0	130.0
PFDA		96.1	70.0	130.0
EtFOSAA		103.0	70.0	130.0
PFOS		97.0	70.0	130.0
PFUnDA		102.0	70.0	130.0
9CL-PF3ONS		97.8	70.0	130.0
PFNS		105.0	70.0	130.0
PFDODA		104.0	70.0	130.0
PFDS		105.0	70.0	130.0
PFTTrDA		116.0	70.0	130.0
FOSA		107.0	70.0	130.0
11CL-PF3OUdS		107.0	70.0	130.0
PFTeDA		96.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		94.2	70.0	130.0	4.3	30.0
PFPeA		100.0	70.0	130.0	5.2	30.0
4:2 FTSA		112.0	70.0	130.0	0.9	30.0
PFHxA		101.0	70.0	130.0	3.3	30.0
PFBS		109.0	70.0	130.0	7.6	30.0
HFPO-DA		104.0	70.0	130.0	5.1	30.0
PFHpA		91.6	70.0	130.0	1.0	30.0
ADONA		109.0	70.0	130.0	5.7	30.0
PFPeS		102.0	70.0	130.0	1.0	30.0
6:2 FTSA		103.0	70.0	130.0	6.3	30.0
PFOA		107.0	70.0	130.0	7.1	30.0
PFHxS		108.0	70.0	130.0	13.6	30.0
PFNA		110.0	70.0	130.0	0.9	30.0
8:2 FTSA		80.1	70.0	130.0	10.6	30.0
PFHpS		102.0	70.0	130.0	7.4	30.0
N-MeFOSAA		104.0	70.0	130.0	10.7	30.0
PFDA		109.0	70.0	130.0	12.6	30.0
EtFOSAA		96.8	70.0	130.0	6.2	30.0
PFOS		104.0	70.0	130.0	7.0	30.0
PFUnDA		94.9	70.0	130.0	7.2	30.0
9CL-PF3ONS		102.0	70.0	130.0	4.2	30.0
PFNS		120.0	70.0	130.0	13.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		95.2	70.0	130.0	8.8	30.0
PFDS		118.0	70.0	130.0	11.7	30.0
PFTTrDA		109.0	70.0	130.0	6.2	30.0
FOSA		106.0	70.0	130.0	0.9	30.0
11CL-PF3OUdS		123.0	70.0	130.0	13.9	30.0
PFTeDA		96.9	70.0	130.0	0.1	30.0

Matrix Spike (MS)

Lab Sample ID: AK200701.1517201M, Parent Sample ID: S15172.01

Run in Batch: AK200701, Run Date: 07/02/2020 01:59, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1.93

Analyte	Flags	% Rec	LCL	UCL
PFBA		95.3	70.0	130.0
PFPeA		99.5	70.0	130.0
4:2 FTSA		99.5	70.0	130.0
PFHxA		103.6	70.0	130.0
PFBS		103.6	70.0	130.0
PFHpA		96.4	70.0	130.0
PFPeS		103.6	70.0	130.0
6:2 FTSA		97.4	70.0	130.0
PFOA		114.0	70.0	130.0
PFHxS		103.6	70.0	130.0
PFNA		114.0	70.0	130.0
8:2 FTSA		88.1	70.0	130.0
PFHpS		95.3	70.0	130.0
PFDA		100.5	70.0	130.0
N-MeFOSAA		103.6	70.0	130.0
EtFOSAA		103.6	70.0	130.0
PFOS		103.6	70.0	130.0
PFUnDA		92.2	70.0	130.0
PFNS		124.4	70.0	130.0
PFDODA		93.3	70.0	130.0
PFDS		124.4	70.0	130.0
PFTTrDA		114.0	70.0	130.0
FOSA		100.5	70.0	130.0
PFTeDA		100.5	70.0	130.0
11CL-PF3OUdS		124.4	70.0	130.0
9CL-PF3ONS		124.4	70.0	130.0
ADONA		114.0	70.0	130.0
HFPO-DA		96.4	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
PFBA	*	200.0	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME		Clifford Yantz.	
COMPANY		O'Brien & Gere, A Ramboll Company	
ADDRESS		2260 East Saginaw	
CITY	STATE	ZIP CODE	
East Lansing	MI	48823	
PHONE NO.	FAX NO.	P.O. NO.	
313-333-0211			
E-MAIL ADDRESS	QUOTE NO.		
Clifford.Yantz@ramboll.com			

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

PROJECT NO./NAME RACER Coldwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME Will Loughner <i>Will Loughner</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

Containers & Preservatives

[illegible]

PEAS (ASTM D799)

Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Will L...</i>	☒ Sampler	DATE 6/24/20	TIME 14:38
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>J. Smith</i>		DATE 6/24/20	TIME 14:38
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>W. Miller</i>		DATE 6/24/20	TIME 18:50
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Samuel L...</i>		DATE 10/24/20	TIME 16:02

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL <u> </u> 3.3	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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



Analytical Laboratory Report

Report ID: S15210.01(01)
Generated on 07/17/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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

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)

Report Summary

Lab Sample ID(s): S15210.01-S15210.05
Project: RACER Coldwater Rd
Collected Date(s): 06/24/2020 - 06/25/2020
Submitted Date/Time: 06/25/2020 15:45
Sampled by: Kevin Schneider
P.O. #: 12000277

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
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)

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
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-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S15210.01	PZ-3	Groundwater	06/24/20 15:44
S15210.02	OBG-MW-26	Groundwater	06/24/20 18:20
S15210.03	OBG-MW-27	Groundwater	06/24/20 10:25
S15210.04	OBG-MW-14	Groundwater	06/24/20 14:00
S15210.05	Field Blank 062520	Water	06/25/20 10:13



Analytical Laboratory Report

Lab Sample ID: S15210.01

Sample Tag: PZ-3

Collected Date/Time: 06/24/2020 15:44

Matrix: Groundwater

COC Reference: 125018

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.94/6.70/10	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 13:16, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	33	9.6	9.6	ng/L	1.91	375-22-4	
PFPeA*	Not detected	3.8	0.96	ng/L	1.91	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.91	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.91	307-24-4	
PFBS*	8.9	1.9	1.3	ng/L	1.91	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.91	375-85-9	
PFPeS*	13	1.9	1.7	ng/L	1.91	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.91	27619-97-2	
PFOA*	11	1.9	1.5	ng/L	1.91	335-67-1	
PFHxS*	46	1.9	1.5	ng/L	1.91	355-46-4	
PFHxS-LN*	39	1.9	1.5	ng/L	1.91	355-46-4-LN	
PFHxS-BR*	7.3	1.9	1.5	ng/L	1.91	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.91	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.91	39108-34-4	
PFHpS*	15	1.9	1.9	ng/L	1.91	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.91	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.91	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.91	2991-50-6	
PFOS*	860	1.9	1.9	ng/L	1.91	1763-23-1	
PFOS-LN*	370	1.9	1.9	ng/L	1.91	1763-23-1-LN	
PFOS-BR*	490	1.9	1.9	ng/L	1.91	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.91	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.91	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.91	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.91	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.91	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.91	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.91	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.91	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.91	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.91	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.91	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15210.02

Sample Tag: OBG-MW-26

Collected Date/Time: 06/24/2020 18:20

Matrix: Groundwater

COC Reference: 125018

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.50/6.70/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 13:35, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	48	9.5	9.5	ng/L	1.9	375-22-4	
PFPeA*	53	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*	43	1.9	1.3	ng/L	1.9	307-24-4	
PFBS*	5.4	1.9	1.3	ng/L	1.9	375-73-5	
PFHpA*	7.5	1.9	1.3	ng/L	1.9	375-85-9	
PFPeS*	8.5	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*	32	1.9	1.5	ng/L	1.9	335-67-1	
PFHxS*	34	1.9	1.5	ng/L	1.9	355-46-4	
PFHxS-LN*	31	1.9	1.5	ng/L	1.9	355-46-4-LN	
PFHxS-BR*	3.1	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*	12	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*	530	1.9	1.9	ng/L	1.9	1763-23-1	
PFOS-LN*	190	1.9	1.9	ng/L	1.9	1763-23-1-LN	
PFOS-BR*	330	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	1.9	1.9	ng/L	1.9	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15210.03

Sample Tag: OBG-MW-27

Collected Date/Time: 06/24/2020 10:25

Matrix: Groundwater

COC Reference: 125018

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.53/6.86/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 13:55, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	33	9.7	9.7	ng/L	1.94	375-22-4	
PFPeA*	3.3	3.9	0.97	ng/L	1.94	2706-90-3	J
4:2 FTSA*	Not detected	1.9	1.6	ng/L	1.94	757124-72-4	
PFHxA*	3.5	1.9	1.4	ng/L	1.94	307-24-4	
PFBS*	18	1.9	1.4	ng/L	1.94	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.94	375-85-9	
PFPeS*	21	1.9	1.7	ng/L	1.94	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.94	27619-97-2	
PFOA*	5.6	1.9	1.6	ng/L	1.94	335-67-1	
PFHxS*	40	1.9	1.6	ng/L	1.94	355-46-4	
PFHxS-LN*	28	1.9	1.6	ng/L	1.94	355-46-4-LN	
PFHxS-BR*	9.7	1.9	1.6	ng/L	1.94	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.94	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.94	39108-34-4	
PFHpS*	1.9	1.9	1.9	ng/L	1.94	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.94	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.94	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.94	2991-50-6	
PFOS*	28	1.9	1.9	ng/L	1.94	1763-23-1	
PFOS-LN*	3.5	1.9	1.9	ng/L	1.94	1763-23-1-LN	
PFOS-BR*	24	1.9	1.9	ng/L	1.94	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.94	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.94	68259-12-1	
PFDODA*	Not detected	1.9	1.6	ng/L	1.94	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.94	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.94	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.94	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.94	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.94	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.94	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.94	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.94	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S15210.04

Sample Tag: OBG-MW-14

Collected Date/Time: 06/24/2020 14:00

Matrix: Groundwater

COC Reference: 125018

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.19/6.81/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 14:14, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	36	10	10	ng/L	2.04	375-22-4	
PFPeA*	5.5	4.1	1.0	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	4.9	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	23	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	3.1	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	45	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	6.5	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	26	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	130	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	110	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	20	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	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*	28	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*	1,300	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	580	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	730	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*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	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	
PFTDA*	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	2.0	2.0	ng/L	2.04	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S15210.05

Sample Tag: Field Blank 062520

Collected Date/Time: 06/25/2020 10:13

Matrix: Water

COC Reference: 12016

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.27/6.65/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 09:08, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	17	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*	Not detected	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	
PFTDA*	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	2.0	2.0	ng/L	1.96	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S15210

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted:06/25/2020 15:45 Login User: REJ

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.8
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ 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: _____



100-445617-100

INVOICE TO

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

Containers & Preservatives

PFAS (ASTM D 7979)

ASTM D7979
low level reporting
limit with estimated
values

please include sample
"Field Blank - 062520"
from lot# 125016
on report. In same
folder
(15210.05)

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL _____ 28	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		



Quality Control Report

Report ID: QC-S15210-01
Generated on 07/20/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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): S15210.01-S15210.05
Project: RACER Coldwater Rd
Submitted Date/Time: 06/25/2020 15:45
Sampled by: Kevin Schneider
P.O. #: 12000277

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-6)
Prep Batch Summary (Page 7)
Internal Standards per Lab Sample (Pages 8-12)
Internal Standards per QC Sample (Pages 13-18)
Batch QC Results (Pages 19-26)

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: S15210.01

Sample Tag: PZ-3

Collected Date/Time: 06/24/2020 15:44

Matrix: Groundwater

COC Reference: 125018

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 13:16	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15210.02

Sample Tag: OBG-MW-26

Collected Date/Time: 06/24/2020 18:20

Matrix: Groundwater

COC Reference: 125018

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/08/20 13:35	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15210.03

Sample Tag: OBG-MW-27

Collected Date/Time: 06/24/2020 10:25

Matrix: Groundwater

COC Reference: 125018

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/08/20 13:55	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15210.04

Sample Tag: OBG-MW-14

Collected Date/Time: 06/24/2020 14:00

Matrix: Groundwater

COC Reference: 125018

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	07/08/20 14:14	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15210.05

Sample Tag: Field Blank 062520

Collected Date/Time: 06/25/2020 10:13

Matrix: Water

COC Reference: 12016

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 09:08	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15210.05	28 PFAs	ASTMD7979-19M	07/02/20 09:08	AK200701

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15210.01	28 PFAs	ASTMD7979-19M	07/08/20 13:16	AK200707B
S15210.02	28 PFAs	ASTMD7979-19M	07/08/20 13:35	AK200707B
S15210.03	28 PFAs	ASTMD7979-19M	07/08/20 13:55	AK200707B
S15210.04	28 PFAs	ASTMD7979-19M	07/08/20 14:14	AK200707B

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15210.01

Sample Tag: PZ-3

Collected Date/Time: 06/24/2020 15:44

Matrix: Groundwater

COC Reference: 125018

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 13:16, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		112.7	50.0	150.0
M2-6:2FTSA		112.8	50.0	150.0
M2-8:2FTSA		109.7	50.0	150.0
M2PFTeDA		77.4	12.0	218.0
M3PFBS		117.2	50.0	150.0
M3PFHxS		120.6	50.0	150.0
M4PFHpA		126.6	50.0	150.0
M5PFHxA		118.3	50.0	150.0
M5PFPeA		116.2	50.0	150.0
M6PFDA		113.0	50.0	150.0
M7PFUnDA		113.5	50.0	150.0
M8FOSA		112.9	50.0	150.0
M8PFOA		123.5	50.0	150.0
M8PFOS		122.8	50.0	150.0
M9-PFNA		125.0	50.0	150.0
MPFBA		117.5	50.0	150.0
MPFDoDA		97.0	50.0	150.0
d3N-MeFOSAA		120.5	50.0	150.0
d5EtFOSAA		119.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15210.02

Sample Tag: OBG-MW-26

Collected Date/Time: 06/24/2020 18:20

Matrix: Groundwater

COC Reference: 125018

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 13:35, Matrix: WW, Dilution: 1.9

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		108.1	50.0	150.0
M2-6:2FTSA		104.9	50.0	150.0
M2-8:2FTSA		96.1	50.0	150.0
M2PFTeDA		95.7	12.0	218.0
M3PFBS		111.8	50.0	150.0
M3PFHxS		119.1	50.0	150.0
M4PFHpA		113.9	50.0	150.0
M5PFHxA		110.2	50.0	150.0
M5PFPeA		111.4	50.0	150.0
M6PFDA		114.5	50.0	150.0
M7PFUnDA		106.6	50.0	150.0
M8FOSA		111.1	50.0	150.0
M8PFOA		120.4	50.0	150.0
M8PFOS		118.0	50.0	150.0
M9-PFNA		115.3	50.0	150.0
MPFBA		111.5	50.0	150.0
MPFDoDA		105.2	50.0	150.0
d3N-MeFOSAA		107.2	50.0	150.0
d5EtFOSAA		124.9	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15210.03

Sample Tag: OBG-MW-27

Collected Date/Time: 06/24/2020 10:25

Matrix: Groundwater

COC Reference: 125018

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 13:55, Matrix: WW, Dilution: 1.94

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		113.1	50.0	150.0
M2-6:2FTSA		111.2	50.0	150.0
M2-8:2FTSA		112.1	50.0	150.0
M2PFTeDA		78.4	12.0	218.0
M3PFBS		121.9	50.0	150.0
M3PFHxS		120.9	50.0	150.0
M4PFHpA		114.9	50.0	150.0
M5PFHxA		116.2	50.0	150.0
M5PFPeA		117.5	50.0	150.0
M6PFDA		111.7	50.0	150.0
M7PFUnDA		105.7	50.0	150.0
M8FOSA		114.7	50.0	150.0
M8PFOA		123.9	50.0	150.0
M8PFOS		121.1	50.0	150.0
M9-PFNA		121.5	50.0	150.0
MPFBA		119.1	50.0	150.0
MPFDoDA		97.9	50.0	150.0
d3N-MeFOSAA		117.8	50.0	150.0
d5EtFOSAA		118.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15210.04

Sample Tag: OBG-MW-14

Collected Date/Time: 06/24/2020 14:00

Matrix: Groundwater

COC Reference: 125018

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 14:14, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.5	50.0	150.0
M2-6:2FTSA		107.0	50.0	150.0
M2-8:2FTSA		91.3	50.0	150.0
M2PFTeDA		115.1	12.0	218.0
M3PFBS		116.0	50.0	150.0
M3PFHxS		124.4	50.0	150.0
M4PFHpA		124.1	50.0	150.0
M5PFHxA		114.1	50.0	150.0
M5PFPeA		114.3	50.0	150.0
M6PFDA		114.4	50.0	150.0
M7PFUnDA		115.7	50.0	150.0
M8FOSA		112.4	50.0	150.0
M8PFOA		120.2	50.0	150.0
M8PFOS		118.9	50.0	150.0
M9-PFNA		118.2	50.0	150.0
MPFBA		114.3	50.0	150.0
MPFDoDA		113.9	50.0	150.0
d3N-MeFOSAA		128.2	50.0	150.0
d5EtFOSAA		109.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15210.05

Sample Tag: Field Blank 062520

Collected Date/Time: 06/25/2020 10:13

Matrix: Water

COC Reference: 12016

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 09:08, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		146.4	50.0	150.0
M2-6:2FTSA		142.5	50.0	150.0
M2-8:2FTSA		129.2	50.0	150.0
M2PFTeDA		107.8	12.0	218.0
M3PFBS		117.6	50.0	150.0
M3PFHxS		123.2	50.0	150.0
M4PFHpA		119.2	50.0	150.0
M5PFHxA		115.9	50.0	150.0
M5PFPeA		111.9	50.0	150.0
M6PFDA		121.4	50.0	150.0
M7PFUnDA		112.1	50.0	150.0
M8FOSA		119.7	50.0	150.0
M8PFOA		123.2	50.0	150.0
M8PFOS		115.4	50.0	150.0
M9-PFNA		119.4	50.0	150.0
MPFBA		111.6	50.0	150.0
MPFDoDA		118.9	50.0	150.0
d3N-MeFOSAA		111.8	50.0	150.0
d5EtFOSAA		116.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Blank (BLK)

Lab Sample ID: AK200701.BLK200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:41, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		141.8	50.0	150.0
M2-6:2FTSA		136.7	50.0	150.0
M2-8:2FTSA		122.5	50.0	150.0
M2PFTeDA		120.2	12.0	218.0
M3PFBS		115.2	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		114.6	50.0	150.0
M5PFHxA		108.6	50.0	150.0
M5PFPeA		111.1	50.0	150.0
M6PFDA		113.6	50.0	150.0
M7PFUnDA		104.1	50.0	150.0
M8FOSA		120.6	50.0	150.0
M8PFOA		114.8	50.0	150.0
M8PFOS		114.3	50.0	150.0
M9-PFNA		112.0	50.0	150.0
MPFBA		108.7	50.0	150.0
MPFDoDA		109.6	50.0	150.0
d3N-MeFOSAA		100.3	50.0	150.0
d5EtFOSAA		124.3	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		129.6	50.0	150.0
M2-6:2FTSA		127.9	50.0	150.0
M2-8:2FTSA		121.1	50.0	150.0
M2PFTeDA		133.9	12.0	218.0
M3PFBS		109.1	50.0	150.0
M3PFHxS		112.4	50.0	150.0
M4PFHpA		105.5	50.0	150.0
M5PFHxA		106.8	50.0	150.0
M5PFPeA		107.5	50.0	150.0
M6PFDA		115.4	50.0	150.0
M7PFUnDA		103.1	50.0	150.0
M8FOSA		113.3	50.0	150.0
M8PFOA		111.2	50.0	150.0
M8PFOS		118.2	50.0	150.0
M9-PFNA		108.1	50.0	150.0
MPFBA		104.2	50.0	150.0
MPFDoDA		110.3	50.0	150.0
d3N-MeFOSAA		114.4	50.0	150.0
d5EtFOSAA		112.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		128.4	50.0	150.0
M2-6:2FTSA		126.1	50.0	150.0
M2-8:2FTSA		127.4	50.0	150.0
M2PFTeDA		141.0	12.0	218.0
M3PFBS		105.9	50.0	150.0
M3PFHxS		109.6	50.0	150.0
M4PFHpA		107.9	50.0	150.0
M5PFHxA		105.4	50.0	150.0
M5PFPeA		102.6	50.0	150.0
M6PFDA		105.9	50.0	150.0
M7PFUnDA		106.9	50.0	150.0
M8FOSA		115.0	50.0	150.0
M8PFOA		105.8	50.0	150.0
M8PFOS		110.1	50.0	150.0
M9-PFNA		110.7	50.0	150.0
MPFBA		101.1	50.0	150.0
MPFDoDA		124.4	50.0	150.0
d3N-MeFOSAA		113.8	50.0	150.0
d5EtFOSAA		110.1	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200701.1517201M, Parent Sample ID: S15172.01

Run in Batch: AK200701, Run Date: 07/02/2020 01:59, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		143.7	50.0	150.0
M2-6:2FTSA		142.1	50.0	150.0
M2-8:2FTSA		125.3	50.0	150.0
M2PFTeDA		155.7	12.0	218.0
M3PFBS		110.5	50.0	150.0
M3PFHxS		108.0	50.0	150.0
M4PFHpA		110.4	50.0	150.0
M5PFHxA		111.4	50.0	150.0
M5PFPeA		107.3	50.0	150.0
M6PFDA		116.6	50.0	150.0
M7PFUnDA		114.6	50.0	150.0
M8FOSA		122.2	50.0	150.0
M8PFOA		111.7	50.0	150.0
M8PFOS		108.8	50.0	150.0
M9-PFNA		113.6	50.0	150.0
MPFBA		107.6	50.0	150.0
MPFDoDA		129.3	50.0	150.0
d3N-MeFOSAA		128.8	50.0	150.0
d5EtFOSAA		115.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		138.8	50.0	150.0
M2-6:2FTSA		137.2	50.0	150.0
M2-8:2FTSA		129.8	50.0	150.0
M2PFTeDA		153.5	12.0	218.0
M3PFBS		112.7	50.0	150.0
M3PFHxS		105.2	50.0	150.0
M4PFHpA		109.6	50.0	150.0
M5PFHxA		107.1	50.0	150.0
M5PFPeA		104.2	50.0	150.0
M6PFDA		117.2	50.0	150.0
M7PFUnDA		104.7	50.0	150.0
M8FOSA		117.2	50.0	150.0
M8PFOA		113.7	50.0	150.0
M8PFOS		109.2	50.0	150.0
M9-PFNA		112.6	50.0	150.0
MPFBA		106.5	50.0	150.0
MPFDoDA		129.0	50.0	150.0
d3N-MeFOSAA		106.9	50.0	150.0
d5EtFOSAA		118.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Blank (BLK)

Lab Sample ID: AK200707B.BLK200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:25, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		112.2	50.0	150.0
M2-6:2FTSA		112.0	50.0	150.0
M2-8:2FTSA		125.1	50.0	150.0
M2PFTeDA		143.1	12.0	218.0
M3PFBS		115.4	50.0	150.0
M3PFHxS		128.1	50.0	150.0
M4PFHpA		123.6	50.0	150.0
M5PFHxA		111.9	50.0	150.0
M5PFPeA		114.8	50.0	150.0
M6PFDA		123.0	50.0	150.0
M7PFUnDA		116.0	50.0	150.0
M8FOSA		117.9	50.0	150.0
M8PFOA		121.2	50.0	150.0
M8PFOS		131.0	50.0	150.0
M9-PFNA		114.0	50.0	150.0
MPFBA		114.3	50.0	150.0
MPFDoDA		130.2	50.0	150.0
d3N-MeFOSAA		125.3	50.0	150.0
d5EtFOSAA		121.8	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		111.0	50.0	150.0
M2-6:2FTSA		108.7	50.0	150.0
M2-8:2FTSA		104.7	50.0	150.0
M2PFTeDA		135.8	12.0	218.0
M3PFBS		111.7	50.0	150.0
M3PFHxS		118.5	50.0	150.0
M4PFHpA		114.6	50.0	150.0
M5PFHxA		112.6	50.0	150.0
M5PFPeA		112.5	50.0	150.0
M6PFDA		114.7	50.0	150.0
M7PFUnDA		115.9	50.0	150.0
M8FOSA		111.4	50.0	150.0
M8PFOA		118.5	50.0	150.0
M8PFOS		118.1	50.0	150.0
M9-PFNA		123.6	50.0	150.0
MPFBA		110.1	50.0	150.0
MPFDoDA		117.3	50.0	150.0
d3N-MeFOSAA		114.1	50.0	150.0
d5EtFOSAA		122.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.8	50.0	150.0
M2-6:2FTSA		102.2	50.0	150.0
M2-8:2FTSA		112.1	50.0	150.0
M2PFTeDA		129.3	12.0	218.0
M3PFBS		113.6	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		118.6	50.0	150.0
M5PFHxA		105.1	50.0	150.0
M5PFPeA		109.0	50.0	150.0
M6PFDA		112.1	50.0	150.0
M7PFUnDA		124.3	50.0	150.0
M8FOSA		108.8	50.0	150.0
M8PFOA		121.7	50.0	150.0
M8PFOS		107.4	50.0	150.0
M9-PFNA		122.4	50.0	150.0
MPFBA		108.1	50.0	150.0
MPFDoDA		115.7	50.0	150.0
d3N-MeFOSAA		106.6	50.0	150.0
d5EtFOSAA		113.3	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200707B.1520802M, Parent Sample ID: S15208.02

Run in Batch: AK200707B, Run Date: 07/08/2020 10:40, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.89

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		114.8	50.0	150.0
M2-6:2FTSA		113.7	50.0	150.0
M2-8:2FTSA		117.2	50.0	150.0
M2PFTeDA		128.0	12.0	218.0
M3PFBS		122.6	50.0	150.0
M3PFHxS		123.6	50.0	150.0
M4PFHpA		121.0	50.0	150.0
M5PFHxA		121.9	50.0	150.0
M5PFPeA		121.1	50.0	150.0
M6PFDA		113.2	50.0	150.0
M7PFUnDA		123.5	50.0	150.0
M8FOSA		120.3	50.0	150.0
M8PFOA		118.6	50.0	150.0
M8PFOS		119.6	50.0	150.0
M9-PFNA		126.1	50.0	150.0
MPFBA		120.1	50.0	150.0
MPFDoDA		120.7	50.0	150.0
d3N-MeFOSAA		121.1	50.0	150.0
d5EtFOSAA		122.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		106.8	50.0	150.0
M2-6:2FTSA		105.5	50.0	150.0
M2-8:2FTSA		104.4	50.0	150.0
M2PFTeDA		167.0	12.0	218.0
M3PFBS		116.0	50.0	150.0
M3PFHxS		115.0	50.0	150.0
M4PFHpA		114.5	50.0	150.0
M5PFHxA		117.9	50.0	150.0
M5PFPeA		112.3	50.0	150.0
M6PFDA		122.3	50.0	150.0
M7PFUnDA		123.4	50.0	150.0
M8FOSA		114.3	50.0	150.0
M8PFOA		121.4	50.0	150.0
M8PFOS		119.8	50.0	150.0
M9-PFNA		124.6	50.0	150.0
MPFBA		112.7	50.0	150.0
MPFDoDA		126.6	50.0	150.0
d3N-MeFOSAA		124.3	50.0	150.0
d5EtFOSAA		115.2	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Blank (BLK)

Lab Sample ID: AK200701.BLK200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:41, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		90.2	70.0	130.0
PFPeA		94.9	70.0	130.0
4:2 FTSA		111.0	70.0	130.0
PFHxA		97.7	70.0	130.0
PFBS		101.0	70.0	130.0
HFPO-DA		98.8	70.0	130.0
PFFHpA		92.5	70.0	130.0
ADONA		103.0	70.0	130.0
PFPeS		103.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		96.7	70.0	130.0
PFOA		99.7	70.0	130.0
PFHxS		94.2	70.0	130.0
PFNA		111.0	70.0	130.0
8:2 FTSA		89.1	70.0	130.0
PFHpS		94.7	70.0	130.0
N-MeFOSAA		93.4	70.0	130.0
PFDA		96.1	70.0	130.0
EtFOSAA		103.0	70.0	130.0
PFOS		97.0	70.0	130.0
PFUnDA		102.0	70.0	130.0
9CL-PF3ONS		97.8	70.0	130.0
PFNS		105.0	70.0	130.0
PFDODA		104.0	70.0	130.0
PFDS		105.0	70.0	130.0
PFTTrDA		116.0	70.0	130.0
FOSA		107.0	70.0	130.0
11CL-PF3OUdS		107.0	70.0	130.0
PFTeDA		96.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		94.2	70.0	130.0	4.3	30.0
PFPeA		100.0	70.0	130.0	5.2	30.0
4:2 FTSA		112.0	70.0	130.0	0.9	30.0
PFHxA		101.0	70.0	130.0	3.3	30.0
PFBS		109.0	70.0	130.0	7.6	30.0
HFPO-DA		104.0	70.0	130.0	5.1	30.0
PFHpA		91.6	70.0	130.0	1.0	30.0
ADONA		109.0	70.0	130.0	5.7	30.0
PFPeS		102.0	70.0	130.0	1.0	30.0
6:2 FTSA		103.0	70.0	130.0	6.3	30.0
PFOA		107.0	70.0	130.0	7.1	30.0
PFHxS		108.0	70.0	130.0	13.6	30.0
PFNA		110.0	70.0	130.0	0.9	30.0
8:2 FTSA		80.1	70.0	130.0	10.6	30.0
PFHpS		102.0	70.0	130.0	7.4	30.0
N-MeFOSAA		104.0	70.0	130.0	10.7	30.0
PFDA		109.0	70.0	130.0	12.6	30.0
EtFOSAA		96.8	70.0	130.0	6.2	30.0
PFOS		104.0	70.0	130.0	7.0	30.0
PFUnDA		94.9	70.0	130.0	7.2	30.0
9CL-PF3ONS		102.0	70.0	130.0	4.2	30.0
PFNS		120.0	70.0	130.0	13.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PfDoDA		95.2	70.0	130.0	8.8	30.0
PFDS		118.0	70.0	130.0	11.7	30.0
PfTrDA		109.0	70.0	130.0	6.2	30.0
FOSA		106.0	70.0	130.0	0.9	30.0
11CL-PF3OUdS		123.0	70.0	130.0	13.9	30.0
PFTeDA		96.9	70.0	130.0	0.1	30.0

Matrix Spike (MS)

Lab Sample ID: AK200701.1517201M, Parent Sample ID: S15172.01

Run in Batch: AK200701, Run Date: 07/02/2020 01:59, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1.93

Analyte	Flags	% Rec	LCL	UCL
PFBA		95.3	70.0	130.0
PFPeA		99.5	70.0	130.0
4:2 FTSA		99.5	70.0	130.0
PFHxA		103.6	70.0	130.0
PFBS		103.6	70.0	130.0
PFHpA		96.4	70.0	130.0
PFPeS		103.6	70.0	130.0
6:2 FTSA		97.4	70.0	130.0
PFOA		114.0	70.0	130.0
PFHxS		103.6	70.0	130.0
PFNA		114.0	70.0	130.0
8:2 FTSA		88.1	70.0	130.0
PFHpS		95.3	70.0	130.0
PFDA		100.5	70.0	130.0
N-MeFOSAA		103.6	70.0	130.0
EtFOSAA		103.6	70.0	130.0
PFOS		103.6	70.0	130.0
PFUnDA		92.2	70.0	130.0
PFNS		124.4	70.0	130.0
PfDoDA		93.3	70.0	130.0
PFDS		124.4	70.0	130.0
PfTrDA		114.0	70.0	130.0
FOSA		100.5	70.0	130.0
PFTeDA		100.5	70.0	130.0
11CL-PF3OUdS		124.4	70.0	130.0
9CL-PF3ONS		124.4	70.0	130.0
ADONA		114.0	70.0	130.0
HFPO-DA		96.4	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
PFBA	*	200.0	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Blank (BLK)

Lab Sample ID: AK200707B.BLK200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:25, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		110.0	70.0	130.0
PFPeA		108.0	70.0	130.0
4:2 FTSA		104.0	70.0	130.0
PFHxA		103.0	70.0	130.0
PFBS		108.0	70.0	130.0
HFPO-DA		99.5	70.0	130.0
PFFHpA		101.0	70.0	130.0
PFPeS		112.0	70.0	130.0
ADONA		95.6	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		107.0	70.0	130.0
PFOA		101.0	70.0	130.0
PFHxS		93.1	70.0	130.0
PFNA		107.0	70.0	130.0
8:2 FTSA		102.0	70.0	130.0
PFHpS		99.6	70.0	130.0
N-MeFOSAA		108.0	70.0	130.0
PFDA		113.0	70.0	130.0
EtFOSAA		97.3	70.0	130.0
PFOS		107.0	70.0	130.0
PFUnDA		105.0	70.0	130.0
9CL-PF3ONS		107.0	70.0	130.0
PFNS		109.0	70.0	130.0
PFDODA		104.0	70.0	130.0
PFDS		119.0	70.0	130.0
PFTTrDA		107.0	70.0	130.0
FOSA		113.0	70.0	130.0
11CL-PF3OUdS		111.0	70.0	130.0
PFTeDA		115.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		110.0	70.0	130.0	0.0	30.0
PFPeA		107.0	70.0	130.0	0.9	30.0
4:2 FTSA		106.0	70.0	130.0	1.9	30.0
PFHxA		109.0	70.0	130.0	5.7	30.0
PFBS		102.0	70.0	130.0	5.7	30.0
HFPO-DA		99.6	70.0	130.0	0.1	30.0
PFHpA		101.0	70.0	130.0	0.0	30.0
PFPeS		112.0	70.0	130.0	0.0	30.0
ADONA		88.3	70.0	130.0	7.9	30.0
6:2 FTSA		111.0	70.0	130.0	3.7	30.0
PFOA		99.1	70.0	130.0	1.9	30.0
PFHxS		101.0	70.0	130.0	8.1	30.0
PFNA		104.0	70.0	130.0	2.8	30.0
8:2 FTSA		91.9	70.0	130.0	10.4	30.0
PFHpS		99.3	70.0	130.0	0.3	30.0
N-MeFOSAA		117.0	70.0	130.0	8.0	30.0
PFDA		118.0	70.0	130.0	4.3	30.0
EtFOSAA		101.0	70.0	130.0	3.7	30.0
PFOS		113.0	70.0	130.0	5.5	30.0
PFUnDA		95.2	70.0	130.0	9.8	30.0
9CL-PF3ONS		120.0	70.0	130.0	11.5	30.0
PFNS		110.0	70.0	130.0	0.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PfDoDA		107.0	70.0	130.0	2.8	30.0
PFDS		113.0	70.0	130.0	5.2	30.0
PfTrDA		109.0	70.0	130.0	1.9	30.0
FOSA		120.0	70.0	130.0	6.0	30.0
11CL-PF3OUdS		120.0	70.0	130.0	7.8	30.0
PFTeDA		117.0	70.0	130.0	1.7	30.0

Matrix Spike (MS)

Lab Sample ID: AK200707B.1520802M, Parent Sample ID: S15208.02

Run in Batch: AK200707B, Run Date: 07/08/2020 10:40, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.89

Analyte	Flags	% Rec	LCL	UCL
PFBA		101.6	70.0	130.0
PFPeA		100.5	70.0	130.0
4:2 FTSA		94.2	70.0	130.0
PFHxA		100.5	70.0	130.0
PFBS		101.6	70.0	130.0
PFHpA		103.7	70.0	130.0
PFPeS		104.8	70.0	130.0
6:2 FTSA		103.7	70.0	130.0
PFOA		116.4	70.0	130.0
PFHxS		96.3	70.0	130.0
PFNA		116.4	70.0	130.0
8:2 FTSA		80.4	70.0	130.0
PFHpS		87.8	70.0	130.0
PFDA		116.4	70.0	130.0
N-MeFOSAA		101.6	70.0	130.0
EtFOSAA		94.2	70.0	130.0
PFOS		116.4	70.0	130.0
PFUnDA		100.5	70.0	130.0
PFNS		98.4	70.0	130.0
PfDoDA		116.4	70.0	130.0
PFDS		105.8	70.0	130.0
PfTrDA		102.6	70.0	130.0
FOSA		105.8	70.0	130.0
PFTeDA		105.8	70.0	130.0
11CL-PF3OUdS		116.4	70.0	130.0
9CL-PF3ONS		116.4	70.0	130.0
ADONA		99.5	70.0	130.0
HFPO-DA		92.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Analyte	Flags	RPD	RPD CL
PFBA		10.5	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0



100-445671-100

INVOICE TO

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



Analytical Laboratory Report

Report ID: S15209.01(01)
Generated on 07/17/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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

Report produced by

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2680 East Lansing Drive
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Phone: (517) 332-0167 FAX: (517) 332-6333

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

Report Summary

Lab Sample ID(s): S15209.01-S15209.04
Project: RACER Coldwater Rd
Collected Date(s): 06/25/2020
Submitted Date/Time: 06/25/2020 15:45
Sampled by: Kevin Schneider
P.O. #: 12000277

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
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)

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
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-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S15209.01	Vault-A	Wastewater	06/25/20 09:32
S15209.02	Vault-C	Wastewater	06/25/20 09:45
S15209.03	Vault-E	Wastewater	06/25/20 09:58
S15209.04	Field Blank 062520	Water	06/25/20 10:13



Analytical Laboratory Report

Lab Sample ID: S15209.01

Sample Tag: Vault-A

Collected Date/Time: 06/25/2020 09:32

Matrix: Wastewater

COC Reference: 125017

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.32/6.85/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 12:17, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	30	10	10	ng/L	2.01	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2.01	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.01	757124-72-4	
PFHxA*	2.4	2.0	1.4	ng/L	2.01	307-24-4	
PFBS*	5.4	2.0	1.4	ng/L	2.01	375-73-5	
PFHpA*	1.7	2.0	1.4	ng/L	2.01	375-85-9	J
PFPeS*	6.8	2.0	1.8	ng/L	2.01	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.01	27619-97-2	
PFOA*	9.7	2.0	1.6	ng/L	2.01	335-67-1	
PFHxS*	21	2.0	1.6	ng/L	2.01	355-46-4	
PFHxS-LN*	17	2.0	1.6	ng/L	2.01	355-46-4-LN	
PFHxS-BR*	3.1	2.0	1.6	ng/L	2.01	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.01	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.01	39108-34-4	
PFHpS*	6.2	2.0	2.0	ng/L	2.01	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.01	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.01	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.01	2991-50-6	
PFOS*	430	2.0	2.0	ng/L	2.01	1763-23-1	
PFOS-LN*	220	2.0	2.0	ng/L	2.01	1763-23-1-LN	
PFOS-BR*	220	2.0	2.0	ng/L	2.01	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.01	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.01	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.01	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.01	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.01	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.01	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.01	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.01	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.01	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.01	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.01	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S15209.02

Sample Tag: Vault-C

Collected Date/Time: 06/25/2020 09:45

Matrix: Wastewater

COC Reference: 125017

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.37/6.84/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 12:37, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	34	10.0	10.0	ng/L	1.99	375-22-4	
PFPeA*	Not detected	4.0	1.00	ng/L	1.99	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.99	757124-72-4	
PFHxA*	1.9	2.0	1.4	ng/L	1.99	307-24-4	J
PFBS*	5.5	2.0	1.4	ng/L	1.99	375-73-5	
PFHpA*	1.5	2.0	1.4	ng/L	1.99	375-85-9	J
PFPeS*	6.1	2.0	1.8	ng/L	1.99	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.99	27619-97-2	
PFOA*	9.0	2.0	1.6	ng/L	1.99	335-67-1	
PFHxS*	17	2.0	1.6	ng/L	1.99	355-46-4	
PFHxS-LN*	13	2.0	1.6	ng/L	1.99	355-46-4-LN	
PFHxS-BR*	3.5	2.0	1.6	ng/L	1.99	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.99	375-95-1	
8:2 FTSA*	Not detected	2.0	1.00	ng/L	1.99	39108-34-4	
PFHpS*	4.0	2.0	2.0	ng/L	1.99	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.99	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.99	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.99	2991-50-6	
PFOS*	430	2.0	2.0	ng/L	1.99	1763-23-1	
PFOS-LN*	240	2.0	2.0	ng/L	1.99	1763-23-1-LN	
PFOS-BR*	180	2.0	2.0	ng/L	1.99	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.99	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.99	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.99	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.99	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.99	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.99	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.99	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.99	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.99	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.99	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.99	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S15209.03

Sample Tag: Vault-E

Collected Date/Time: 06/25/2020 09:58

Matrix: Wastewater

COC Reference: 125017

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.48/6.90/11	ASTMD7979-19M	07/07/20 11:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/08/20 12:56, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	24	9.9	9.9	ng/L	1.97	375-22-4	
PFPeA*	2.6	3.9	0.99	ng/L	1.97	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.97	757124-72-4	
PFHxA*	2.5	2.0	1.4	ng/L	1.97	307-24-4	
PFBS*	7.6	2.0	1.4	ng/L	1.97	375-73-5	
PFHpA*	2.6	2.0	1.4	ng/L	1.97	375-85-9	
PFPeS*	12	2.0	1.8	ng/L	1.97	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.97	27619-97-2	
PFOA*	15	2.0	1.6	ng/L	1.97	335-67-1	
PFHxS*	33	2.0	1.6	ng/L	1.97	355-46-4	
PFHxS-LN*	28	2.0	1.6	ng/L	1.97	355-46-4-LN	
PFHxS-BR*	5.8	2.0	1.6	ng/L	1.97	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.97	375-95-1	
8:2 FTSA*	Not detected	2.0	0.99	ng/L	1.97	39108-34-4	
PFHpS*	9.5	2.0	2.0	ng/L	1.97	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.97	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.97	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.97	2991-50-6	
PFOS*	480	2.0	1.9	ng/L	1.97	1763-23-1	
PFOS-LN*	240	2.0	1.9	ng/L	1.97	1763-23-1-LN	
PFOS-BR*	240	2.0	1.9	ng/L	1.97	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.97	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.97	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.97	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.97	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	1.97	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.97	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.97	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.97	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.97	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.97	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.97	13252-13-6	

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



Analytical Laboratory Report

Lab Sample ID: S15209.04

Sample Tag: Field Blank 062520

Collected Date/Time: 06/25/2020 10:13

Matrix: Water

COC Reference: 125016

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.27/6.75/11	ASTMD7979-19M	07/01/20 15:45	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 07/02/20 09:08, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	18	10.0	10.0	ng/L	1.99	375-22-4	
PFPeA*	Not detected	4.0	1.00	ng/L	1.99	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.99	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.99	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.99	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.99	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.99	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.99	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.99	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.99	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.99	375-95-1	
8:2 FTSA*	Not detected	2.0	1.00	ng/L	1.99	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.99	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.99	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.99	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.99	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.99	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.99	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.99	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.99	335-77-3	
PFTDA*	Not detected	2.0	1.2	ng/L	1.99	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.99	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.99	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.99	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.99	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.99	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.99	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S15209

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Coldwater Rd

Submitted:06/25/2020 15:45 Login User: MMC

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.8
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME Clifford Yantz			
COMPANY O'Brien & Gere, A Ramboll Company			
ADDRESS 2260 East Saginaw			
CITY East Lansing			STATE MI
PHONE NO. 313-333-0211			FAX NO. 313-333-0211
E-MAIL ADDRESS clifford.yantz@obg.com			QUOTE NO. 48823

CHAIN OF CUSTODY RECORD

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

INVOICE TO

PROJECT NO./NAME RACER Coldwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME Kevin Schneider <i>[Signature]</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

Containers & Preservatives

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York☐ Other

Special Instructions

[illegible]

RELINQUISHED BY:	Will Loughner <i>Will</i>	☐ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			6/25/20	1545
RECEIVED BY:	<i>M. Chilcote</i>		DATE	TIME
SIGNATURE/ORGANIZATION			6/25/2020	1545
RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL <u>2.8</u>
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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

Rev. 5.18.12



Quality Control Report

Report ID: QC-S15209-01
Generated on 07/20/2020

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
2260 East Saginaw Street
East Lansing, MI 48823

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): S15209.01-S15209.04
Project: RACER Coldwater Rd
Submitted Date/Time: 06/25/2020 15:45
Sampled by: Kevin Schneider
P.O. #: 12000277

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 11-16)
Batch QC Results (Pages 17-24)

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: S15209.01

Sample Tag: Vault-A

Collected Date/Time: 06/25/2020 09:32

Matrix: Wastewater

COC Reference: 125017

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 12:17	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15209.02

Sample Tag: Vault-C

Collected Date/Time: 06/25/2020 09:45

Matrix: Wastewater

COC Reference: 125017

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 12:37	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15209.03

Sample Tag: Vault-E

Collected Date/Time: 06/25/2020 09:58

Matrix: Wastewater

COC Reference: 125017

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/08/20 12:56	AK200707B	PF200707W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Analysis Summary

Lab Sample ID: S15209.04

Sample Tag: Field Blank 062520

Collected Date/Time: 06/25/2020 10:13

Matrix: Water

COC Reference: 125016

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Organics - Volatiles</i>						
28 PFAs	ASTMD7979-19M	07/02/20 09:08	AK200701	PF200701W1	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15209.04	28 PFAs	ASTMD7979-19M	07/02/20 09:08	AK200701

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S15209.01	28 PFAs	ASTMD7979-19M	07/08/20 12:17	AK200707B
S15209.02	28 PFAs	ASTMD7979-19M	07/08/20 12:37	AK200707B
S15209.03	28 PFAs	ASTMD7979-19M	07/08/20 12:56	AK200707B

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15209.01

Sample Tag: Vault-A

Collected Date/Time: 06/25/2020 09:32

Matrix: Wastewater

COC Reference: 125017

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 12:17, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		114.8	50.0	150.0
M2-6:2FTSA		103.7	50.0	150.0
M2-8:2FTSA		108.8	50.0	150.0
M2PFTeDA		135.6	12.0	218.0
M3PFBS		112.5	50.0	150.0
M3PFHxS		114.7	50.0	150.0
M4PFHpA		111.5	50.0	150.0
M5PFHxA		115.9	50.0	150.0
M5PFPeA		111.1	50.0	150.0
M6PFDA		112.8	50.0	150.0
M7PFUnDA		111.3	50.0	150.0
M8FOSA		109.7	50.0	150.0
M8PFOA		111.6	50.0	150.0
M8PFOS		121.6	50.0	150.0
M9-PFNA		118.9	50.0	150.0
MPFBA		112.6	50.0	150.0
MPFDoDA		126.1	50.0	150.0
d3N-MeFOSAA		108.7	50.0	150.0
d5EtFOSAA		111.0	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15209.02

Sample Tag: Vault-C

Collected Date/Time: 06/25/2020 09:45

Matrix: Wastewater

COC Reference: 125017

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 12:37, Matrix: WW, Dilution: 1.99

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		101.3	50.0	150.0
M2-6:2FTSA		104.3	50.0	150.0
M2-8:2FTSA		95.7	50.0	150.0
M2PFTeDA		135.1	12.0	218.0
M3PFBS		109.4	50.0	150.0
M3PFHxS		115.5	50.0	150.0
M4PFHpA		119.1	50.0	150.0
M5PFHxA		110.8	50.0	150.0
M5PFPeA		111.9	50.0	150.0
M6PFDA		109.9	50.0	150.0
M7PFUnDA		114.1	50.0	150.0
M8FOSA		109.2	50.0	150.0
M8PFOA		114.2	50.0	150.0
M8PFOS		109.9	50.0	150.0
M9-PFNA		117.9	50.0	150.0
MPFBA		112.8	50.0	150.0
MPFDoDA		116.3	50.0	150.0
d3N-MeFOSAA		113.7	50.0	150.0
d5EtFOSAA		114.5	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15209.03

Sample Tag: Vault-E

Collected Date/Time: 06/25/2020 09:58

Matrix: Wastewater

COC Reference: 125017

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200707B, Run Date: 07/08/2020 12:56, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.1	50.0	150.0
M2-6:2FTSA		107.4	50.0	150.0
M2-8:2FTSA		99.0	50.0	150.0
M2PFTeDA		126.5	12.0	218.0
M3PFBS		116.9	50.0	150.0
M3PFHxS		113.5	50.0	150.0
M4PFHpA		114.8	50.0	150.0
M5PFHxA		118.2	50.0	150.0
M5PFPeA		111.0	50.0	150.0
M6PFDA		115.0	50.0	150.0
M7PFUnDA		113.9	50.0	150.0
M8FOSA		110.2	50.0	150.0
M8PFOA		124.6	50.0	150.0
M8PFOS		124.1	50.0	150.0
M9-PFNA		118.4	50.0	150.0
MPFBA		112.9	50.0	150.0
MPFDoDA		113.1	50.0	150.0
d3N-MeFOSAA		111.7	50.0	150.0
d5EtFOSAA		112.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S15209.04

Sample Tag: Field Blank 062520

Collected Date/Time: 06/25/2020 10:13

Matrix: Water

COC Reference: 125016

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200701, Run Date: 07/02/2020 09:08, Matrix: WW, Dilution: 1.99

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		146.4	50.0	150.0
M2-6:2FTSA		142.5	50.0	150.0
M2-8:2FTSA		129.2	50.0	150.0
M2PFTeDA		107.8	12.0	218.0
M3PFBS		117.6	50.0	150.0
M3PFHxS		123.2	50.0	150.0
M4PFHpA		119.2	50.0	150.0
M5PFHxA		115.9	50.0	150.0
M5PFPeA		111.9	50.0	150.0
M6PFDA		121.4	50.0	150.0
M7PFUnDA		112.1	50.0	150.0
M8FOSA		119.7	50.0	150.0
M8PFOA		123.2	50.0	150.0
M8PFOS		115.4	50.0	150.0
M9-PFNA		119.4	50.0	150.0
MPFBA		111.6	50.0	150.0
MPFDoDA		118.9	50.0	150.0
d3N-MeFOSAA		111.8	50.0	150.0
d5EtFOSAA		116.1	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Blank (BLK)

Lab Sample ID: AK200701.BLK200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:41, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		141.8	50.0	150.0
M2-6:2FTSA		136.7	50.0	150.0
M2-8:2FTSA		122.5	50.0	150.0
M2PFTeDA		120.2	12.0	218.0
M3PFBS		115.2	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		114.6	50.0	150.0
M5PFHxA		108.6	50.0	150.0
M5PFPeA		111.1	50.0	150.0
M6PFDA		113.6	50.0	150.0
M7PFUnDA		104.1	50.0	150.0
M8FOSA		120.6	50.0	150.0
M8PFOA		114.8	50.0	150.0
M8PFOS		114.3	50.0	150.0
M9-PFNA		112.0	50.0	150.0
MPFBA		108.7	50.0	150.0
MPFDoDA		109.6	50.0	150.0
d3N-MeFOSAA		100.3	50.0	150.0
d5EtFOSAA		124.3	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		129.6	50.0	150.0
M2-6:2FTSA		127.9	50.0	150.0
M2-8:2FTSA		121.1	50.0	150.0
M2PFTeDA		133.9	12.0	218.0
M3PFBS		109.1	50.0	150.0
M3PFHxS		112.4	50.0	150.0
M4PFHpA		105.5	50.0	150.0
M5PFHxA		106.8	50.0	150.0
M5PFPeA		107.5	50.0	150.0
M6PFDA		115.4	50.0	150.0
M7PFUnDA		103.1	50.0	150.0
M8FOSA		113.3	50.0	150.0
M8PFOA		111.2	50.0	150.0
M8PFOS		118.2	50.0	150.0
M9-PFNA		108.1	50.0	150.0
MPFBA		104.2	50.0	150.0
MPFDoDA		110.3	50.0	150.0
d3N-MeFOSAA		114.4	50.0	150.0
d5EtFOSAA		112.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		128.4	50.0	150.0
M2-6:2FTSA		126.1	50.0	150.0
M2-8:2FTSA		127.4	50.0	150.0
M2PFTeDA		141.0	12.0	218.0
M3PFBS		105.9	50.0	150.0
M3PFHxS		109.6	50.0	150.0
M4PFHpA		107.9	50.0	150.0
M5PFHxA		105.4	50.0	150.0
M5PFPeA		102.6	50.0	150.0
M6PFDA		105.9	50.0	150.0
M7PFUnDA		106.9	50.0	150.0
M8FOSA		115.0	50.0	150.0
M8PFOA		105.8	50.0	150.0
M8PFOS		110.1	50.0	150.0
M9-PFNA		110.7	50.0	150.0
MPFBA		101.1	50.0	150.0
MPFDoDA		124.4	50.0	150.0
d3N-MeFOSAA		113.8	50.0	150.0
d5EtFOSAA		110.1	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200701.1517201M, Parent Sample ID: S15172.01

Run in Batch: AK200701, Run Date: 07/02/2020 01:59, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		143.7	50.0	150.0
M2-6:2FTSA		142.1	50.0	150.0
M2-8:2FTSA		125.3	50.0	150.0
M2PFTeDA		155.7	12.0	218.0
M3PFBS		110.5	50.0	150.0
M3PFHxS		108.0	50.0	150.0
M4PFHpA		110.4	50.0	150.0
M5PFHxA		111.4	50.0	150.0
M5PFPeA		107.3	50.0	150.0
M6PFDA		116.6	50.0	150.0
M7PFUnDA		114.6	50.0	150.0
M8FOSA		122.2	50.0	150.0
M8PFOA		111.7	50.0	150.0
M8PFOS		108.8	50.0	150.0
M9-PFNA		113.6	50.0	150.0
MPFBA		107.6	50.0	150.0
MPFDoDA		129.3	50.0	150.0
d3N-MeFOSAA		128.8	50.0	150.0
d5EtFOSAA		115.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		138.8	50.0	150.0
M2-6:2FTSA		137.2	50.0	150.0
M2-8:2FTSA		129.8	50.0	150.0
M2PFTeDA		153.5	12.0	218.0
M3PFBS		112.7	50.0	150.0
M3PFHxS		105.2	50.0	150.0
M4PFHpA		109.6	50.0	150.0
M5PFHxA		107.1	50.0	150.0
M5PFPeA		104.2	50.0	150.0
M6PFDA		117.2	50.0	150.0
M7PFUnDA		104.7	50.0	150.0
M8FOSA		117.2	50.0	150.0
M8PFOA		113.7	50.0	150.0
M8PFOS		109.2	50.0	150.0
M9-PFNA		112.6	50.0	150.0
MPFBA		106.5	50.0	150.0
MPFDoDA		129.0	50.0	150.0
d3N-MeFOSAA		106.9	50.0	150.0
d5EtFOSAA		118.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Blank (BLK)

Lab Sample ID: AK200707B.BLK200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:25, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		112.2	50.0	150.0
M2-6:2FTSA		112.0	50.0	150.0
M2-8:2FTSA		125.1	50.0	150.0
M2PFTeDA		143.1	12.0	218.0
M3PFBS		115.4	50.0	150.0
M3PFHxS		128.1	50.0	150.0
M4PFHpA		123.6	50.0	150.0
M5PFHxA		111.9	50.0	150.0
M5PFPeA		114.8	50.0	150.0
M6PFDA		123.0	50.0	150.0
M7PFUnDA		116.0	50.0	150.0
M8FOSA		117.9	50.0	150.0
M8PFOA		121.2	50.0	150.0
M8PFOS		131.0	50.0	150.0
M9-PFNA		114.0	50.0	150.0
MPFBA		114.3	50.0	150.0
MPFDoDA		130.2	50.0	150.0
d3N-MeFOSAA		125.3	50.0	150.0
d5EtFOSAA		121.8	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		111.0	50.0	150.0
M2-6:2FTSA		108.7	50.0	150.0
M2-8:2FTSA		104.7	50.0	150.0
M2PFTeDA		135.8	12.0	218.0
M3PFBS		111.7	50.0	150.0
M3PFHxS		118.5	50.0	150.0
M4PFHpA		114.6	50.0	150.0
M5PFHxA		112.6	50.0	150.0
M5PFPeA		112.5	50.0	150.0
M6PFDA		114.7	50.0	150.0
M7PFUnDA		115.9	50.0	150.0
M8FOSA		111.4	50.0	150.0
M8PFOA		118.5	50.0	150.0
M8PFOS		118.1	50.0	150.0
M9-PFNA		123.6	50.0	150.0
MPFBA		110.1	50.0	150.0
MPFDoDA		117.3	50.0	150.0
d3N-MeFOSAA		114.1	50.0	150.0
d5EtFOSAA		122.9	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		105.8	50.0	150.0
M2-6:2FTSA		102.2	50.0	150.0
M2-8:2FTSA		112.1	50.0	150.0
M2PFTeDA		129.3	12.0	218.0
M3PFBS		113.6	50.0	150.0
M3PFHxS		112.0	50.0	150.0
M4PFHpA		118.6	50.0	150.0
M5PFHxA		105.1	50.0	150.0
M5PFPeA		109.0	50.0	150.0
M6PFDA		112.1	50.0	150.0
M7PFUnDA		124.3	50.0	150.0
M8FOSA		108.8	50.0	150.0
M8PFOA		121.7	50.0	150.0
M8PFOS		107.4	50.0	150.0
M9-PFNA		122.4	50.0	150.0
MPFBA		108.1	50.0	150.0
MPFDoDA		115.7	50.0	150.0
d3N-MeFOSAA		106.6	50.0	150.0
d5EtFOSAA		113.3	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200707B.1520802M, Parent Sample ID: S15208.02

Run in Batch: AK200707B, Run Date: 07/08/2020 10:40, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.89

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		114.8	50.0	150.0
M2-6:2FTSA		113.7	50.0	150.0
M2-8:2FTSA		117.2	50.0	150.0
M2PFTeDA		128.0	12.0	218.0
M3PFBS		122.6	50.0	150.0
M3PFHxS		123.6	50.0	150.0
M4PFHpA		121.0	50.0	150.0
M5PFHxA		121.9	50.0	150.0
M5PFPeA		121.1	50.0	150.0
M6PFDA		113.2	50.0	150.0
M7PFUnDA		123.5	50.0	150.0
M8FOSA		120.3	50.0	150.0
M8PFOA		118.6	50.0	150.0
M8PFOS		119.6	50.0	150.0
M9-PFNA		126.1	50.0	150.0
MPFBA		120.1	50.0	150.0
MPFDoDA		120.7	50.0	150.0
d3N-MeFOSAA		121.1	50.0	150.0
d5EtFOSAA		122.6	50.0	150.0

QC Report - Internal Standards per QC Sample

Duplicate (DUP)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		106.8	50.0	150.0
M2-6:2FTSA		105.5	50.0	150.0
M2-8:2FTSA		104.4	50.0	150.0
M2PFTeDA		167.0	12.0	218.0
M3PFBS		116.0	50.0	150.0
M3PFHxS		115.0	50.0	150.0
M4PFHpA		114.5	50.0	150.0
M5PFHxA		117.9	50.0	150.0
M5PFPeA		112.3	50.0	150.0
M6PFDA		122.3	50.0	150.0
M7PFUnDA		123.4	50.0	150.0
M8FOSA		114.3	50.0	150.0
M8PFOA		121.4	50.0	150.0
M8PFOS		119.8	50.0	150.0
M9-PFNA		124.6	50.0	150.0
MPFBA		112.7	50.0	150.0
MPFDoDA		126.6	50.0	150.0
d3N-MeFOSAA		124.3	50.0	150.0
d5EtFOSAA		115.2	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1

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

Blank (BLK)

Lab Sample ID: AK200701.BLK200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:41, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		90.2	70.0	130.0
PFPeA		94.9	70.0	130.0
4:2 FTSA		111.0	70.0	130.0
PFHxA		97.7	70.0	130.0
PFBS		101.0	70.0	130.0
HFPO-DA		98.8	70.0	130.0
PFFHpA		92.5	70.0	130.0
ADONA		103.0	70.0	130.0
PFPeS		103.0	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:02, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		96.7	70.0	130.0
PFOA		99.7	70.0	130.0
PFHxS		94.2	70.0	130.0
PFNA		111.0	70.0	130.0
8:2 FTSA		89.1	70.0	130.0
PFHpS		94.7	70.0	130.0
N-MeFOSAA		93.4	70.0	130.0
PFDA		96.1	70.0	130.0
EtFOSAA		103.0	70.0	130.0
PFOS		97.0	70.0	130.0
PFUnDA		102.0	70.0	130.0
9CL-PF3ONS		97.8	70.0	130.0
PFNS		105.0	70.0	130.0
PFDODA		104.0	70.0	130.0
PFDS		105.0	70.0	130.0
PFTTrDA		116.0	70.0	130.0
FOSA		107.0	70.0	130.0
11CL-PF3OUdS		107.0	70.0	130.0
PFTeDA		96.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		94.2	70.0	130.0	4.3	30.0
PFPeA		100.0	70.0	130.0	5.2	30.0
4:2 FTSA		112.0	70.0	130.0	0.9	30.0
PFHxA		101.0	70.0	130.0	3.3	30.0
PFBS		109.0	70.0	130.0	7.6	30.0
HFPO-DA		104.0	70.0	130.0	5.1	30.0
PFHpA		91.6	70.0	130.0	1.0	30.0
ADONA		109.0	70.0	130.0	5.7	30.0
PFPeS		102.0	70.0	130.0	1.0	30.0
6:2 FTSA		103.0	70.0	130.0	6.3	30.0
PFOA		107.0	70.0	130.0	7.1	30.0
PFHxS		108.0	70.0	130.0	13.6	30.0
PFNA		110.0	70.0	130.0	0.9	30.0
8:2 FTSA		80.1	70.0	130.0	10.6	30.0
PFHpS		102.0	70.0	130.0	7.4	30.0
N-MeFOSAA		104.0	70.0	130.0	10.7	30.0
PFDA		109.0	70.0	130.0	12.6	30.0
EtFOSAA		96.8	70.0	130.0	6.2	30.0
PFOS		104.0	70.0	130.0	7.0	30.0
PFUnDA		94.9	70.0	130.0	7.2	30.0
9CL-PF3ONS		102.0	70.0	130.0	4.2	30.0
PFNS		120.0	70.0	130.0	13.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200701.LCSD200701, Parent Sample ID: AK200701.LCS200701

Run in Batch: AK200701, Run Date: 07/02/2020 00:22, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDODA		95.2	70.0	130.0	8.8	30.0
PFDS		118.0	70.0	130.0	11.7	30.0
PFTTrDA		109.0	70.0	130.0	6.2	30.0
FOSA		106.0	70.0	130.0	0.9	30.0
11CL-PF3OUdS		123.0	70.0	130.0	13.9	30.0
PFTeDA		96.9	70.0	130.0	0.1	30.0

Matrix Spike (MS)

Lab Sample ID: AK200701.1517201M, Parent Sample ID: S15172.01

Run in Batch: AK200701, Run Date: 07/02/2020 01:59, Prep Date: 07/01/2020, Matrix: WW, Dilution: 1.93

Analyte	Flags	% Rec	LCL	UCL
PFBA		95.3	70.0	130.0
PFPeA		99.5	70.0	130.0
4:2 FTSA		99.5	70.0	130.0
PFHxA		103.6	70.0	130.0
PFBS		103.6	70.0	130.0
PFHpA		96.4	70.0	130.0
PFPeS		103.6	70.0	130.0
6:2 FTSA		97.4	70.0	130.0
PFOA		114.0	70.0	130.0
PFHxS		103.6	70.0	130.0
PFNA		114.0	70.0	130.0
8:2 FTSA		88.1	70.0	130.0
PFHpS		95.3	70.0	130.0
PFDA		100.5	70.0	130.0
N-MeFOSAA		103.6	70.0	130.0
EtFOSAA		103.6	70.0	130.0
PFOS		103.6	70.0	130.0
PFUnDA		92.2	70.0	130.0
PFNS		124.4	70.0	130.0
PFDODA		93.3	70.0	130.0
PFDS		124.4	70.0	130.0
PFTTrDA		114.0	70.0	130.0
FOSA		100.5	70.0	130.0
PFTeDA		100.5	70.0	130.0
11CL-PF3OUdS		124.4	70.0	130.0
9CL-PF3ONS		124.4	70.0	130.0
ADONA		114.0	70.0	130.0
HFPO-DA		96.4	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
PFBA	*	200.0	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200701W1 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200701.1517202D, Parent Sample ID: S15172.02

Run in Batch: AK200701, Run Date: 07/02/2020 02:38, Prep Date: 07/01/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2

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

Blank (BLK)

Lab Sample ID: AK200707B.BLK200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:25, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	20.0	ng/l
PFPeA		ND	10.0	ng/l
4:2 FTSA		ND	10.0	ng/l
PFHxA		ND	10.0	ng/l
PFBS		ND	10.0	ng/l
PFFHpA		ND	10.0	ng/l
PFPeS		ND	10.0	ng/l
6:2 FTSA		ND	10.0	ng/l
PFOA		ND	10.0	ng/l
PFHxS		ND	10.0	ng/l
PFHxS-LN		ND	10.0	ng/l
PFHxS-BR		ND	10.0	ng/l
PFNA		ND	10.0	ng/l
8:2 FTSA		ND	10.0	ng/l
PFFHpS		ND	10.0	ng/l
PFDA		ND	10.0	ng/l
N-MeFOSAA		ND	10.0	ng/l
EtFOSAA		ND	10.0	ng/l
PFOS		ND	10.0	ng/l
PFOS-LN		ND	10.0	ng/l
PFOS-BR		ND	10.0	ng/l
PFOUnDA		ND	10.0	ng/l
PFNS		ND	10.0	ng/l
PFDODA		ND	10.0	ng/l
PFDS		ND	10.0	ng/l
PFTTrDA		ND	10.0	ng/l
FOSA		ND	10.0	ng/l
PFTeDA		ND	10.0	ng/l
11CL-PF3OUdS		ND	1	ng/l
9CL-PF3ONS		ND	1	ng/l
ADONA		ND	1	ng/l
HFPO-DA		ND	1	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		110.0	70.0	130.0
PFPeA		108.0	70.0	130.0
4:2 FTSA		104.0	70.0	130.0
PFHxA		103.0	70.0	130.0
PFBS		108.0	70.0	130.0
HFPO-DA		99.5	70.0	130.0
PFFHpA		101.0	70.0	130.0
PFPeS		112.0	70.0	130.0
ADONA		95.6	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 06:46, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		107.0	70.0	130.0
PFOA		101.0	70.0	130.0
PFHxS		93.1	70.0	130.0
PFNA		107.0	70.0	130.0
8:2 FTSA		102.0	70.0	130.0
PFHpS		99.6	70.0	130.0
N-MeFOSAA		108.0	70.0	130.0
PFDA		113.0	70.0	130.0
EtFOSAA		97.3	70.0	130.0
PFOS		107.0	70.0	130.0
PFUnDA		105.0	70.0	130.0
9CL-PF3ONS		107.0	70.0	130.0
PFNS		109.0	70.0	130.0
PFDODA		104.0	70.0	130.0
PFDS		119.0	70.0	130.0
PFTTrDA		107.0	70.0	130.0
FOSA		113.0	70.0	130.0
11CL-PF3OUdS		111.0	70.0	130.0
PFTeDA		115.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		110.0	70.0	130.0	0.0	30.0
PFPeA		107.0	70.0	130.0	0.9	30.0
4:2 FTSA		106.0	70.0	130.0	1.9	30.0
PFHxA		109.0	70.0	130.0	5.7	30.0
PFBS		102.0	70.0	130.0	5.7	30.0
HFPO-DA		99.6	70.0	130.0	0.1	30.0
PFHpA		101.0	70.0	130.0	0.0	30.0
PFPeS		112.0	70.0	130.0	0.0	30.0
ADONA		88.3	70.0	130.0	7.9	30.0
6:2 FTSA		111.0	70.0	130.0	3.7	30.0
PFOA		99.1	70.0	130.0	1.9	30.0
PFHxS		101.0	70.0	130.0	8.1	30.0
PFNA		104.0	70.0	130.0	2.8	30.0
8:2 FTSA		91.9	70.0	130.0	10.4	30.0
PFHpS		99.3	70.0	130.0	0.3	30.0
N-MeFOSAA		117.0	70.0	130.0	8.0	30.0
PFDA		118.0	70.0	130.0	4.3	30.0
EtFOSAA		101.0	70.0	130.0	3.7	30.0
PFOS		113.0	70.0	130.0	5.5	30.0
PFUnDA		95.2	70.0	130.0	9.8	30.0
9CL-PF3ONS		120.0	70.0	130.0	11.5	30.0
PFNS		110.0	70.0	130.0	0.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200707B.LCSD200707B, Parent Sample ID: AK200707B.LCS200707B

Run in Batch: AK200707B, Run Date: 07/08/2020 07:06, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PfDoDA		107.0	70.0	130.0	2.8	30.0
PFDS		113.0	70.0	130.0	5.2	30.0
PfTrDA		109.0	70.0	130.0	1.9	30.0
FOSA		120.0	70.0	130.0	6.0	30.0
11CL-PF3OUdS		120.0	70.0	130.0	7.8	30.0
PFTeDA		117.0	70.0	130.0	1.7	30.0

Matrix Spike (MS)

Lab Sample ID: AK200707B.1520802M, Parent Sample ID: S15208.02

Run in Batch: AK200707B, Run Date: 07/08/2020 10:40, Prep Date: 07/07/2020, Matrix: WW, Dilution: 1.89

Analyte	Flags	% Rec	LCL	UCL
PFBA		101.6	70.0	130.0
PFPeA		100.5	70.0	130.0
4:2 FTSA		94.2	70.0	130.0
PFHxA		100.5	70.0	130.0
PFBS		101.6	70.0	130.0
PFHpA		103.7	70.0	130.0
PFPeS		104.8	70.0	130.0
6:2 FTSA		103.7	70.0	130.0
PFOA		116.4	70.0	130.0
PFHxS		96.3	70.0	130.0
PFNA		116.4	70.0	130.0
8:2 FTSA		80.4	70.0	130.0
PFHpS		87.8	70.0	130.0
PFDA		116.4	70.0	130.0
N-MeFOSAA		101.6	70.0	130.0
EtFOSAA		94.2	70.0	130.0
PFOS		116.4	70.0	130.0
PFUnDA		100.5	70.0	130.0
PFNS		98.4	70.0	130.0
PfDoDA		116.4	70.0	130.0
PFDS		105.8	70.0	130.0
PfTrDA		102.6	70.0	130.0
FOSA		105.8	70.0	130.0
PFTeDA		105.8	70.0	130.0
11CL-PF3OUdS		116.4	70.0	130.0
9CL-PF3ONS		116.4	70.0	130.0
ADONA		99.5	70.0	130.0
HFPO-DA		92.1	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Analyte	Flags	RPD	RPD CL
PFBA		10.5	30.0
PFPeA		NC	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF200707W2 (continued)

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

Duplicate (DUP) (continued)

Lab Sample ID: AK200707B.1520803D, Parent Sample ID: S15208.03

Run in Batch: AK200707B, Run Date: 07/08/2020 11:19, Prep Date: 07/07/2020, Matrix: WW, Dilution: 2.06

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

REPORT TO

CONTACT NAME Clifford Yantz			
COMPANY O'Brien & Gere, A Ramboll Company			
ADDRESS 2260 East Saginaw			
CITY East Lansing			STATE MI
PHONE NO. 313-333-0211			ZIP CODE 48823
FAX NO.		P.O. NO.	
E-MAIL ADDRESS clifford.yantz@obg.com		QUOTE NO.	

CHAIN OF CUSTODY RECORD

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

INVOICE TO

PROJECT NO./NAME RACER coldwater Rd	SAMPLER(S) - PLEASE PRINT/SIGN NAME Kevin Schneider <i>[Signature]</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

Containers & Preservatives

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York☐ Other

Special Instructions

[illegible]

RELINQUISHED BY:	Will Loughner <i>Will Loughner</i>	☐ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			6/25/20	1545
RECEIVED BY:	<i>M. Alcala</i>		DATE	TIME
SIGNATURE/ORGANIZATION			6/25/2020	1545
RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL <u>2.8</u>
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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

Rev. 5.18.12