April 25, 2019

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

RE: ***Discharge Permit Submittal– January 2019 through March 2019***
Permit No.: 6-08-04-04-GML1

FILE: 15388/72202/Docs

Dear **Mr. Hutchings:**

In accordance with requirements of the above referenced discharge permit, we are providing you with the following discharge information for the period January 1, 2019 to March 31, 2019 for the Coldwater Road Landfill facility, located at 6220 Horton Avenue, Flint, Michigan. In addition, we have reported the performance of the per- and polyfluoroalkyl substances (PFAS) pretreatment system in this letter, and will continue to do so as long as the pretreatment system is in operation.

- Periodic Report on Continued Compliance, certification
- Periodic Report on Continued Compliance (Table 1)
- Daily Discharge Summary Table (Table 2)
- PFAS Sampling Results Table (Table 3)
- Analytical Reports provided by Merit Laboratories, Inc. for samples from the on-Site, above ground collection tank collected on February 12, 2019.
- Analytical Reports provided by Merit Laboratories, Inc. for samples from the on-Site, PFAS pretreatment system collected on March 11, 2019 and March 12, 2019 during the discharge of the liquids from the on-Site, above ground collection tank through the system.
- Copy of Chain-of-Custody forms.

The laboratory analytical results indicate concentrations were below the Sewer Use Permit limits for the parameters analyzed for the water discharged to the POTW during the discharge period.

In addition, the PFAS analytical results indicate that the PFAS pretreatment system reduced PFAS concentrations to non-detectable concentrations, which are below the current MDEQ Part 4, Water Quality Standards, Rule 57 Water Quality Values. Therefore, the PFAS pretreatment system is operating as designed.

Breakthrough analysis samples were collected to evaluate the adsorption capacity of the first and second granular activated carbon (GAC) drums. The breakthrough analysis samples from the primary GAC drum indicate some breakthrough after just a short period of time, which increased over time, as indicated in the second sample collected on March 11, 2019, (the 40nd bed volume [approximately 1,800 gallons] sample).

The breakthrough analysis on the mid-fluent or secondary GAC drum, and the effluent sample (after the tertiary [third] GAC drum) at the end of discharge on March 12, 2019, at the 136th bed volume (6,149 gallons), did not indicate breakthrough. Therefore, the primary drum is still protecting the subsequent GAC drums from receiving the full influent PFAS concentrations in the tank liquids.

During the wetting of the GAC drums, a leak was observed in the bottom of the primary drum on March 7, 2019, and it was removed from service; therefore, a request to operate this quarters discharge utilizing only three GAC drums was made on March 8, 2019, which was granted on March 11, 2019. During the start of the discharge, the new primary GAC drum (previously secondary drum) was also observed with a leak in the bottom. The leaking liquid was contained in the drum spill containment platform beneath the four GAC drums and pumped via a sump pump back into the accumulation tank during the discharge. The two leaking drums will be replaced with new GAC drums for the next discharge, and the second and third drums used during this most recent discharge will become the primary and secondary drums, respectively for the approved four-drum pretreatment system. At least one spare GAC drum will be kept on site prior to each future discharge to try to avoid having to revert to a three-drum pretreatment system as happened this quarter. The leaking drums may have been caused by damage incurred during the delivery of the drums back in August 2018. The drums were supposed to have been delivered with a semi-truck outfitted with a lift gate, but in the absence of the lift gate at the time of delivery, the drums were offloaded using a ramp system, which may have damaged the bottom of the drums. Future deliveries will be rejected unless the lift gate is available as ordered.

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

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Clifford S. Yantz
Senior Hydrogeologist

cc: Mr. Kevin Forbes – Beecher Metropolitan District, Flint, MI
Mr. Richard Conforti – MDEQ (via email)
Mr. Grant Trigger – RACER Trust
Mr. David Favero – RACER Trust
Mr. Kevin Schneider – O'Brien & Gere

City of Flint
Industrial Pretreatment Program

Periodic Report on Continued Compliance

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

Reporting Period: January 1, 2019 through March 31, 2019

Average Volume of Daily Discharge (during reporting period): 3,075 gallons
(Two One Day Events)

Complete the following:

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

Name of Authorized Representative: Clifford Yantz

Title of Authorized Representative: Senior Hydrogeologist, O'Brien & Gere Engineers, Inc.
As agent for the RACER Trust

Signature of Authorized Representative: Clifford Scott Yantz

Date Signed by Authorized Representative: 4/25/19

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

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

Name of Authorized Representative: N/A

Title of Authorized Representative: N/A

Signature of Authorized Representative: N/A

Date Signed by Authorized Representative: N/A

Table 1
Periodic Report on Continued Compliance
City of Flint Sewer User Self-Monitoring Report
First Quarter - 2019

RACER Trust - Coldwater Road Landfill Facility
Permit Number 6-08-04-04-GML1
6220 Horton Avenue

Analytical Parameter	Ammonia-N	BOD5	HEM	pH @ 25°C	Phosphorus	TSS
Units	mg/L	mg/L	mg/L	SU	mg/L	mg/L
Sampling Frequency	Per Batch	Per Batch	Per Batch	Per Batch	Per Batch	Per Batch
Sampling Procedure	Grab sample	Grab sample	Grab sample	Grab sample	Grab sample	Grab sample
Daily Maximum Limit	110	1196	100	NA	14	570
Maximum Limit	NA	NA	NA	10.5	NA	NA
Minimum Limit	NA	NA	NA	6	NA	NA
Test Result	1.2	4.1	0.000	7.6	0.08	46
Test Method	4500-NH3 D	10360	1664A	4500-H+ B	4500-PE	2540 D
Test Date	2/12/2019	2/18/2019	2/14/2019	2/12/2019	2/14/2019	2/15/2109
Sample Date	2/12/2019	2/12/2019	2/12/2019	2/12/2019	2/12/2019	2/12/2019
Sample Type	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater
Test Result						
Test Method						
Test Date						
Sample Date						
Sample Type						
Test Result						
Test Method						
Test Date						
Sample Date						
Sample Type						
Average Daily Conc.						
No. of Samples						
Number of Limit Exceedances						

Table 1
Periodic Report on Continued Compliance
City of Flint Sewer User Self-Monitoring Report
First Quarter - 2019

RACER Trust - Coldwater Road Landfill Facility
Permit Number 6-08-04-04-GML1
6220 Horton Avenue

Analytical Parameter	Arsenic	Chromium	Copper	Mercury	Nickel	Zinc	Cyanide, available
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sampling Frequency	Per Batch	Per Batch	Per Batch	Per Batch	Per Batch	Per Batch	Per Batch
Sampling Procedure	Grab sample	Grab sample	Grab sample	Grab sample	Grab sample	Grab sample	Grab sample
Daily Maximum Limit	0.051	1.273	1.797	0.000012	0.543	2.626	0.165
Maximum Limit	NA	NA	NA	NA	NA	NA	NA
Minimum Limit	NA	NA	NA	NA	NA	NA	NA
Test Result	0.008	0.095	0.537	0.000	0.156	0.033	0.000
Test Method	200.8	200.8	200.8	245.1	200.8	200.8	1677
Test Date	2/13/2019	2/13/2019	2/13/2019	2/13/2019	2/13/2019	2/13/2019	2/13/2019
Sample Date	2/12/2019	2/12/2019	2/12/2019	2/12/2019	2/12/2019	2/12/2019	2/12/2019
Sample Type	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater	wastewater
Test Result							
Test Method							
Test Date							
Sample Date							
Sample Type							
Test Result							
Test Method							
Test Date							
Sample Date							
Sample Type							
Average Daily Conc.							
No. of Samples							
Number of Limit Exceedances							

Table 2
Coldwater Road Landfill
Daily Discharge Summary Table
First Quarter - 2019
6-08-04-04-GML1

Date	Beginning Flow Meter Reading	End Flow Meter Reading	Gallons Discharged	Begin Time of Discharge	End Time of Discharge	Average Flow (gal/min)	Temperature at Discharge (C)	(F)	pH
3/11/2019	563,590	568,236	**4,646**	9:45	6:00 AM (3/12/19)	3.8	10.0	50.0	7.80
3/12/2019	568,236	569,739	**1,503**	12:00	18:50	3.7	6.0	42.8	7.70

Total Discharge Volume (2 Days): **6,149**
Average Discharge Volume (2 Days): **3,075**

NOTES :

TABLE 3

RACER Trust - Coldwater Road Landfill

Per- and Polyfluoroalkyl Substances (PFAS) Sampling Results

Coldwater Road Landfill - PFAS Pretreatment System Samples

Perfluorinated Compound	Well/Sample ID:	01-PRCC-19-Inf (Influent Sample)	01-PRCC-19-Prim-20 (Primary GAC Drum Sample after 20 Bed Volumes)	01-PRCC-19-Prim-40 (Primary GAC Drum Sample after 40 Bed Volumes)	01-PRCC-19-Prim-136 (Primary GAC Drum Sample after 136 Bed Volumes)	01-PRCC-19-Mid-40 (Secondary GAC Drum Sample after 40 Bed Volumes)	01-PRCC-19-Mid-136 (Secondary GAC Drum Sample after 136 Bed Volumes)	01-PRCC-19-Eff-136 (Effluent Sample)	Field Blank-031119 (Field Blank)	Field Blank-031219 (Field Blank)
	Sample Date:	*3/11/2019*	*3/11/2019*	*3/11/2019*	*3/12/2019*	*3/11/2019*	*3/12/2019*	*3/12/2019*	*3/11/2019*	*3/12/2019*
Perfluorobutanoic Acid (PFBA)		<90	**20**	**26**	<20	<20	<20	<20	<20	<20
Perfluoropentanoic Acid (PFPeA)		**130**	<10	**35**	**12**	<10	<10	<10	<10	<10
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorohexanoic Acid (PFHxA)		**70**	<10	**11**	<10	<10	<10	<10	<10	<10
Perfluorobutane Sulfonic Acid (PFBS)		**50**	<10	<10	<10	<10	<10	<10	<10	<10
Perfluoroheptanoic Acid (PFHpA)		**20**	<10	<10	<10	<10	<10	<10	<10	<10
Perfluoropentane Sulfonic Acid (PFPeS)		**80**	<10	<10	<10	<10	<10	<10	<10	<10
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)		<10	<10	**13**	<10	<10	**11**	**13**	<10	<10
Perfluorooctanoic Acid (**PFOA**)		**50**	<10	<10	**10**	<10	<10	<10	<10	<10
Perfluorohexane Sulfonic Acid (PFHxS)		**300**	<10	**27**	**19**	<10	<10	<10	<10	<10
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)		**250**	<10	**18**	**10**	<10	<10	<10	<10	<10
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)		**44**	<10	**11**	<10	<10	<10	<10	<10	<10
Perfluorononanoic Acid (PFNA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluoroheptane Sulfonic Acid (PFHpS)		**65**	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorodecanoic Acid (PFDA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorooctane Sulfonic Acid (**PFOS**)		**4,700**	**69**	**270**	**210**	<10	<10	<10	<10	<10
Perfluorooctane Sulfonic Acid (**PFOS**-LN)		**3,000**	**30**	**130**	**95**	<10	<10	<10	<10	<10
Perfluorooctane Sulfonic Acid (**PFOS**-BR)		**1,700**	**40**	**150**	**120**	<10	<10	<10	<10	<10
Perfluoroundecanoic Acid (PFUnDA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorononane Sulfonic Acid (PFNS)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorododecanoic Acid (PFDoDA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorodecane Sulfonic Acid (PFDS)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorotridecanoic Acid (PFTrDA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorooctane Sulfonamide (FOSA)		<10	<10	<10	<10	<10	<10	<10	<10	<10
Perfluorotetradecanoic Acid (PFTeDA)		<10	<10	<10	<10	<10	<10	<10	<10	<10

Notes

1) Detections in **bold**.
2) Concentrations in ng/L.
3) < = Not detected at specified reporting limit.
4) -- = Not analyzed.
5) Concentrations above the MDEQ Part 4, Water Quality Standards, Rule 57 Water Quality Value for PFOS of 11 ng/L for drinking water are highlighted in yellow.
6) Number after Prim (Primary GAC drum), Mid (Secondary GAC drum), and Eff (Effluent sample after tertiary GAC drum) samples equals number of GAC Bed volumes discharged through the pretreatment system at the time of sample collection. One bed volume equals 45 gallons.

Analytical Laboratory Report

Report ID: S99142.01(01)+QC01
Generated on 02/19/2019

Report to

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

Phone: 248-477-5701 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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S99142.01
Project: RACER Coldwater Rd - PRCC
Collected Date: 02/12/2019
Submitted Date/Time: 02/12/2019 14:05
Sampled by: Kevin Schneider
P.O. #: 11800350

Table of Contents

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.

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

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

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S99142.01	01-PRCC-19	Wastewater	02/12/19 12:00

Analytical Laboratory Report

Lab Sample ID: S99142.01
Sample Tag: 01-PRCC-19
Collected Date/Time: 02/12/2019 12:00
Matrix: Wastewater
COC Reference: 81853

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.3	IR
1	250ml Plastic	H2SO4	Yes	4.3	IR
1	125ml Amber	PbCO3/NaOH	Yes	4.3	IR
1	1L Plastic	None	Yes	4.3	IR
1	32oz Glass	HCL	Yes	4.3	IR
3	500ml Plastic	None	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	02/14/19 10:30	JRH	
TBOD5 - Set*	Completed	HACH 10360	02/13/19 14:02	ASB	
Metal Digestion	Completed	SW3015A	02/13/19 12:00	CCM	

Inorganics

Method: E1664A, Run Date: 02/14/19 16:21, Analyst: ANW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Oil & Grease n-Hexane Extract.	Not detected	2		mg/L	1		

Method: HACH 10360, Run Date: 02/18/19 13:17, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TBOD5*	4.1	3		mg/L	1.5		

Method: SM2540D, Run Date: 02/15/19 17:30, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	46	3		mg/L	1.67		

Method: SM2550B, Run Date: 02/12/19 12:00, Analyst: KS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field Temperature*	46	1		oF	1		

Method: SM4500-H+ B, Run Date: 02/12/19 12:00, Analyst: KS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Field pH*	7.6	0.1		STD Units	1		

Method: SM4500-NH3 D, Run Date: 02/12/19 16:10, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Ammonia-N (Undistilled)	1.2	0.1	0.014	mg/L	5	7664-41-7	

Method: SM4500-PE, Run Date: 02/14/19 15:27, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.08	0.05	0.02	mg/L	5	7723-14-0	

Metals

Method: E200.8, Run Date: 02/13/19 15:04, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.008	0.002		mg/L	5	7440-38-2	

Lab Sample ID: S99142.01 (continued)
Sample Tag: 01-PRCC-19

Method: E200.8, Run Date: 02/13/19 15:04, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium	0.095	0.005		mg/L	5	7440-47-3	
Copper	0.537	0.005		mg/L	5	7440-50-8	
Nickel	0.156	0.005		mg/L	5	7440-02-0	
Zinc	0.033	0.005		mg/L	5	7440-66-6	

Method: E245.1, Run Date: 02/14/19 14:34, Analyst: JRH

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

Other / Misc.

Method: OIA-1677, Run Date: 02/13/19 13:09, Analyst: JDP

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

Quality Control Report

Report ID: S99142.01(01)+QC01
Generated on 02/18/2019

Report to

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

Phone: 248-477-5701 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): S99142.01
Project: RACER Coldwater Rd - PRCC
Submitted Date/Time: 02/12/2019 14:05
Sampled by: Kevin Schneider
P.O. #: 11800350

QC Report Sections

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: S99142.01
Sample Tag: 01-PRCC-19
Collected Date/Time: 02/12/2019 12:00
Matrix: Wastewater
COC Reference: 81853

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Ammonia-N (Undistilled)	SM4500-NH3 D	02/12/19 16:10	AMN190212QC	AMN190212QC	No	BLK/LCS/MS/DUP
Oil & Grease n-Hexane Extract.	E1664A	02/14/19 16:21	OGHEX190214W01	OGHEX190214W01	No	BLK/LCS
Total Phosphorus	SM4500-PE	02/14/19 15:27	PHS190214QC	PHS190214QC	No	BLK/LCS/MS/DUP
Total Suspended Solids	SM2540D	02/15/19 17:30	TSS190215B	TSS190215B	No	BLK/LCS/DUP
Metals						
Arsenic	E200.8	02/13/19 15:04	MT4-19-0213B	MTD-021319-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	02/13/19 15:04	MT4-19-0213B	MTD-021319-3	No	BLK/LCS/MS/MSD
Copper	E200.8	02/13/19 15:04	MT4-19-0213B	MTD-021319-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	02/14/19 14:34	HG2-19-0214A	HGD-021419-1	No	BLK/LCS/MS/MSD
Nickel	E200.8	02/13/19 15:04	MT4-19-0213B	MTD-021319-3	No	BLK/LCS/MS/MSD
Zinc	E200.8	02/13/19 15:04	MT4-19-0213B	MTD-021319-3	No	BLK/LCS/MS/MSD
Other / Misc.						
Available Cyanide	OIA-1677	02/13/19 13:09	ACN190213-W2	ACN190213-W2	No	BLK/LCS/MS/MSD/DU

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: AMN190212QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S99142.01	Ammonia-N (Undistilled)	SM4500-NH3 D	02/12/19 16:10	AMN190212QC

Inorganics, Prep Batch ID: OGHEX190214W01

Surrogates: No, QC Types: BLK/LCS

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S99142.01	Oil & Grease n-Hexane Extract.	E1664A	02/14/19 16:21	OGHEX190214W01

Inorganics, Prep Batch ID: PHS190214QC

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S99142.01	Total Phosphorus	SM4500-PE	02/14/19 15:27	PHS190214QC

Inorganics, Prep Batch ID: TSS190215B

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S99142.01	Total Suspended Solids	SM2540D	02/15/19 17:30	TSS190215B

Metals, Prep Batch ID: HGD-021419-1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S99142.01	Mercury	E245.1	02/14/19 14:34	HG2-19-0214A

Metals, Prep Batch ID: MTD-021319-3

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S99142.01	Arsenic	E200.8	02/13/19 15:04	MT4-19-0213B
S99142.01	Chromium	E200.8	02/13/19 15:04	MT4-19-0213B
S99142.01	Copper	E200.8	02/13/19 15:04	MT4-19-0213B
S99142.01	Nickel	E200.8	02/13/19 15:04	MT4-19-0213B
S99142.01	Zinc	E200.8	02/13/19 15:04	MT4-19-0213B

Other / Misc., Prep Batch ID: ACN190213-W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S99142.01	Available Cyanide	OIA-1677	02/13/19 13:09	ACN190213-W2

Inorganics, Prep Batch ID: AMN190212QC

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

Blank (BLK)

Lab Sample ID: AMN190212QC.LRB1

Run in Batch: AMN190212QC, Run Date: 02/12/2019 11:51, Prep Date: 02/12/2019, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: AMN190212QC.LCS1

Run in Batch: AMN190212QC, Run Date: 02/12/2019 12:52, Prep Date: 02/12/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		101	90	110

Matrix Spike (MS)

Lab Sample ID: AMN190212QC.MS1, Parent Sample ID: S99106.01

Run in Batch: AMN190212QC, Run Date: 02/12/2019 13:54, Prep Date: 02/12/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Ammonia-N (Undistilled)		101	80	120

Duplicate (DUP)

Lab Sample ID: AMN190212QC.DP1, Parent Sample ID: S99067.01

Run in Batch: AMN190212QC, Run Date: 02/12/2019 13:29, Prep Date: 02/12/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Ammonia-N (Undistilled)		1.2	20

Inorganics, Prep Batch ID: OGHEX190214W01

Surrogates: No, QC Types: BLK/LCS

Blank (BLK)

Lab Sample ID: OGHEX190214W01.LRB1

Run in Batch: OGHEX190214W01, Run Date: 02/14/2019 16:22, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: OGHEX190214W01.LCS1

Run in Batch: OGHEX190214W01, Run Date: 02/14/2019 16:22, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		100	78	114

Laboratory Control Sample (LCS)

Lab Sample ID: OGHEX190214W01.LCS2

Run in Batch: OGHEX190214W01, Run Date: 02/14/2019 16:22, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Oil & Grease n-Hexane Extract.		98	78	114

Inorganics, Prep Batch ID: PHS190214QC

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

Blank (BLK)

Lab Sample ID: PHS190214QC.LRB1

Run in Batch: PHS190214QC, Run Date: 02/14/2019 14:39, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

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

Blank (BLK)

Lab Sample ID: PHS190214QC.LRB2

Run in Batch: PHS190214QC, Run Date: 02/14/2019 14:46, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: PHS190214QC.LCS1

Run in Batch: PHS190214QC, Run Date: 02/14/2019 14:53, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		93	90	110

Matrix Spike (MS)

Lab Sample ID: PHS190214QC.MS1, Parent Sample ID: S99081.01

Run in Batch: PHS190214QC, Run Date: 02/14/2019 17:32, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		86	80	120

Duplicate (DUP)

Lab Sample ID: PHS190214QC.DP1, Parent Sample ID: S99147.01

Run in Batch: PHS190214QC, Run Date: 02/14/2019 17:27, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		1.7	20

Inorganics, Prep Batch ID: TSS190215B

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

Blank (BLK)

Lab Sample ID: TSS190215B.LRB1

Run in Batch: TSS190215B, Run Date: 02/15/2019 17:30, Prep Date: 02/15/2019, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: TSS190215B.LCS1

Run in Batch: TSS190215B, Run Date: 02/15/2019 17:30, Prep Date: 02/15/2019, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Total Suspended Solids		78.4	67.1	122

Duplicate (DUP)

Lab Sample ID: TSS190215B.DP1, Parent Sample ID: S99176.02

Run in Batch: TSS190215B, Run Date: 02/15/2019 17:30, Prep Date: 02/15/2019, Matrix: Liquid, Dilution: 20

Analyte	Flags	RPD	RPD CL
Total Suspended Solids		3.4	5

Metals, Prep Batch ID: HGD-021419-1

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

Blank (BLK)

Lab Sample ID: HG2-19-0214A.018.LRB

Run in Batch: HG2-19-0214A, Run Date: 02/14/2019 14:14, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Mercury		ND	0.03	ug/L

Laboratory Control Sample (LCS)

Lab Sample ID: HG2-19-0214A.017.LCS

Run in Batch: HG2-19-0214A, Run Date: 02/14/2019 14:12, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		100	85	115

Matrix Spike (MS)

Lab Sample ID: HG2-19-0214A.024.MS, Parent Sample ID: S99115.01

Run in Batch: HG2-19-0214A, Run Date: 02/14/2019 14:25, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Mercury		96	75	125

Matrix Spike (MS)

Lab Sample ID: HG2-19-0214A.037.MS, Parent Sample ID: S99166.01

Run in Batch: HG2-19-0214A, Run Date: 02/14/2019 14:48, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		88	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: HG2-19-0214A.025.MSD, Parent Sample ID: HG2-19-0214A.024.MS

Run in Batch: HG2-19-0214A, Run Date: 02/14/2019 14:27, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		98	75	125	2	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: HG2-19-0214A.038.MSD, Parent Sample ID: HG2-19-0214A.037.MS

Run in Batch: HG2-19-0214A, Run Date: 02/14/2019 14:50, Prep Date: 02/14/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		88	75	125	0	20

Metals, Prep Batch ID: MTD-021319-3

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

Blank (BLK)

Lab Sample ID: MT4-19-0213B.023.LRB

Run in Batch: MT4-19-0213B, Run Date: 02/13/2019 14:49, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-19-0213B.021.LCS

Run in Batch: MT4-19-0213B, Run Date: 02/13/2019 14:46, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		99	85	115
Chromium		101	85	115
Copper		101	85	115
Nickel		103	85	115
Zinc		100	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-19-0213B.035.MS, Parent Sample ID: S99122.01

Run in Batch: MT4-19-0213B, Run Date: 02/13/2019 15:17, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		106	75	125
Chromium		97	75	125
Copper		88	75	125
Nickel		97	75	125
Zinc		93	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-19-0213B.049.MS, Parent Sample ID: S99050.01

Run in Batch: MT4-19-0213B, Run Date: 02/13/2019 15:35, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL
Arsenic		107	75	125
Chromium		99	75	125
Copper		94	75	125
Nickel		101	75	125
Zinc		103	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-19-0213B.036.MSD, Parent Sample ID: MT4-19-0213B.035.MS

Run in Batch: MT4-19-0213B, Run Date: 02/13/2019 15:18, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		105	75	125	1	20
Chromium		100	75	125	2	20
Copper		90	75	125	3	20
Nickel		96	75	125	2	20
Zinc		94	75	125	2	20

Metals, Prep Batch ID: MTD-021319-3 (continued)

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

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-19-0213B.050.MSD, Parent Sample ID: MT4-19-0213B.049.MS

Run in Batch: MT4-19-0213B, Run Date: 02/13/2019 15:37, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		101	75	125	6	20
Chromium		94	75	125	5	20
Copper		88	75	125	6	20
Nickel		95	75	125	5	20
Zinc		97	75	125	6	20

Other / Misc., Prep Batch ID: ACN190213-W2

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

Blank (BLK)

Lab Sample ID: ACN190213-W2.LRB1

Run in Batch: ACN190213-W2, Run Date: 02/13/2019 13:01, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

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

Blank (BLK)

Lab Sample ID: ACN190213-W2.LRB2

Run in Batch: ACN190213-W2, Run Date: 02/13/2019 13:29, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

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

Laboratory Control Sample (LCS)

Lab Sample ID: ACN190213-W2.LCS1

Run in Batch: ACN190213-W2, Run Date: 02/13/2019 13:05, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		91	88	110

Matrix Spike (MS)

Lab Sample ID: ACN190213-W2.MS1, Parent Sample ID: S99142.01

Run in Batch: ACN190213-W2, Run Date: 02/13/2019 13:13, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Available Cyanide		98	82	130

Matrix Spike Duplicate (MSD)

Lab Sample ID: ACN190213-W2.MSD1, Parent Sample ID: ACN190213-W2.MS1

Run in Batch: ACN190213-W2, Run Date: 02/13/2019 13:15, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Available Cyanide		100	82	130	2	15

Duplicate (DUP)

Lab Sample ID: ACN190213-W2.DP1, Parent Sample ID: S99142.01

Run in Batch: ACN190213-W2, Run Date: 02/13/2019 13:11, Prep Date: 02/13/2019, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Available Cyanide		<1	15

Merit Laboratories Login Checklist

Lab Set ID: S99142
Client: OBG02 (O'Brien & Gere Engineers, Inc.)
Project: RACER Coldwater Rd - PRCC
Submitted: 02/12/2019 14:05 Login User: SRS

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

Phone: 248-477-5701 FAX:
Email: Clifford.Yantz@obg.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S99142 Initials: SRS

Client: OBG02 (O'Brien & Gere Engineers, Inc.)

Project: RACER Coldwater Rd - PRCC

Submitted: 02/12/2019 14:05 Login User:

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

Phone: 248-477-5701 FAX:
Email: Clifford.Yantz@obg.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S99142.01	X								X					
S99142.01				X					X					
S99142.01						X					4	1.0	<2	Lot# 53221
S99142.01								X		X				

Merit Laboratories, Inc.

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

81853

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Clifford Yantz
COMPANY: O'Brien & Gere - Part of Ramboll
ADDRESS: 2260 E Saginaw St
CITY: East Lansing | STATE: MI | ZIP CODE: 48823
PHONE NO.: 313-333-0211 | FAX NO.: | P.O. NO.:
E-MAIL ADDRESS: clifford.yantz@OBG.COM | QUOTE NO.:

INVOICE TO

CONTACT NAME: X SAME
COMPANY:
ADDRESS:
CITY: | STATE: | ZIP CODE:
PHONE NO.: | E-MAIL ADDRESS:

PROJECT NO./NAME: RACER Coldwater Rd - PRCC
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schneider KBS

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

DELIVERABLES REQUIRED ☐ STD X 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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Total Metals	Available Cyanide	BOD / TSS	Ammonia - Nitrogen / Total phosphorus	FOG (Hex-Ext)	Special Instructions
99142.01	2/12/19	1200	01 - PRCC - 19	WW		4	1	1	1			1	X	X	X	X	X	X

Metals Are:
As, Cr, Cu, Hg, Ni, Zn

Analysis Per city of Flint - Including QC Report

Field pH: 7.6
Field Temp: 8.0 °C

KBS

RELINQUISHED BY: SIGNATURE/ORGANIZATION	K SCH OBG X Sampler	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		2/12/19	18:31
RELINQUISHED BY: SIGNATURE/ORGANIZATION		2/13/19	12:31
RECEIVED BY: SIGNATURE/ORGANIZATION		2/13/19	14:05
RELINQUISHED BY: SIGNATURE/ORGANIZATION		2/15/19	1405
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL 4.3

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

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S99806.01(01)
Generated on 03/26/2019

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S99806.01-S99806.05
Project: RACER Coldwater Rd Landfill
Collected Date: 03/11/2019
Submitted Date/Time: 03/12/2019 15:10
Sampled by: Kevin Schneider
P.O. #: 11800350

Table of Contents

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.

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

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
ASTMD7979-17M	ASTM Method D7979 - 17 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	474511-07-4
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S99806.01	Field Blank-031119	Water	03/11/19 09:30
S99806.02	01-PRCC-19-Inf	Wastewater	03/11/19 09:50
S99806.03	01-PRCC-19-Prim-20	Wastewater	03/11/19 14:05
S99806.04	01-PRCC-19-Mid-40	Wastewater	03/11/19 18:15
S99806.05	01-PRCC-19-Prim-40	Wastewater	03/11/19 18:20

Lab Sample ID: S99806.01
Sample Tag: Field Blank-031119
Collected Date/Time: 03/11/2019 09:30
Matrix: Water
COC Reference: 121927

Sample Containers

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

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 02:35, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.02	375-22-4	
PFPeA*	Not detected	10		ng/L	2.02	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.02	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.02	307-24-4	
PFBS*	Not detected	10		ng/L	2.02	375-73-5	
PFHpA*	Not detected	10		ng/L	2.02	375-85-9	
PFPeS*	Not detected	10		ng/L	2.02	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.02	27619-97-2	
PFOA*	Not detected	10		ng/L	2.02	335-67-1	
PFHxS*	Not detected	10		ng/L	2.02	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.02	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.02	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.02	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.02	375-92-8	
PFDA*	Not detected	10		ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.02	2991-50-6	
PFOS*	Not detected	10		ng/L	2.02	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	2.02	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.02	2058-94-8	
PFNS*	Not detected	10		ng/L	2.02	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.02	307-55-1	
PFDS*	Not detected	10		ng/L	2.02	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.02	72629-94-8	
FOSA*	Not detected	10		ng/L	2.02	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.02	376-06-7	

Analytical Laboratory Report

Lab Sample ID: S99806.02
Sample Tag: 01-PRCC-19-Inf
Collected Date/Time: 03/11/2019 09:50
Matrix: Wastewater
COC Reference: 121927

Sample Containers

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

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 02:58, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	90		ng/L	2.04	375-22-4	X
PFPeA*	130	10		ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.04	757124-72-4	I
PFHxA*	70	10		ng/L	2.04	307-24-4	
PFBS*	50	10		ng/L	2.04	375-73-5	
PFHpA*	20	10		ng/L	2.04	375-85-9	
PFPeS*	80	10		ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	2.04	27619-97-2	
PFOA*	50	10		ng/L	2.04	335-67-1	
PFHxS*	300	10		ng/L	2.04	355-46-4	
PFHxS-LN*	250	10		ng/L	2.04	355-46-4-LN	
PFHxS-BR*	44	10		ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.04	39108-34-4	
PFHpS*	65	10		ng/L	2.04	375-92-8	
PFDA*	Not detected	10		ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.04	2991-50-6	
PFOS*	4,700	10		ng/L	2.04	1763-23-1	
PFOS-LN*	3,000	10		ng/L	2.04	1763-23-1-LN	
PFOS-BR*	1,700	10		ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.04	2058-94-8	
PFNS*	Not detected	10		ng/L	2.04	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.04	307-55-1	
PFDS*	Not detected	10		ng/L	2.04	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.04	72629-94-8	
FOSA*	Not detected	10		ng/L	2.04	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.04	376-06-7	

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

Lab Sample ID: S99806.03
Sample Tag: 01-PRCC-19-Prim-20
Collected Date/Time: 03/11/2019 14:05
Matrix: Wastewater
COC Reference: 121927

Sample Containers

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

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 03:21, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	20	20		ng/L	1.97	375-22-4	
PFPeA*	Not detected	10		ng/L	1.97	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	1.97	757124-72-4	
PFHxA*	Not detected	10		ng/L	1.97	307-24-4	
PFBS*	Not detected	10		ng/L	1.97	375-73-5	
PFHpA*	Not detected	10		ng/L	1.97	375-85-9	
PFPeS*	Not detected	10		ng/L	1.97	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	1.97	27619-97-2	
PFOA*	Not detected	10		ng/L	1.97	335-67-1	
PFHxS*	Not detected	10		ng/L	1.97	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	1.97	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	1.97	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.97	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.97	39108-34-4	
PFHpS*	Not detected	10		ng/L	1.97	375-92-8	
PFDA*	Not detected	10		ng/L	1.97	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.97	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.97	2991-50-6	
PFOS*	69	10		ng/L	1.97	1763-23-1	
PFOS-LN*	30	10		ng/L	1.97	1763-23-1-LN	
PFOS-BR*	40	10		ng/L	1.97	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.97	2058-94-8	
PFNS*	Not detected	10		ng/L	1.97	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.97	307-55-1	
PFDS*	Not detected	10		ng/L	1.97	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.97	72629-94-8	
FOSA*	Not detected	10		ng/L	1.97	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.97	376-06-7	

Lab Sample ID: S99806.04
Sample Tag: 01-PRCC-19-Mid-40
Collected Date/Time: 03/11/2019 18:15
Matrix: Wastewater
COC Reference: 121927

Sample Containers

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

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 03:44, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	1.94	375-22-4	
PFPeA*	Not detected	10		ng/L	1.94	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	1.94	757124-72-4	
PFHxA*	Not detected	10		ng/L	1.94	307-24-4	
PFBS*	Not detected	10		ng/L	1.94	375-73-5	
PFHpA*	Not detected	10		ng/L	1.94	375-85-9	
PFPeS*	Not detected	10		ng/L	1.94	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	1.94	27619-97-2	
PFOA*	Not detected	10		ng/L	1.94	335-67-1	
PFHxS*	Not detected	10		ng/L	1.94	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	1.94	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	1.94	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.94	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.94	39108-34-4	
PFHpS*	Not detected	10		ng/L	1.94	375-92-8	
PFDA*	Not detected	10		ng/L	1.94	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.94	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.94	2991-50-6	
PFOS*	Not detected	10		ng/L	1.94	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	1.94	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	1.94	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.94	2058-94-8	
PFNS*	Not detected	10		ng/L	1.94	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.94	307-55-1	
PFDS*	Not detected	10		ng/L	1.94	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.94	72629-94-8	
FOSA*	Not detected	10		ng/L	1.94	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.94	376-06-7	

Analytical Laboratory Report

Lab Sample ID: S99806.05
Sample Tag: 01-PRCC-19-Prim-40
Collected Date/Time: 03/11/2019 18:20
Matrix: Wastewater
COC Reference: 121927

Sample Containers

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

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 04:06, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	26	20		ng/L	2.08	375-22-4	
PFPeA*	35	10		ng/L	2.08	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.08	757124-72-4	
PFHxA*	11	10		ng/L	2.08	307-24-4	
PFBS*	Not detected	10		ng/L	2.08	375-73-5	
PFHpA*	Not detected	10		ng/L	2.08	375-85-9	
PFPeS*	Not detected	10		ng/L	2.08	2706-91-4	
6:2 FTSA*	13	10		ng/L	2.08	27619-97-2	B
PFOA*	Not detected	10		ng/L	2.08	335-67-1	
PFHxS*	27	10		ng/L	2.08	355-46-4	
PFHxS-LN*	18	10		ng/L	2.08	355-46-4-LN	
PFHxS-BR*	11	10		ng/L	2.08	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.08	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.08	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.08	375-92-8	
PFDA*	Not detected	10		ng/L	2.08	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.08	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.08	2991-50-6	
PFOS*	270	10		ng/L	2.08	1763-23-1	
PFOS-LN*	130	10		ng/L	2.08	1763-23-1-LN	
PFOS-BR*	150	10		ng/L	2.08	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.08	2058-94-8	
PFNS*	Not detected	10		ng/L	2.08	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.08	307-55-1	
PFDS*	Not detected	10		ng/L	2.08	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.08	72629-94-8	
FOSA*	Not detected	10		ng/L	2.08	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.08	376-06-7	

B-Compound also found in associated method blank

Merit Laboratories Login Checklist

Lab Set ID: S99806
Client: OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)
Project: RACER Coldwater Rd Landfill
Submitted: 03/12/2019 15:10 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.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[ ] Yes	[ ] No	[X] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
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

121927

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME	Clifford Yantz
COMPANY	O'Brien & Gere
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@obg.com
QUOTE NO.	

INVOICE TO

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

PROJECT NO./NAME	BALER Coldwater Rd Landfill
SAMPLER(S) - PLEASE PRINT/SIGN NAME	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 CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS
99806.01	3/11/19	930	Field Blank - 031119	QC	1	X							X
.02		950	01-PRCC-19-Inf	ww	3	X							X
.03		1405	01-PRCC-19-Prim-20	ww	3	X							X
.04		1815	01-PRCC-19-MID-40	ww	3	X							X
.05		1820	01-PRCC-19-Prim-40	ww	3	X							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	OBG	X Sampler	DATE 3/12/19	TIME 1355
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE 3/13/19	TIME 13:55
RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE 3/18/19	TIME 15:10
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE 3/12/19	TIME 1510

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

SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL 4.3
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

Analytical Laboratory Report

Report ID: S99856.01(01)
Generated on 03/27/2019

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S99856.01-S99856.04
Project: RACER Coldwater Rd Landfill
Collected Date: 03/12/2019
Submitted Date/Time: 03/13/2019 14:30
Sampled by: Kevin Schneider
P.O. #: 11800350

Table of Contents

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.

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

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
ASTMD7979-17M	ASTM Method D7979 - 17 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	474511-07-4
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S99856.01	01-PRCC-19-Eff-136	Wastewater	03/12/19 18:46
S99856.02	01-PRCC-19-Mid-136	Wastewater	03/12/19 18:48
S99856.03	01-PRCC-19-Prim-136	Wastewater	03/12/19 18:50
S99856.04	Field Blank-031219	Water	03/12/19 18:55

Lab Sample ID: S99856.01
Sample Tag: 01-PRCC-19-Eff-136
Collected Date/Time: 03/12/2019 18:46
Matrix: Wastewater
COC Reference: 87993

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.2	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 06:00, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	1.98	375-22-4	
PFPeA*	Not detected	10		ng/L	1.98	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	1.98	757124-72-4	
PFHxA*	Not detected	10		ng/L	1.98	307-24-4	
PFBS*	Not detected	10		ng/L	1.98	375-73-5	
PFHpA*	Not detected	10		ng/L	1.98	375-85-9	
PFPeS*	Not detected	10		ng/L	1.98	2706-91-4	
6:2 FTSA*	13	10		ng/L	1.98	27619-97-2	B
PFOA*	Not detected	10		ng/L	1.98	335-67-1	
PFHxS*	Not detected	10		ng/L	1.98	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	1.98	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	1.98	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.98	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.98	39108-34-4	
PFHpS*	Not detected	10		ng/L	1.98	375-92-8	
PFDA*	Not detected	10		ng/L	1.98	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.98	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.98	2991-50-6	
PFOS*	Not detected	10		ng/L	1.98	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	1.98	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	1.98	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.98	2058-94-8	
PFNS*	Not detected	10		ng/L	1.98	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.98	307-55-1	
PFDS*	Not detected	10		ng/L	1.98	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.98	72629-94-8	
FOSA*	Not detected	10		ng/L	1.98	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.98	376-06-7	

B-Compound also found in associated method blank

Lab Sample ID: S99856.02
Sample Tag: 01-PRCC-19-Mid-136
Collected Date/Time: 03/12/2019 18:48
Matrix: Wastewater
COC Reference: 87993

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.2	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 06:23, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	1.98	375-22-4	
PFPeA*	Not detected	10		ng/L	1.98	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	1.98	757124-72-4	
PFHxA*	Not detected	10		ng/L	1.98	307-24-4	
PFBS*	Not detected	10		ng/L	1.98	375-73-5	
PFHpA*	Not detected	10		ng/L	1.98	375-85-9	
PFPeS*	Not detected	10		ng/L	1.98	2706-91-4	
6:2 FTSA*	11	10		ng/L	1.98	27619-97-2	B
PFOA*	Not detected	10		ng/L	1.98	335-67-1	
PFHxS*	Not detected	10		ng/L	1.98	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	1.98	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	1.98	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.98	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.98	39108-34-4	
PFHpS*	Not detected	10		ng/L	1.98	375-92-8	
PFDA*	Not detected	10		ng/L	1.98	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.98	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.98	2991-50-6	
PFOS*	Not detected	10		ng/L	1.98	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	1.98	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	1.98	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.98	2058-94-8	
PFNS*	Not detected	10		ng/L	1.98	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.98	307-55-1	
PFDS*	Not detected	10		ng/L	1.98	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.98	72629-94-8	
FOSA*	Not detected	10		ng/L	1.98	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.98	376-06-7	

B-Compound also found in associated method blank

Analytical Laboratory Report

Lab Sample ID: S99856.03
Sample Tag: 01-PRCC-19-Prim-136
Collected Date/Time: 03/12/2019 18:50
Matrix: Wastewater
COC Reference: 87993

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.2	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 06:45, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	1.96	375-22-4	
PFPeA*	12	10		ng/L	1.96	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	1.96	757124-72-4	
PFHxA*	Not detected	10		ng/L	1.96	307-24-4	
PFBS*	Not detected	10		ng/L	1.96	375-73-5	
PFHpA*	Not detected	10		ng/L	1.96	375-85-9	
PFPeS*	Not detected	10		ng/L	1.96	2706-91-4	
6:2 FTSA*	Not detected	10		ng/L	1.96	27619-97-2	
PFOA*	10	10		ng/L	1.96	335-67-1	
PFHxS*	19	10		ng/L	1.96	355-46-4	
PFHxS-LN*	10	10		ng/L	1.96	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	1.96	355-46-4-BR	
PFNA*	Not detected	10		ng/L	1.96	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	1.96	39108-34-4	
PFHpS*	Not detected	10		ng/L	1.96	375-92-8	
PFDA*	Not detected	10		ng/L	1.96	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	1.96	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	1.96	2991-50-6	
PFOS*	210	10		ng/L	1.96	1763-23-1	
PFOS-LN*	95	10		ng/L	1.96	1763-23-1-LN	
PFOS-BR*	120	10		ng/L	1.96	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	1.96	2058-94-8	
PFNS*	Not detected	10		ng/L	1.96	474511-07-4	
PFDoDA*	Not detected	10		ng/L	1.96	307-55-1	
PFDS*	Not detected	10		ng/L	1.96	335-77-3	
PFTrDA*	Not detected	10		ng/L	1.96	72629-94-8	
FOSA*	Not detected	10		ng/L	1.96	754-91-6	
PFTeDA*	Not detected	10		ng/L	1.96	376-06-7	

Analytical Laboratory Report

Lab Sample ID: S99856.04
Sample Tag: Field Blank-031219
Collected Date/Time: 03/12/2019 18:55
Matrix: Water
COC Reference: 87993

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.2	IR

Organics

24 PFAs, Method: ASTMD7979-17M, Run Date: 03/15/19 07:08, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20		ng/L	2.02	375-22-4	
PFPeA*	Not detected	10		ng/L	2.02	2706-90-3	
4:2 FTSA*	Not detected	10		ng/L	2.02	757124-72-4	
PFHxA*	Not detected	10		ng/L	2.02	307-24-4	
PFBS*	Not detected	10		ng/L	2.02	375-73-5	
PFHpA*	Not detected	10		ng/L	2.02	375-85-9	
PFPeS*	Not detected	10		ng/L	2.02	2706-91-4	
6:2 FTSA*	23	10		ng/L	2.02	27619-97-2	B
PFOA*	Not detected	10		ng/L	2.02	335-67-1	
PFHxS*	Not detected	10		ng/L	2.02	355-46-4	
PFHxS-LN*	Not detected	10		ng/L	2.02	355-46-4-LN	
PFHxS-BR*	Not detected	10		ng/L	2.02	355-46-4-BR	
PFNA*	Not detected	10		ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	10		ng/L	2.02	39108-34-4	
PFHpS*	Not detected	10		ng/L	2.02	375-92-8	
PFDA*	Not detected	10		ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	10		ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	10		ng/L	2.02	2991-50-6	
PFOS*	Not detected	10		ng/L	2.02	1763-23-1	
PFOS-LN*	Not detected	10		ng/L	2.02	1763-23-1-LN	
PFOS-BR*	Not detected	10		ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	10		ng/L	2.02	2058-94-8	
PFNS*	Not detected	10		ng/L	2.02	474511-07-4	
PFDoDA*	Not detected	10		ng/L	2.02	307-55-1	
PFDS*	Not detected	10		ng/L	2.02	335-77-3	
PFTrDA*	Not detected	10		ng/L	2.02	72629-94-8	
FOSA*	Not detected	10		ng/L	2.02	754-91-6	
PFTeDA*	Not detected	10		ng/L	2.02	376-06-7	

B-Compound also found in associated method blank

Merit Laboratories Login Checklist

Lab Set ID: S99856
Client: OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)
Project: RACER Coldwater Rd Landfill
Submitted: 03/13/2019 14:30 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.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.2
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[ ] Yes	[ ] No	[X] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[X] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

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

Client Review By: _____ Date: _____

Merit Laboratories, Inc.

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

87993

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Clifford Yantz
COMPANY: O'Brien & Gere
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@obg.com QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RALER Coldwater Rd Landfill
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schindler

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	PFAS
99856.01	3/12/19	1846	01-PRCC-19-Eff-136	ww	3	X							X
.02		1848	01-PRCC-19-MID-136	ww	3	X							X
.03		1850	01-PRCC-19-Prim-136	ww	3	X							X
.04	↓	1855	Field Blank-031219	qc	3	X							X

KBS

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
	OBG ☒ Sampler	3/13/19	11-
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		3-13-19	11-
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		3-13-19	1430
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
		3/13/19	1430

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 4.2

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

Rev. 5.18.12