



August 07, 2018

Vista Work Order No. 1801877

Ms. Maya Murshak
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Dear Ms. Murshak,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on July 20, 2018. This sample set was analyzed on a standard turn-around time, under your Project Name 'MDEQ State Municipal Sampling'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1801877**Case Narrative****Sample Condition on Receipt:**

One drinking water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:**EPA Method 537, Rev. 1.1**

The sample was extracted and analyzed for a selected list of 14 PFAS using EPA Method 537, Rev. 1.1. The results have been reported following the conventions specified by the Michigan Department of Environmental Quality.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

Two Laboratory Fortified Blanks (LFB/LFBD) and a Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank. The LFB/LFBD recoveries were within the method acceptance criteria.

The surrogate recoveries for all QC and field samples were within the acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1801877-01	GWEF1807191010GSC	19-Jul-18 10:10	20-Jul-18 10:03	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB					EPA Method 537				
Client Data Name: Merit Laboratories, Inc. Matrix: Aqueous Project: MDEQ State Municipal Sampling					Laboratory Data Lab Sample: B8G0176-BLK1 Column: BEH C18				
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFHxA	307-24-4	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFHpA	375-85-9	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFHxS	355-46-4	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFOA	335-67-1	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFNA	375-95-1	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFOS	1763-23-1	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFDA	335-76-2	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
MeFOSAA	2355-31-9	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
EtFOSAA	2991-50-6	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFUnA	2058-94-8	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFDaA	307-55-1	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFTTrDA	72629-94-8	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
PFTeDA	376-06-7	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	95	70 - 130		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
13C2-PFDA	SURR	95	70 - 130		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1
d5-EtFOSAA	SURR	81	70 - 130		B8G0176	25-Jul-18	0.25 L	04-Aug-18 21:04	1

RL - Reporting limit

Results reported to RL.
Reporting convention specified by MI DEQ.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: LFB												EPA Method 537				
Name: Merit Laboratories, Inc. Project: MDEQ State Municipal Sampling Matrix: Aqueous					Lab Sample: B8G0176-BS1/B8G0176-BSD1 QC Batch: B8G0176 Samp Size: 0.25/0.25 L					Date Extracted: 25-Jul-18 Column: BEH C18						
Analyte	CAS Number	LFB (ng/L)	LFB Spike Amt	LFB % Rec	LFB Quals	LFBD (ng/L)	LFBD Spike Amt	LFBD % Rec	RPD	LFBD Quals	%Rec Limits	RPD Limits	LFB Analyzed	LFB Dil	LFBD Analyzed	LFBD Dil
PFBS	375-73-5	39	35	110		38	35	106	3		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFHxA	307-24-4	42	40	104		38	40	96	9		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFHpA	375-85-9	42	40	106		38	40	95	11		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFHxS	355-46-4	40	36	110		39	36	107	3		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFOA	335-67-1	37	40	93		35	40	88	5		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFNA	375-95-1	47	40	118		44	40	109	8		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFOS	1763-23-1	38	37	102		37	37	99	3		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFDA	335-76-2	46	40	115		41	40	103	10		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
MeFOSAA	2355-31-9	44	40	110		41	40	103	6		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
EtFOSAA	2991-50-6	40	40	100		34	40	85	16		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFUnA	2058-94-8	44	40	109		36	40	91	18		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFDaA	307-55-1	39	40	98		38	40	94	4		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFTTrDA	72629-94-8	42	40	105		39	40	97	8		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
PFTeDA	376-06-7	42	40	106		38	40	95	11		70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
Labeled Standards		Type		LFB % Rec	LFB Quals			LFBD % Rec		LFBD Quals	Limits		LFB Analyzed	LFB Dil	LFBD Analyzed	LFBD Dil
13C2-PFHxA		SURR		99				95			70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
13C2-PFDA		SURR		92				99			70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1
d5-EtFOSAA		SURR		82				82			70-130		04-Aug-18 21:17	1	04-Aug-18 21:30	1

Data Reported per Michigan DEQ instructions.

Sample ID: GWEF1807191010GSC						EPA Method 537					
Client Data				Laboratory Data							
Name:	Merit Laboratories, Inc.		Matrix:	Drinking Water		Lab Sample:	1801877-01		Column:	BEH C18	
Project:	MDEQ State Municipal Sampling		Date Collected:	19-Jul-18 10:10		Date Received:	20-Jul-18 10:03				
Location:	LIVINGCWA03929TP001										
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution		
PFBS	375-73-5	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFHxA	307-24-4	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFHpA	375-85-9	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFHxS	355-46-4	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFOA	335-67-1	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFNA	375-95-1	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFOS	1763-23-1	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFDA	335-76-2	ND	2		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
MeFOSAA	2355-31-9	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
EtFOSAA	2991-50-6	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFUnA	2058-94-8	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFDoA	307-55-1	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFTTrDA	72629-94-8	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
PFTeDA	376-06-7	ND	4		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution		
13C2-PFHxA	SURR	92	70 - 130		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
13C2-PFDA	SURR	91	70 - 130		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		
d5-EtFOSAA	SURR	93	70 - 130		B8G0176	25-Jul-18	0.25 L	04-Aug-18 22:35	1		

RL - Reporting limit

Results reported to RL.

Reporting convention specified by MI DEQ..

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

Sample Log-in Checklist

 Vista Work Order #: 1801877 TAT std

Samples Arrival:	Date/Time 07/20/18 1003	Initials: VSB	Location: WR-2 Shelf/Rack: NA
Logged In:	Date/Time 07/21/18 1342	Initials: KE	Location: WR2 Shelf/Rack: F3 / D7
Delivered By:	<input checked="" type="radio"/> FedEx <input type="radio"/> UPS <input type="radio"/> On Trac <input type="radio"/> GSO <input type="radio"/> DHL <input type="radio"/> Hand Delivered <input type="radio"/> Other		
Preservation:	<input checked="" type="radio"/> Ice <input type="radio"/> Blue Ice <input type="radio"/> Dry Ice <input type="radio"/> None		
Temp °C: 0.5 (uncorrected)	Time: 1048		Thermometer ID: IR-4
Temp °C: 0.4 (corrected)	Probe used: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

		YES	NO	NA
Adequate Sample Volume Received?		KE		
Holding Time Acceptable?		KE		
Shipping Container(s) Intact?		VSB		
Shipping Custody Seals Intact?				BLB
Shipping Documentation Present?		VSB		
Airbill	Trk # 7727 4842 0932	VSB		
Sample Container Intact?		KE		
Sample Custody Seals Intact?				KE
Chain of Custody / Sample Documentation Present?		BLB		
COC Anomaly/Sample Acceptance Form completed?			KE	KE
If Chlorinated or Drinking Water Samples, Acceptable Preservation?		KE		
Preservation Documented:	Na ₂ S ₂ O ₃ <input checked="" type="radio"/> Trizma <input type="radio"/> None	<input checked="" type="radio"/> Yes	No	NA
Shipping Container	<input checked="" type="radio"/> Vista <input type="radio"/> Client <input checked="" type="radio"/> Retain <input type="radio"/> Return <input type="radio"/> Dispose			

Comments: