

July 27, 2018

Vista Work Order No. 1801516

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 June 29, 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 Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

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Vista Work Order No. 1801516 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.

A Laboratory Fortified Blank (LFB) 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 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
1801516-01	GWNT1806221400KER	22-Jun-18 14:00	29-Jun-18 10:01	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

Vista Project: 1801516 Client Project: MDEQ State Municipal Sampling

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ANALYTICAL RESULTS

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Sample ID: LF	RB								EPA Meth	nod 537
Client Data				Lat	boratory Data					
Name: Project:	•		Aqueous	Lab	Sample:	B8G0011-	B8G0011-BLK1		BEH C18	
Analyte	CAS Number	Conc. (ng/L)		RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFHxA	307-24-4	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFHpA	375-85-9	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFHxS	355-46-4	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFOA	335-67-1	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFNA	375-95-1	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFOS	1763-23-1	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFDA	335-76-2	ND		2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
MeFOSAA	2355-31-9	ND		4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
EtFOSAA	2991-50-6	ND		4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFUnA	2058-94-8	ND		4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFDoA	307-55-1	ND		4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFTrDA	72629-94-8	ND		4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFTeDA	376-06-7	ND		4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
Labeled Standard	ls Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130			B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
13C2-PFDA	SURR	99	70 - 130			B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
d5-EtFOSAA	SURR	94	70 - 130			B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	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.

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Sample ID: LFB

Client Data Laboratory Data

Name: Merit Laboratories, Inc. Matrix: Aqueous Lab Sample: B8G0011-BS1 Column: BEH C18

Project: MDEQ State Municipal Sampling

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	71	71	100	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFHxA	307-24-4	88	80	110	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFHpA	375-85-9	85	80	106	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFHxS	355-46-4	73	73	100	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFOA	335-67-1	85	80	106	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFNA	375-95-1	92	80	115	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFOS	1763-23-1	72	74	97	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFDA	335-76-2	97	80	121	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
MeFOSAA	2355-31-9	74	80	93	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
EtFOSAA	2991-50-6	88	80	111	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFUnA	2058-94-8	85	80	106	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFDoA	307-55-1	83	80	104	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFTrDA	72629-94-8	77	80	96	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFTeDA	376-06-7	77	80	96	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
Labeled Standards		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA		SURR		109	70- 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
13C2-PFDA		SURR		104	70- 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
d5-EtFOSAA		SURR		98	70- 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1

Data Reported per Michigan DEQ instructions.

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Sample ID: G	WNT1806221400KER								EPA Meth	hod 537
Client Data				Lal	boratory Data					
Name:	Merit Laboratories, Inc.	Matrix:	Drinking Water		Sample:	1801516-0)1	Column:	BEH C18	
Project:	MDEQ State Municipal Sampling	Date Collected:	22-Jun-18 14:00		te Received:	29-Jun-18	10:01	0.0.0	BEITCIO	
Location:	CREEKVLY40655CH001									
Analyte	CAS Number	Conc. (ng/L)		RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFHxA	307-24-4	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFHpA	375-85-9	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFHxS	355-46-4	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFOA	335-67-1	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFNA	375-95-1	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFOS	1763-23-1	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFDA	335-76-2	ND		2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
MeFOSAA	2355-31-9	ND		4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
EtFOSAA	2991-50-6	ND		4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFUnA	2058-94-8	ND		4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFDoA	307-55-1	ND		4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFTrDA	72629-94-8	ND		4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
PFTeDA	376-06-7	ND		4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
Labeled Standar	ds Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130			B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
13C2-PFDA	SURR	88	70 - 130			B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	1
d5-EtFOSAA	SURR	76	70 - 130			B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:29	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.

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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.

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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.

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CHAIN OF CUSTODY

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For Labor Work Order Storage ID:	ratory Use Or #: 180 WR-2	1516	Temp:Storage Securi	2.9 ed: Yes ₫ No	<u>°C</u>
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Relinquish	ed by ∮printed name∮and sig	nature)		Date		Time	2		Rec	eived	by (pri	inted	name and sign	ature)					,	Date	Time
SHIP TO): Vista Analytical Laboratory	/															7	7			
	1104 Windfield Way El Dorado Hills, CA 95762 Ph: (916) 673-1520; Fax: (106	Method of Shipment:	Add		is(es) F		ested	$\sqrt{}$,		Pr. 4S. Dilliope Dilliution				VSEP Wellow				
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Container T	'ypes: P= HDPE, PJ= HDPE Jຄ	ar	1	Bottle Preservation Type TZ = Trizma:): T = Th	niosulfa	ate,	_					Q = Aqueous, DV Soil, WW = Wa		-				lp/Paper, St) = Sediment	



Sample Log-in Checklist

Vista Work Orde	er#:	8	015	516			T/	AT_8}	1				
Samples Arrival:	Date/Time	Time Initia				L	ocatio	on: WR.	std wr-z				
Arrivai:				101		S	Shelf/Rack: NA						
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COC Anomaly/Sa	ample Accepta	ance F	orm com	pleted?						19			
If Chlorinated or I	Drinking Wate	r Sam	ples, Acc	eptable	Prese	rvatior	1?	16					
Preservation Doc			S ₂ O ₃	Trizr	1	Nor		Yes	No	NA			
Shipping Contain	er	V	ista	Clier	t	Reta	in	Return		oose			
Comments:)								

ID.: LR - SLC

Rev No.: 0

Rev Date: 05/18/2017

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