



February 08, 2018

Vista Work Order No. 1800139

Mr. Patrick Williford
Great Lakes Water Authority
10100 E. Jefferson Avenue
Detroit, MI 48214

Dear Mr. Williford,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on January 19, 2018. This sample set was analyzed on a standard turn-around time, under your Project Name 'GLWA-PFAS Lake Huron WTP'.

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. 1800139

Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

Modified EPA Method 537

The samples were extracted and analyzed for a selected list of PFAS using Modified EPA Method 537. The results for PFHxS, PFOA and PFOS include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

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

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The recovery of PFDS was > 130% in the OPR. This analyte was not detected in the samples. The recoveries of all other analytes were within the method acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
B8A0140-BLK1	B8A0140-BLK1	Modified EPA Method 537	13C2-PFDA	H	56.4
B8A0140-BLK1	B8A0140-BLK1	Modified EPA Method 537	13C2-PFUnA	H	56.4

H = Recovery was outside laboratory acceptance criteria.

TABLE OF CONTENTS

Case Narrative.....	1
Table of Contents.....	3
Sample Inventory.....	4
Analytical Results.....	5
Qualifiers.....	14
Certifications.....	15
Sample Receipt.....	16

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1800139-01	LH-TAP	16-Jan-18 09:27	19-Jan-18 09:28	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800139-02	LH-RAW	16-Jan-18 09:32	19-Jan-18 09:28	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank
Modified EPA Method 537

Client Data				Laboratory Data			
Name:	Great Lakes Water Authority	Matrix:	Aqueous	Lab Sample:	B8A0140-BLK1	Column:	BEH C18
Project:	GLWA-PFAS Lake Huron WTP						

Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFPeA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFBS	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFHxA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFHpA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFHxS	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
6:2 FTS	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFOA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFHpS	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFOS	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFNA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFDA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
8:2 FTS	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFOSA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
MeFOSAA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFDS	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFUnA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
EtFOSAA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFDaA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
MeFOSA	ND	10.0		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
MeFOSE	ND	10.0		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFTTrDA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
EtFOSE	ND	10.0		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
EtFOSA	ND	10.0		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFTeDA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
PFHxDA	ND	2.00		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.0	60 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C3-PFPeA	IS	104	60 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C3-PFBS	IS	109	60 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C2-PFHxA	IS	112	70 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C4-PFHpA	IS	91.4	60 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
18O2-PFHxS	IS	94.3	60 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C2-6:2 FTS	IS	79.3	40 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C2-PFOA	IS	92.1	60 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C8-PFOS	IS	103	60 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C5-PFNA	IS	99.7	50 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1
13C2-PFDA	IS	56.4	60 - 130	H	B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1

Sample ID: Method Blank					Modified EPA Method 537					
Client Data Name: Great Lakes Water Authority Matrix: Aqueous Project: GLWA-PFAS Lake Huron WTP					Laboratory Data Lab Sample: B8A0140-BLK1 Column: BEH C18					
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	89.4	40 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
13C8-PFOSA	IS	50.2	20 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
d3-MeFOSAA	IS	58.2	50 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
13C2-PFUnA	IS	56.4	60 - 130	H	B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
d5-EtFOSAA	IS	60.4	50 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
13C2-PFDoA	IS	63.3	30 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
d3-MeFOSA	IS	27.1	10 - 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
d7-MeFOSE	IS	40.6	10 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
d9-EtFOSE	IS	49.5	10 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
d5-EtFOSA	IS	27.9	10 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
13C2-PFTeDA	IS	57.5	20 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	
13C2-PFHxDA	IS	56.3	20 - 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:44	1	

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit
Results reported to RL.

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

Sample ID: OPR					Modified EPA Method 537					
Client Data Name: Great Lakes Water Authority Project: GLWA-PFAS Lake Huron WTP					Laboratory Data Lab Sample: B8A0140-BS1 Column: BEH C18					
Analyte	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	37.9	40.0	94.7	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFPeA	40.0	40.0	100	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFBS	37.8	40.0	94.5	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFHxA	37.4	40.0	93.4	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFHpA	36.2	40.0	90.6	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFHxS	36.8	40.0	91.9	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
6:2 FTS	36.5	40.0	91.2	60-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFOA	32.9	40.0	82.3	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFHpS	48.1	40.0	120	60-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFOS	43.8	40.0	110	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFNA	38.3	40.0	95.8	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFDA	30.6	40.0	76.6	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
8:2 FTS	31.0	40.0	77.5	60-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFOSA	35.8	40.0	89.5	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
MeFOSAA	32.6	40.0	81.5	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFDS	60.3	40.0	151	60-130	H	B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFUnA	41.4	40.0	103	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
EtFOSAA	40.0	40.0	100	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFDoA	51.8	40.0	129	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
MeFOSA	202	200	101	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
MeFOSE	204	200	102	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFTTrDA	48.7	40.0	122	60-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
EtFOSE	213	200	107	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
EtFOSA	183	200	91.6	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFTeDA	42.0	40.0	105	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
PFHxDA	46.2	40.0	115	70-130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
Labeled Standards	Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS		100	60- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C3-PFPeA	IS		95.3	60- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C3-PFBS	IS		109	60- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-PFHxA	IS		102	70- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C4-PFHpA	IS		104	60- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
18O2-PFHxS	IS		112	60- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-6:2 FTS	IS		84.8	40- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-PFOA	IS		94.4	60- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1

Sample ID: OPR					Modified EPA Method 537				
Client Data Name: Great Lakes Water Authority Project: GLWA-PFAS Lake Huron WTP					Laboratory Data Lab Sample: B8A0140-BS1 Column: BEH C18				
Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C8-PFOS	IS	89.6	60- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C5-PFNA	IS	84.6	50- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-PFDA	IS	81.2	60- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-8:2 FTS	IS	86.4	40- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C8-PFOSA	IS	75.8	20- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
d3-MeFOSAA	IS	101	50- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-PFUnA	IS	69.8	60- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
d5-EtFOSAA	IS	100	50- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-PFDoA	IS	70.6	30- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
d3-MeFOSA	IS	48.8	10- 130		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
d7-MeFOSE	IS	63.7	10- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
d9-EtFOSE	IS	60.7	10- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
d5-EtFOSA	IS	47.2	10- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-PFTeDA	IS	71.0	20- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1
13C2-PFHxDA	IS	78.0	20- 150		B8A0140	25-Jan-18	0.250 L	30-Jan-18 20:21	1

Sample ID: LH-TAP
Modified EPA Method 537

Client Data				Laboratory Data			
Name:	Great Lakes Water Authority	Matrix:	Drinking Water	Lab Sample:	1800139-01	Column:	BEH C18
Project:	GLWA-PFAS Lake Huron WTP	Date Collected:	16-Jan-18 09:27	Date Received:	19-Jan-18 09:28		
Location:	Lake Huron WTP TAP						

Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFPeA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFBS	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFHxA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFHpA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFHxS	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
6:2 FTS	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFOA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFHpS	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFOS	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFNA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFDA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
8:2 FTS	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFOSA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
MeFOSAA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFDS	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFUnA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
EtFOSAA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFDaA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
MeFOSA	ND	9.10		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
MeFOSE	ND	9.10		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFTTrDA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
EtFOSE	ND	9.10		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
EtFOSA	ND	9.10		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFTeDA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
PFHxDA	ND	1.82		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	101	60 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C3-PFPeA	IS	97.2	60 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C3-PFBS	IS	94.6	60 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-PFHxA	IS	99.3	70 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C4-PFHpA	IS	94.9	60 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
18O2-PFHxS	IS	118	60 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-6:2 FTS	IS	109	40 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-PFOA	IS	114	60 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C8-PFOS	IS	86.3	60 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C5-PFNA	IS	102	50 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-PFDA	IS	89.1	60 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1

Sample ID: LH-TAP	Modified EPA Method 537
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Client Data Name: Great Lakes Water Authority Project: GLWA-PFAS Lake Huron WTP Location: Lake Huron WTP TAP	Laboratory Data Matrix: Drinking Water Date Collected: 16-Jan-18 09:27 Lab Sample: 1800139-01 Date Received: 19-Jan-18 09:28 Column: BEH C18
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Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-8:2 FTS	IS	91.9	40 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C8-PFOSA	IS	77.0	20 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
d3-MeFOSAA	IS	79.6	50 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-PFUnA	IS	92.7	60 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
d5-EtFOSAA	IS	85.6	50 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-PFDoA	IS	75.1	30 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
d3-MeFOSA	IS	41.2	10 - 130		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
d7-MeFOSE	IS	59.7	10 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
d9-EtFOSE	IS	63.2	10 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
d5-EtFOSA	IS	41.6	10 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-PFTeDA	IS	61.5	20 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1
13C2-PFHxDA	IS	87.8	20 - 150		B8A0140	25-Jan-18	0.275 L	30-Jan-18 23:13	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit
Results reported to RL.

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

Sample ID: LH-RAW
Modified EPA Method 537

Client Data				Laboratory Data			
Name:	Great Lakes Water Authority	Matrix:	Surface Water	Lab Sample:	1800139-02	Column:	BEH C18
Project:	GLWA-PFAS Lake Huron WTP	Date Collected:	16-Jan-18 09:32	Date Received:	19-Jan-18 09:28		
Location:	Lake Huron WTP RAW						

Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFPeA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFBS	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFHxA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFHpA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFHxS	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
6:2 FTS	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFOA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFHpS	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFOS	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFNA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFDA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
8:2 FTS	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFOSA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
MeFOSAA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFDS	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFUnA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
EtFOSAA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFDaA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
MeFOSA	ND	9.13		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
MeFOSE	ND	9.13		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFTTrDA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
EtFOSE	ND	9.13		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
EtFOSA	ND	9.13		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFTeDA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
PFHxDA	ND	1.83		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	104	60 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C3-PFPeA	IS	104	60 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C3-PFBS	IS	101	60 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-PFHxA	IS	97.8	70 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C4-PFHpA	IS	96.8	60 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
18O2-PFHxS	IS	90.6	60 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-6:2 FTS	IS	75.6	40 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-PFOA	IS	93.9	60 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C8-PFOS	IS	96.8	60 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C5-PFNA	IS	96.5	50 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-PFDA	IS	81.9	60 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1

Sample ID: LH-RAW	Modified EPA Method 537
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Client Data Name: Great Lakes Water Authority Project: GLWA-PFAS Lake Huron WTP Location: Lake Huron WTP RAW	Laboratory Data Matrix: Surface Water Date Collected: 16-Jan-18 09:32 Lab Sample: 1800139-02 Date Received: 19-Jan-18 09:28 Column: BEH C18
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Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-8:2 FTS	IS	92.0	40 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C8-PFOSA	IS	82.4	20 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
d3-MeFOSAA	IS	85.6	50 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-PFUnA	IS	81.7	60 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
d5-EtFOSAA	IS	96.5	50 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-PFDoA	IS	97.0	30 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
d3-MeFOSA	IS	44.7	10 - 130		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
d7-MeFOSE	IS	74.5	10 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
d9-EtFOSE	IS	75.8	10 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
d5-EtFOSA	IS	45.5	10 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-PFTeDA	IS	82.2	20 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1
13C2-PFHxDA	IS	96.8	20 - 150		B8A0140	25-Jan-18	0.274 L	30-Jan-18 23:24	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit
Results reported to RL.

When reported, PFHxS, PFOA and PFOS 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.
D	Dilution
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.
M	Estimated Maximum Possible Concentration. (CA Region 2 projects only)
*	See Cover Letter
Conc.	Concentration
NA	Not applicable
ND	Not Detected
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)

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.



For Laboratory Use Only

Work Order #: 1800139 Temp: 0.2 °C

Storage ID: WR-2 Storage Secured Yes ☒ No ☐

Sampler: Theresa Will
FRED COLLINS
(name)

TAT Standard: ☒ 21 days
(check one) Rush (surcharge may apply):
☐ 14 days ☐ 7 days Specify:

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
<i>[Signature]</i>	1-16-18	2:49 PM	<i>[Signature]</i>	01-17-2018	0930
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
<i>[Signature]</i>	01-17-2018	09:00	<i>[Signature]</i>	01/16/18	0951

Method of Shipment:

ATTN:

Tracking No.:

Add Analysis(es) Requested

Container(s)

Mod. EPA
Method 537EPA Method
837 (DW only)[illegible]

Special Instructions/Comments: _____

SEND
DOCUMENTATION
AND RESULTS TO:

Name: MARY LYNN SEMEGEN

Company: GREAT LAKES WATER AUTHORITY (GLWA)

Address: 10100 EAST JEFFERSON AVENUE

City: DETROIT State: MI Zip: 48214

Phone: (313) 926-8102 Fax: (313) 842-6418

Email: mary.semegen@glwater.org, patrick.williford@glwater.org

Bottle Preservation Type: T = Thiosulfate.
TZ = Trizma: TZ

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SO = Sediment, SL = Sludge, SQ = Soil, WW = Wastewater, B = Blood/Serum, Q = Other: **SW = SURFACE WATER**

Sample Log-in Checklist

 Vista Work Order #: 180001 1800139 TAT std

Samples Arrival:	Date/Time 01/19/18 0928	Initials: UPB	Location: WR-2
			Shelf/Rack: NA
Logged In:	Date/Time 01/19/18 1204	Initials: UPB	Location: WR-2
			Shelf/Rack: A4
Delivered By:	FedEx	UPS	On Trac
		GSO	DHL
		Hand Delivered	Other
Preservation:	Ice	Blue Ice	Dry Ice
	None		
Temp °C: 0.3 (uncorrected)	Time: 0951		
Temp °C: 0.2 (corrected)	Probe used: Yes ☐ No ☒		
Thermometer ID: IR-4			

		YES	NO	NA
Adequate Sample Volume Received?		✓		
Holding Time Acceptable?		✓		
Shipping Container(s) Intact?		✓		
Shipping Custody Seals Intact?		✓		
Shipping Documentation Present?		✓		
Airbill	Trk # 7712 3195 8290	✓		
Sample Container Intact?		✓		
Sample Custody Seals Intact?				✓
Chain of Custody / Sample Documentation Present?		✓		
COC Anomaly/Sample Acceptance Form completed?			✓	✓
If Chlorinated or Drinking Water Samples, Acceptable Preservation?		✓		
Preservation Documented:	Na ₂ S ₂ O ₃	Trizma	None	
		Yes	No	NA
Shipping Container	Vista	Client	Retain	Return
				Dispose

Comments: