Naval Facilities Engineering Command

Off-base Drinking Water Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG 1801383

Marine Corps Outlying Landing Field Atlantic
MCAS Cherry Point NC

February 2019

July 02, 2018

Vista Work Order No. 1801383

Ms. Tiffany Hill
Jacobs
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 21, 2018. This sample set was analyzed on a rush turn-around time, under your Project Name 'CTO-08, MCOLF Atlantic PFAS DW Investigation'.

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. 1800702
Case Narrative

Sample Condition on Receipt:

Ten drinking water samples 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. As requested, this report has been amended to remove two samples from the data set.

Analytical Notes:

EPA Method 537, Rev. 1.1

Samples "CH-AT-1RW190-0418" and "CH-AT-1RW192-0418" contained particulates and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using EPA Method 537, Rev. 1.1.

Holding Times

The samples were 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 Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank above 1/2 the LOQ. The LFB recoveries were within the method acceptance criteria.

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

A Laboratory Fortified Sample Matrix (LFSM) and Laboratory Fortified Sample Matrix Duplicate (LFSMD) were performed on sample "CH-AT-1RW189-0418". The analyte recoveries and RPDs were within the method acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID		Sampled	Received	Components/Containers
1800702-01	CH-AT-1RW189-0418	MS/MSD	17-Apr-18 13:12	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-02	CH-AT-1FB189-0418		17-Apr-18 13:13	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-03	CH-AT-1RW190-0418		17-Apr-18 14:00	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-04	CH-AT-1FB190-0418		17-Apr-18 14:01	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-05	CH-AT-1RW191-0418		17-Apr-18 14:22	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-06	CH-AT-1FB191-0418		17-Apr-18 14:23	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-07	CH-AT-1RW192-0418		18-Apr-18 10:34	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-08	CH-AT-1FB192-0418		18-Apr-18 10:35	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-09	CH-AT-1RW193-0418		18-Apr-18 11:02	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-10	CH-AT-1FB193-0418		18-Apr-18 11:03	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Aqueous

Laboratory Data

Lab Sample: B8D0126-BLK1
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.443	5.00	10.0		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1
PFOA	ND	1.08	5.00	10.0		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1
PFOS	ND	1.04	5.00	10.0		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1
13C2-PFDA	SURR	86.8	70 - 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: LFB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Aqueous

Laboratory Data

Lab Sample: B8D0126-BS1
Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	86.9	70.8	123	70-130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
PFOA	83.6	80.0	105	70-130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
PFOS	82.0	74.0	111	70-130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
Labeled Standards	**Type**		**% Rec**	**Limits**	**Qualifiers**	**Batch**	**Extracted**	**Samp Size**	**Analyzed**	**Dilution**
13C2-PFHxA	SURR		94.2	70- 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
13C2-PFDA	SURR		85.7	70- 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1

Sample ID: CH-AT-1RW189-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 13:12

Laboratory Data

Lab Sample: 1800702-01
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.436	4.92	9.83		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1
PFOA	ND	1.06	4.92	9.83		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1
PFOS	ND	1.02	4.92	9.83		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	92.4	70 - 130		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1
13C2-PFDA	SURR	85.8	70 - 130		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW189-0418 **EPA Method 537**

Name:	CH2M Hill	Lab Sample:	B8D0126-MS1/B8D0126-MSD1	Source Lab Sample:	1800702-01
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigatior	QC Batch:	B8D0126	Date Extracted:	23-Apr-18
Matrix:	Aqueous	Samp Size:	0.248/0.253 L	Column:	BEH C18

Analyte	Sample (ng/L)	MS (ng/L)	MS Spike Amt	MS % Rec	MS Quals	MSD (ng/L)	MSD Spike Amt	MSD % Rec	RPD	MSD Quals	%Rec Limits	RPD Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
PFBS	ND	72.8	71.4	102		79.6	69.8	114	11.1		70-130	30	25-Apr-18 20:08	1	25-Apr-18 20:19	1
PFOA	ND	81.6	80.7	101		81.5	78.9	103	1.96		70-130	30	25-Apr-18 20:08	1	25-Apr-18 20:19	1
PFOS	ND	73.9	74.7	98.9		80.6	73.0	110	10.6		70-130	30	25-Apr-18 20:08	1	25-Apr-18 20:19	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C2-PFHxA	SURR	90.2		96.4		70-130	25-Apr-18 20:08	1	25-Apr-18 20:19	1
13C2-PFDA	SURR	85.5		84.2		70-130	25-Apr-18 20:08	1	25-Apr-18 20:19	1

Sample ID: CH-AT-1FB189-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 13:13

Laboratory Data

Lab Sample: 1800702-02
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.433	4.88	9.78		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1
PFOA	ND	1.06	4.88	9.78		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1
PFOS	ND	1.02	4.88	9.78		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	84.6	70 - 130		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1
13C2-PFDA	SURR	84.0	70 - 130		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW190-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:00

Laboratory Data

Lab Sample: 1800702-03
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.438	4.94	9.89		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1
PFOA	ND	1.07	4.94	9.89		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1
PFOS	ND	1.03	4.94	9.89		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	91.9	70 - 130		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1
13C2-PFDA	SURR	91.6	70 - 130		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1FB190-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:01

Laboratory Data

Lab Sample: 1800702-04
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.419	4.73	9.46		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1
PFOA	ND	1.02	4.73	9.46		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1
PFOS	ND	0.984	4.73	9.46		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1
13C2-PFDA	SURR	98.0	70 - 130		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW191-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:22

Laboratory Data

Lab Sample: 1800702-05
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.428	4.83	9.66		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1
PFOA	ND	1.04	4.83	9.66		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1
PFOS	ND	1.00	4.83	9.66		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	98.6	70 - 130		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1
13C2-PFDA	SURR	102	70 - 130		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1FB191-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:23

Laboratory Data

Lab Sample: 1800702-06
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.442	4.98	9.97		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1
PFOA	ND	1.08	4.98	9.97		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1
PFOS	ND	1.04	4.98	9.97		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	84.9	70 - 130		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1
13C2-PFDA	SURR	92.0	70 - 130		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW192-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 18-Apr-18 10:34

Laboratory Data

Lab Sample: 1800702-07
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.457	5.17	10.3		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1
PFOA	ND	1.11	5.17	10.3		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1
PFOS	ND	1.07	5.17	10.3		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	89.1	70 - 130		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1
13C2-PFDA	SURR	89.5	70 - 130		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1FB192-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 18-Apr-18 10:35

Laboratory Data

Lab Sample: 1800702-08
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.430	4.86	9.71		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1
PFOA	ND	1.05	4.86	9.71		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1
PFOS	ND	1.01	4.86	9.71		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	90.5	70 - 130		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1
13C2-PFDA	SURR	101	70 - 130		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
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**
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.

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1800702 Temp 1.0 °C
Storage ID WR-2 Storage Secured Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation
PO#: 10006-7-106051
Sampler: K. Smith & M. Witmer (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	4/18/18	1300	Marissa Sparks	04/19/18	0939
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod EPA Method 537: PFOA/PFOS	UCMR3 PFAS List:6	537 List: 14	Full List of 26	Other: Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List:6	PFAS List: 14	Comments
CH-AT-1RW189-0418	4/17/18	1312		2	P	DW						X			TZ preservative
CH-AT-1RW189-0418-MS		1312		2	P	DW						X			TZ preservative
CH-AT-1RW189-0418-SD		1312		2	P	DW						X			TZ preservative
CH-AT-1FB189-0418		1313		2	P	DW						X			TZ preservative
CH-AT-1RW190-0418		1400		2	P	DW						X			TZ preservative
CH-AT-1FB190-0418		1401		2	P	DW						X			TZ preservative
CH-AT-1RW191-0418		1422		2	P	DW						X			TZ preservative
CH-AT-1FB191-0418	↓	1423		2	P	DW						X			TZ preservative
CH-AT-1RW192-0418	4/18/18	1034		2	P	DW						X			TZ preservative
CH-AT-1FB192-0418	↓	1035		2	P	DW						X			TZ preservative

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@ch2m.com

Container Types: P= HDPE, PJ= HDPE Jar, O = Other

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

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

Page: 1 of 1

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1800702 Temp: 1.0 °C
Storage ID: WR-2 Storage Secured: Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation
PO#: 10006-7-106051
Sampler: K. Smith & M. Witmer (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	4/18/18	1300	Marissa Sparks	04/19/18	0939
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s): Quantity	Type	Matrix	Mod EPA Method 537: PFOA/PFOS	UCMR3 PFAS List 6	537 List 14	Full List of 26	Other: Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List 6	PFAS List 14	Comments
CH-AT-1RW193-0418	4/18/18	1102		2	P	DW						X			TZ
CH-AT-1FB193-0418	↓	1103		2	P	DW						X			TZ

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@ch2m.com

Container Types: P= HDPE, PJ= HDPE Jar, O = Other

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

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

Page: 1 of 1

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1800702 **TAT** 7 days

Samples Arrival:	**Date/Time** 04/19/18 0849	**Initials:** MWS	**Location:** WR-2 **Shelf/Rack:** N/a
Logged In:	**Date/Time** 04/19/18 1058	**Initials:** MWS	**Location:** WR-2 **Shelf/Rack:** E-6

Delivered By:	(FedEx)	UPS	On Trac	GSO	DHL	Hand Delivered	Other
Preservation:		(Ice)	Blue Ice		Dry Ice		None

Temp °C: 1.1	(uncorrected)	**Time:** 0937	**Thermometer ID:** IR-4
Temp °C: 1.0	(corrected)	**Probe used:** Yes☐ No☒	

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill — Trk # 7805 7701 8632	✓		
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:	$Na_2S_2O_3$	(Trizma)	None		(Yes)	No	NA
Shipping Container	(Vista)	Client	(Retain)	Return		Dispose	

Comments:

July 02, 2018

Vista Work Order No. 1801383

Ms. Tiffany Hill
Jacobs
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 21, 2018. This sample set was analyzed on a rush turn-around time, under your Project Name 'CTO-08, MCOLF Atlantic PFAS DW Investigation'.

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. 1800702
Case Narrative

Sample Condition on Receipt:

Ten drinking water samples 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. As requested, this report has been amended to remove two samples from the data set.

Analytical Notes:

EPA Method 537, Rev. 1.1

Samples "CH-AT-1RW190-0418" and "CH-AT-1RW192-0418" contained particulates and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using EPA Method 537, Rev. 1.1.

Holding Times

The samples were 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 Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank above 1/2 the LOQ. The LFB recoveries were within the method acceptance criteria.

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

A Laboratory Fortified Sample Matrix (LFSM) and Laboratory Fortified Sample Matrix Duplicate (LFSMD) were performed on sample "CH-AT-1RW189-0418". The analyte recoveries and RPDs were within the method acceptance criteria.

TABLE OF CONTENTS

Sample Inventory Report

Vista Sample ID	Client Sample ID		Sampled	Received	Components/Containers
1800702-01	CH-AT-1RW189-0418	MS/MSD	17-Apr-18 13:12	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-02	CH-AT-1FB189-0418		17-Apr-18 13:13	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-03	CH-AT-1RW190-0418		17-Apr-18 14:00	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-04	CH-AT-1FB190-0418		17-Apr-18 14:01	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-05	CH-AT-1RW191-0418		17-Apr-18 14:22	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-06	CH-AT-1FB191-0418		17-Apr-18 14:23	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-07	CH-AT-1RW192-0418		18-Apr-18 10:34	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-08	CH-AT-1FB192-0418		18-Apr-18 10:35	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-09	CH-AT-1RW193-0418		18-Apr-18 11:02	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
1800702-10	CH-AT-1FB193-0418		18-Apr-18 11:03	19-Apr-18 08:49	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Aqueous

Laboratory Data

Lab Sample: B8D0126-BLK1
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.443	5.00	10.0		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1
PFOA	ND	1.08	5.00	10.0		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1
PFOS	ND	1.04	5.00	10.0		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1
13C2-PFDA	SURR	86.8	70 - 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:56	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: LFB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Aqueous

Laboratory Data

Lab Sample: B8D0126-BS1
Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	86.9	70.8	123	70-130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
PFOA	83.6	80.0	105	70-130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
PFOS	82.0	74.0	111	70-130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
Labeled Standards	**Type**		**% Rec**	**Limits**	**Qualifiers**	**Batch**	**Extracted**	**Samp Size**	**Analyzed**	**Dilution**
13C2-PFHxA	SURR		94.2	70- 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1
13C2-PFDA	SURR		85.7	70- 130		B8D0126	23-Apr-18	0.250 L	25-Apr-18 19:45	1

Sample ID: CH-AT-1RW189-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 13:12

Laboratory Data

Lab Sample: 1800702-01
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.436	4.92	9.83		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1
PFOA	ND	1.06	4.92	9.83		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1
PFOS	ND	1.02	4.92	9.83		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	92.4	70 - 130		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1
13C2-PFDA	SURR	85.8	70 - 130		B8D0126	23-Apr-18	0.254 L	25-Apr-18 20:31	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW189-0418 **EPA Method 537**

Name:	CH2M Hill	Lab Sample:	B8D0126-MS1/B8D0126-MSD1	Source Lab Sample:	1800702-01
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigatior	QC Batch:	B8D0126	Date Extracted:	23-Apr-18
Matrix:	Aqueous	Samp Size:	0.248/0.253 L	Column:	BEH C18

Analyte	Sample (ng/L)	MS (ng/L)	MS Spike Amt	MS % Rec	MS Quals	MSD (ng/L)	MSD Spike Amt	MSD % Rec	RPD	MSD Quals	%Rec Limits	RPD Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
PFBS	ND	72.8	71.4	102		79.6	69.8	114	11.1		70-130	30	25-Apr-18 20:08	1	25-Apr-18 20:19	1
PFOA	ND	81.6	80.7	101		81.5	78.9	103	1.96		70-130	30	25-Apr-18 20:08	1	25-Apr-18 20:19	1
PFOS	ND	73.9	74.7	98.9		80.6	73.0	110	10.6		70-130	30	25-Apr-18 20:08	1	25-Apr-18 20:19	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C2-PFHxA	SURR	90.2		96.4		70-130	25-Apr-18 20:08	1	25-Apr-18 20:19	1
13C2-PFDA	SURR	85.5		84.2		70-130	25-Apr-18 20:08	1	25-Apr-18 20:19	1

Sample ID: CH-AT-1FB189-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 13:13

Laboratory Data

Lab Sample: 1800702-02
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.433	4.88	9.78		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1
PFOA	ND	1.06	4.88	9.78		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1
PFOS	ND	1.02	4.88	9.78		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	84.6	70 - 130		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1
13C2-PFDA	SURR	84.0	70 - 130		B8D0126	23-Apr-18	0.256 L	25-Apr-18 20:42	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW190-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:00

Laboratory Data

Lab Sample: 1800702-03
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.438	4.94	9.89		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1
PFOA	ND	1.07	4.94	9.89		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1
PFOS	ND	1.03	4.94	9.89		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	91.9	70 - 130		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1
13C2-PFDA	SURR	91.6	70 - 130		B8D0126	23-Apr-18	0.253 L	25-Apr-18 20:54	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1FB190-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:01

Laboratory Data

Lab Sample: 1800702-04
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.419	4.73	9.46		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1
PFOA	ND	1.02	4.73	9.46		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1
PFOS	ND	0.984	4.73	9.46		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1
13C2-PFDA	SURR	98.0	70 - 130		B8D0126	23-Apr-18	0.264 L	25-Apr-18 21:05	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW191-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:22

Laboratory Data

Lab Sample: 1800702-05
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.428	4.83	9.66		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1
PFOA	ND	1.04	4.83	9.66		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1
PFOS	ND	1.00	4.83	9.66		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	98.6	70 - 130		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1
13C2-PFDA	SURR	102	70 - 130		B8D0126	23-Apr-18	0.259 L	25-Apr-18 21:17	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1FB191-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Apr-18 14:23

Laboratory Data

Lab Sample: 1800702-06
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.442	4.98	9.97		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1
PFOA	ND	1.08	4.98	9.97		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1
PFOS	ND	1.04	4.98	9.97		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	84.9	70 - 130		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1
13C2-PFDA	SURR	92.0	70 - 130		B8D0126	23-Apr-18	0.251 L	25-Apr-18 21:28	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1RW192-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 18-Apr-18 10:34

Laboratory Data

Lab Sample: 1800702-07
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.457	5.17	10.3		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1
PFOA	ND	1.11	5.17	10.3		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1
PFOS	ND	1.07	5.17	10.3		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	89.1	70 - 130		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1
13C2-PFDA	SURR	89.5	70 - 130		B8D0126	23-Apr-18	0.242 L	25-Apr-18 21:40	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
When reported, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: CH-AT-1FB192-0418

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 18-Apr-18 10:35

Laboratory Data

Lab Sample: 1800702-08
Date Received: 19-Apr-18 08:49
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.430	4.86	9.71		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1
PFOA	ND	1.05	4.86	9.71		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1
PFOS	ND	1.01	4.86	9.71		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	90.5	70 - 130		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1
13C2-PFDA	SURR	101	70 - 130		B8D0126	23-Apr-18	0.257 L	25-Apr-18 21:51	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.
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**
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.

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1800702 Temp 1.0 °C
Storage ID WR-2 Storage Secured Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation
PO#: 10006-7-106051
Sampler: K. Smith & M. Witmer (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	4/18/18	1300	Marissa Sparks	04/19/18	0939
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod EPA Method 537: PFOA/PFOS	UCMR3 PFAS List:6	537 List: 14	Full List of 26	Other: Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List:6	PFAS List: 14	Comments
CH-AT-1RW189-0418	4/17/18	1312		2	P	DW						X			TZ preservative
CH-AT-1RW189-0418-MS		1312		2	P	DW						X			TZ preservative
CH-AT-1RW189-0418-SD		1312		2	P	DW						X			TZ preservative
CH-AT-1FB189-0418		1313		2	P	DW						X			TZ preservative
CH-AT-1RW190-0418		1400		2	P	DW						X			TZ preservative
CH-AT-1FB190-0418		1401		2	P	DW						X			TZ preservative
CH-AT-1RW191-0418		1422		2	P	DW						X			TZ preservative
CH-AT-1FB191-0418	↓	1423		2	P	DW						X			TZ preservative
CH-AT-1RW192-0418	4/18/18	1034		2	P	DW						X			TZ preservative
CH-AT-1FB192-0418	↓	1035		2	P	DW						X			TZ preservative

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@ch2m.com

Container Types: P= HDPE, PJ= HDPE Jar, O = Other

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

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

Page: 1 of 1

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1800702 Temp: 1.0 °C
Storage ID: WR-2 Storage Secured: Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation
PO#: 10006-7-106051
Sampler: K. Smith & M. Witmer (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	4/18/18	1300	Marissa Sparks	04/19/18	0939
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s): Quantity	Type	Matrix	Mod EPA Method 537: PFOA/PFOS	UCMR3 PFAS List 6	537 List: 14	Full List of 26	Other: Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List 6	PFAS List: 14	Comments
CH-AT-1RW193-0418	4/18/18	1102		2	P	DW						X			TZ
CH-AT-1FB193-0418	↓	1103		2	P	DW						X			TZ

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@ch2m.com

Container Types: P= HDPE, PJ= HDPE Jar, O = Other

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

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

Page: 1 of 1

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1800702 **TAT** 7 days

Samples Arrival:	**Date/Time** 04/19/18 0849	**Initials:** MWS	**Location:** WR-2 **Shelf/Rack:** N/a
Logged In:	**Date/Time** 04/19/18 1058	**Initials:** MWS	**Location:** WR-2 **Shelf/Rack:** E-6

Delivered By:	(FedEx)	UPS	On Trac	GSO	DHL	Hand Delivered	Other
Preservation:	(Ice)	Blue Ice	Dry Ice	None		

Temp °C: 1.1	(uncorrected)	**Time:** 0937	**Thermometer ID:** IR-4
Temp °C: 1.0	(corrected)	**Probe used:** Yes☐ No☒	

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill — Trk # 7805 7701 8632	✓		
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:	$Na_2S_2O_3$	(Trizma)	None	(Yes)	No	NA
Shipping Container	(Vista)	Client	(Retain)	Return	Dispose	

Comments:

EXTRACTION INFORMATION

Process Sheet

RUSH

Workorder: 1800702

Prep Expiration: 2018-May-01
Client: CH2M Hill

Workorder Due: 26-Apr-18 00:00

TAT: 7

Method: **537 PFAS DW DoD Unmodified**
Matrix: **Aqueous**

Prep Batch: B8D0126

Prep Data Entered: HN 4/24/18
Date and Initials

Version: PFOA, PFOS, PFBS
DoD: DoD QSM 5.1

Initial Sequence: S0D0047

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
1800702-01	"ABC" "A"	☑	☒	CH-AT-1RW189-0418	**MS/MSD**	WR-2 E-6	HDPE Bottle, 250 mL
1800702-02		☑	☒	CH-AT-1FB189-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-03		☑	☒	CH-AT-1RW190-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-04		☑	☒	CH-AT-1FB190-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-05		☑	☒	CH-AT-1RW191-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-06		☑	☒	CH-AT-1FB191-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-07		☑	☒	CH-AT-1RW192-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-08		☑	☒	CH-AT-1FB192-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-09		☑	☒	CH-AT-1RW193-0418		WR-2 E-6	HDPE Bottle, 250 mL
1800702-10		☑	☒	CH-AT-1FB193-0418		WR-2 E-6	HDPE Bottle, 250 mL

Pre-Prep Check Out: HB 4/19/18
Pre-Prep Check In: HB 4/19/18

Prep Check Out: FR 4.23.18
Prep Check In: N/A

Prep Reconciled Initals/Date: HB 4/19/18
Spike Reconciled Initals/Date: FR 4.23.18
VialBoxID: Ditto

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537 PFAS DW DoD Unmodified
Method: 537 PFAS DW Unmodified

B8D0126

Chemist: JR

Prep Date/Time: ~~18-Apr-18 17:30~~ 4·23·18 9:00

Prepared using: LCMS - SPE Extraction-LCMS

BalanceID: HRMS-8

Cen	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☐	B8D0126-BLK1 (A)	NA	NA	(0.250)	JR 4·23·18	JR 4·23·18	HN JR 4/23/18
☐	B8D0126-BS1 (A)	↓	↓	(0.250)	↓	↓	↓
☐	B8D0126-MS1 1800702-01 (B)	285.40	37.59	0.24781	↓	↓	↓
☐	B8D0126-MSD1 1800702-01 (B)	291.14	37.70	0.25344	↓	↓	↓
☐	1800690-01	~~278.45~~					
☐	1800690-02	~~299.97~~					
☐	1800690-03	~~297.24~~					
☐	1800690-04	~~298.05~~					
☐	1800690-05	~~296.31~~					
☐	1800702-01 (B)	292.28	37.99	0.25429	JR 4·23·18	JR 4·23·18	HN JR 4/23/18
☐	1800702-01RE1						HB 4/19/18
☐	1800702-02	293.44	37.81	0.25563	JR 4·23·18	JR 4·23·18	HN JR 4/23/18
☒	1800702-03 HB 4/19/18	~~302.01~~ 290.50	37.74	0.25276	↓	↓	↓
☐	1800702-04	302.01	37.80	0.26421	↓	↓	↓
☐	1800702-05	296.33	37.62	0.25871	↓	↓	↓
☐	1800702-06	288.52	37.81	0.25071	↓	↓	↓

JR 4·23·18

SS/IS: 18D0505, 20 µL (V2)
NS: 18C1218, 20 µL (V1)
IS/RS: 18D0506, 20 µL (V2)

SPE Chem: Strata X 33µm 500mg/6mL
Lot#: S18-000744
Ele SOLV: MeOH
Lot#: JB064809
Final Volume(s): 1mL

Notes: (A) 1.25 grams Trizma added to QCs. HB 4/19/18
(B) Samples discolored after extraction HN 4/23/18

Comments: Assume 1 g = 1 mL
Cen = Centrifuged

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537 PFAS DW DoD Unmodified
Method: 537 PFAS DW Unmodified

B8D0126

Chemist: 7R

Prep Date/Time: ~~18-Apr-18 17:30~~ 4.23.18 9:00

Prepared using: LCMS - SPE Extraction-LCMS

BalanceID: HRM1~8

Cen	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☒	1800702-07	280.23	37.89	0.24234	7R JR 4.23.18	7R 4.23.18	HN 7R 4/23/18
☐	1800702-08	295.43	38.02	0.25741	"	"	"
☐	1800702-09	292.36	37.83	0.25453	"	"	"
☐	1800702-10	280.81	37.76	0.24305	"	"	"

SS/IS: 18D0505, 20 µL (V2)

NS: 18C1218, 20 µL (V1)

IS/RS: 18D0506, 20 µL (V2)

SPE Chem: Strata X 33 µm 500mg/6mL

Lot#: S18-000744

Ele SOLV: MeOH

Lot#: JBD64809

Final Volume(s) 1 mL

Notes:

Comments: Assume 1 g = 1 mL
Cen = Centrifuged

Batch: B8D0126

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1800702-01	0.25429	N/A	N/A	1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-01	0.25429			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW Unmodified
1800702-02	0.25563			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-03	0.25276			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-04	0.26421			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-05	0.25871			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-06	0.25071			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-07	0.24234			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-08	0.25741			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-09	0.25453			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
1800702-10	0.24305			1000	23-Apr-18 09:00	FBR			Drinking Water	537 PFAS DW DoD Unmoc
B8D0126-BLK1	0.25			1000	23-Apr-18 09:30	FBR				QC
B8D0126-BS1	0.25			1000	23-Apr-18 09:30	FBR	18C1218	20		QC
B8D0126-MS1	0.24781			1000	23-Apr-18 09:30	FBR	18C1218	20		QC
B8D0126-MSD1	0.25344			1000	23-Apr-18 09:30	FBR	18C1218	20		QC

HN 4/24/18

SAMPLE DATA –EPA METHOD 537

Vista Analytical Laboratory

rev ANP 4/30/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-16.qld

Last Altered: Thursday, April 26, 2018 13:40:45 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:41:22 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_16, Date: 25-Apr-2018, Time: 19:56:59, ID: B8D0126-BLK1 LRB 0.25, Description: LRB

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		8.45e3	0.2500		2.64				
2	5	PFOA	413 > 368.7		1.52e4	0.2500		3.86				
3	7	PFOS	499 >79.9		8.45e3	0.2500		4.23				
4	15	13C2-PFHxA	315 > 269.8	1.09e4	1.52e4	0.2500	0.689	3.08	3.01	7.15	41.5	103.8
5	16	13C2-PFDA	515.1 > 469.9	9.17e3	1.52e4	0.2500	0.696	4.43	4.44	6.04	34.7	86.8
6	18	13C2-PFOA	414.9 > 369.7	1.52e4	1.52e4	0.2500	1.000	3.92	3.85	10.0	40.0	100.0
7	19	13C4-PFOS	503.0 > 79.9	8.45e3	8.45e3	0.2500	1.000	4.29	4.22	28.7	115	100.0

AR 4/26/2018

Vista Analytical Laboratory

rev ANP 4/30/2018

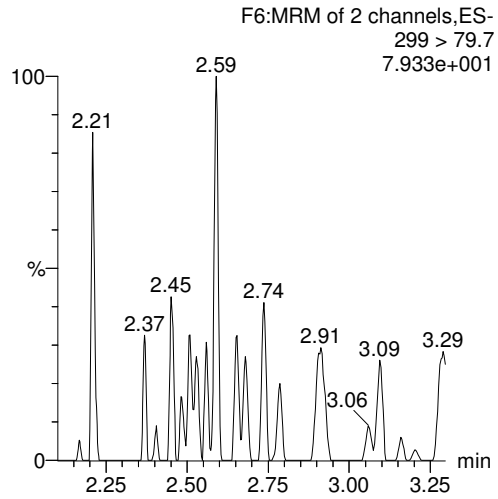
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-16.qld

Last Altered: Thursday, April 26, 2018 13:40:45 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:41:22 Pacific Daylight Time

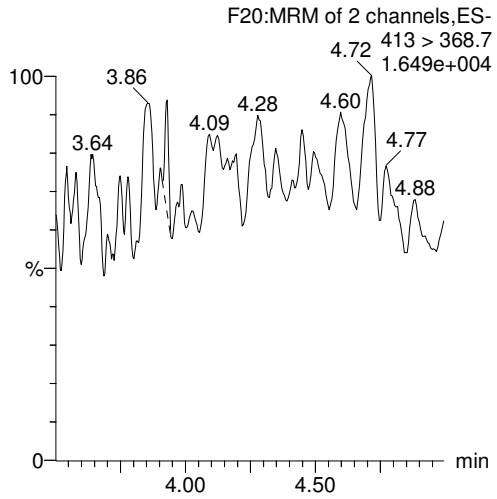
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_16, Date: 25-Apr-2018, Time: 19:56:59, ID: B8D0126-BLK1 LRB 0.25, Description: LRB

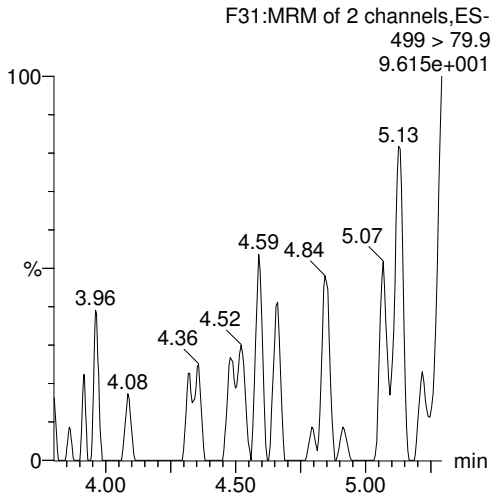
PFBS



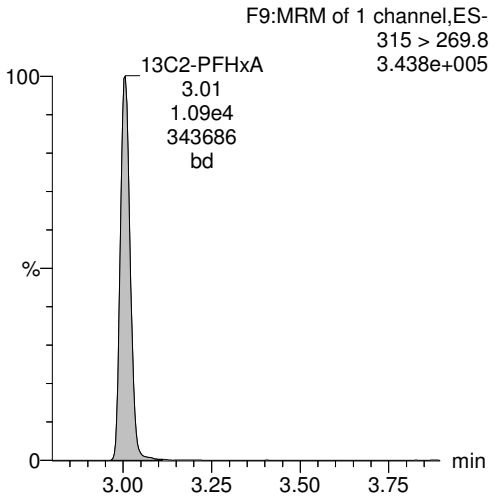
PFOA



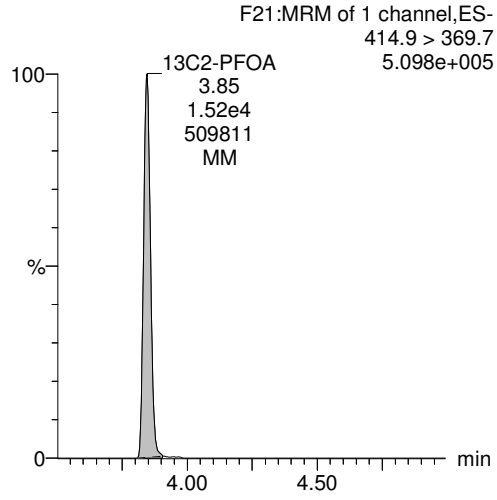
PFOS



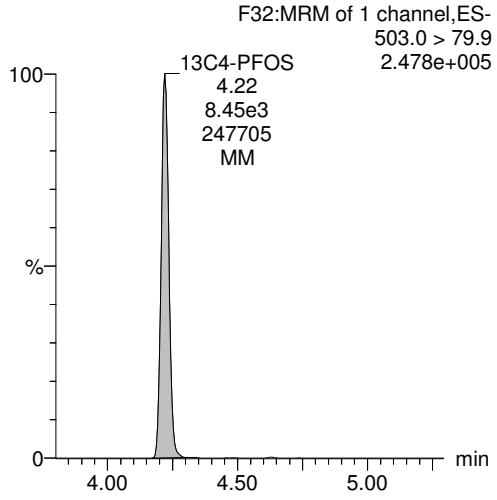
13C2-PFHxA



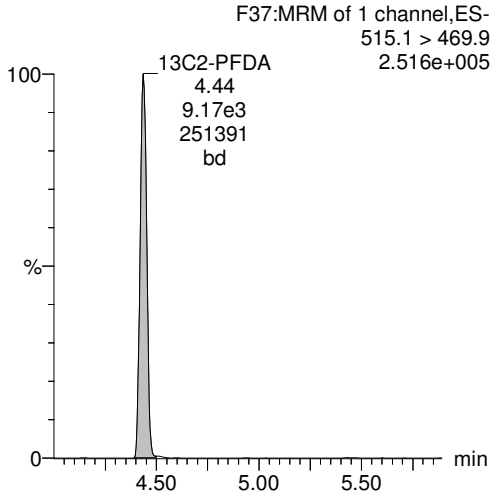
13C2-PFOA



13C4-PFOS



13C2-PFDA



AR 4/26/2018

Vista Analytical Laboratory

rev ANP 4/30/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-15.qld

Last Altered: Thursday, April 26, 2018 13:45:40 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:46:05 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_15, Date: 25-Apr-2018, Time: 19:45:32, ID: B8D0126-BS1 LFB 0.25, Description: LFB

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	5.94e3	7.32e3	0.2500		2.64	2.66	23.3	86.9	122.8
2	5	PFOA	413 > 368.7	3.33e4	1.65e4	0.2500		3.86	3.85	20.2	83.6	104.5
3	7	PFOS	499 >79.9	5.65e3	7.32e3	0.2500		4.23	4.22	22.2	82.0	110.8
4	15	13C2-PFHxA	315 > 269.8	1.07e4	1.65e4	0.2500	0.689	3.09	3.01	6.48	37.7	94.2
5	16	13C2-PFDA	515.1 > 469.9	9.82e3	1.65e4	0.2500	0.696	4.43	4.44	5.96	34.3	85.7
6	18	13C2-PFOA	414.9 > 369.7	1.65e4	1.65e4	0.2500	1.000	3.92	3.85	10.0	40.0	100.0
7	19	13C4-PFOS	503.0 > 79.9	7.32e3	7.32e3	0.2500	1.000	4.29	4.22	28.7	115	100.0

AR 4/26/2018

Vista Analytical Laboratory

rev ANP 4/30/2018

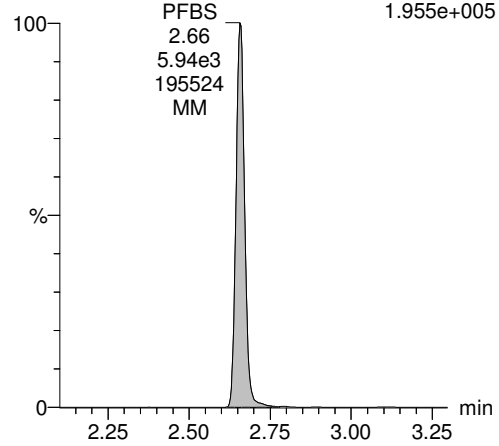
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-15.qld

Last Altered: Thursday, April 26, 2018 13:45:40 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:46:05 Pacific Daylight Time

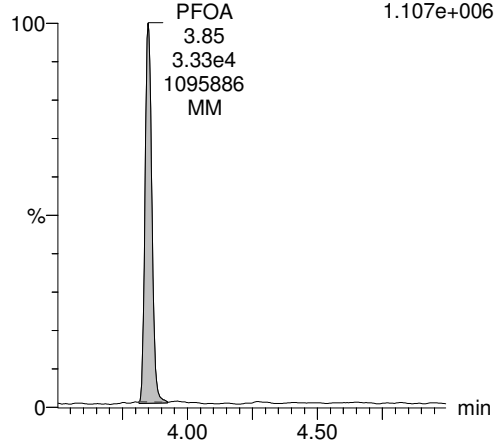
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_15, Date: 25-Apr-2018, Time: 19:45:32, ID: B8D0126-BS1 LFB 0.25, Description: LFB

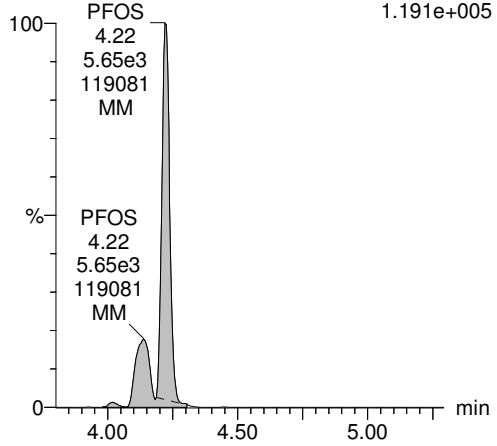
PFBS



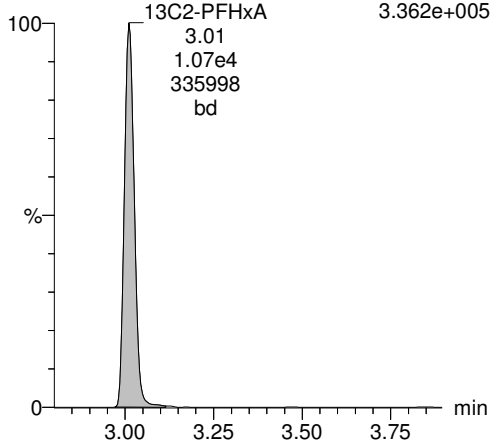
PFOA



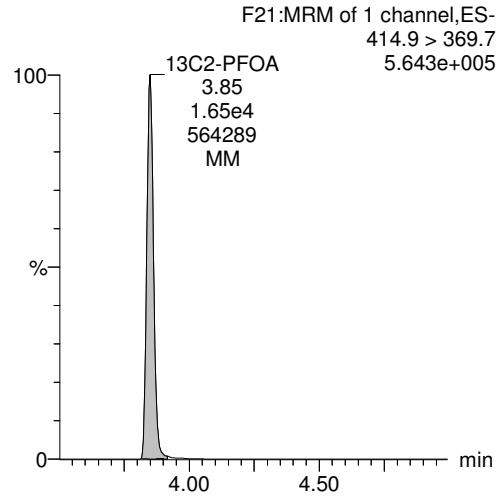
PFOS



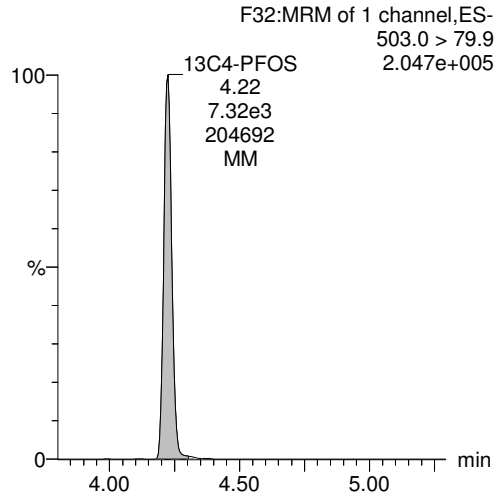
13C2-PFHxA



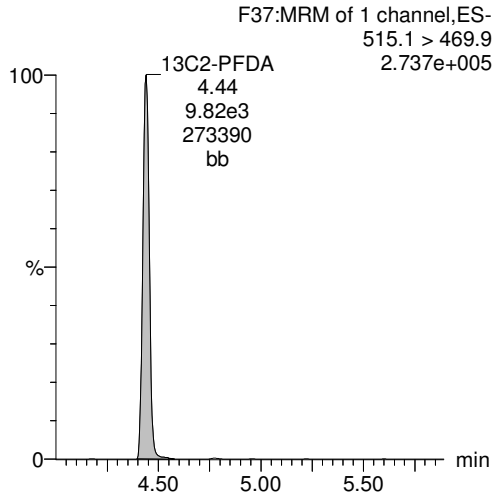
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-19.qld

Last Altered: Thursday, April 26, 2018 13:47:20 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:47:49 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_19, Date: 25-Apr-2018, Time: 20:31:24, ID: 1800702-01 CH-AT-1RW189-0418 0.25429, Description: CH-AT-1RW189-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.02e3	0.2543		2.64				
2	5	PFOA	413 > 368.7		1.60e4	0.2543		3.86				
3	7	PFOS	499 >79.9		9.02e3	0.2543		4.23				
4	15	13C2-PFHxA	315 > 269.8	1.02e4	1.60e4	0.2543	0.689	3.08	3.01	6.36	36.3	92.4
5	16	13C2-PFDA	515.1 > 469.9	9.53e3	1.60e4	0.2543	0.696	4.43	4.44	5.97	33.7	85.8
6	18	13C2-PFOA	414.9 > 369.7	1.60e4	1.60e4	0.2543	1.000	3.92	3.85	10.0	39.3	100.0
7	19	13C4-PFOS	503.0 > 79.9	9.02e3	9.02e3	0.2543	1.000	4.29	4.22	28.7	113	100.0

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Vista Analytical Laboratory

rev ANP 4/30/2018

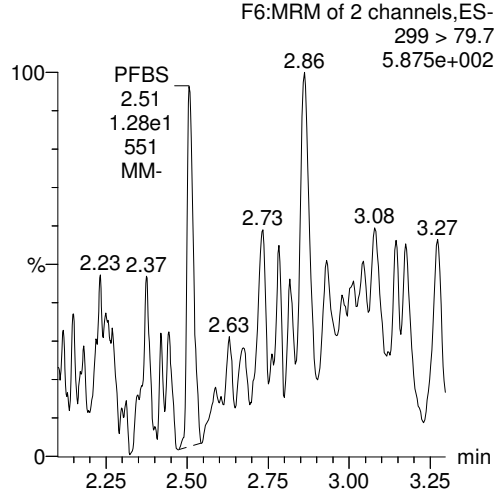
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-19.qld

Last Altered: Thursday, April 26, 2018 13:47:20 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:47:49 Pacific Daylight Time

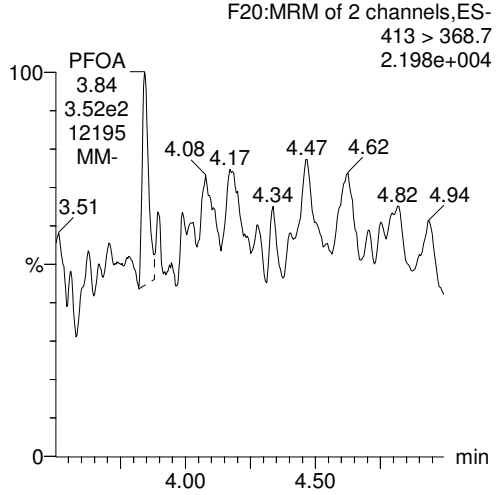
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_19, Date: 25-Apr-2018, Time: 20:31:24, ID: 1800702-01 CH-AT-1RW189-0418 0.25429, Description: CH-AT-1RW189-0418

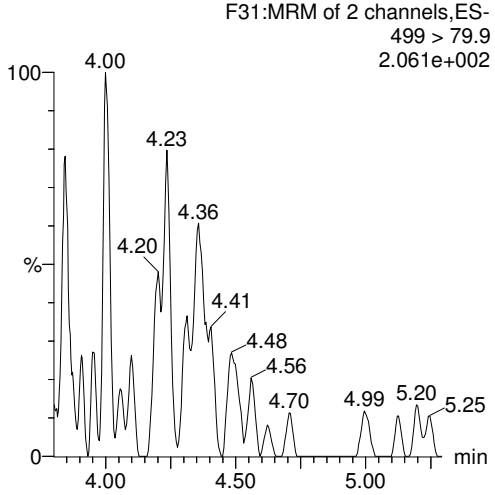
PFBS



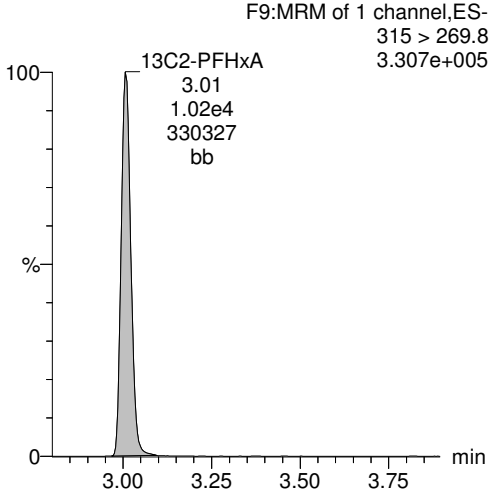
PFOA



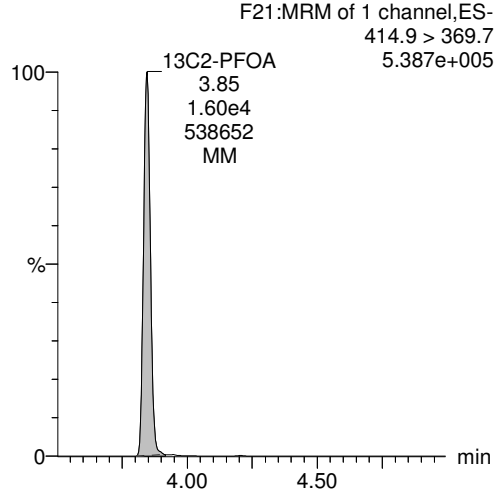
PFOS



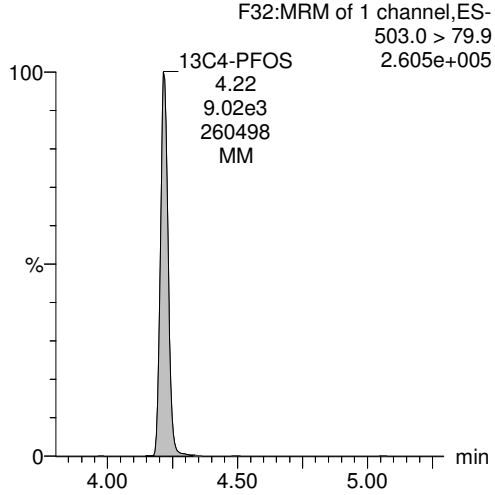
13C2-PFHxA



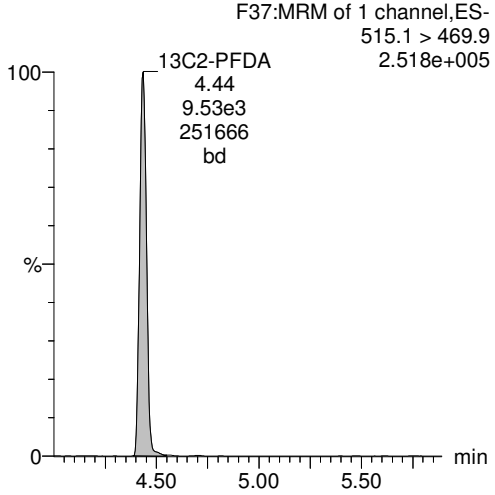
13C2-PFOA



13C4-PFOS



13C2-PFDA



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rev ANP 4/30/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-17.qld

Last Altered: Thursday, April 26, 2018 13:38:19 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:39:14 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_17, Date: 25-Apr-2018, Time: 20:08:27, ID: B8D0126-MS1 LFSM 0.24781, Description: LFSM

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	5.98e3	8.87e3	0.2478		2.64	2.65	19.4	72.8	
2	5	PFOA	413 > 368.7	3.09e4	1.58e4	0.2478		3.85	3.84	19.5	81.6	
3	7	PFOS	499 >79.9	6.12e3	8.87e3	0.2478		4.23	4.22	19.8	73.9	
4	15	13C2-PFHxA	315 > 269.8	9.83e3	1.58e4	0.2478	0.689	3.08	3.01	6.21	36.4	90.2
5	16	13C2-PFDA	515.1 > 469.9	9.42e3	1.58e4	0.2478	0.696	4.42	4.44	5.95	34.5	85.5
6	18	13C2-PFOA	414.9 > 369.7	1.58e4	1.58e4	0.2478	1.000	3.92	3.84	10.0	40.4	100.0
7	19	13C4-PFOS	503.0 > 79.9	8.87e3	8.87e3	0.2478	1.000	4.29	4.22	28.7	116	100.0

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rev ANP 4/30/2018

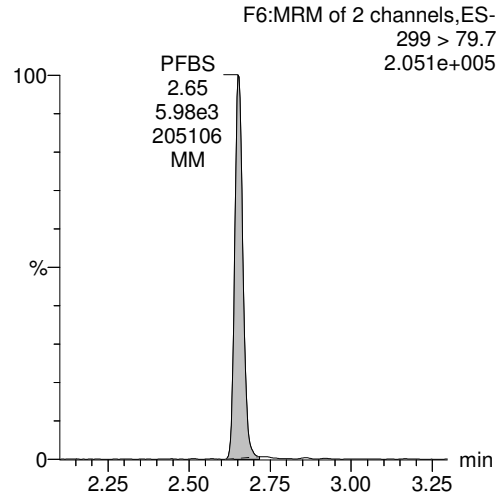
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-17.qld

Last Altered: Thursday, April 26, 2018 13:38:19 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:39:14 Pacific Daylight Time

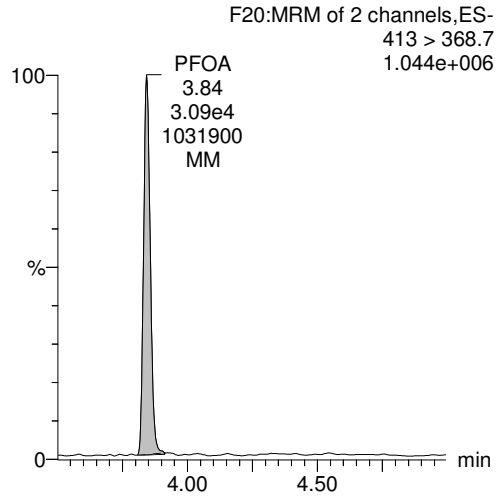
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_17, Date: 25-Apr-2018, Time: 20:08:27, ID: B8D0126-MS1 LFSM 0.24781, Description: LFSM

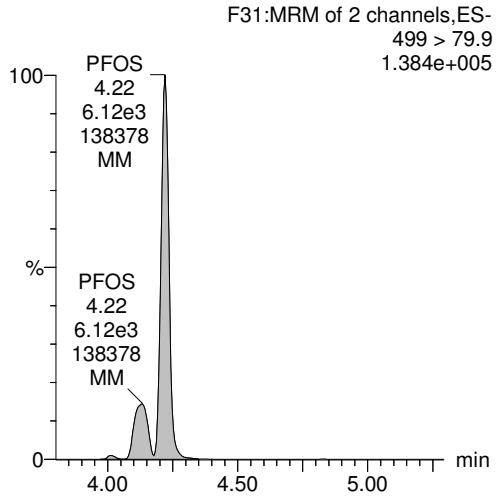
PFBS



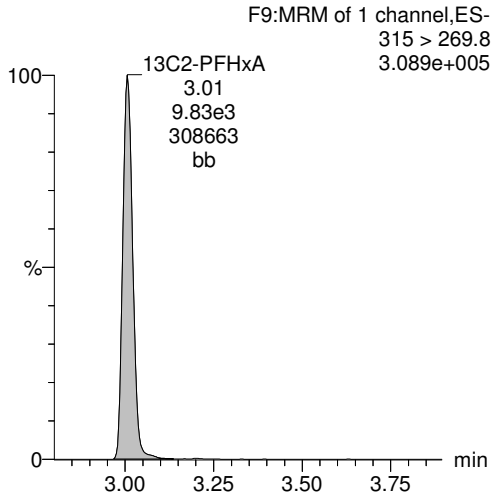
PFOA



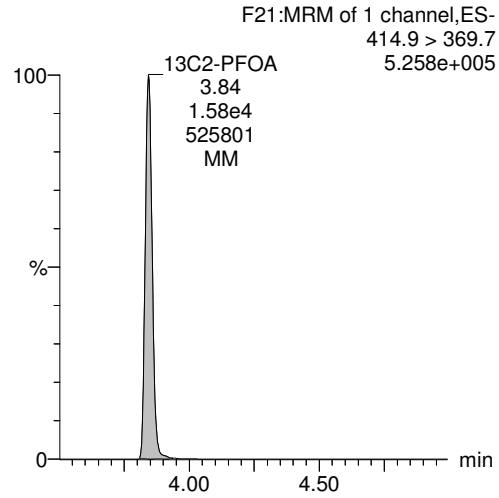
PFOS



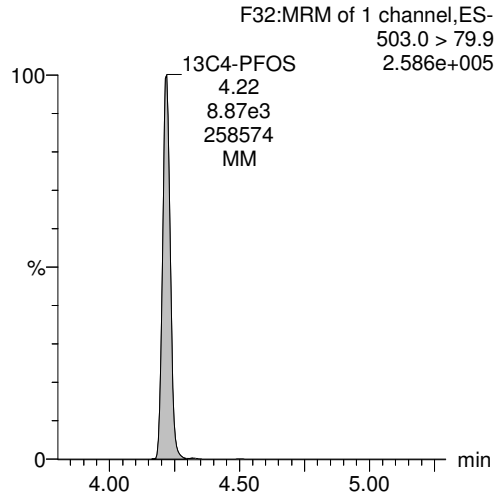
13C2-PFHxA



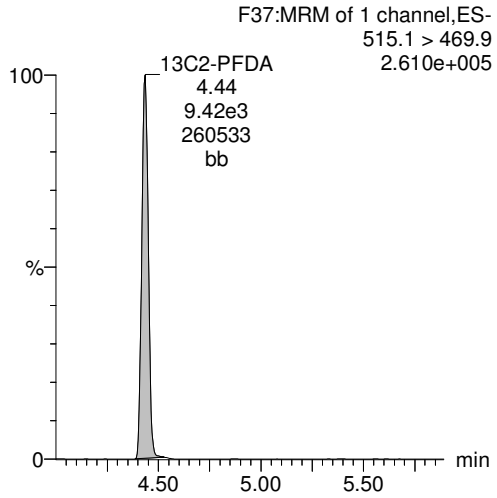
13C2-PFOA



13C4-PFOS



13C2-PFDA



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rev ANP 4/30/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-18.qld

Last Altered: Thursday, April 26, 2018 13:25:19 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:35:01 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_18, Date: 25-Apr-2018, Time: 20:19:57, ID: B8D0126-MSD1 LFSMD 0.25344, Description: LFSMD

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	5.82e3	7.72e3	0.2534		2.64	2.65	21.6	79.6	
2	5	PFOA	413 > 368.7	3.04e4	1.52e4	0.2534		3.86	3.85	20.0	81.5	
3	7	PFOS	499 >79.9	5.94e3	7.72e3	0.2534		4.23	4.22	22.1	80.6	
4	15	13C2-PFHxA	315 > 269.8	1.01e4	1.52e4	0.2534	0.689	3.08	3.01	6.64	38.0	96.4
5	16	13C2-PFDA	515.1 > 469.9	8.92e3	1.52e4	0.2534	0.696	4.43	4.44	5.86	33.2	84.2
6	18	13C2-PFOA	414.9 > 369.7	1.52e4	1.52e4	0.2534	1.000	3.92	3.85	10.0	39.5	100.0
7	19	13C4-PFOS	503.0 > 79.9	7.72e3	7.72e3	0.2534	1.000	4.29	4.22	28.7	113	100.0

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rev ANP 4/30/2018

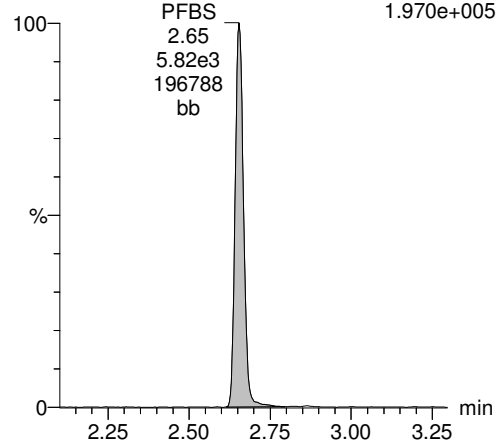
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-18.qld

Last Altered: Thursday, April 26, 2018 13:25:19 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:35:01 Pacific Daylight Time

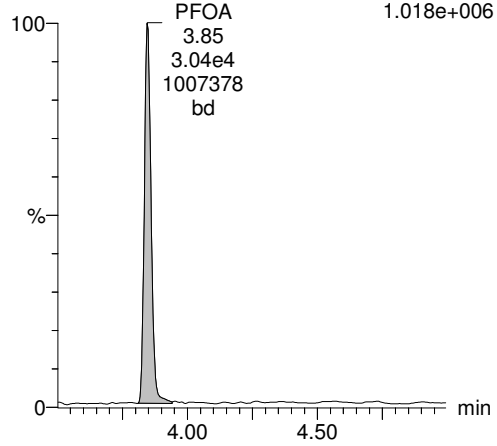
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_18, Date: 25-Apr-2018, Time: 20:19:57, ID: B8D0126-MSD1 LFSMD 0.25344, Description: LFSMD

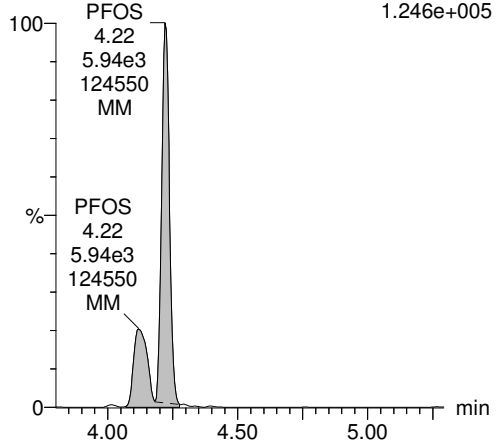
PFBS



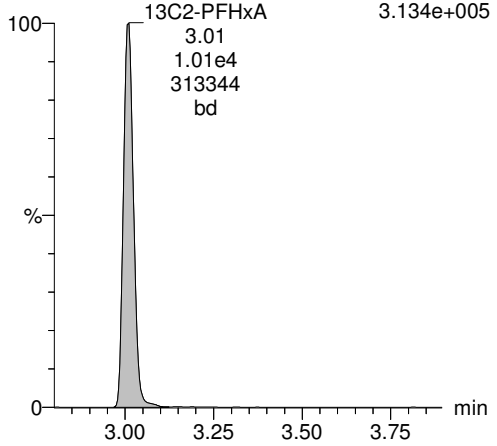
PFOA



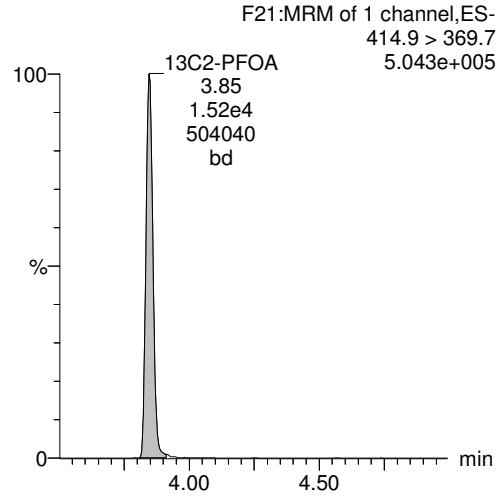
PFOS



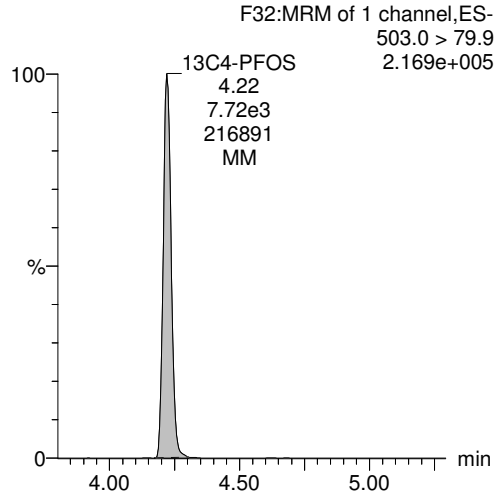
13C2-PFHxA



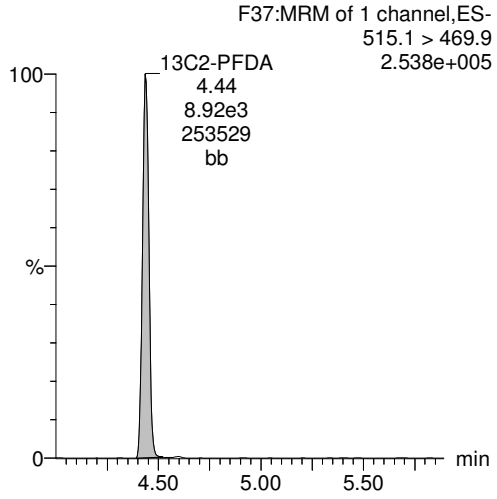
13C2-PFOA



13C4-PFOS



13C2-PFDA



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rev ANP 4/30/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-20.qld

Last Altered: Thursday, April 26, 2018 13:48:39 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:49:18 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_20, Date: 25-Apr-2018, Time: 20:42:54, ID: 1800702-02 CH-AT-1FB189-0418 0.25563, Description: CH-AT-1FB189-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		8.08e3	0.2556		2.64				
2	5	PFOA	413 > 368.7		1.63e4	0.2556		3.86				
3	7	PFOS	499 >79.9		8.08e3	0.2556		4.23				
4	15	13C2-PFHxA	315 > 269.8	9.48e3	1.63e4	0.2556	0.689	3.09	3.01	5.83	33.1	84.6
5	16	13C2-PFDA	515.1 > 469.9	9.51e3	1.63e4	0.2556	0.696	4.43	4.44	5.85	32.9	84.0
6	18	13C2-PFOA	414.9 > 369.7	1.63e4	1.63e4	0.2556	1.000	3.92	3.85	10.0	39.1	100.0
7	19	13C4-PFOS	503.0 > 79.9	8.08e3	8.08e3	0.2556	1.000	4.29	4.22	28.7	112	100.0

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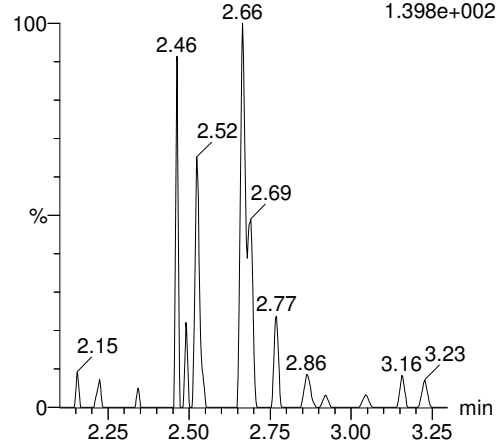
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-20.qld

Last Altered: Thursday, April 26, 2018 13:48:39 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:49:18 Pacific Daylight Time

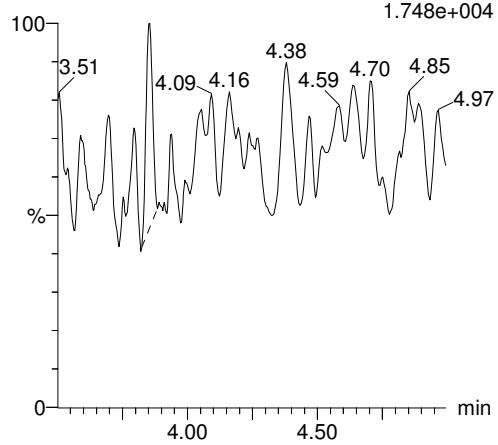
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_20, Date: 25-Apr-2018, Time: 20:42:54, ID: 1800702-02 CH-AT-1FB189-0418 0.25563, Description: CH-AT-1FB189-0418

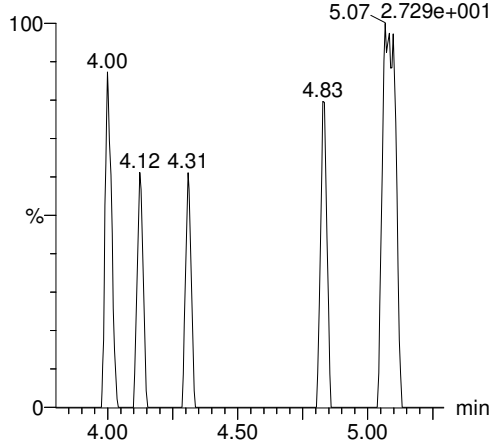
PFBS



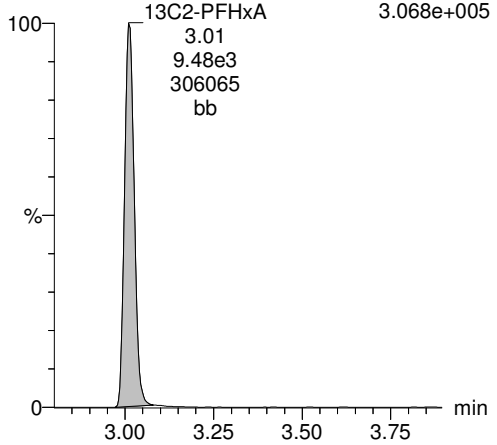
PFOA



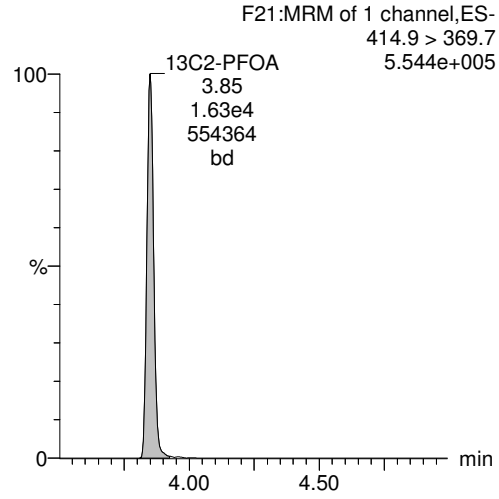
PFOS



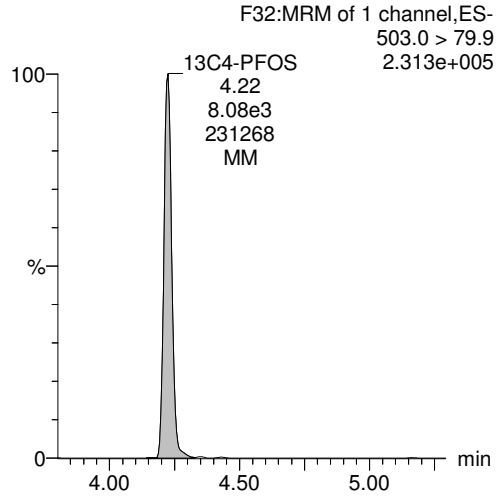
13C2-PFHxA



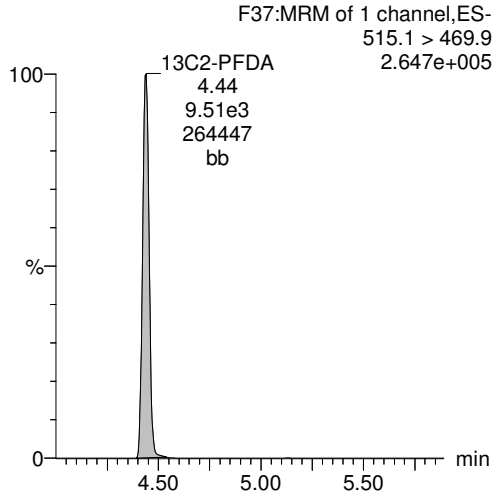
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-21.qld

Last Altered: Thursday, April 26, 2018 13:50:24 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:50:51 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_21, Date: 25-Apr-2018, Time: 20:54:21, ID: 1800702-03 CH-AT-1RW190-0418 0.25276, Description: CH-AT-1RW190-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		8.93e3	0.2528		2.64				
2	5	PFOA	413 > 368.7		1.56e4	0.2528		3.86				
3	7	PFOS	499 >79.9		8.93e3	0.2528		4.23				
4	15	13C2-PFHxA	315 > 269.8	9.90e3	1.56e4	0.2528	0.689	3.09	3.01	6.33	36.4	91.9
5	16	13C2-PFDA	515.1 > 469.9	9.97e3	1.56e4	0.2528	0.696	4.43	4.44	6.37	36.2	91.6
6	18	13C2-PFOA	414.9 > 369.7	1.56e4	1.56e4	0.2528	1.000	3.92	3.85	10.0	39.6	100.0
7	19	13C4-PFOS	503.0 > 79.9	8.93e3	8.93e3	0.2528	1.000	4.29	4.22	28.7	114	100.0

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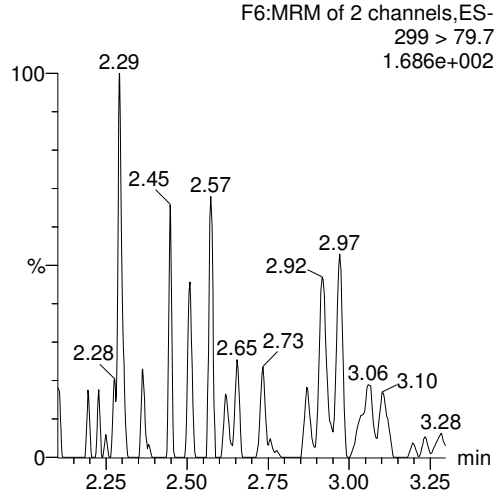
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-21.qld

Last Altered: Thursday, April 26, 2018 13:50:24 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:50:51 Pacific Daylight Time

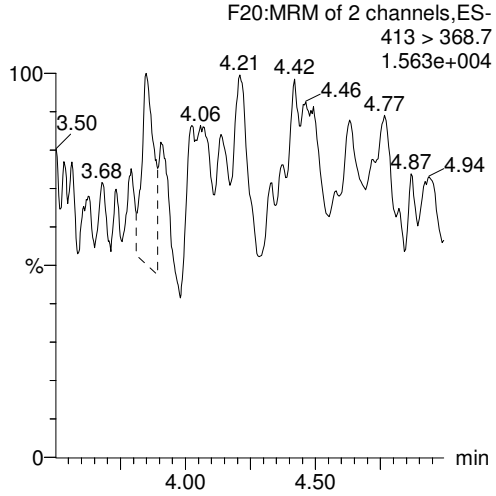
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_21, Date: 25-Apr-2018, Time: 20:54:21, ID: 1800702-03 CH-AT-1RW190-0418 0.25276, Description: CH-AT-1RW190-0418

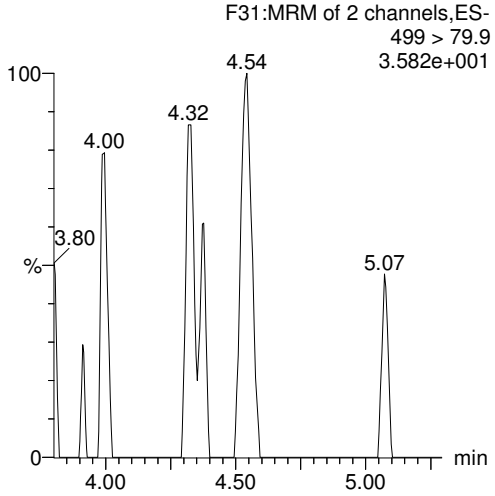
PFBS



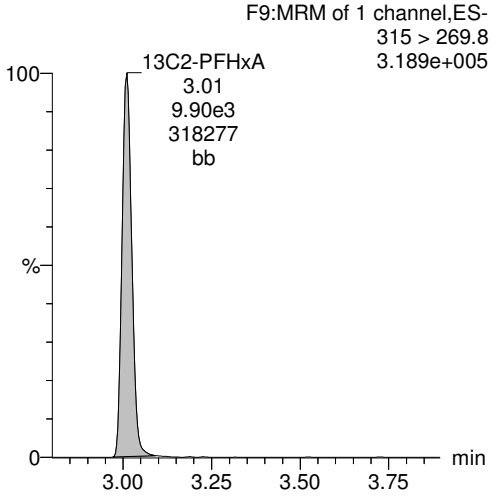
PFOA



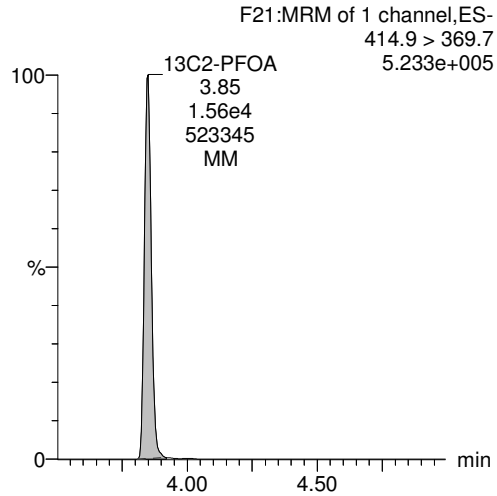
PFOS



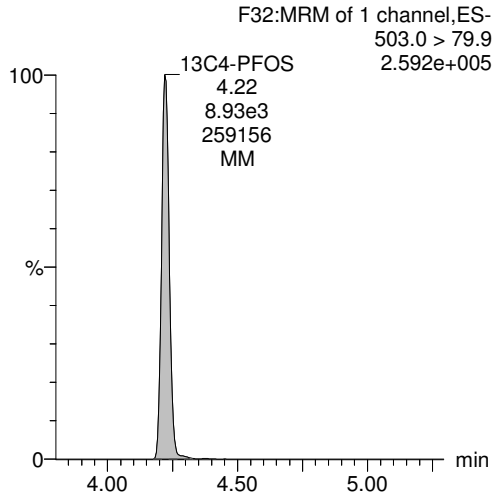
13C2-PFHxA



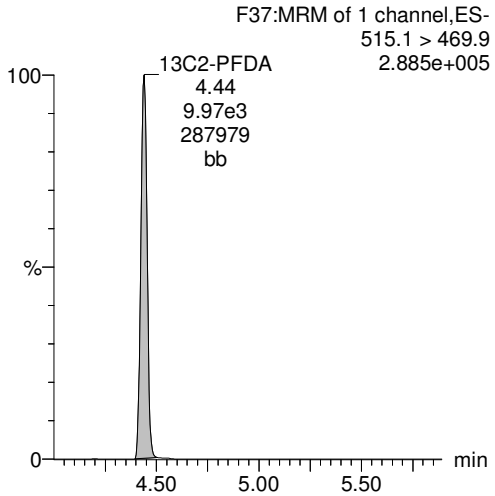
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-22.qld

Last Altered: Thursday, April 26, 2018 13:51:39 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:52:06 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_22, Date: 25-Apr-2018, Time: 21:05:51, ID: 1800702-04 CH-AT-1FB190-0418 0.26421, Description: CH-AT-1FB190-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		8.86e3	0.2642		2.64				
2	5	PFOA	413 > 368.7		1.56e4	0.2642		3.86				
3	7	PFOS	499 >79.9		8.86e3	0.2642		4.23				
4	15	13C2-PFHxA	315 > 269.8	1.08e4	1.56e4	0.2642	0.689	3.09	3.01	6.90	37.9	100.2
5	16	13C2-PFDA	515.1 > 469.9	1.06e4	1.56e4	0.2642	0.696	4.43	4.44	6.82	37.1	98.0
6	18	13C2-PFOA	414.9 > 369.7	1.56e4	1.56e4	0.2642	1.000	3.92	3.85	10.0	37.8	100.0
7	19	13C4-PFOS	503.0 > 79.9	8.86e3	8.86e3	0.2642	1.000	4.29	4.22	28.7	109	100.0

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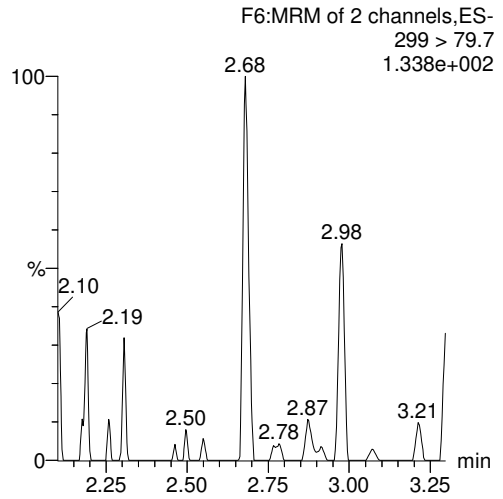
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-22.qld

Last Altered: Thursday, April 26, 2018 13:51:39 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:52:06 Pacific Daylight Time

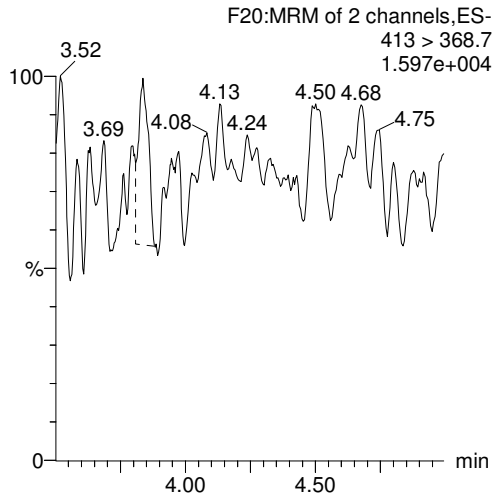
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_22, Date: 25-Apr-2018, Time: 21:05:51, ID: 1800702-04 CH-AT-1FB190-0418 0.26421, Description: CH-AT-1FB190-0418

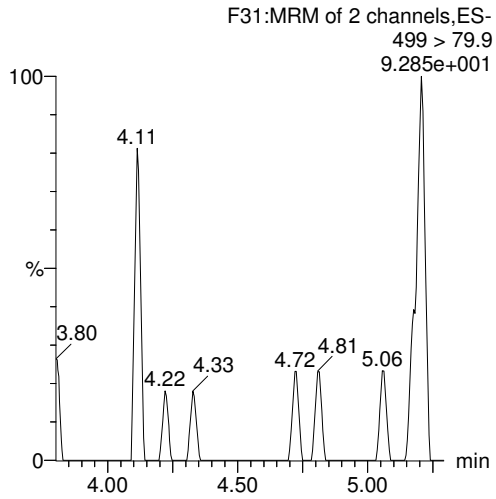
PFBS



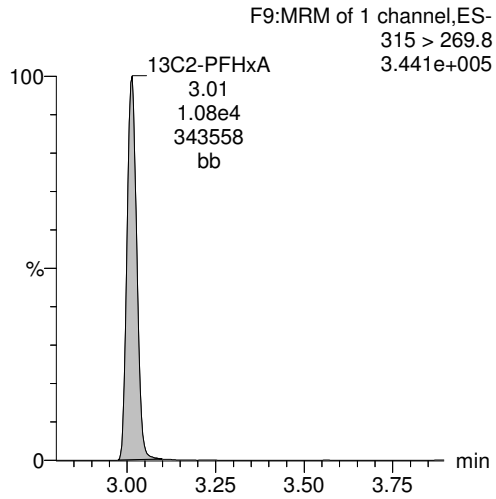
PFOA



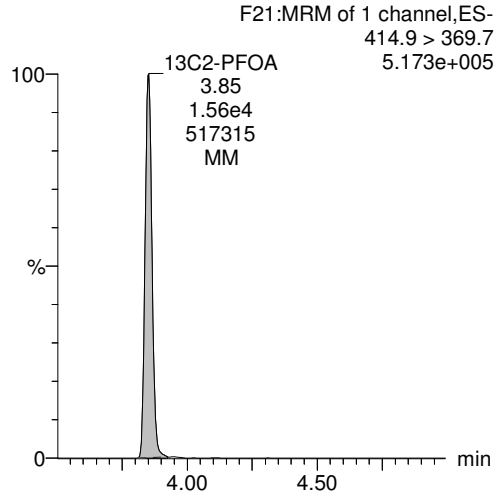
PFOS



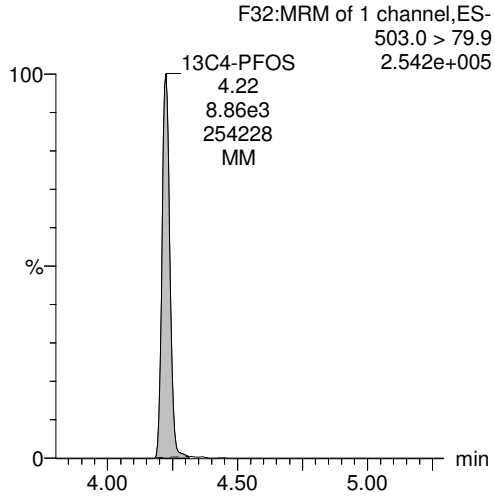
13C2-PFHxA



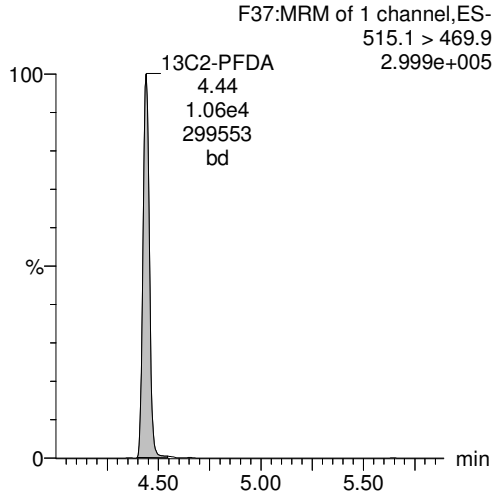
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-23.qld

Last Altered: Thursday, April 26, 2018 13:54:51 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:55:20 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_23, Date: 25-Apr-2018, Time: 21:17:21, ID: 1800702-05 CH-AT-1RW191-0418 0.25871, Description: CH-AT-1RW191-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	1.14e1	7.54e3	0.2587		2.64	2.65	0.0436	0.156	
2	5	PFOA	413 > 368.7		1.49e4	0.2587		3.86				
3	7	PFOS	499 >79.9	2.30e1	7.54e3	0.2587		4.23	4.12	0.0875	0.314	
4	15	13C2-PFHxA	315 > 269.8	1.01e4	1.49e4	0.2587	0.689	3.08	3.01	6.79	38.1	98.6
5	16	13C2-PFDA	515.1 > 469.9	1.06e4	1.49e4	0.2587	0.696	4.43	4.44	7.12	39.6	102.4
6	18	13C2-PFOA	414.9 > 369.7	1.49e4	1.49e4	0.2587	1.000	3.92	3.85	10.0	38.7	100.0
7	19	13C4-PFOS	503.0 > 79.9	7.54e3	7.54e3	0.2587	1.000	4.29	4.22	28.7	111	100.0

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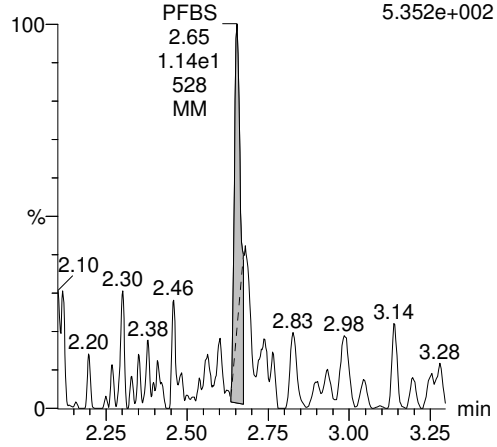
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-23.qld

Last Altered: Thursday, April 26, 2018 13:54:51 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:55:20 Pacific Daylight Time

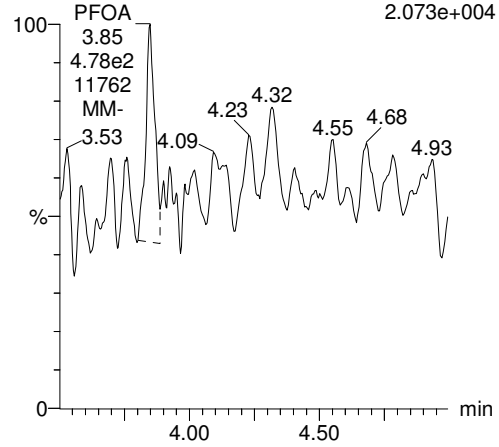
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_23, Date: 25-Apr-2018, Time: 21:17:21, ID: 1800702-05 CH-AT-1RW191-0418 0.25871, Description: CH-AT-1RW191-0418

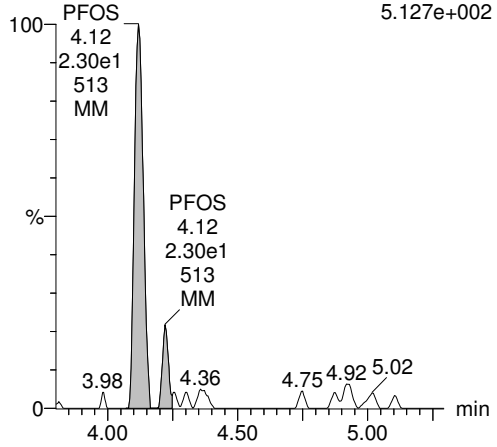
PFBS



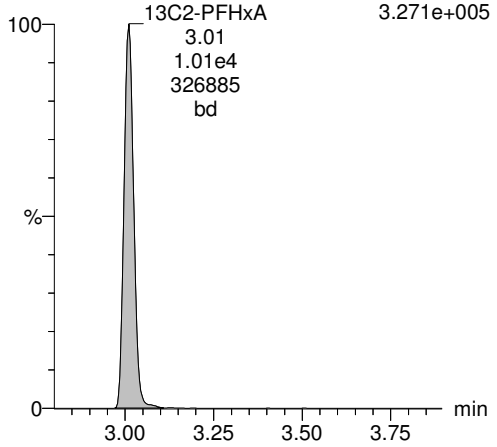
PFOA



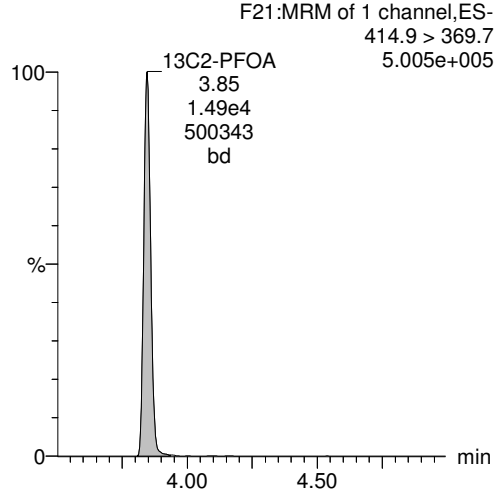
PFOS



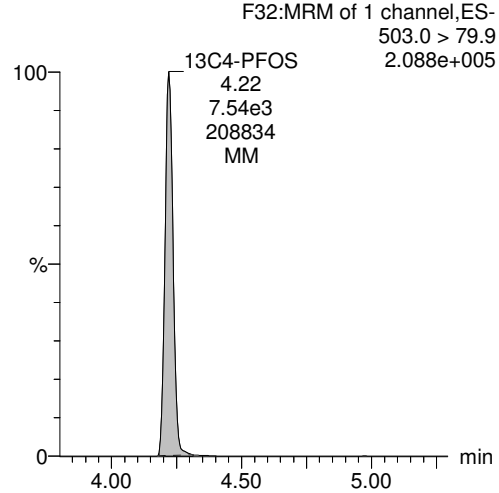
13C2-PFHxA



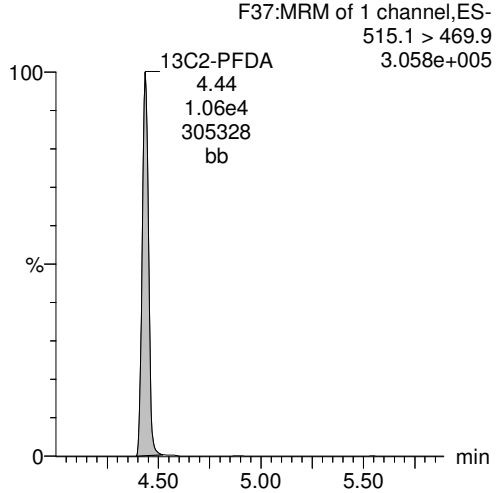
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-24.qld

Last Altered: Thursday, April 26, 2018 13:56:43 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:57:16 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_24, Date: 25-Apr-2018, Time: 21:28:50, ID: 1800702-06 CH-AT-1FB191-0418 0.25071, Description: CH-AT-1FB191-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.63e3	0.2507		2.64				
2	5	PFOA	413 > 368.7		1.71e4	0.2507		3.86				
3	7	PFOS	499 >79.9	1.18e1	9.63e3	0.2507		4.23	4.22	0.0353	0.131	
4	15	13C2-PFHxA	315 > 269.8	9.99e3	1.71e4	0.2507	0.689	3.08	3.01	5.84	33.9	84.9
5	16	13C2-PFDA	515.1 > 469.9	1.09e4	1.71e4	0.2507	0.696	4.43	4.44	6.40	36.7	92.0
6	18	13C2-PFOA	414.9 > 369.7	1.71e4	1.71e4	0.2507	1.000	3.92	3.85	10.0	39.9	100.0
7	19	13C4-PFOS	503.0 > 79.9	9.63e3	9.63e3	0.2507	1.000	4.29	4.22	28.7	114	100.0

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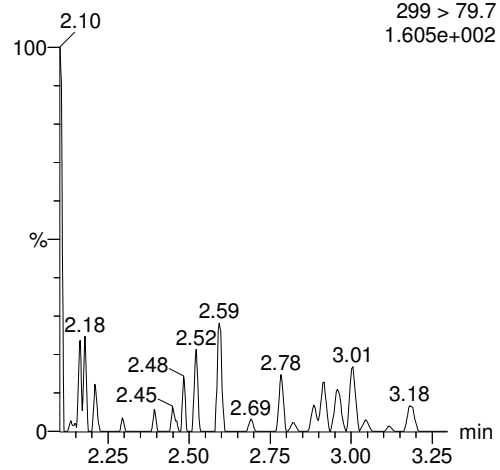
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-24.qld

Last Altered: Thursday, April 26, 2018 13:56:43 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:57:16 Pacific Daylight Time

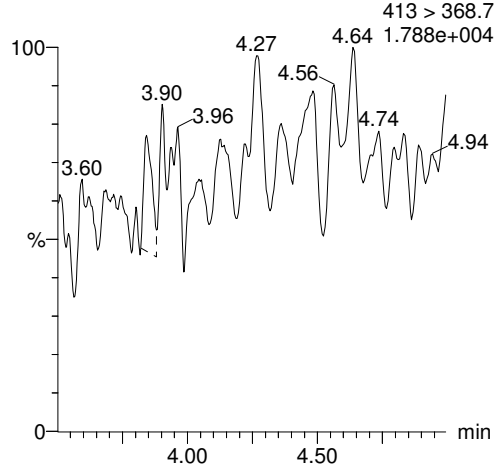
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_24, Date: 25-Apr-2018, Time: 21:28:50, ID: 1800702-06 CH-AT-1FB191-0418 0.25071, Description: CH-AT-1FB191-0418

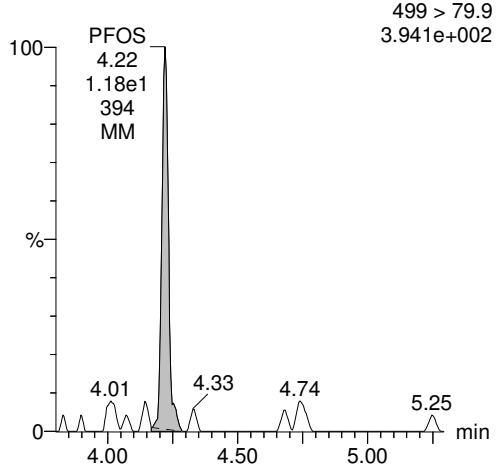
PFBS



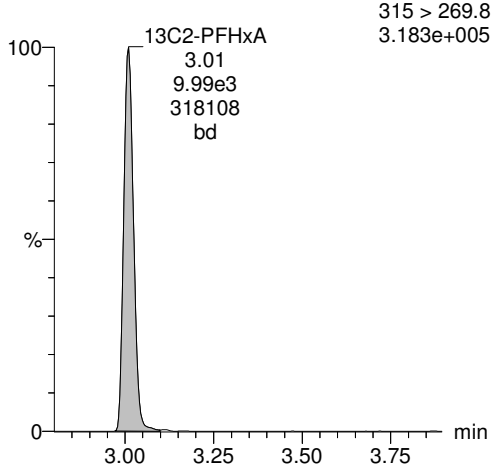
PFOA



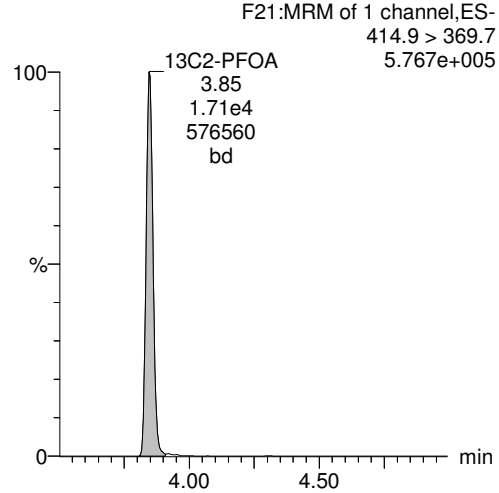
PFOS



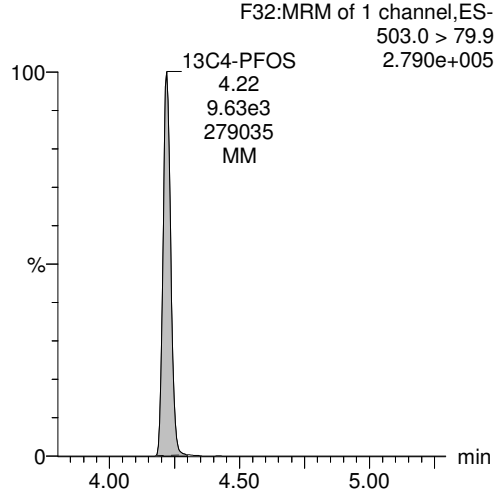
13C2-PFHxA



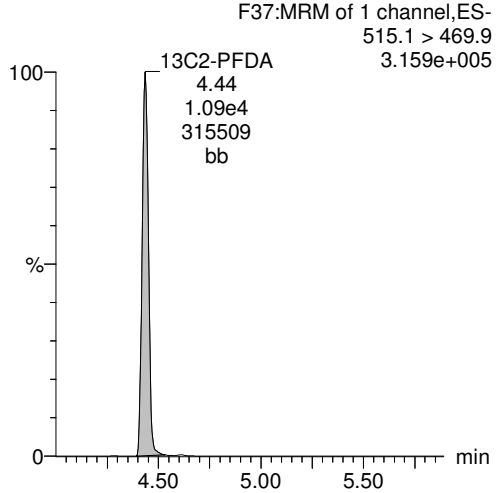
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-25.qld

Last Altered: Thursday, April 26, 2018 13:58:09 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:58:36 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_25, Date: 25-Apr-2018, Time: 21:40:19, ID: 1800702-07 CH-AT-1RW192-0418 0.24234, Description: CH-AT-1RW192-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		8.79e3	0.2423		2.64				
2	5	PFOA	413 > 368.7		1.69e4	0.2423		3.86				
3	7	PFOS	499 >79.9		8.79e3	0.2423		4.23				
4	15	13C2-PFHxA	315 > 269.8	1.03e4	1.69e4	0.2423	0.689	3.08	3.01	6.13	36.8	89.1
5	16	13C2-PFDA	515.1 > 469.9	1.05e4	1.69e4	0.2423	0.696	4.43	4.44	6.23	36.9	89.5
6	18	13C2-PFOA	414.9 > 369.7	1.69e4	1.69e4	0.2423	1.000	3.92	3.85	10.0	41.3	100.0
7	19	13C4-PFOS	503.0 > 79.9	8.79e3	8.79e3	0.2423	1.000	4.29	4.22	28.7	118	100.0

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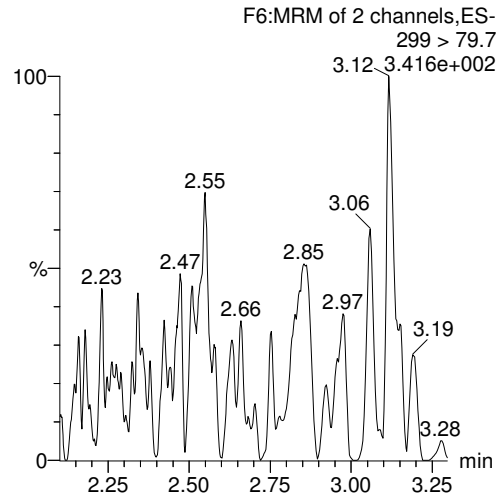
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-25.qld

Last Altered: Thursday, April 26, 2018 13:58:09 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:58:36 Pacific Daylight Time

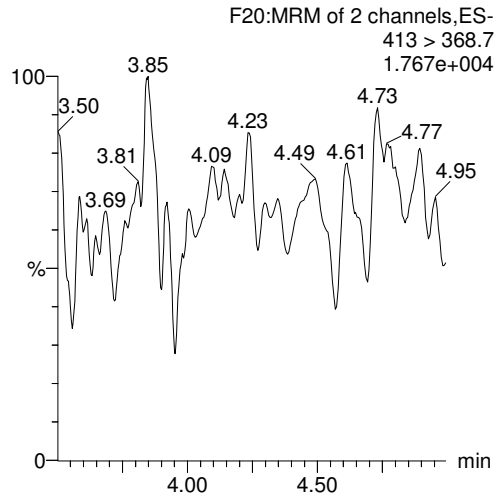
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_25, Date: 25-Apr-2018, Time: 21:40:19, ID: 1800702-07 CH-AT-1RW192-0418 0.24234, Description: CH-AT-1RW192-0418

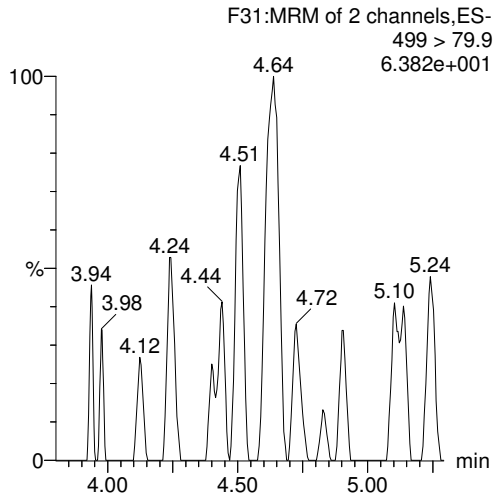
PFBS



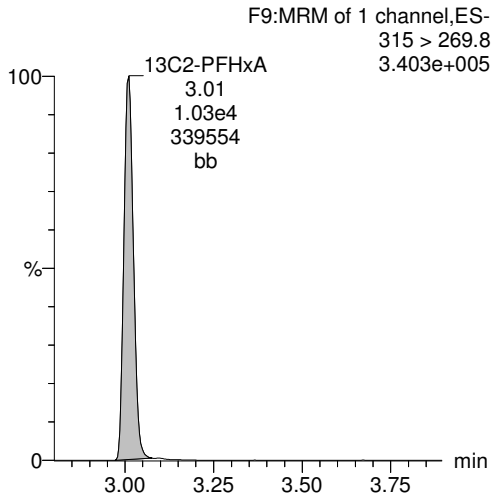
PFOA



PFOS



13C2-PFHxA



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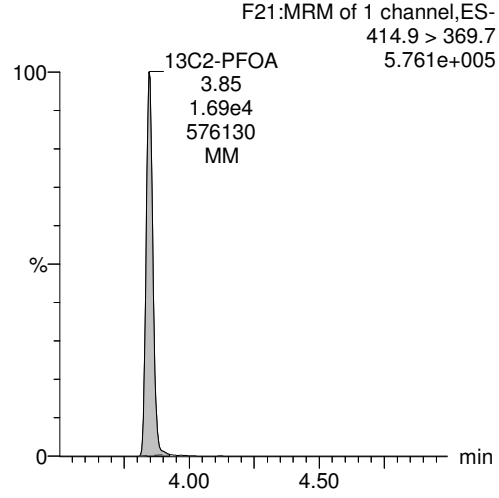
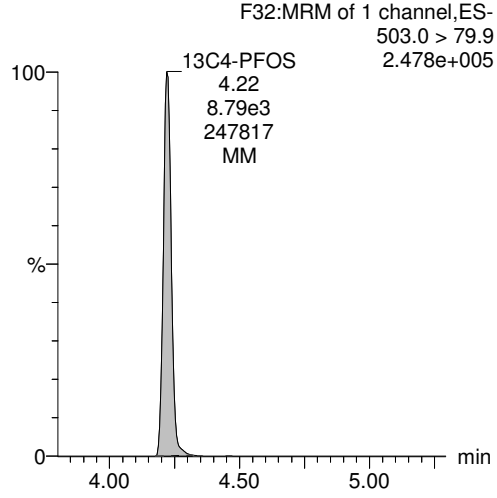


13C4-PFOS



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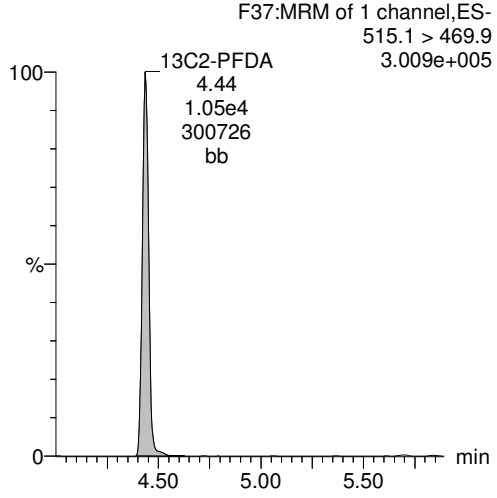

AR 4/26/2018

Vista Analytical Laboratory

rev ANP 4/30/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-26.qld

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Printed: Thursday, April 26, 2018 14:00:05 Pacific Daylight Time

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Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_26, Date: 25-Apr-2018, Time: 21:51:50, ID: 1800702-08 CH-AT-1FB192-0418 0.25741, Description: CH-AT-1FB192-0418

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		7.55e3	0.2574		2.64				
2	5	PFOA	413 > 368.7		1.48e4	0.2574		3.86				
3	7	PFOS	499 >79.9		7.55e3	0.2574		4.23				
4	15	13C2-PFHxA	315 > 269.8	9.24e3	1.48e4	0.2574	0.689	3.09	3.01	6.23	35.2	90.5
5	16	13C2-PFDA	515.1 > 469.9	1.04e4	1.48e4	0.2574	0.696	4.43	4.44	7.03	39.2	101.0
6	18	13C2-PFOA	414.9 > 369.7	1.48e4	1.48e4	0.2574	1.000	3.92	3.85	10.0	38.8	100.0
7	19	13C4-PFOS	503.0 > 79.9	7.55e3	7.55e3	0.2574	1.000	4.29	4.22	28.7	111	100.0

AR 4/26/2018

Vista Analytical Laboratory

rev ANP 4/30/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-26.qld

Last Altered: Thursday, April 26, 2018 13:59:24 Pacific Daylight Time
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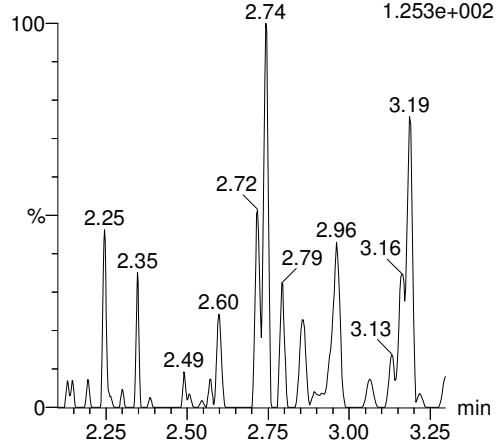
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_26, Date: 25-Apr-2018, Time: 21:51:50, ID: 1800702-08 CH-AT-1FB192-0418 0.25741, Description: CH-AT-1FB192-0418

PFBS



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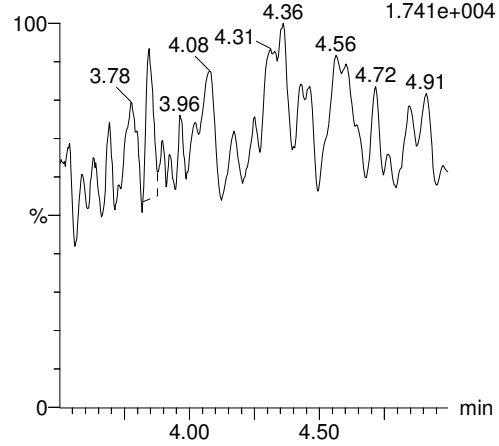

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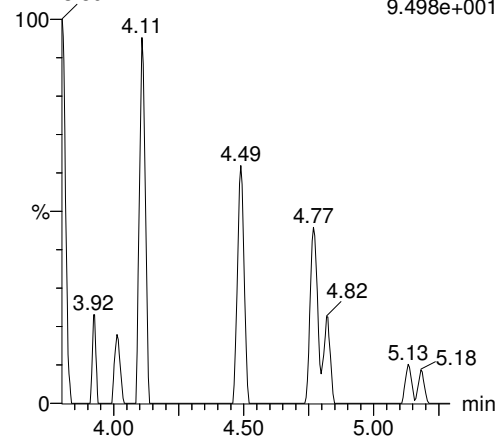

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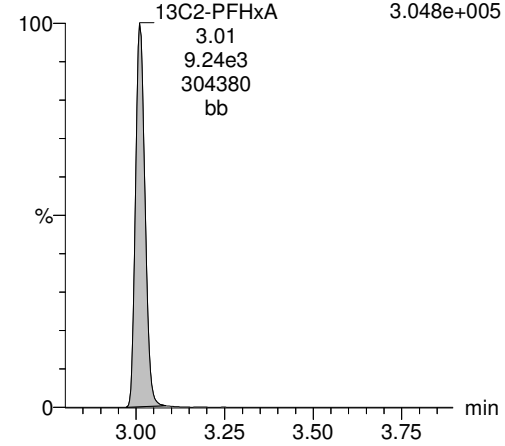

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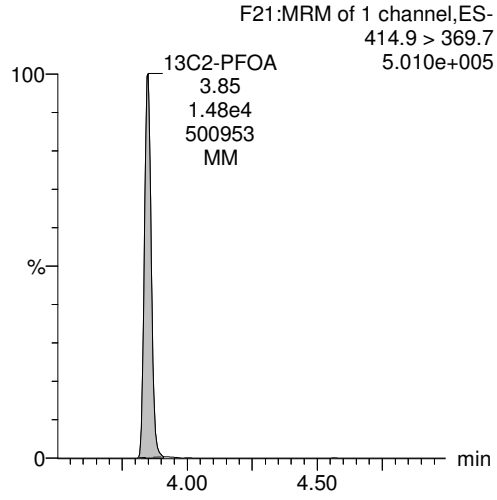

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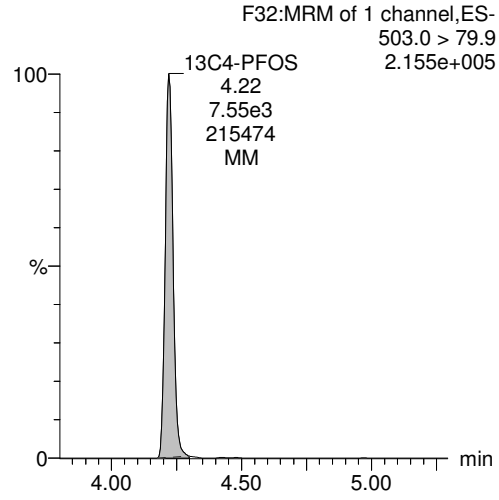

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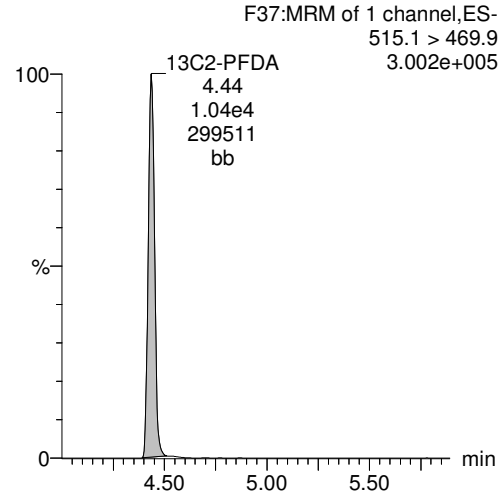

AR 4/26/2018

INJECTION INTERNAL STANDARD (IIS) AREAS,

AND

CONTINUTING CALIBRATION VERIFICATIONS CCV)

ICAL

Quantify Compound Summary Report

Printed Thu Apr 26 12:08:57 2018

Compound 18: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	ICAL AREA	%AREA
1	ICV180425M1-1 PFC 537 ICV 18D2007	180425M1	Analyte	10	3.85	16919.41	16919.41	17154.92	101.392
2	IPA	180425M1	Analyte	10				17154.92	#DIV/0!
3	B8D0126-BS1 LFB 0.25	180425M1	Analyte	10	3.85	16395.59	16395.59	17154.92	104.6313
4	B8D0126-BLK1 LRB 0.25	180425M1	Analyte	10	3.85	15068.79	15068.79	17154.92	113.8441
5	B8D0126-MS1 LFSM 0.24781	180425M1	Analyte	10	3.84	15799.62	15799.62	17154.92	108.5781
6	B8D0126-MSD1 LFSMD 0.25344	180425M1	Analyte	10	3.85	15227.31	15227.31	17154.92	112.6589
7	1800702-01 CH-AT-1RW189-0418 0.254	180425M1	Analyte	10	3.85	15837.35	15837.35	17154.92	108.3194
8	1800702-02 CH-AT-1FB189-0418 0.255	180425M1	Analyte	10	3.85	16269.08	16269.08	17154.92	105.4449
9	1800702-03 CH-AT-1RW190-0418 0.252	180425M1	Analyte	10	3.85	15520.62	15520.62	17154.92	110.5298
10	1800702-04 CH-AT-1FB190-0418 0.264	180425M1	Analyte	10	3.85	15496.88	15496.88	17154.92	110.6992
11	1800702-05 CH-AT-1RW191-0418 0.258	180425M1	Analyte	10	3.85	14887.37	14887.37	17154.92	115.2314
12	1800702-06 CH-AT-1FB191-0418 0.250	180425M1	Analyte	10	3.85	17093.26	17093.26	17154.92	100.3607
13	1800702-07 CH-AT-1RW192-0418 0.242	180425M1	Analyte	10	3.85	16705.54	16705.54	17154.92	102.69
14	1800702-08 CH-AT-1FB192-0418 0.257	180425M1	Analyte	10	3.85	14723.55	14723.55	17154.92	116.5135
15	1800702-09 CH-AT-1RW193-0418 0.254	180425M1	Analyte	10	3.85	13735.37	13735.37	17154.92	124.896
16	1800702-10 CH-AT-1FB193-0418 0.243	180425M1	Analyte	10	3.85	17579.39	17579.39	17154.92	97.58544
17	IPA	180425M1	Analyte	10				17154.92	#DIV/0!
18	ST180425M1-10 PFC CS2 537 18D1815	180425M1	Analyte	10	3.85	18062.18	18062.18	17154.92	94.97701

Compound 19: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	ICAL AREA	% AREA
1	ICV180425M1-1 PFC 537 ICV 18D2007	180425M1	Analyte	28.7	4.22	9299.717	9299.717	9202.634	98.95607
2	IPA	180425M1	Analyte	28.7					
3	B8D0126-BS1 LFB 0.25	180425M1	Analyte	28.7	4.22	7355.846	7355.846	9202.634	125.1064
4	B8D0126-BLK1 LRB 0.25	180425M1	Analyte	28.7	4.22	8474.586	8474.586	9202.634	108.591
5	B8D0126-MS1 LFSM 0.24781	180425M1	Analyte	28.7	4.22	8870.528	8870.528	9202.634	103.7439
6	B8D0126-MSD1 LFSMD 0.25344	180425M1	Analyte	28.7	4.22	7673.65	7673.65	9202.634	119.9251
7	1800702-01 CH-AT-1RW189-0418 0.254	180425M1	Analyte	28.7	4.22	8965.396	8965.396	9202.634	102.6462
8	1800702-02 CH-AT-1FB189-0418 0.255	180425M1	Analyte	28.7	4.22	8053.719	8053.719	9202.634	114.2656
9	1800702-03 CH-AT-1RW190-0418 0.252	180425M1	Analyte	28.7	4.22	8937.313	8937.313	9202.634	102.9687
10	1800702-04 CH-AT-1FB190-0418 0.2642	180425M1	Analyte	28.7	4.22	8772.155	8772.155	9202.634	104.9073
11	1800702-05 CH-AT-1RW191-0418 0.258	180425M1	Analyte	28.7	4.22	7483.5	7483.5	9202.634	122.9723
12	1800702-06 CH-AT-1FB191-0418 0.2507	180425M1	Analyte	28.7	4.22	9556.66	9556.66	9202.634	96.29551
13	1800702-07 CH-AT-1RW192-0418 0.242	180425M1	Analyte	28.7	4.22	8728.962	8728.962	9202.634	105.4264
14	1800702-08 CH-AT-1FB192-0418 0.2574	180425M1	Analyte	28.7	4.22	7484.821	7484.821	9202.634	122.9506
15	1800702-09 CH-AT-1RW193-0418 0.254	180425M1	Analyte	28.7	4.22	8619.093	8619.093	9202.634	106.7703
16	1800702-10 CH-AT-1FB193-0418 0.243	180425M1	Analyte	28.7	4.22	9753.654	9753.654	9202.634	94.35063
17	IPA	180425M1	Analyte	28.7					
18	ST180425M1-10 PFC CS2 537 18D1815	180425M1	Analyte	28.7	4.22	10143.54	10143.54	9202.634	90.72408

LC Calibration Standards Review Checklist Q4

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	other
Calibration ID: ST180425M1-10	L (M) H	☒	☑	☑	☑	☑	☑	NA ☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	NA ☐	AR 4/26/18 ☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 4/19/18

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☑

IIS Area Saved ☑

Reviewed By: JM 4/26/18
Initials/Date

Comments:

ID: LR - LCSRC *Rev. No.:* 1 *Rev. Date:* 02/06/2018 *Page:* 1 of 1

ista Analytical Laboratory

ataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-30_B.qld

ast Altered: Thursday, April 26, 2018 16:17:11 Pacific Daylight Time
rinted: Thursday, April 26, 2018 16:18:00 Pacific Daylight Time

JM 4/26/18

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alibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

ame: 180425M1_30, Date: 25-Apr-2018, Time: 22:37:37, ID: ST180425M1-10 PFC CS2 537 18D1815, Description: PFC CS2 537 18D1815

#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	PFBS	299 > 79.7	8.07e3	1.01e4	1.0000		2.64	2.66	22.8	21.3	96.3
5	PFOA	413 > 368.7	4.26e4	1.81e4	1.0000		3.86	3.85	23.6	24.4	97.5
7	PFOS	499 >79.9	8.17e3	1.01e4	1.0000		4.23	4.22	23.1	21.4	92.5
15	13C2-PFHxA	315 > 269.8	1.23e4	1.81e4	1.0000	0.689	3.09	3.01	6.80	9.88	98.8
16	13C2-PFDA	515.1 > 469.9	1.23e4	1.81e4	1.0000	0.696	4.43	4.44	6.80	9.77	97.7
18	13C2-PFOA	414.9 > 369.7	1.81e4	1.81e4	1.0000	1.000	3.92	3.85	10.0	10.0	100.0
19	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.0000	1.000	4.29	4.22	28.7	28.7	100.0

AR 4/26/2018

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, April 26, 2018 16:20:42 Pacific Daylight Time
Printed: Thursday, April 26, 2018 16:21:06 Pacific Daylight Time

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Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	180425M1_13	ICV180425M1-1 PFC 537 ICV 18D2007	25-Apr-18	19:22:38
2	180425M1_14	IPA	25-Apr-18	19:34:06
3	180425M1_15	B8D0126-BS1 LFB 0.25	25-Apr-18	19:45:32
4	180425M1_16	B8D0126-BLK1 LRB 0.25	25-Apr-18	19:56:59
5	180425M1_17	B8D0126-MS1 LFSM 0.24781	25-Apr-18	20:08:27
6	180425M1_18	B8D0126-MSD1 LFSMD 0.25344	25-Apr-18	20:19:57
7	180425M1_19	1800702-01 CH-AT-1RW189-0418 0.25429	25-Apr-18	20:31:24
8	180425M1_20	1800702-02 CH-AT-1FB189-0418 0.25563	25-Apr-18	20:42:54
9	180425M1_21	1800702-03 CH-AT-1RW190-0418 0.25276	25-Apr-18	20:54:21
10	180425M1_22	1800702-04 CH-AT-1FB190-0418 0.26421	25-Apr-18	21:05:51
11	180425M1_23	1800702-05 CH-AT-1RW191-0418 0.25871	25-Apr-18	21:17:21
12	180425M1_24	1800702-06 CH-AT-1FB191-0418 0.25071	25-Apr-18	21:28:50
13	180425M1_25	1800702-07 CH-AT-1RW192-0418 0.24234	25-Apr-18	21:40:19
14	180425M1_26	1800702-08 CH-AT-1FB192-0418 0.25741	25-Apr-18	21:51:50
15	180425M1_27	1800702-09 CH-AT-1RW193-0418 0.25453	25-Apr-18	22:03:17
16	180425M1_28	1800702-10 CH-AT-1FB193-0418 0.24305	25-Apr-18	22:14:43
17	180425M1_29	IPA	25-Apr-18	22:26:10
18	180425M1_30	ST180425M1-10 PFC CS2 537 18D1815	25-Apr-18	22:37:37

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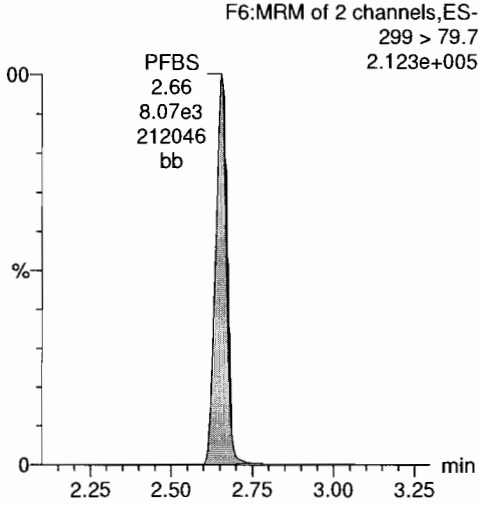
alibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

ame: 180425M1_30, Date: 25-Apr-2018, Time: 22:37:37, ID: ST180425M1-10 PFC CS2 537 18D1815, Description: PFC CS2 537 18D1815

FBS



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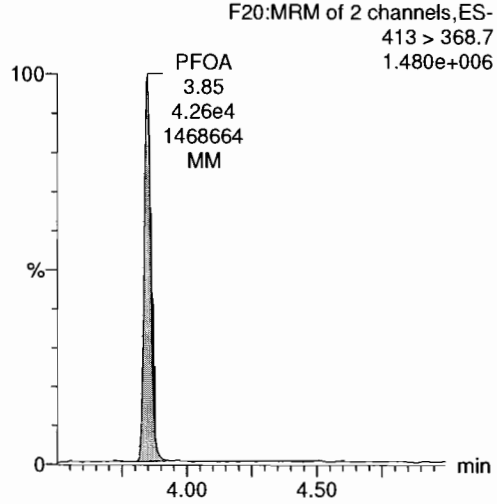
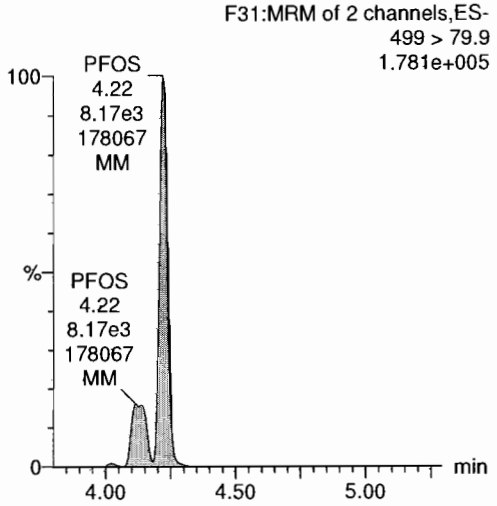


PFOS



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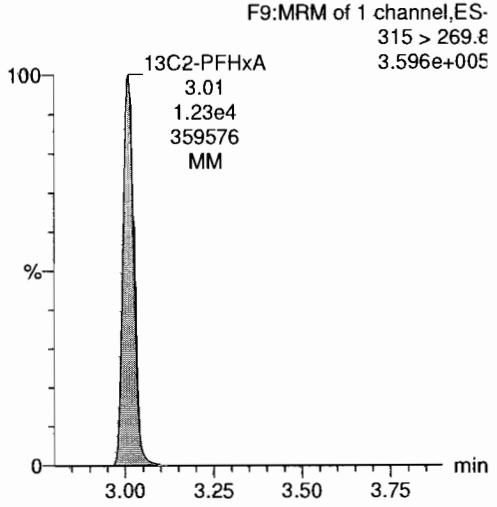

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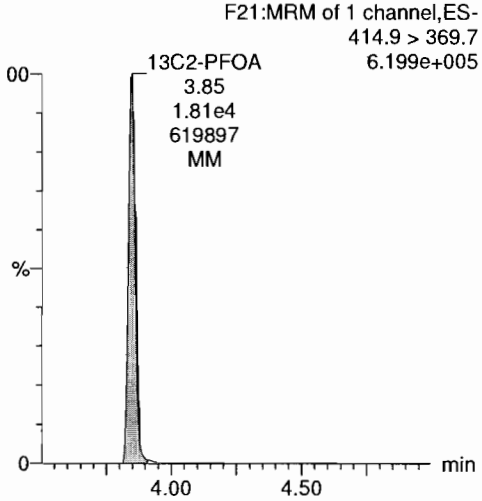
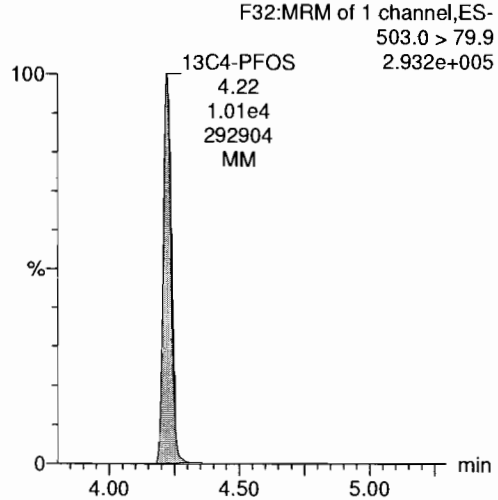
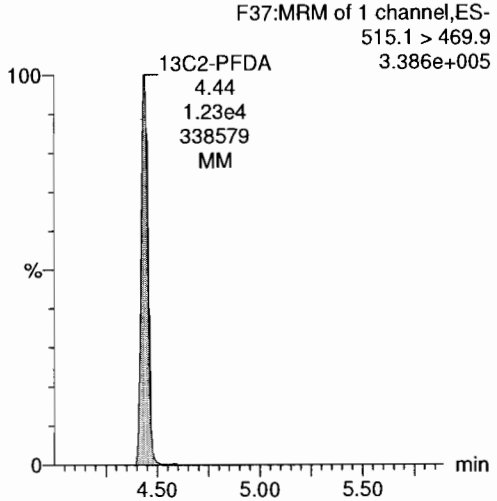


13C4-PFOS



13C2-PFDA



AR 4/26/2018

INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV)

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 14:57:23 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

AD 4/26/18

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999152
Calibration curve: -0.00023982 * x^2 + 1.07703 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180425M1_3	Standard	0.443	2.69	184.368	8570.421	0.617	0.6	29.6	NO	0.999	NO	MM
2	2	180425M1_4	Standard	0.885	2.69	339.813	8460.754	1.153	1.1	21.0	NO	0.999	NO	MM
3	3	180425M1_5	Standard	1.770	2.66	601.331	9797.274	1.762	1.6	-7.6	NO	0.999	NO	MM
4	4	180425M1_6	Standard	4.420	2.66	1587.215	9708.601	4.692	4.4	-1.3	NO	0.999	NO	MM
5	5	180425M1_7	Standard	8.850	2.66	3046.636	9920.870	8.814	8.2	-7.4	NO	0.999	NO	MM
6	6	180425M1_8	Standard	22.100	2.66	7593.539	9315.014	23.396	21.8	-1.2	NO	0.999	NO	MM
7	7	180425M1_9	Standard	44.200	2.66	15396.681	9112.330	48.493	45.5	2.9	NO	0.999	NO	MM
8	8	180425M1_10	Standard	66.300	2.65	22610.658	9207.239	70.480	66.4	0.2	NO	0.999	NO	MM
9	9	180425M1_11	Standard	88.400	2.65	30291.537	9377.523	92.708	87.8	-0.7	NO	0.999	NO	MM

Compound name: PFOA
Coefficient of Determination: R^2 = 0.998949
Calibration curve: 0.966768 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

AD 4/26/18

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180425M1_3	Standard	0.500	3.88	796.064	15969.096	0.499	0.5	3.1	NO	0.999	NO	bb
2	2	180425M1_4	Standard	1.000	3.88	1699.550	16718.566	1.017	1.1	5.2	NO	0.999	NO	MM
3	3	180425M1_5	Standard	2.000	3.85	3711.874	17904.262	2.073	2.1	7.2	NO	0.999	NO	bb
4	4	180425M1_6	Standard	5.000	3.85	8279.867	16705.125	4.956	5.1	2.5	NO	0.999	NO	bb
5	5	180425M1_7	Standard	10.000	3.85	17139.666	18147.477	9.445	9.8	-2.3	NO	0.999	NO	bb
6	6	180425M1_8	Standard	25.000	3.85	42993.453	18391.389	23.377	24.2	-3.3	NO	0.999	NO	MM
7	7	180425M1_9	Standard	50.000	3.85	88243.258	17288.604	51.041	52.8	5.6	NO	0.999	NO	MM
8	8	180425M1_10	Standard	75.000	3.85	118936.484	16352.584	72.733	75.2	0.3	NO	0.999	NO	bb
9	9	180425M1_11	Standard	100.000	3.85	160439.688	16989.059	94.437	97.7	-2.3	NO	0.999	NO	MM

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 14:57:23 Pacific Daylight Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.997657
Calibration curve: 0.000184413 * x^2 + 1.07766 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180425M1_3	Standard	0.464	4.25	156.313	8570.421	0.523	0.5	4.7	NO	0.998	NO	db
2	2	180425M1_4	Standard	0.925	4.25	344.442	8460.754	1.168	1.1	17.2	NO	0.998	NO	MM
3	3	180425M1_5	Standard	1.850	4.22	719.462	9797.274	2.108	2.0	5.7	NO	0.998	NO	MM
4	4	180425M1_6	Standard	4.625	4.22	1491.318	9708.601	4.409	4.1	-11.6	NO	0.998	NO	MM
5	5	180425M1_7	Standard	9.250	4.22	3242.169	9920.870	9.379	8.7	-6.0	NO	0.998	NO	MM
6	6	180425M1_8	Standard	23.100	4.22	8234.826	9315.014	25.372	23.4	1.5	NO	0.998	NO	MM
7	7	180425M1_9	Standard	46.200	4.22	15482.118	9112.330	48.762	44.9	-2.8	NO	0.998	NO	MM
8	8	180425M1_10	Standard	69.300	4.22	25802.936	9207.239	80.431	73.7	6.4	NO	0.998	NO	MM
9	9	180425M1_11	Standard	92.400	4.22	32087.045	9377.523	98.203	89.7	-2.9	NO	0.998	NO	MM

Compound name: 13C2-PFHxA
Response Factor: 0.6886
RRF SD: 0.0385874, Relative SD: 5.60375
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180425M1_3	Standard	10.000	3.05	11938.599	15969.096	7.476	10.9	8.6	NO		NO	bd
2	2	180425M1_4	Standard	10.000	3.05	11050.317	16718.566	6.610	9.6	-4.0	NO		NO	bd
3	3	180425M1_5	Standard	10.000	3.01	12432.515	17904.262	6.944	10.1	0.8	NO		NO	MM
4	4	180425M1_6	Standard	10.000	3.01	11923.019	16705.125	7.137	10.4	3.7	NO		NO	MM
5	5	180425M1_7	Standard	10.000	3.01	11122.331	18147.477	6.129	8.9	-11.0	NO		NO	bb
6	6	180425M1_8	Standard	10.000	3.01	12310.778	18391.389	6.694	9.7	-2.8	NO		NO	bb
7	7	180425M1_9	Standard	10.000	3.01	12034.856	17288.604	6.961	10.1	1.1	NO		NO	MM
8	8	180425M1_10	Standard	10.000	3.01	11731.204	16352.584	7.174	10.4	4.2	NO		NO	bd
9	9	180425M1_11	Standard	10.000	3.01	11636.468	16989.059	6.849	9.9	-0.5	NO		NO	bd

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 14:57:23 Pacific Daylight Time

Compound name: 13C2-PFDA
Response Factor: 0.695839
RRF SD: 0.0485416, Relative SD: 6.97597
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180425M1_3	Standard	10.000	4.46	11620.116	15969.096	7.277	10.5	4.6	NO		NO	bb
2	2	180425M1_4	Standard	10.000	4.46	10238.659	16718.566	6.124	8.8	-12.0	NO		NO	MM
3	3	180425M1_5	Standard	10.000	4.44	12742.152	17904.262	7.117	10.2	2.3	NO		NO	bb
4	4	180425M1_6	Standard	10.000	4.44	12190.665	16705.125	7.298	10.5	4.9	NO		NO	bb
5	5	180425M1_7	Standard	10.000	4.44	12492.804	18147.477	6.884	9.9	-1.1	NO		NO	bb
6	6	180425M1_8	Standard	10.000	4.44	11941.006	18391.389	6.493	9.3	-6.7	NO		NO	bb
7	7	180425M1_9	Standard	10.000	4.44	11276.231	17288.604	6.522	9.4	-6.3	NO		NO	MM
8	8	180425M1_10	Standard	10.000	4.44	12424.822	16352.584	7.598	10.9	9.2	NO		NO	bb
9	9	180425M1_11	Standard	10.000	4.44	12424.471	16989.059	7.313	10.5	5.1	NO		NO	bb

Compound name: 13C2-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180425M1_3	Standard	10.000	3.88	15969.096	15969.096	10.000	10.0	0.0	NO		NO	bb
2	2	180425M1_4	Standard	10.000	3.88	16718.566	16718.566	10.000	10.0	0.0	NO		NO	bd
3	3	180425M1_5	Standard	10.000	3.85	17904.262	17904.262	10.000	10.0	0.0	NO		NO	MM
4	4	180425M1_6	Standard	10.000	3.85	16705.125	16705.125	10.000	10.0	0.0	NO		NO	MM
5	5	180425M1_7	Standard	10.000	3.85	18147.477	18147.477	10.000	10.0	0.0	NO		NO	bd
6	6	180425M1_8	Standard	10.000	3.85	18391.389	18391.389	10.000	10.0	0.0	NO		NO	bd
7	7	180425M1_9	Standard	10.000	3.85	17288.604	17288.604	10.000	10.0	0.0	NO		NO	bd
8	8	180425M1_10	Standard	10.000	3.85	16352.584	16352.584	10.000	10.0	0.0	NO		NO	bd
9	9	180425M1_11	Standard	10.000	3.85	16989.059	16989.059	10.000	10.0	0.0	NO		NO	MM

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 14:57:23 Pacific Daylight Time

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180425M1_3	Standard	28.700	4.25	8570.421	8570.421	28.700	28.7	0.0	NO		NO	bd
2	2	180425M1_4	Standard	28.700	4.25	8460.754	8460.754	28.700	28.7	0.0	NO		NO	MM
3	3	180425M1_5	Standard	28.700	4.22	9797.274	9797.274	28.700	28.7	0.0	NO		NO	MM
4	4	180425M1_6	Standard	28.700	4.22	9708.601	9708.601	28.700	28.7	0.0	NO		NO	MM
5	5	180425M1_7	Standard	28.700	4.22	9920.870	9920.870	28.700	28.7	0.0	NO		NO	MM
6	6	180425M1_8	Standard	28.700	4.22	9315.014	9315.014	28.700	28.7	0.0	NO		NO	MM
7	7	180425M1_9	Standard	28.700	4.22	9112.330	9112.330	28.700	28.7	0.0	NO		NO	MM
8	8	180425M1_10	Standard	28.700	4.22	9207.239	9207.239	28.700	28.7	0.0	NO		NO	MM
9	9	180425M1_11	Standard	28.700	4.22	9377.523	9377.523	28.700	28.7	0.0	NO		NO	MM

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 14:57:23 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_3, Date: 25-Apr-2018, Time: 17:28:03, ID: ST180425M1-1 PFC CS-3 537 18D1810, Description: PFC CS-3 18D1810

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBS	19	0.9992	NO	
2	5	PFOA	18	0.9989	NO	
3	7	PFOS	19	0.9977	NO	
4	15	13C2-PFHxA	18		NO	5.604
5	16	13C2-PFDA	18		NO	6.976
6	18	13C2-PFOA	18		NO	0.000
7	19	13C4-PFOS	19		NO	0.000

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, April 26, 2018 12:37:42 Pacific Daylight Time
Printed: Thursday, April 26, 2018 12:38:11 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	180425M1_2	IPA	25-Apr-18	17:16:41
2	180425M1_3	ST180425M1-1 PFC CS-3 537 18D1810	25-Apr-18	17:28:03
3	180425M1_4	ST180425M1-2 PFC CS-2 537 18D1811	25-Apr-18	17:39:30
4	180425M1_5	ST180425M1-3 PFC CS-1 537 18D1812	25-Apr-18	17:50:57
5	180425M1_6	ST180425M1-4 PFC CS0 537 18D1813	25-Apr-18	18:02:24
6	180425M1_7	ST180425M1-5 PFC CS1 537 18D1814	25-Apr-18	18:13:51
7	180425M1_8	ST180425M1-6 PFC CS2 537 18D1815	25-Apr-18	18:25:18
8	180425M1_9	ST180425M1-7 PFC CS3 537 18D1816	25-Apr-18	18:36:45
9	180425M1_10	ST180425M1-8 PFC CS4 537 18D1817	25-Apr-18	18:48:12
10	180425M1_11	ST180425M1-9 PFC CS5 537 18D1818	25-Apr-18	18:59:41
11	180425M1_12	IPA	25-Apr-18	19:11:11
12	180425M1_13	ICV180425M1-1 PFC 537 ICV 18D2007	25-Apr-18	19:22:38

Ical RPD

Compound 18: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Flags
1	ST180425M1-1 PFC CS-3 537 18D1810	180425M1_3	Standard	10	3.88	15969.10	15969.10	10	bb
2	ST180425M1-2 PFC CS-2 537 18D1811	180425M1_4	Standard	10	3.88	16718.57	16718.57	10	bd
3	ST180425M1-3 PFC CS-1 537 18D1812	180425M1_5	Standard	10	3.85	17873.09	17873.09	10	bd
4	ST180425M1-4 PFC CS0 537 18D1813	180425M1_6	Standard	10	3.85	16689.20	16689.20	10	bd
5	ST180425M1-5 PFC CS1 537 18D1814	180425M1_7	Standard	10	3.85	18147.48	18147.48	10	bd
6	ST180425M1-6 PFC CS2 537 18D1815	180425M1_8	Standard	10	3.85	18391.39	18391.39	10	bd
7	ST180425M1-7 PFC CS3 537 18D1816	180425M1_9	Standard	10	3.85	17288.60	17288.60	10	bd
8	ST180425M1-8 PFC CS4 537 18D1817	180425M1_10	Standard	10	3.85	16352.58	16352.58	10	bd
9	ST180425M1-9 PFC CS5 537 18D1818	180425M1_11	Standard	10	3.85	16964.29	16964.29	10	bd
				Average		High	18391.39		RPD
				17154.92		Low	15969.10		14.10

Compound 19: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Flags
1	ST180425M1-1 PFC CS-3 537 18D1810	180425M1_3	Standard	28.7	4.25	8570.42	8570.42	28.7	bd
2	ST180425M1-2 PFC CS-2 537 18D1811	180425M1_4	Standard	28.7	4.25	8347.63	8347.63	28.7	MM
3	ST180425M1-3 PFC CS-1 537 18D1812	180425M1_5	Standard	28.7	4.22	9732.03	9732.03	28.7	MM
4	ST180425M1-4 PFC CS0 537 18D1813	180425M1_6	Standard	28.7	4.22	9578.13	9578.13	28.7	MM
5	ST180425M1-5 PFC CS1 537 18D1814	180425M1_7	Standard	28.7	4.22	9854.85	9854.85	28.7	bb
6	ST180425M1-6 PFC CS2 537 18D1815	180425M1_8	Standard	28.7	4.22	9258.86	9258.86	28.7	MM
7	ST180425M1-7 PFC CS3 537 18D1816	180425M1_9	Standard	28.7	4.22	9070.64	9070.64	28.7	MM
8	ST180425M1-8 PFC CS4 537 18D1817	180425M1_10	Standard	28.7	4.22	9135.42	9135.42	28.7	bb
9	ST180425M1-9 PFC CS5 537 18D1818	180425M1_11	Standard	28.7	4.22	9275.74	9275.74	28.7	MM
				Average		High	9854.85		RPD
				9202.63		Low	8347.63		16.56

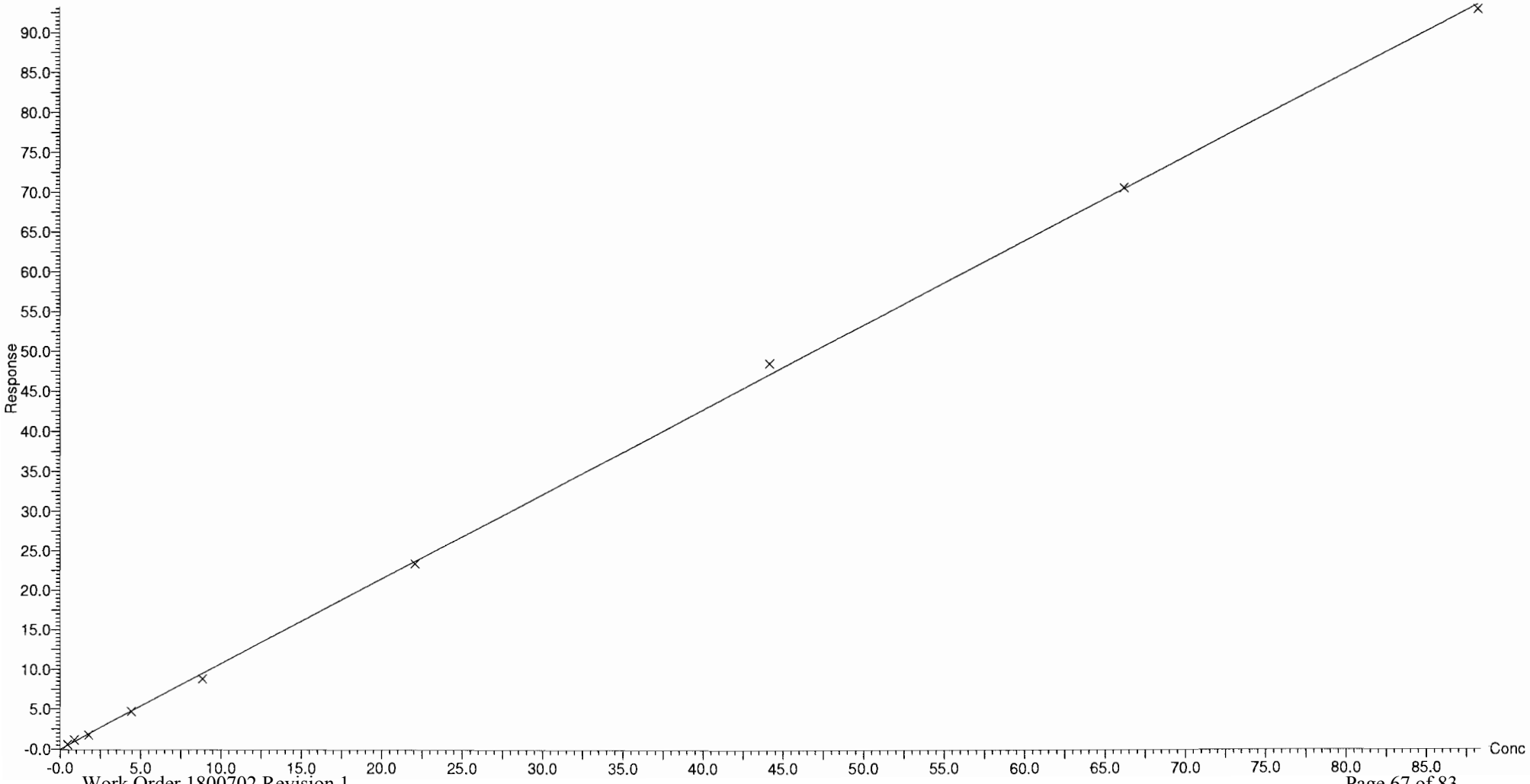
Vista Analytical Laboratory Q1

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 11:38:12 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999152
Calibration curve: -0.00023982 * x^2 + 1.07703 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



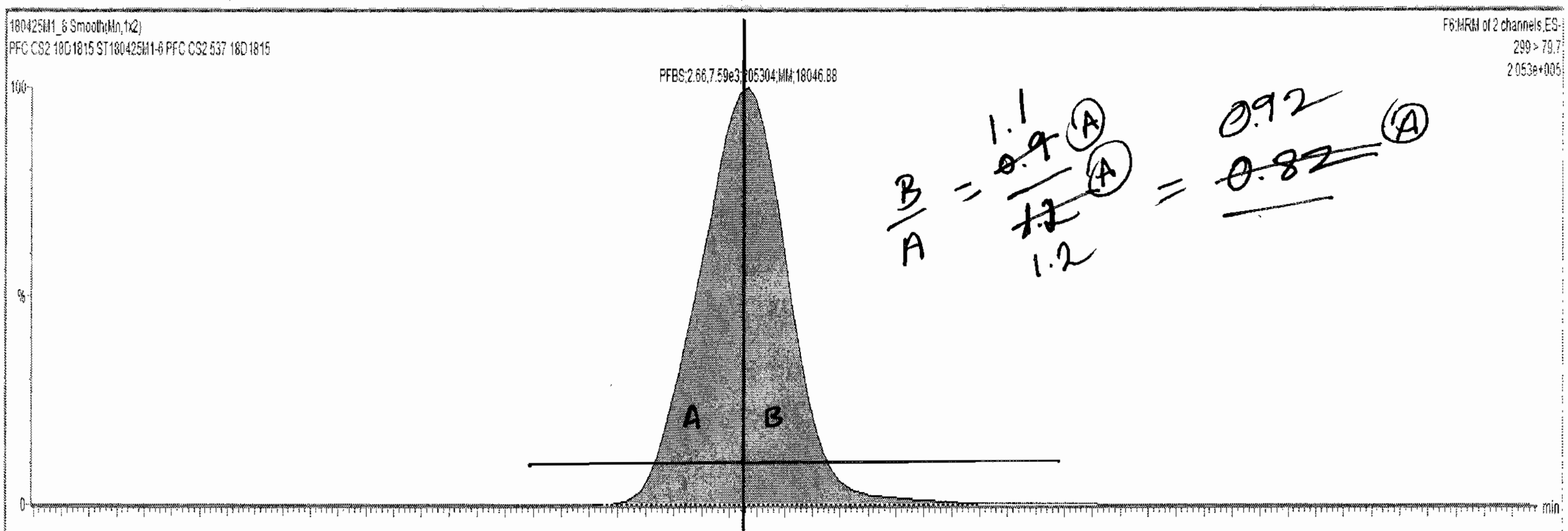
TargetLynx XS - 180425M1-CRVL3 - [Chromatogram]

File Edit View Display Processing Window Help

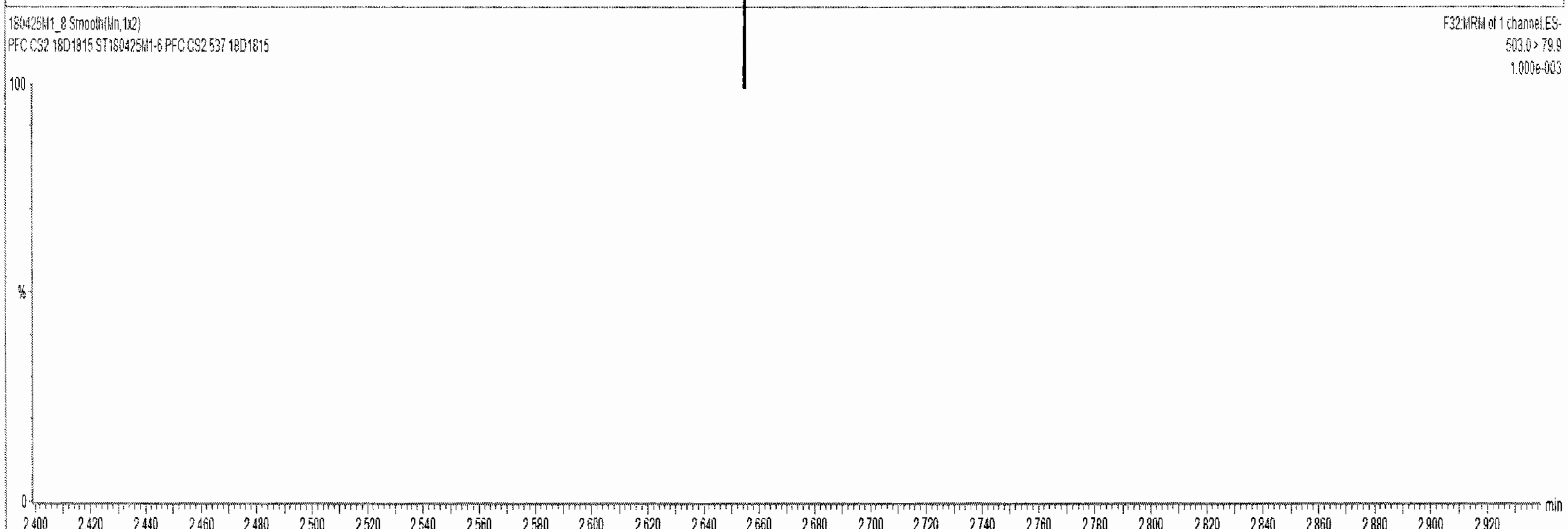
180425M1_8 - ST180425M1-6 PFC CS2 537 18D1815 - PFC CS2 18D1815

	Name	Conc.	DL	%Rec	EMPC	Abs.Resp	RRF	RT	#	IS#	RA	Y/N	RRT	Acq.Date	Acq.Time	1* Chr.Noise	ID	Sample Text	Factor1	SWt	Cal.File	>MDL
1	PFBS	21.826824	0.00278	98.6		7.594e3		2.66	1	19			0.629	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
2	PFHxA	23.223700	0.00271	92.9		4.534e4		3.01	2	18			0.782	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
3	PFHpA	23.020416	0.000348	92.1		3.514e4		3.46	3	18			0.900	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
4	PFHxS	23.903667	0.0112	104.8		6.121e3		3.57	4	19			0.846	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
5	PFOA	24.180513	0.0332	96.7		4.299e4		3.85	5	18			1.001	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
6	PFNA	24.410279	0.00454	97.6		4.167e4		4.17	6	18			1.083	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
7	PFOS	23.449458	0.000245	101.5		8.235e3		4.22	7	19			1.000	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
8	PFDA	22.726937	0.00327	90.9		4.493e4		4.44	8	18			1.154	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		NO
9	N-MeFOSAA	23.200984	0.00147	92.8		1.795e4		4.55	9	20			1.001	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
10	N-EtFOSAA	25.293842	0.00321	101.2		1.430e4		4.67	10	20			1.026	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES

(A) incorrect entry AR 4/26/18



B/A = ~~0.9~~ 1.1 (A) / ~~1.2~~ 1.2 (A) = ~~0.82~~ 0.92 (A)



Ready 180425M1_8 CAP NUM

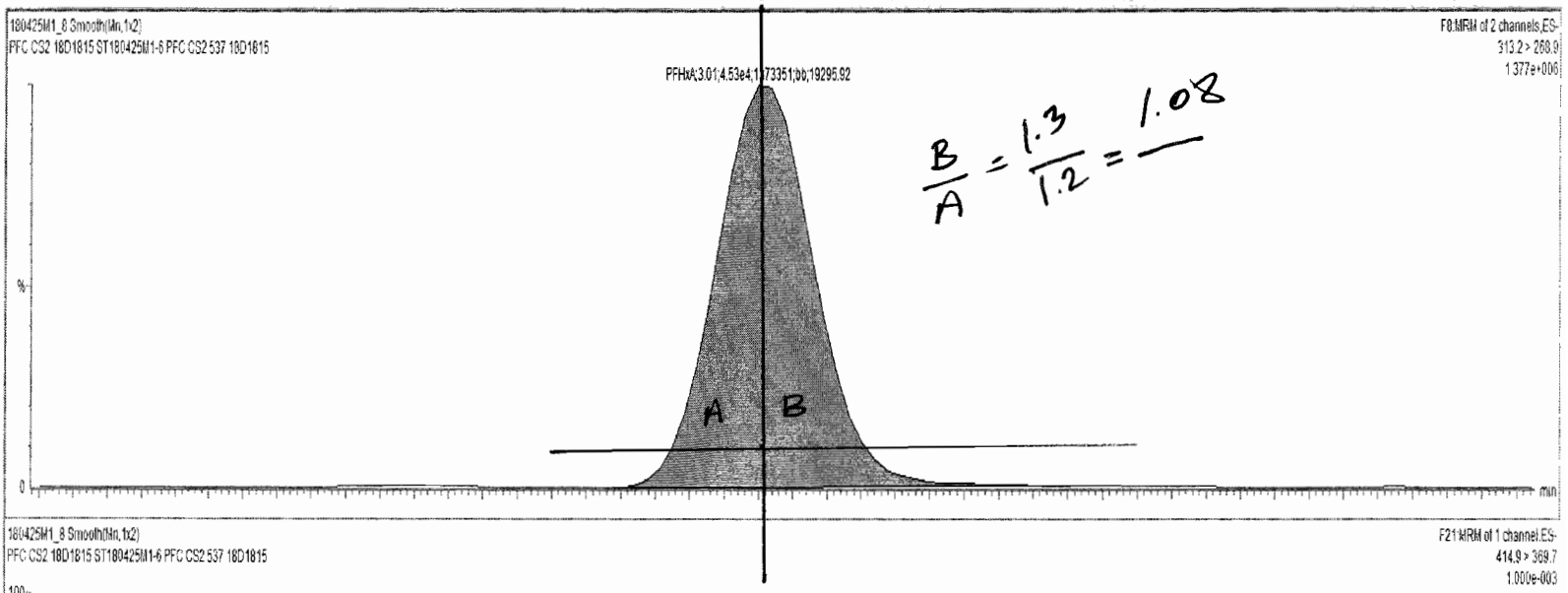
3:26 PM 4/26/2018

TargetLynx XS - 180425M1-CRVL1 - [Chromatogram]

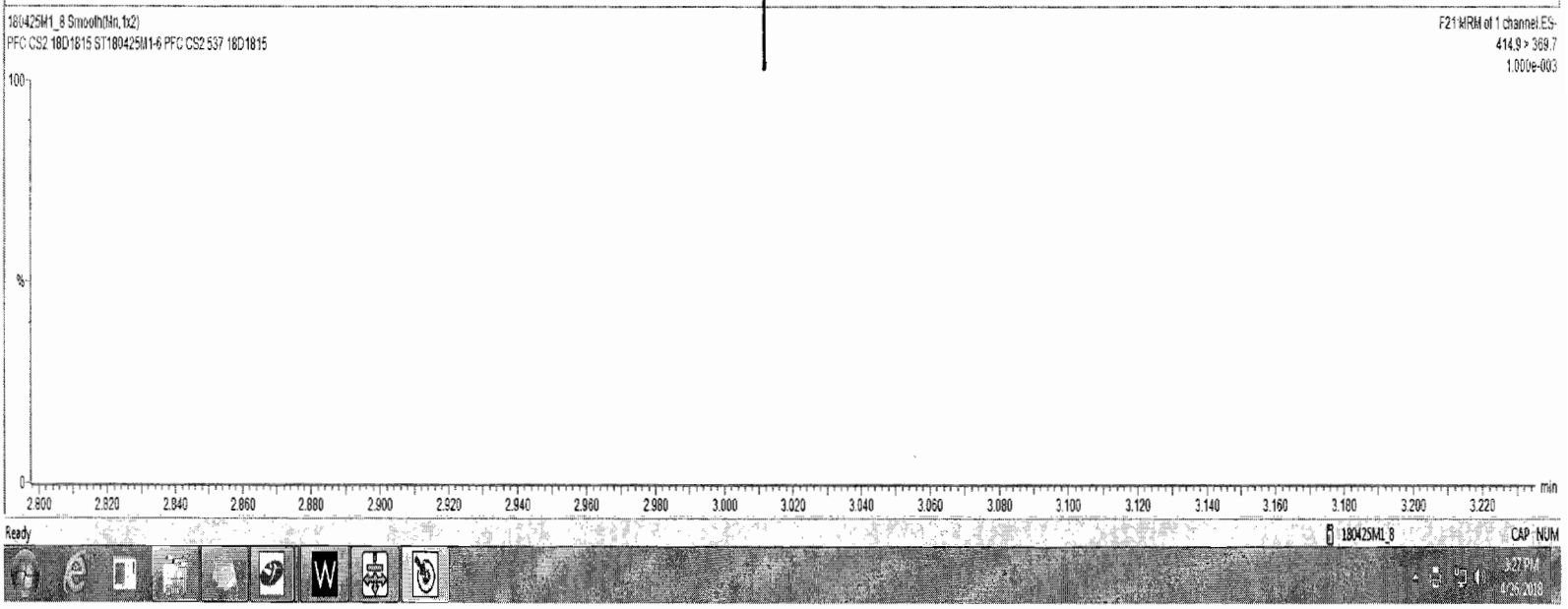
File Edit View Display Processing Window Help

180425M1_8 - ST180425M1-6 PFC CS2 537 18D1815 - PFC CS2 18D1815

	Name	Conc.	DL	%Rec	EMPC	Abs.Resp	RRF	RT	#	IS#	RA	Y/N	RRT	Acq.Date	Acq.Time	1st Chr.Noise	ID	Sample Text	Factor1	SWF	Cal.File	>MDL
1	PFBS	21.628824	0.00278	96.8		7.594e3		2.66	1	19			0.629	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
2	PFHxA	23.223769	0.00271	92.9		4.534e4		3.01	2	18			0.782	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
3	PFHpA	23.020416	0.000346	92.1		3.514e4		3.46	3	18			0.900	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
4	PFHxS	23.903667	0.0112	104.8		6.121e3		3.97	4	19			0.846	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
5	PFOA	24.186513	0.0332	96.7		4.299e4		3.85	5	18			1.001	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
6	PFNA	24.410279	0.00454	97.6		4.167e4		4.17	6	18			1.083	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
7	PFOS	23.449458	0.000245	101.9		8.235e3		4.22	7	19			1.000	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
8	PFDA	22.726837	0.00327	90.9		4.493e4		4.44	8	18			1.154	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		NO
9	N-MeFOSAA	23.206984	0.00147	92.8		1.795e4		4.55	9	20			1.001	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES
10	N-EtFOSAA	25.293942	0.00321	101.2		1.430e4		4.67	10	20			1.026	25-Apr-18	18:25:18		ST180425M...	PFC CS2 18D1815	1.0	1.00		YES



$\frac{B}{A} = \frac{1.3}{1.2} = 1.08$



Ready

180425M1_8

CAP NUM

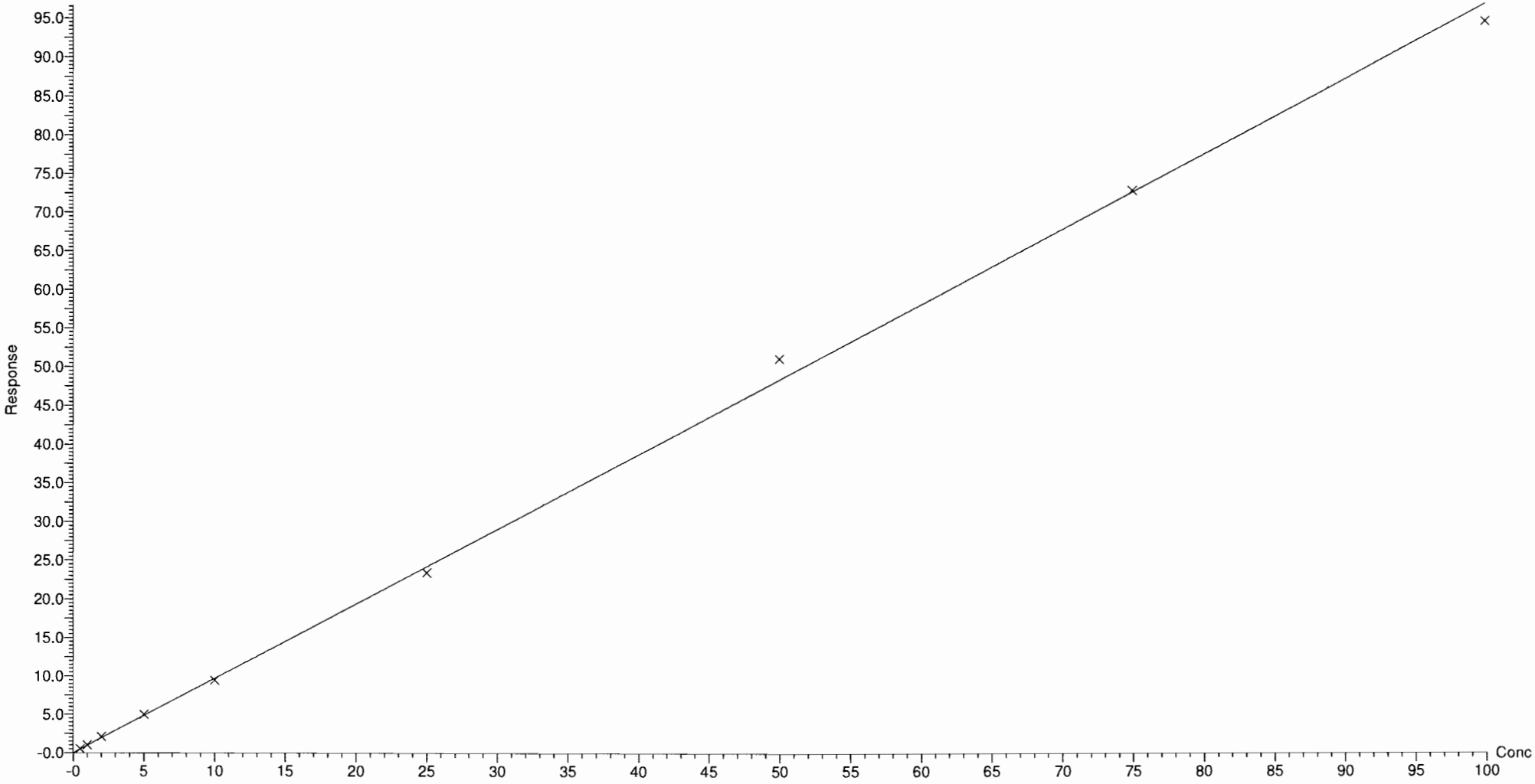
3:27 PM
4/25/2018

Vista Analytical Laboratory Q1

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 11:38:12 Pacific Daylight Time

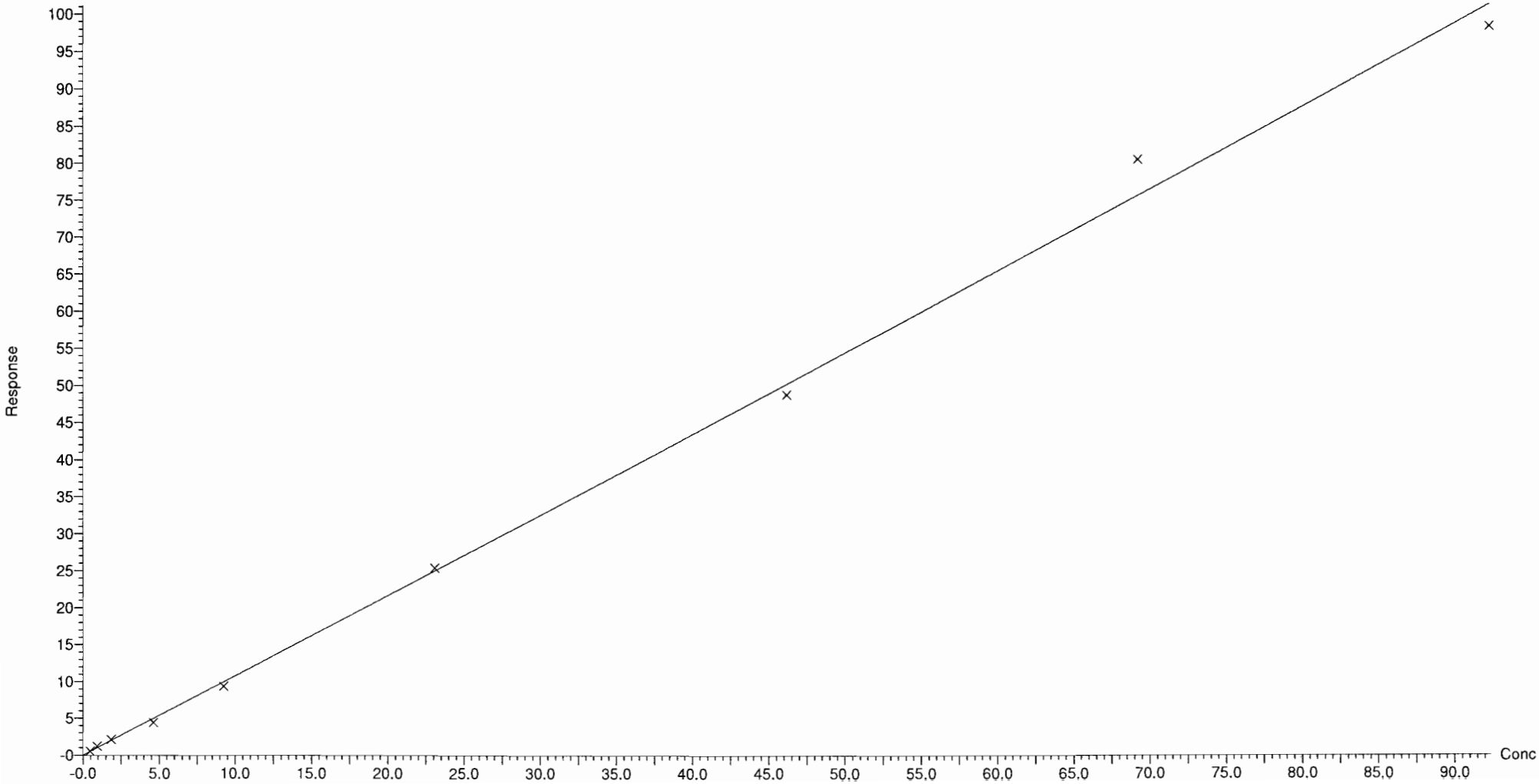
Compound name: PFOA
Coefficient of Determination: R^2 = 0.998949
Calibration curve: 0.966768 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 11:38:12 Pacific Daylight Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.997657
Calibration curve: 0.000184413 * x^2 + 1.07766 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory

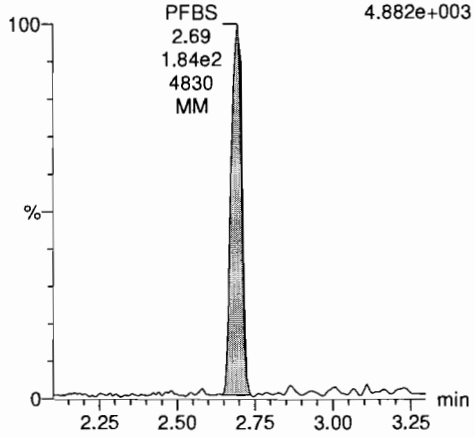
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

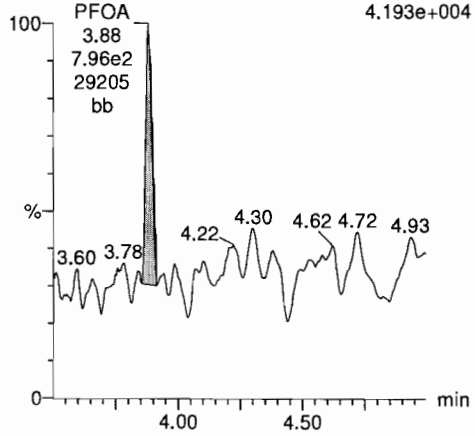
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_3, Date: 25-Apr-2018, Time: 17:28:03, ID: ST180425M1-1 PFC CS-3 537 18D1810, Description: PFC CS-3 18D1810

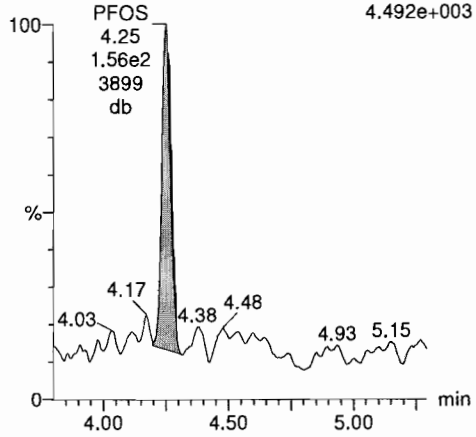
PFBS



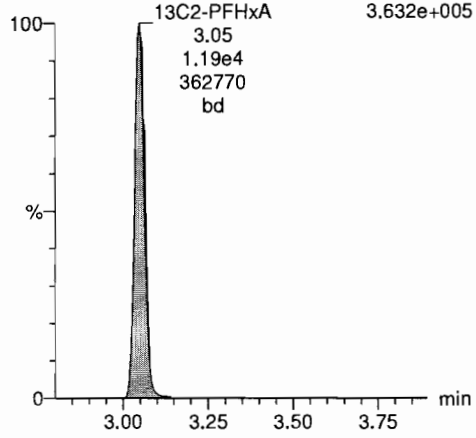
PFOA



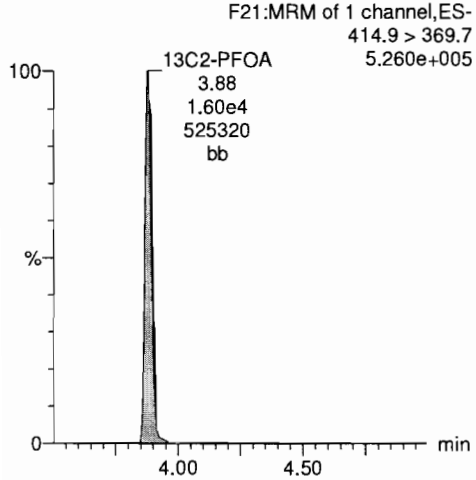
PFOS



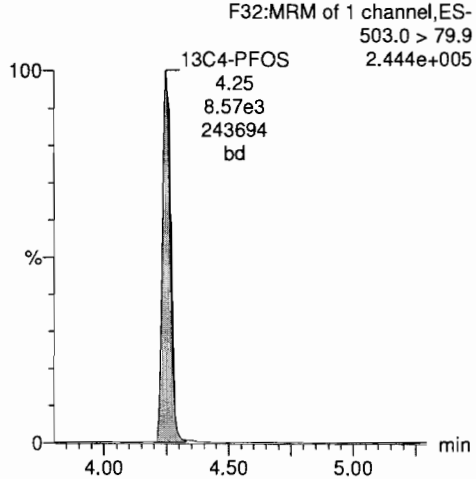
13C2-PFHxA



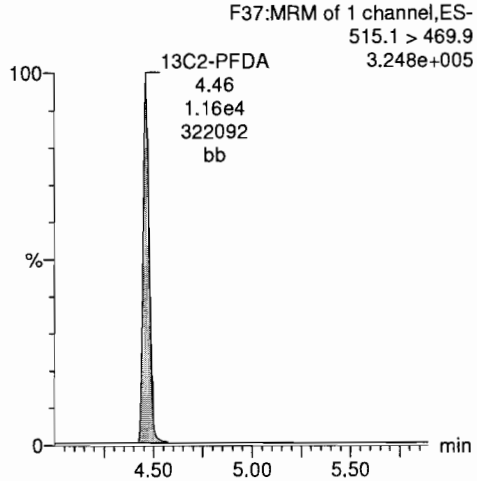
13C2-PFOA



13C4-PFOS



13C2-PFDA

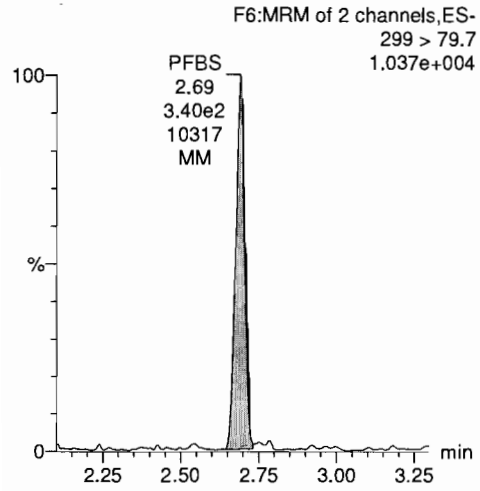


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

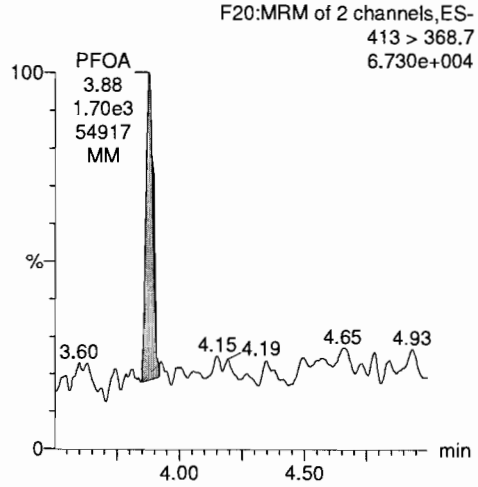
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_4, Date: 25-Apr-2018, Time: 17:39:30, ID: ST180425M1-2 PFC CS-2 537 18D1811, Description: PFC CS-2 18D1811

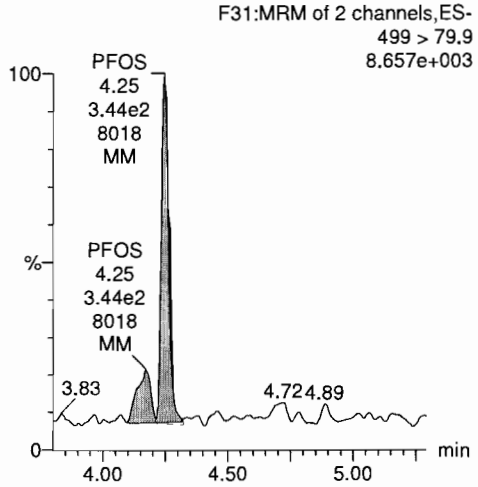
PFBS



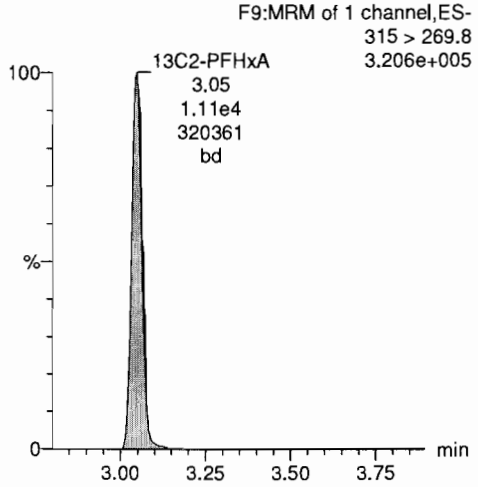
PFOA



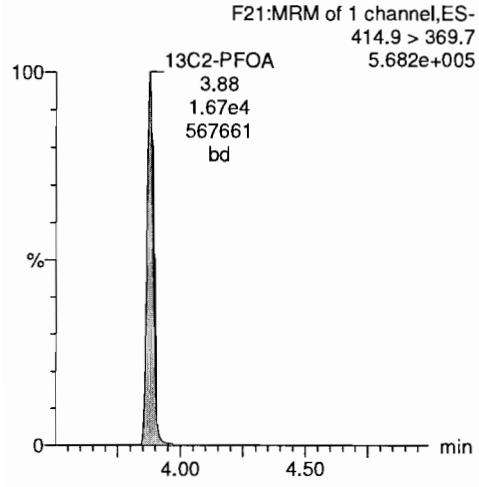
PFOS



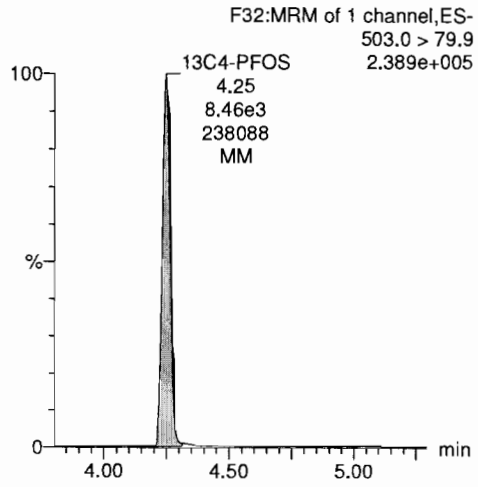
13C2-PFHxA



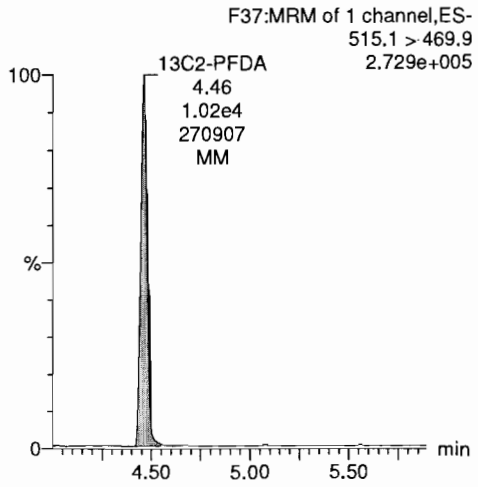
13C2-PFOA



13C4-PFOS



13C2-PFDA

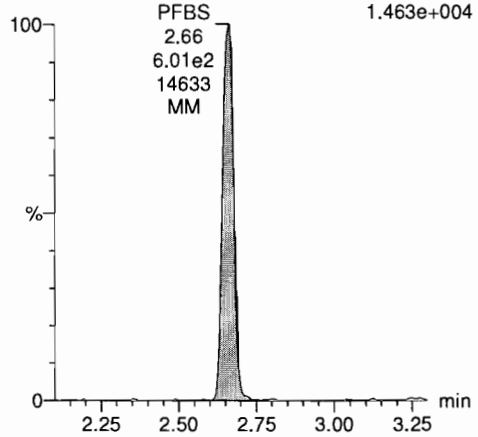


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

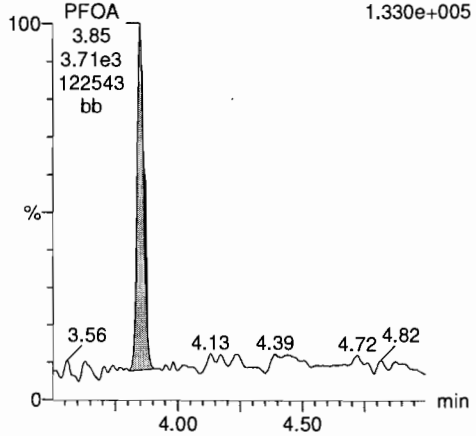
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_5, Date: 25-Apr-2018, Time: 17:50:57, ID: ST180425M1-3 PFC CS-1 537 18D1812, Description: PFC CS-1 18D1812

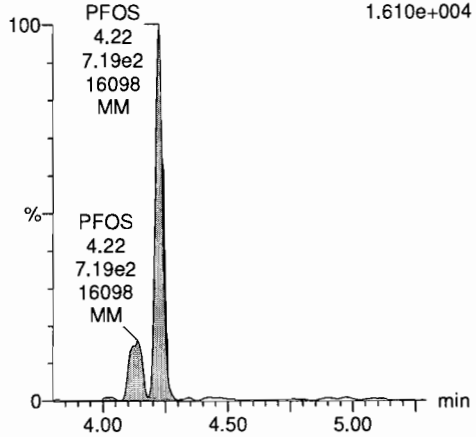
PFBS



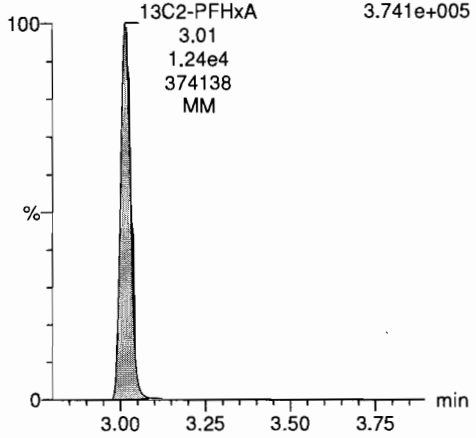
PFOA



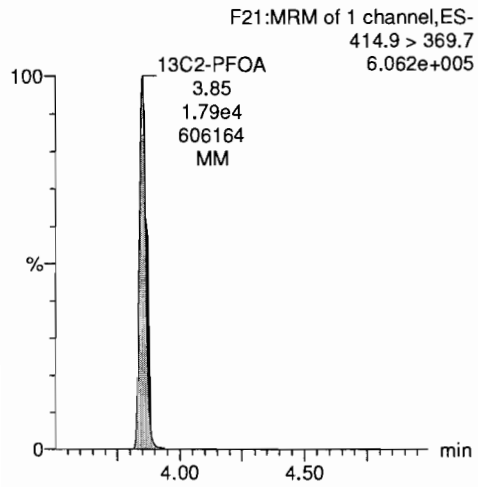
PFOS



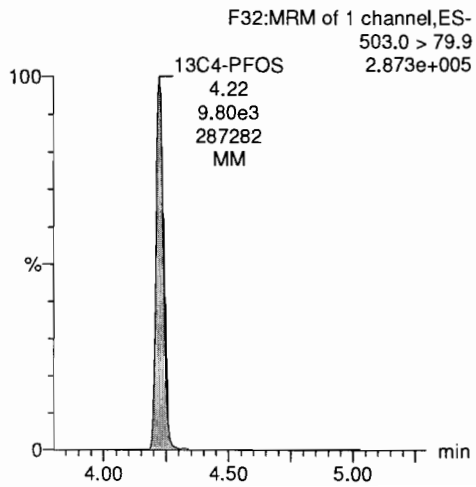
13C2-PFHxA



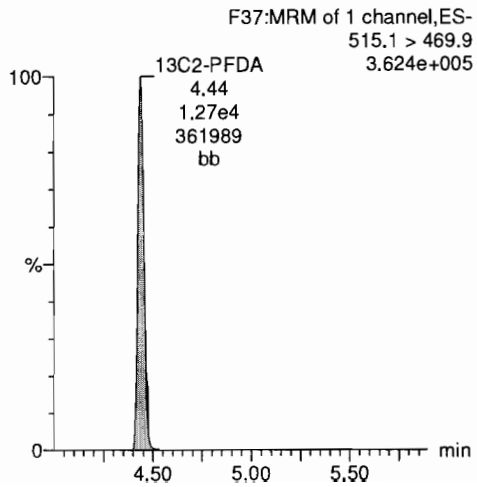
13C2-PFOA



13C4-PFOS



13C2-PFDA



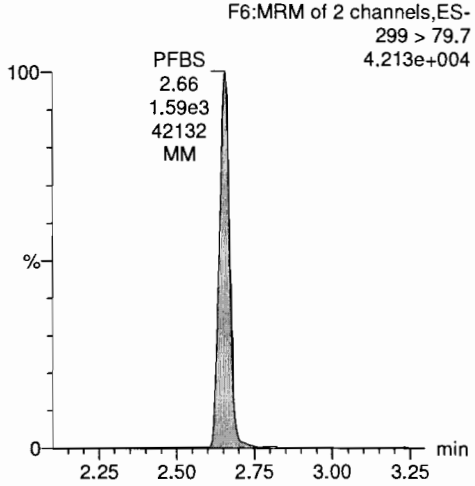
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

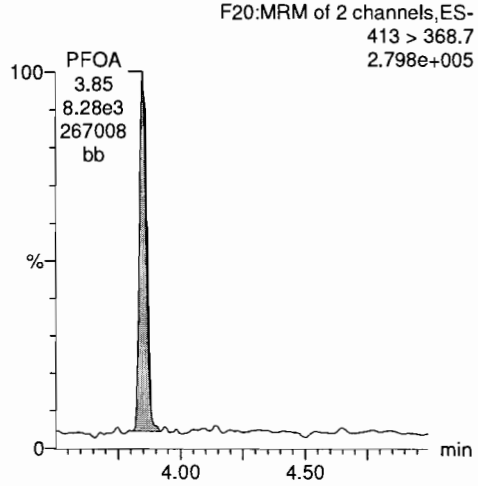
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_6, Date: 25-Apr-2018, Time: 18:02:24, ID: ST180425M1-4 PFC CS0 537 18D1813, Description: PFC CS0 18D1813

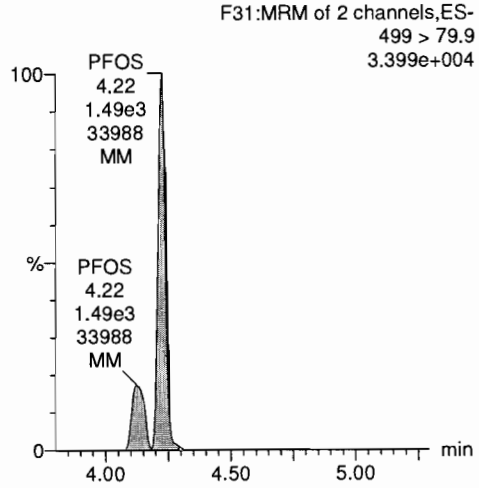
PFBS



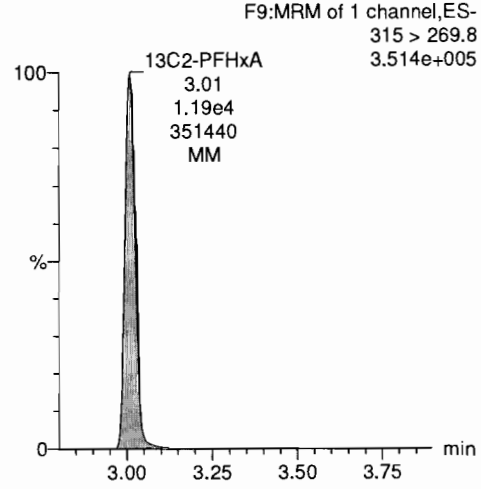
PFOA



PFOS



13C2-PFHxA



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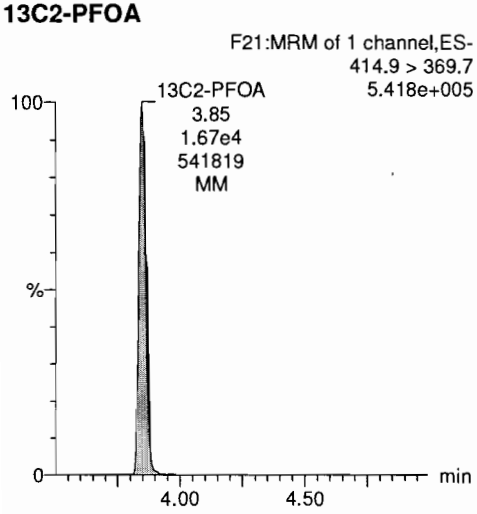
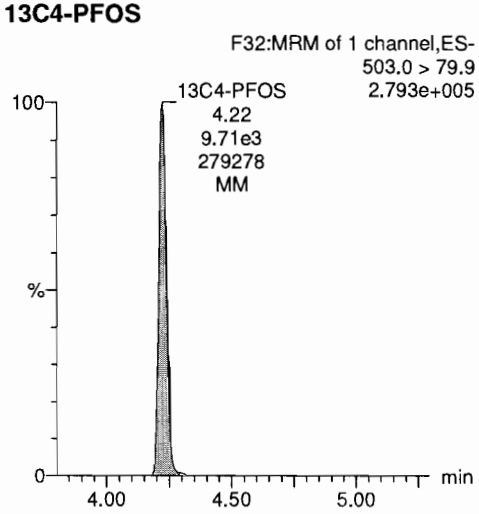
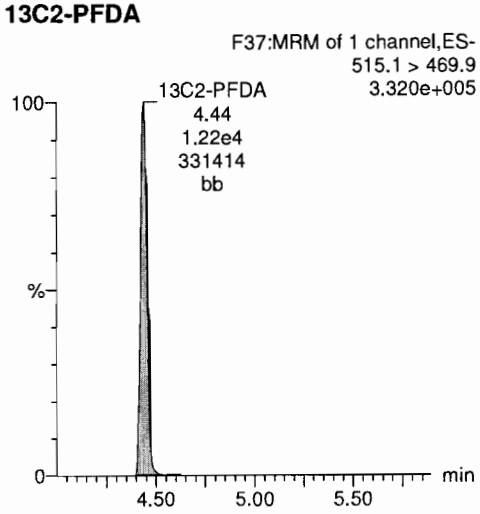


13C4-PFOS



13C2-PFDA

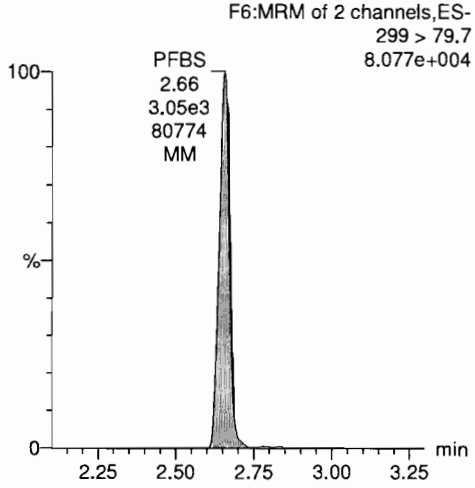


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

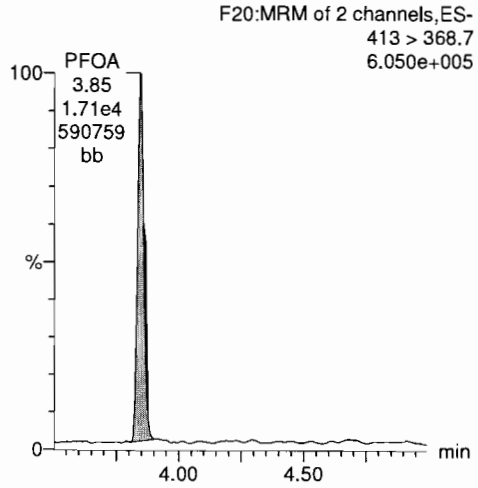
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_7, Date: 25-Apr-2018, Time: 18:13:51, ID: ST180425M1-5 PFC CS1 537 18D1814, Description: PFC CS1 18D1814

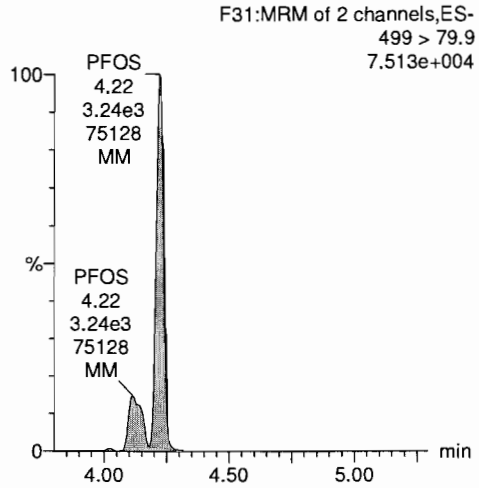
PFBS



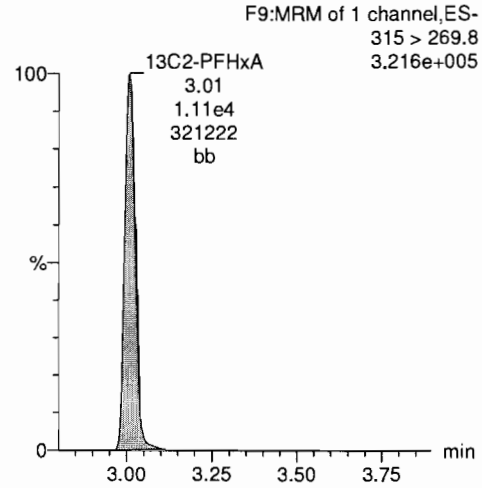
PFOA



PFOS



13C2-PFHxA



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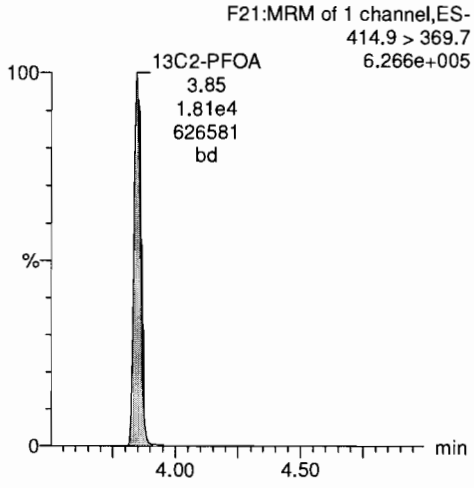
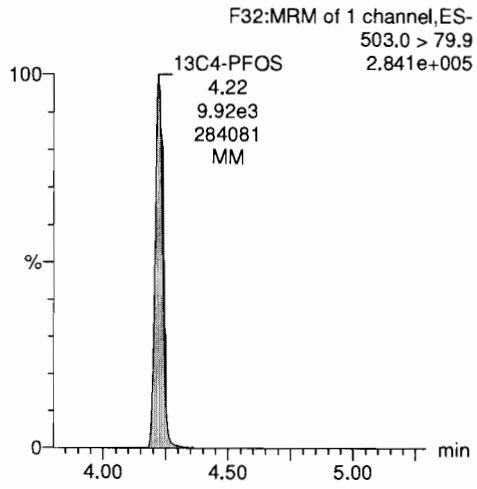
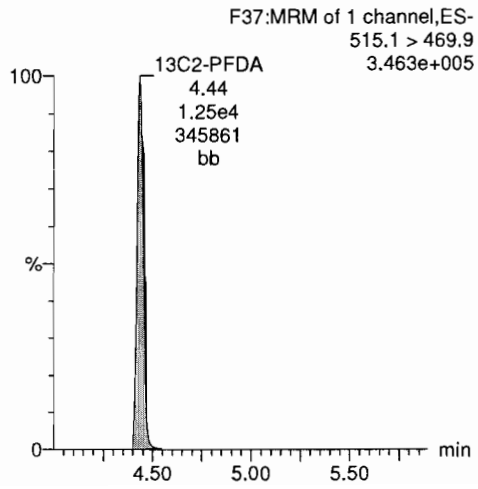


13C4-PFOS



13C2-PFDA

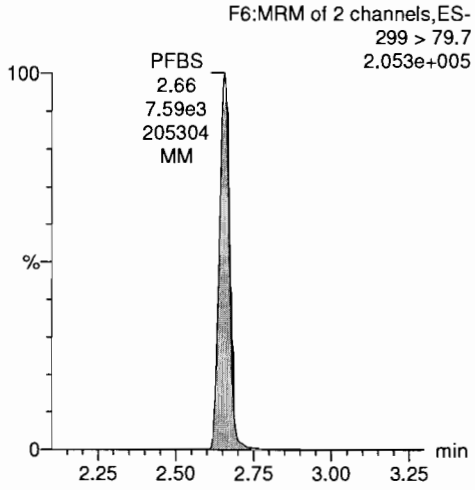


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

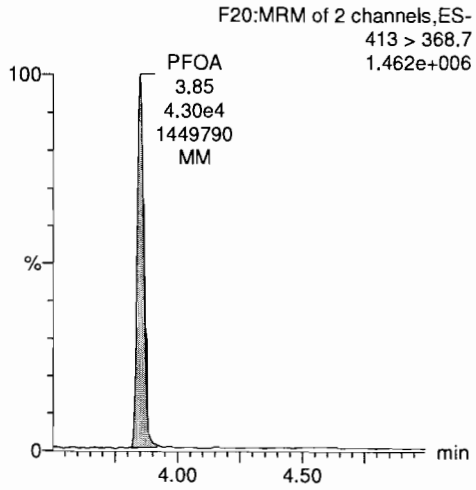
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_8, Date: 25-Apr-2018, Time: 18:25:18, ID: ST180425M1-6 PFC CS2 537 18D1815, Description: PFC CS2 18D1815

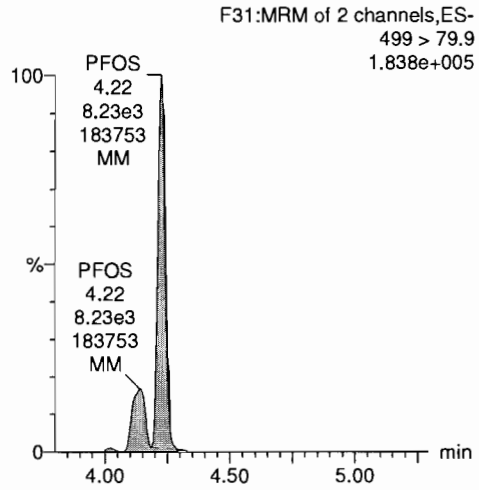
PFBS



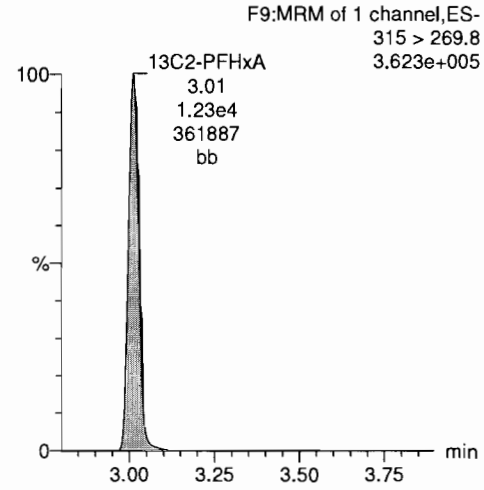
PFOA



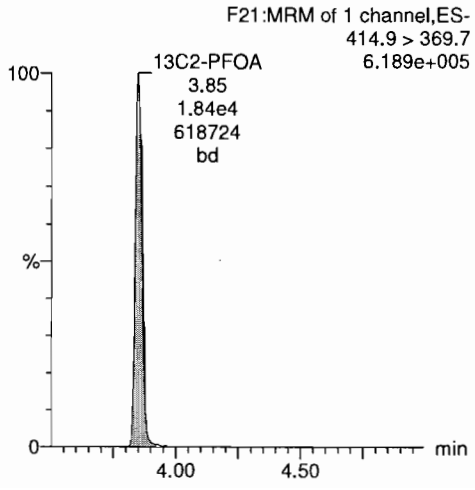
PFOS



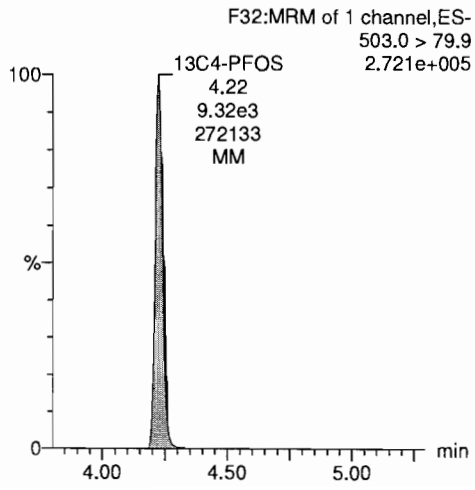
13C2-PFHxA



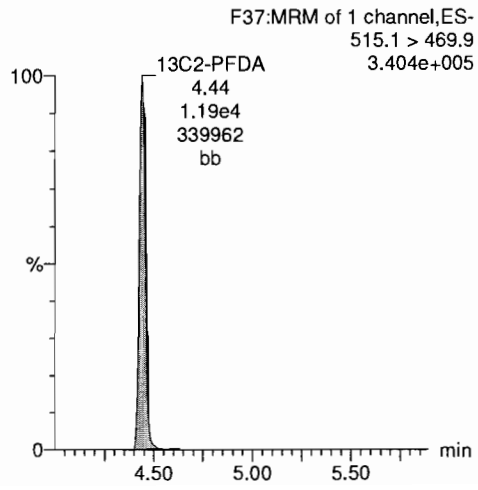
13C2-PFOA



13C4-PFOS



13C2-PFDA

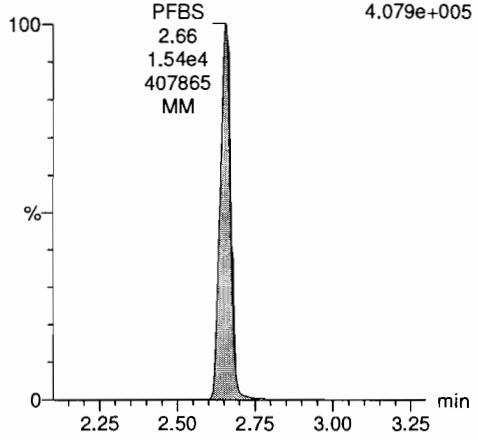


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

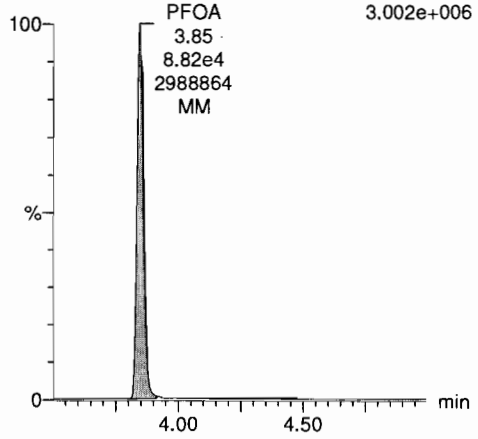
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_9, Date: 25-Apr-2018, Time: 18:36:45, ID: ST180425M1-7 PFC CS3 537 18D1816, Description: PFC CS3 18D1816

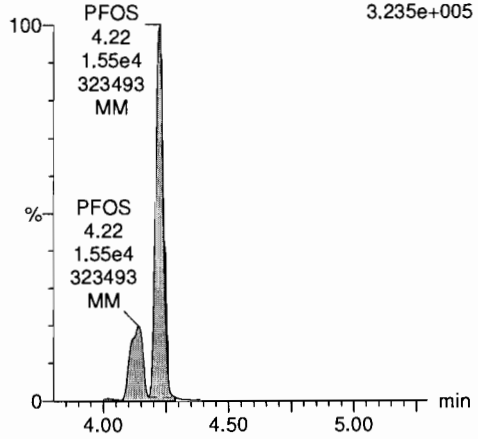
PFBS



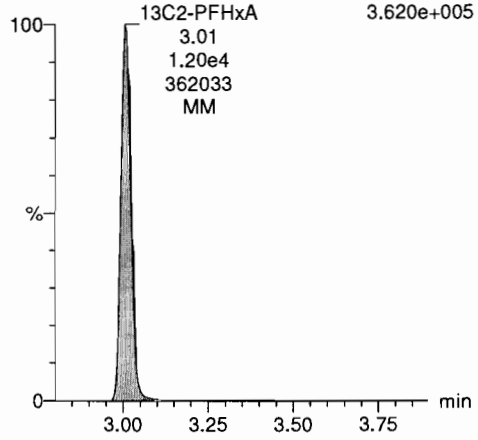
PFOA



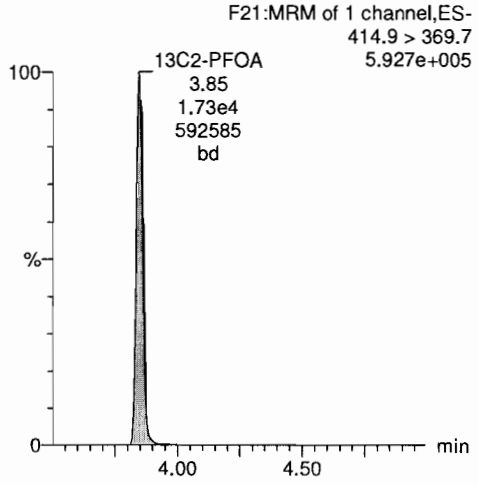
PFOS



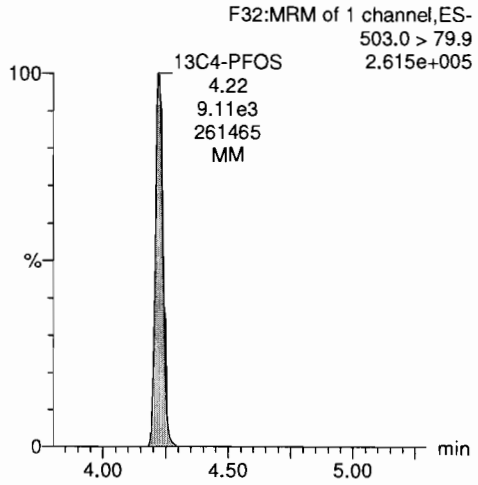
13C2-PFHxA



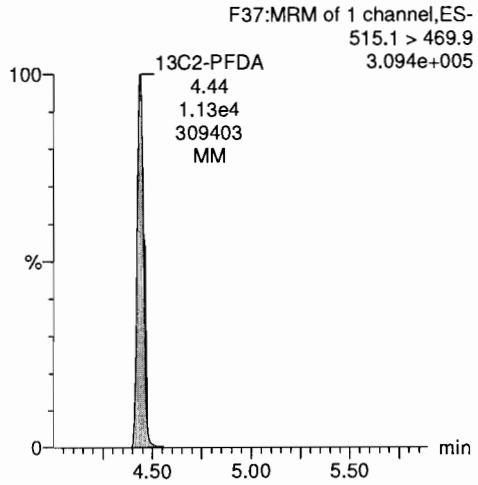
13C2-PFOA



13C4-PFOS



13C2-PFDA

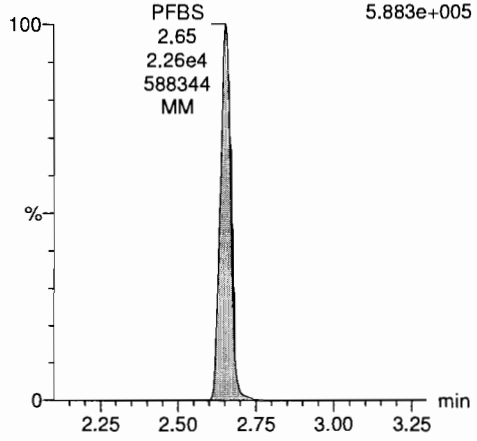


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

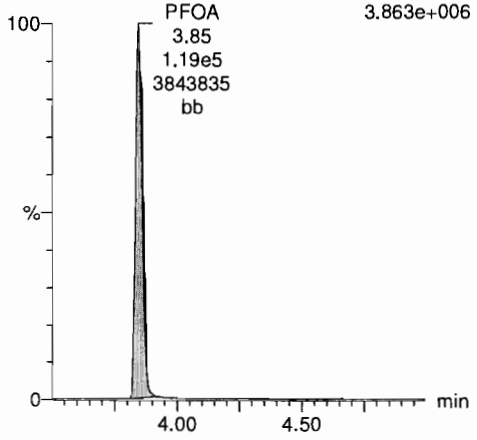
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_10, Date: 25-Apr-2018, Time: 18:48:12, ID: ST180425M1-8 PFC CS4 537 18D1817, Description: PFC CS4 18D1817

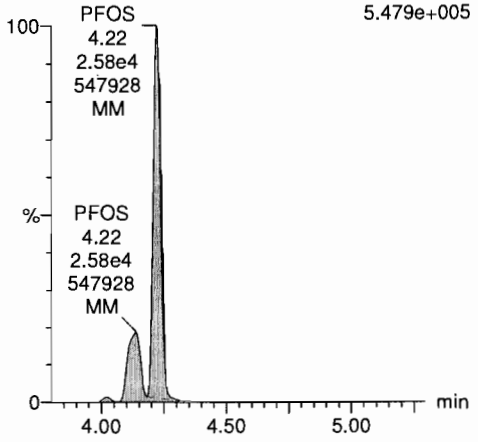
PFBS



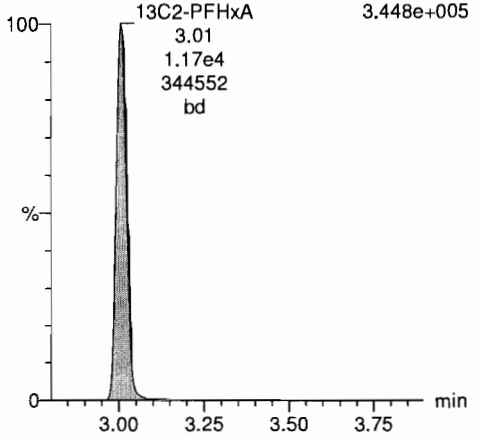
PFOA



PFOS



13C2-PFHxA



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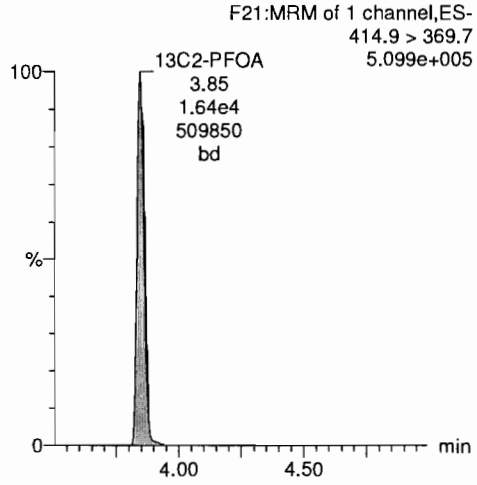
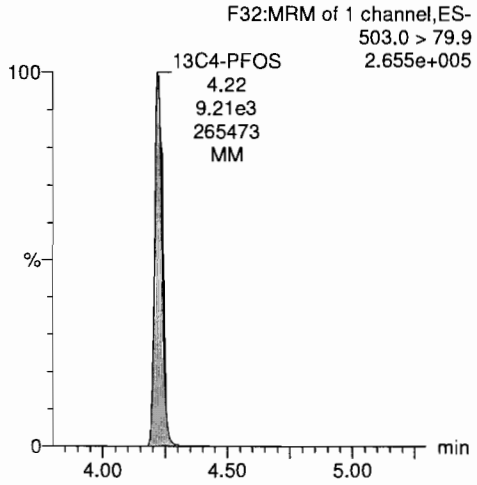


13C4-PFOS



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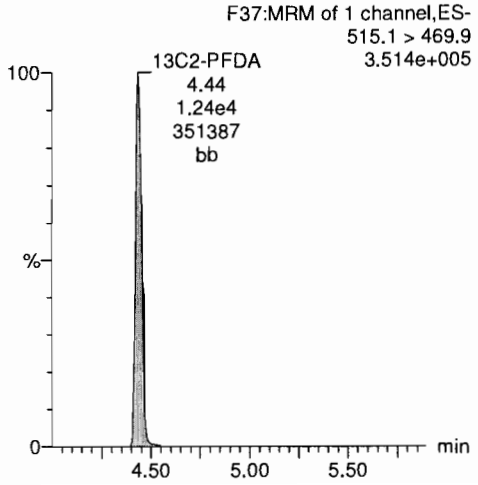
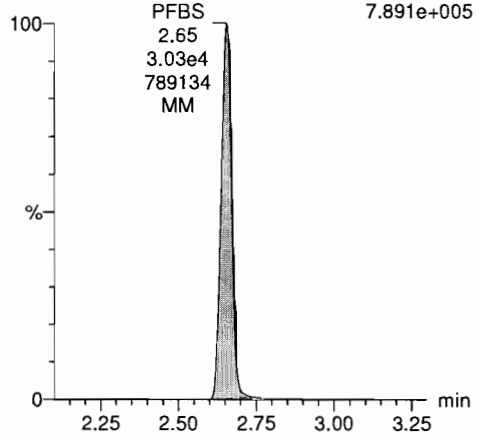


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-CRVL3.qld

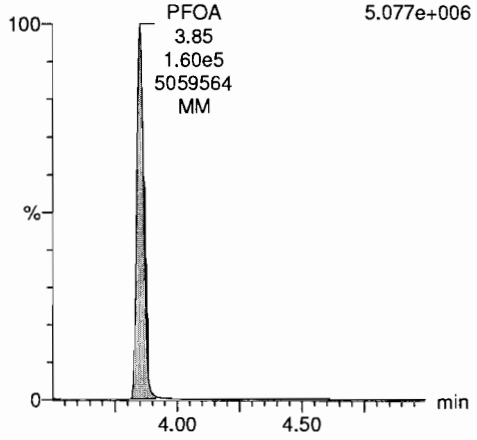
Last Altered: Thursday, April 26, 2018 11:14:52 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:53:27 Pacific Daylight Time

Name: 180425M1_11, Date: 25-Apr-2018, Time: 18:59:41, ID: ST180425M1-9 PFC CS5 537 18D1818, Description: PFC CS5 18D1818

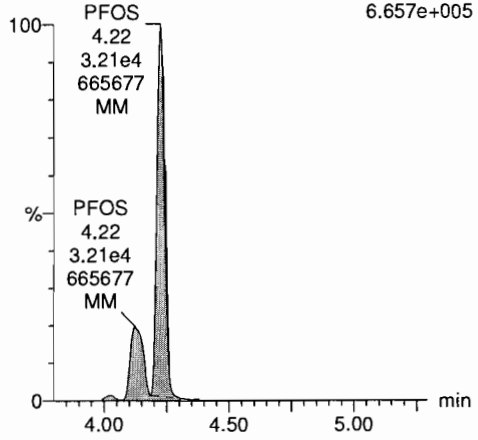
PFBS



PFOA



PFOS



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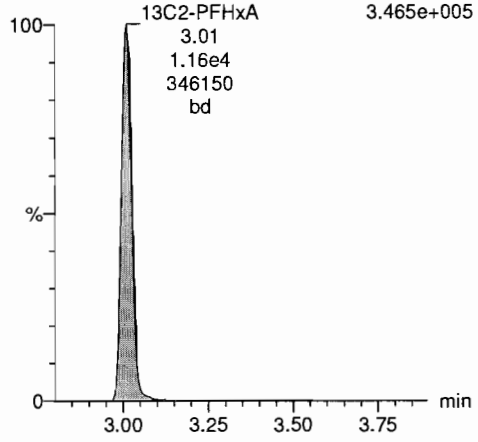
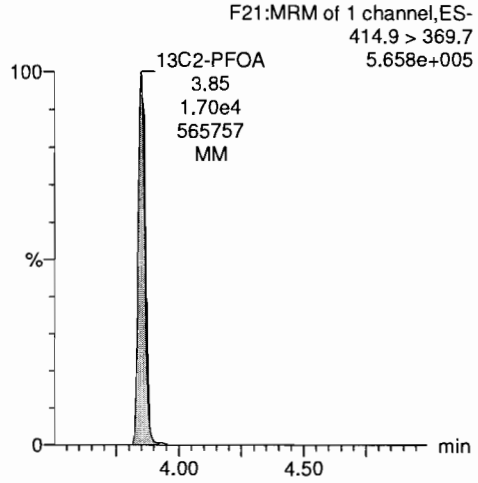


13C2-PFOA



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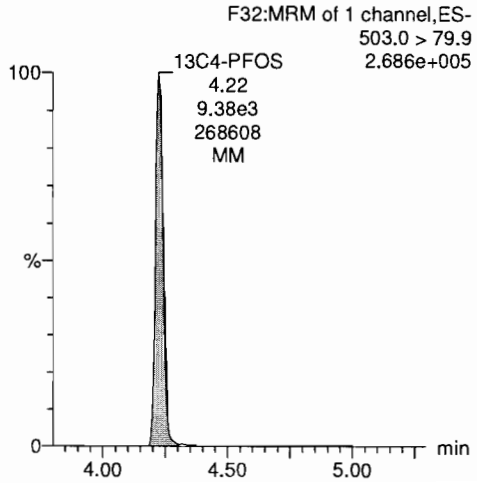
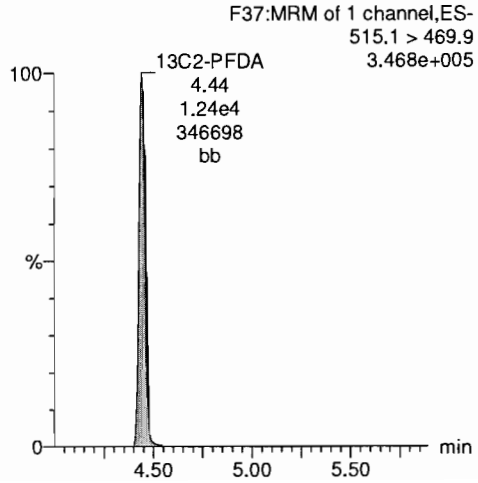


13C2-PFDA



Quantify Sample Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-ICV.qld

Last Altered: Thursday, April 26, 2018 11:48:21 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:55:33 Pacific Daylight Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

AD 4/26/18

Name: 180425M1_13, Date: 25-Apr-2018, Time: 19:22:38, ID: ICV180425M1-1 PFC 537 ICV 18D2007, Description: PFC ICV 18D2007

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	3.64e3	9.31e3	1.0000		2.64	2.66	11.2	10.4	104.3
2	5	PFOA	413 > 368.7	1.71e4	1.69e4	1.0000		3.86	3.85	10.1	10.5	104.5
3	7	PFOS	499 >79.9	3.73e3	9.31e3	1.0000		4.23	4.22	11.5	10.7	106.6
4	15	13C2-PFHxA	315 > 269.8	1.22e4	1.69e4	1.0000	0.689	3.09	3.01	7.22	10.5	104.9
5	16	13C2-PFDA	515.1 > 469.9	1.19e4	1.69e4	1.0000	0.696	4.43	4.44	7.00	10.1	100.7
6	17	d5-N-EtFOSAA	589.3 > 419.0	2.17e4	2.13e4	1.0000	1.114	4.55	4.66	40.9	36.7	91.8
7	18	13C2-PFOA	414.9 > 369.7	1.69e4	1.69e4	1.0000	1.000	3.92	3.85	10.0	10.0	100.0
8	19	13C4-PFOS	503.0 > 79.9	9.31e3	9.31e3	1.0000	1.000	4.29	4.22	28.7	28.7	100.0
9	20	d3-N-MeFOSAA	573.3 > 419.0	2.13e4	2.13e4	1.0000	1.000	4.62	4.55	40.0	40.0	100.0

AR 5/4/18

Vista Analytical Laboratory

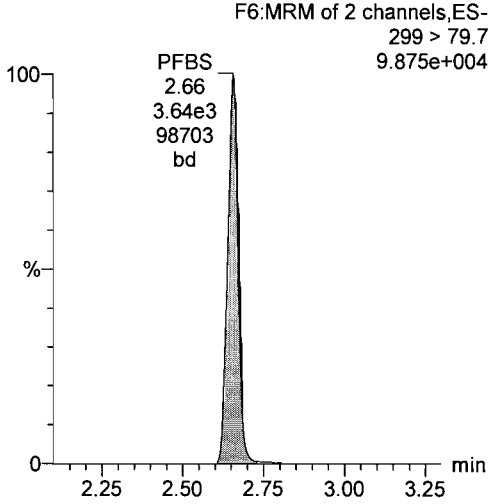
Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-ICV.qld

Last Altered: Thursday, April 26, 2018 11:48:21 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:55:33 Pacific Daylight Time

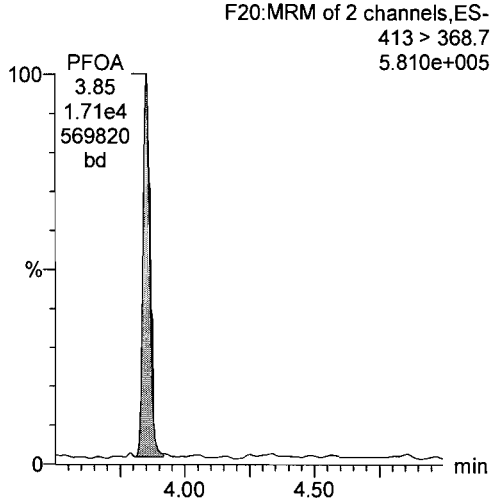
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_0408.mdb 08 Apr 2018 13:44:34
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_04-25-18_M1-L3.cdb 26 Apr 2018 11:14:52

Name: 180425M1_13, Date: 25-Apr-2018, Time: 19:22:38, ID: ICV180425M1-1 PFC 537 ICV 18D2007, Description: PFC ICV 18D2007

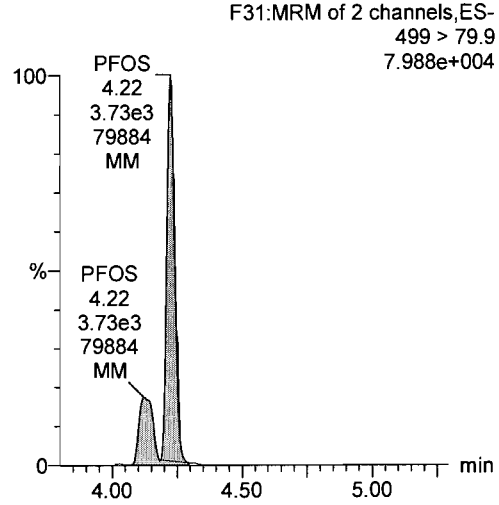
PFBS



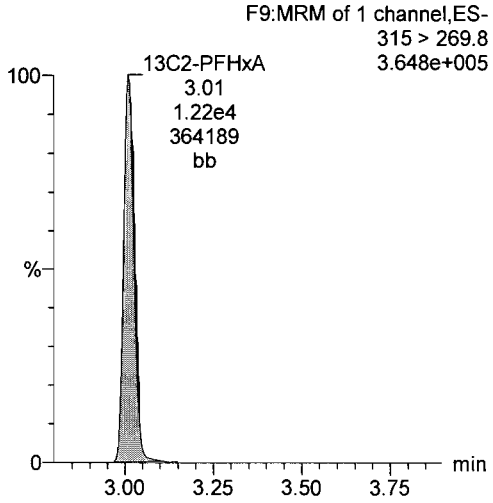
PFOA



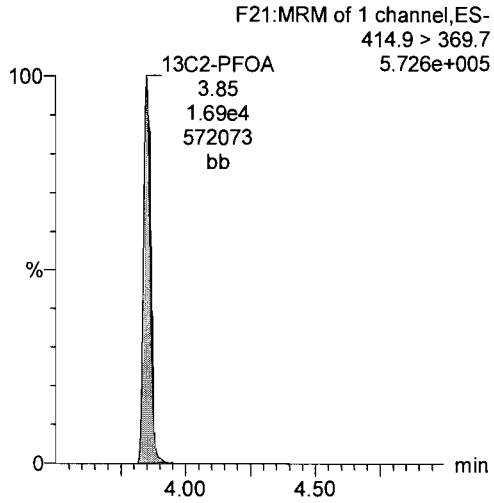
PFOS



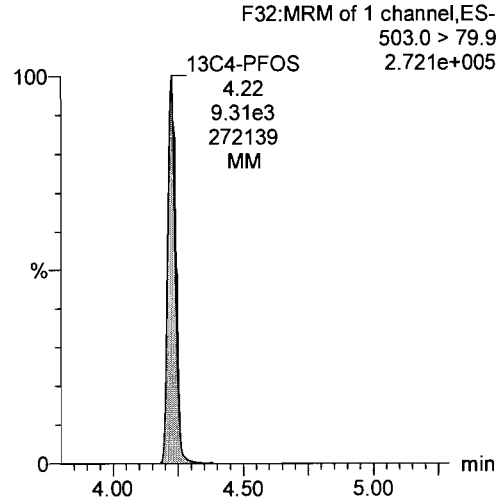
13C2-PFHxA



13C2-PFOA



13C4-PFOS

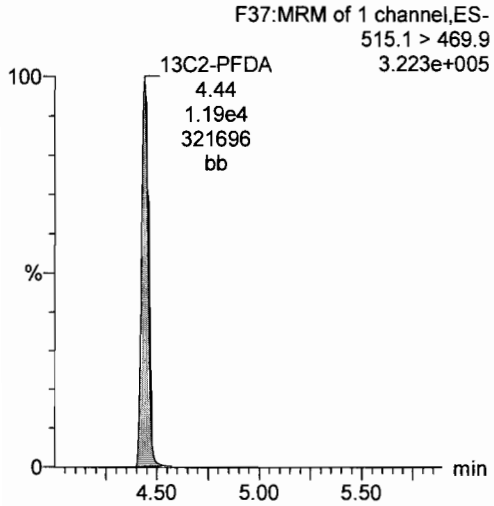


Dataset: Z:\Projects\PFAS.PRO\Results\180425M1\180425M1-ICV.qld

Last Altered: Thursday, April 26, 2018 11:48:21 Pacific Daylight Time
Printed: Thursday, April 26, 2018 13:55:33 Pacific Daylight Time

Name: 180425M1_13, Date: 25-Apr-2018, Time: 19:22:38, ID: ICV180425M1-1 PFC 537 ICV 18D2007, Description: PFC ICV 18D2007

13C2-PFDA



Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	Date_Time_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:51	06/21/2018			20180622	09:10:00	20180628	21:27:00	1801383-01	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:51	06/21/2018			20180622	09:10:00	20180628	21:27:00	1801383-01	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:51	06/21/2018			20180622	09:10:00	20180628	21:27:00	1801383-01	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:51	06/21/2018			20180622	09:10:00	20180628	21:27:00	1801383-01	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:51	06/21/2018			20180622	09:10:00	20180628	21:27:00	1801383-01	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:52	06/21/2018			20180622	09:10:00	20180628	21:36:00	1801383-02	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:52	06/21/2018			20180622	09:10:00	20180628	21:36:00	1801383-02	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:52	06/21/2018			20180622	09:10:00	20180628	21:36:00	1801383-02	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:52	06/21/2018			20180622	09:10:00	20180628	21:36:00	1801383-02	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB194-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/19/2018 16:52	06/21/2018			20180622	09:10:00	20180628	21:36:00	1801383-02	1	-999	
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N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB193-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/20/2018 09:05	06/21/2018			20180622	09:10:00	20180628	22:10:00	1801383-06	1	-999	
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N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW198-0618	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	06/20/2018 11:50	06/21/2018			20180622	09:10:00	20180628	22:53:00	1801383-11	1	-999	
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N6247016D9000	0008		CHERRY_POINT_MCAS	Blank	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BLK	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:01:00	B8F0172-BLK1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Blank	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BLK	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:01:00	B8F0172-BLK1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Blank	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BLK	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:01:00	B8F0172-BLK1	1	-999	
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N6247016D9000	0008		CHERRY_POINT_MCAS	LCS	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	20:53:00	B8F0172-BS1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	20:53:00	B8F0172-BS1	1	-999	
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N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MS	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:10:00	B8F0172-MS1	1	-999	
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N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MS	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:10:00	B8F0172-MS1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MS	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:10:00	B8F0172-MS1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MSD	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:18:00	B8F0172-MSD1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MSD	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:18:00	B8F0172-MSD1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MSD	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:18:00	B8F0172-MSD1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MSD	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:18:00	B8F0172-MSD1	1	-999	
N6247016D9000	0008		CHERRY_POINT_MCAS	Matrix Spike Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	MSD	W	4	06/22/2018 09:10	06/22/2018			20180622	09:10:00	20180628	21:18:00	B8F0172-MSD1	1	-999	

Percent_ Lipid	Chem_Name	Analyte_ID	Analyte_ Value	Original_ Analyte_ Value	Result_ Units	Lab_ Qualifier	Validator_ Qualifier	GC_ Column_ Type	Analysis_ Result_ Type	Result_ Narrative	QC_ Control_ Limit_Code	QC_ Accuracy _Upper	QC_ Accuracy _Lower	Control_L imit_ Date	QC_ Narrative	MDL	Detection_ Limit	QSM_ Version	DL	LOD	LOQ	SDG	Analysis_ Batch
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.84	NG_L	U		PR	TRG									5.1	2.95	4.84	9.69	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.84	NG_L	U		PR	TRG									5.1	2.95	4.84	9.69	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.84	NG_L	U		PR	TRG									5.1	2.95	4.84	9.69	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		97.3	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		97.9	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.92	NG_L	U		PR	TRG									5.1	2.99	4.92	9.84	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.92	NG_L	U		PR	TRG									5.1	2.99	4.92	9.84	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.92	NG_L	U		PR	TRG									5.1	2.99	4.92	9.84	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		104	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		102	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.77	NG_L	U		PR	TRG									5.1	2.91	4.77	9.56	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.77	NG_L	U		PR	TRG									5.1	2.91	4.77	9.56	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.77	NG_L	U		PR	TRG									5.1	2.91	4.77	9.56	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		97.3	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		101	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.81	NG_L	U		PR	TRG									5.1	2.92	4.81	9.60	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.81	NG_L	U		PR	TRG									5.1	2.92	4.81	9.60	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.81	NG_L	U		PR	TRG									5.1	2.92	4.81	9.60	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		93.2	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		92.9	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.81	NG_L	U		PR	TRG									5.1	2.92	4.81	9.61	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.81	NG_L	U		PR	TRG									5.1	2.92	4.81	9.61	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.81	NG_L	U		PR	TRG									5.1	2.92	4.81	9.61	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		101	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		92.5	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.75	NG_L	U		PR	TRG									5.1	2.89	4.75	9.51	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.75	NG_L	U		PR	TRG									5.1	2.89	4.75	9.51	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.75	NG_L	U		PR	TRG									5.1	2.89	4.75	9.51	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		103	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		98.6	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.79	NG_L	U		PR	TRG									5.1	2.91	4.79	9.58	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.79	NG_L	U		PR	TRG									5.1	2.91	4.79	9.58	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.79	NG_L	U		PR	TRG									5.1	2.91	4.79	9.58	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		95.7	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		99.6	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.79	NG_L	U		PR	TRG									5.1	2.92	4.79	9.60	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.79	NG_L	U		PR	TRG									5.1	2.92	4.79	9.60	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.79	NG_L	U		PR	TRG									5.1	2.92	4.79	9.60	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		85.6	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		89.3	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.79	NG_L	U		PR	TRG									5.1	2.92	4.79	9.60	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.79	NG_L	U		PR	TRG									5.1	2.92	4.79	9.60	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.79	NG_L	U		PR	TRG									5.1	2.92	4.79	9.60	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		96.9	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		95.7	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.73	NG_L	U		PR	TRG									5.1	2.88	4.73	9.48	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.73	NG_L	U		PR	TRG									5.1	2.88	4.73	9.48	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.73	NG_L	U		PR	TRG									5.1	2.88	4.73	9.48	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		95.8	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		80.6	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.83	NG_L	U		PR	TRG									5.1	2.94	4.83	9.66	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.83	NG_L	U		PR	TRG									5.1	2.94	4.83	9.66	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.83	NG_L	U		PR	TRG									5.1	2.94	4.83	9.66	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		84.9	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		98.6	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.66	NG_L	U		PR	TRG									5.1	2.84	4.66	9.34	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		4.66	NG_L	U		PR	TRG									5.1	2.84	4.66	9.34	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.66	NG_L	U		PR	TRG									5.1	2.84	4.66	9.34	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		103	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		112	PCT_REC			PR			SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.00	NG_L	U		PR	TRG									5.1	3.04	5.00	10.0	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		5.00	NG_L	U		PR	TRG									5.1	3.04	5.00	10.0	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.00	NG_L	U		PR	TRG									5.1	3.04	5.00	10.0	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		101	PCT_REC			PR	SUR		SLSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		97.9	PCT_REC			PR	SUR		SLSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		47.0	NG_L			PR	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		38.6	NG_L			PR	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		33.9	NG_L			PR	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		102	PCT_REC			PR	SUR		LSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		103	PCT_REC			PR	SUR		LSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		53.1	NG_L			PR	TRG		LSA	130	70					5.1	2.94	4.84	9.68	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		35.8	NG_L			PR	TRG		LSA	130	70					5.1	2.94	4.84	9.68	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		33.9	NG_L			PR	TRG		LSA	130	70					5.1	2.94	4.84	9.68	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		92.6	PCT_REC			PR	SUR		LSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		86.6	PCT_REC			PR	SUR		LSA	130	70					5.1				1801383	S8F0087
	Perfluorobutanesulfonic acid (PFBS)	375-73-5		48.6	NG_L			PR	TRG		LSA	130	70					5.1	2.92	4.81	9.61	1801383	S8F0087
	Perfluorooctanoic acid (PFOA)	335-67-1		37.6	NG_L			PR	TRG		LSA	130	70					5.1	2.92	4.81	9.61	1801383	S8F0087
	Perfluorooctane Sulfonate (PFOS)	1763-23-1		29.6	NG_L			PR	TRG		LSA	130	70					5.1	2.92	4.81	9.61	1801383	S8F0087
	13C2-PFHxA	13C2-PFHxA		98.9	PCT_REC			PR	SUR		LSA	130	70					5.1				1801383	S8F0087
	13C2-PFDA	13C2-PFDA		102	PCT_REC			PR	SUR		LSA	130	70					5.1				1801383	S8F0087

ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
MCOLF ATLANTC, NORTH CAROLINA

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 1801383
Laboratory: Vista Analytical Laboratory, El Dorado Hills, California
Site: MCOLF Atlantic, North Carolina
Date: July 18, 2018

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	CH-AT-1RW194-0618	1801383-1	Water
2	CH-AT-1FB194-0618	1801383-2	Water
3	CH-AT-1RW195-0618	1801383-3	Water
4	CH-AT-1FB195-0618	1801383-4	Water
5	CH-AT-1RW193-0618	1801383-5	Water
6	CH-AT-1FB193-0618	1801383-6	Water
7	CH-AT-1RW196-0618	1801383-7	Water
7MS	CH-AT-1RW196-0618MS	1801383-7MS	Water
7MSD	CH-AT-1RW196-0618MSD	1801383-7MSD	Water
8	CH-AT-1FB196-0618	1801383-8	Water
9	CH-AT-1RW197-0618	1801383-9	Water
10	CH-AT-1FB197-0618	1801383-10	Water
11	CH-AT-1RW198-0618	1801383-11	Water
12	CH-AT-1FB198-0618	1801383-12	Water

A full data validation was performed on the analytical data for six water samples and six aqueous field blank samples collected on June 19-20, 2018 by CH2M HILL at the MCOLF Atlantic site in Atlantic, North Carolina. The samples were analyzed under the EPA Method "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)".

Specific method references are as follows:

Analysis	*Method References*
PFCs	USEPA Method 537, Rev 1.1

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (July 2013) and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Organic Superfund Methods Data Review," January 2017;

- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Date Completeness, Case Narrative & Custody Documentation
- Holding times
- Liquid Chromatography/Mass Spectrometry (LC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Data Usability Assessment

There were no rejections of data.

Overall the data is acceptable for the intended purposes. There were no qualifications.

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

Holding Times

- All samples were extracted within 14 days for water samples and analyzed within 28 days.

LC/MS Tuning

- All criteria were met.

Initial Calibration

- All relative standard deviation (%RSD) and/or correlation coefficients criteria were met.

Continuing Calibration

- All percent recovery (%R) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- Field QC samples were free of contamination.

Blank ID	Compound	Conc. ng/L	Qualifier	Affected Samples
CH-AT-1FB194-0618	None - ND	-	-	-
CH-AT-1FB195-0618	None - ND	-	-	-
CH-AT-1FB193-0618	None - ND	-	-	-
CH-AT-1FB196-0618	None - ND	-	-	-
CH-AT-1FB197-0618	None - ND	-	-	-
CH-AT-1FB198-0618	None - ND	-	-	-

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD samples exhibited acceptable %R and RPD values except for the following.

MS/MSD Sample	Compound	MS %R/MSD %R/RPD	Qualifier	Affected Samples
7	PFBS	155%/143%/OK	None	Sample ND

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

LCS Sample ID	Compound	%R	Qualifier	Affected Samples
B8F0172-BS1	PFBS	133%	None	All Associated ND

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met.

Field Duplicate Sample Precision

- Field duplicate samples were not collected.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver Dated: 7/18/18

Nancy Weaver
Senior Chemist

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

Vista Analytical Laboratory

1

Sample ID: CH-AT-1RW194-0618

EPA Method 537

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-01	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	19-Jun-18 16:51	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.95	4.84	9.69		B8F0172	22-Jun-18	0.258 L	28-Jun-18 21:27	1
PFOA	335-67-1	ND	2.95	4.84	9.69		B8F0172	22-Jun-18	0.258 L	28-Jun-18 21:27	1
PFOS	1763-23-1	ND	2.95	4.84	9.69		B8F0172	22-Jun-18	0.258 L	28-Jun-18 21:27	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.3	70 - 130		B8F0172	22-Jun-18	0.258 L	28-Jun-18 21:27	1
13C2-PFDA	SURR	97.9	70 - 130		B8F0172	22-Jun-18	0.258 L	28-Jun-18 21:27	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL

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

NW 7/18/18

Sample ID: CH-AT-1FB194-0618 — **EPA Method 537**

Client Data

Name: Jacobs
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 19-Jun-18 16:52

Laboratory Data

Lab Sample: 1801383-02
Date Received: 21-Jun-18 10:16
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.99	4.92	9.84		B8F0172	22-Jun-18	0.254 L	28-Jun-18 21:36	1
PFOA	335-67-1	ND	2.99	4.92	9.84		B8F0172	22-Jun-18	0.254 L	28-Jun-18 21:36	1
PFOS	1763-23-1	ND	2.99	4.92	9.84		B8F0172	22-Jun-18	0.254 L	28-Jun-18 21:36	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130		B8F0172	22-Jun-18	0.254 L	28-Jun-18 21:36	1
13C2-PFDA	SURR	102	70 - 130		B8F0172	22-Jun-18	0.254 L	28-Jun-18 21:36	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

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

7/18/18

Vista 3
Analytical Laboratory

Sample ID: CH-AT-1RW195-0618 **EPA Method 537**

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-03	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	20-Jun-18 08:28	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.91	4.77	9.56		B8F0172	22-Jun-18	0.262 L	28-Jun-18 21:44	1
PFOA	335-67-1	ND	2.91	4.77	9.56		B8F0172	22-Jun-18	0.262 L	28-Jun-18 21:44	1
PFOS	1763-23-1	ND	2.91	4.77	9.56		B8F0172	22-Jun-18	0.262 L	28-Jun-18 21:44	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.3	70 - 130		B8F0172	22-Jun-18	0.262 L	28-Jun-18 21:44	1
13C2-PFDA	SURR	101	70 - 130		B8F0172	22-Jun-18	0.262 L	28-Jun-18 21:44	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL
When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

MW 7/18/18

Vista 4
Analytical Laboratory

Sample ID: CH-AT-1FB195-0618

EPA Method 537

Client Data

Name: Jacobs
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 20-Jun-18 08:29

Laboratory Data

Lab Sample: 1801383-04
Date Received: 21-Jun-18 10:16
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.92	4.81	9.60		B8F0172	22-Jun-18	0.260 L	28-Jun-18 21:53	1
PFOA	335-67-1	ND	2.92	4.81	9.60		B8F0172	22-Jun-18	0.260 L	28-Jun-18 21:53	1
PFOS	1763-23-1	ND	2.92	4.81	9.60		B8F0172	22-Jun-18	0.260 L	28-Jun-18 21:53	1
Labeled Standards	**Type**	**% Recovery**		**Limits**		**Qualifiers**	**Batch**	**Extracted**	**Samp Size**	**Analyzed**	**Dilution**
13C2-PFHxA	SURR	93.2		70 - 130			B8F0172	22-Jun-18	0.260 L	28-Jun-18 21:53	1
13C2-PFDA	SURR	92.9		70 - 130			B8F0172	22-Jun-18	0.260 L	28-Jun-18 21:53	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL
When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

MW 7/18/18

Vista Analytical Laboratory 5

Sample ID: CH-AT-1RW193-0618 **EPA Method 537**

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-05	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	20-Jun-18 09:04	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.92	4.81	9.61		B8F0172	22-Jun-18	0.260 L	28-Jun-18 22:02	1
PFOA	335-67-1	ND	2.92	4.81	9.61		B8F0172	22-Jun-18	0.260 L	28-Jun-18 22:02	1
PFOS	1763-23-1	ND	2.92	4.81	9.61		B8F0172	22-Jun-18	0.260 L	28-Jun-18 22:02	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130		B8F0172	22-Jun-18	0.260 L	28-Jun-18 22:02	1
13C2-PFDA	SURR	92.5	70 - 130		B8F0172	22-Jun-18	0.260 L	28-Jun-18 22:02	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL

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

nw 7.18.18

Vista Analytical Laboratory

b

Sample ID: CH-AT-1FB193-0618 **EPA Method 537**

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-06	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	20-Jun-18 09:05	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.89	4.75	9.51		B8F0172	22-Jun-18	0.263 L	28-Jun-18 22:10	1
PFOA	335-67-1	ND	2.89	4.75	9.51		B8F0172	22-Jun-18	0.263 L	28-Jun-18 22:10	1
PFOS	1763-23-1	ND	2.89	4.75	9.51		B8F0172	22-Jun-18	0.263 L	28-Jun-18 22:10	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B8F0172	22-Jun-18	0.263 L	28-Jun-18 22:10	1
13C2-PFDA	SURR	98.6	70 - 130		B8F0172	22-Jun-18	0.263 L	28-Jun-18 22:10	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL

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

7/18/18

Vista Analytical Laboratory

7

Sample ID: CH-AT-1RW196-0618

EPA Method 537

Client Data

Name: Jacobs
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 20-Jun-18 09:47

Laboratory Data

Lab Sample: 1801383-07
Date Received: 21-Jun-18 10:16
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.91	4.79	9.58		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:19	1
PFOA	335-67-1	ND	2.91	4.79	9.58		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:19	1
PFOS	1763-23-1	ND	2.91	4.79	9.58		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	95.7	70 - 130		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:19	1
13C2-PFDA	SURR	99.6	70 - 130		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:19	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

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

NW 7/18/18

Vista Analytical Laboratory

Sample ID: CH-AT-1FB196-0618 **EPA Method 537**

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-08	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	20-Jun-18 09:48	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.92	4.79	9.60		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:27	1
PFOA	335-67-1	ND	2.92	4.79	9.60		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:27	1
PFOS	1763-23-1	ND	2.92	4.79	9.60		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:27	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	85.6	70 - 130		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:27	1
13C2-PFDA	SURR	89.3	70 - 130		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:27	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL
When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

jw 7/18/18

Vista Analytical Laboratory 9

Sample ID: CH-AT-1RW197-0618 **EPA Method 537**

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-09	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	20-Jun-18 10:41	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.92	4.79	9.60		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:36	1
PFOA	335-67-1	ND	2.92	4.79	9.60		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:36	1
PFOS	1763-23-1	ND	2.92	4.79	9.60		B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:36	1
Labeled Standards	**Type**	**% Recovery**		**Limits**		**Qualifiers**	**Batch**	**Extracted**	**Samp Size**	**Analyzed**	**Dilution**
13C2-PFHxA	SURR	96.9		70 - 130			B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:36	1
13C2-PFDA	SURR	95.7		70 - 130			B8F0172	22-Jun-18	0.261 L	28-Jun-18 22:36	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.
When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

mw 7/18/18

Vista 10
Analytical Laboratory

Sample ID: CH-AT-1FB197-0618

EPA Method 537

Client Data

Name: Jacobs
Project: CTO-08, MCOLF Atlantic PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 20-Jun-18 10:42

Laboratory Data

Lab Sample: 1801383-10
Date Received: 21-Jun-18 10:16
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.88	4.73	9.48		B8F0172	22-Jun-18	0.264 L	28-Jun-18 22:45	1
PFOA	335-67-1	ND	2.88	4.73	9.48		B8F0172	22-Jun-18	0.264 L	28-Jun-18 22:45	1
PFOS	1763-23-1	ND	2.88	4.73	9.48		B8F0172	22-Jun-18	0.264 L	28-Jun-18 22:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	95.8	70 - 130		B8F0172	22-Jun-18	0.264 L	28-Jun-18 22:45	1
13C2-PFDA	SURR	80.6	70 - 130		B8F0172	22-Jun-18	0.264 L	28-Jun-18 22:45	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL
When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

MW 7/18/18

Vista Analytical Laboratory

Sample ID: CH-AT-1RW198-0618

EPA Method 537

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-11	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	20-Jun-18 11:50	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.94	4.83	9.66		B8F0172	22-Jun-18	0.259 L	28-Jun-18 22:53	1
PFOA	335-67-1	ND	2.94	4.83	9.66		B8F0172	22-Jun-18	0.259 L	28-Jun-18 22:53	1
PFOS	1763-23-1	ND	2.94	4.83	9.66		B8F0172	22-Jun-18	0.259 L	28-Jun-18 22:53	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	84.9	70 - 130		B8F0172	22-Jun-18	0.259 L	28-Jun-18 22:53	1
13C2-PFDA	SURR	98.6	70 - 130		B8F0172	22-Jun-18	0.259 L	28-Jun-18 22:53	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL

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

7.8.18

Vista 12
Analytical Laboratory

Sample ID: CH-AT-1FB198-0618 **EPA Method 537**

Client Data				Laboratory Data			
Name:	Jacobs	Matrix:	Drinking Water	Lab Sample:	1801383-12	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic PFAS DW Investigation	Date Collected:	20-Jun-18 11:51	Date Received:	21-Jun-18 10:16		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.84	4.66	9.34		B8F0172	22-Jun-18	0.268 L	28-Jun-18 23:02	1
PFOA	335-67-1	ND	2.84	4.66	9.34		B8F0172	22-Jun-18	0.268 L	28-Jun-18 23:02	1
PFOS	1763-23-1	ND	2.84	4.66	9.34		B8F0172	22-Jun-18	0.268 L	28-Jun-18 23:02	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B8F0172	22-Jun-18	0.268 L	28-Jun-18 23:02	1
13C2-PFDA	SURR	112	70 - 130		B8F0172	22-Jun-18	0.268 L	28-Jun-18 23:02	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL

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

7/18/18

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Legend

- Proposed Sample Location
- Public Water Supply Well
- Direction of Groundwater Flow
- MCOLF Atlantic - 1-mile zone
- Base Boundary
- Site Boundary (suspected source)
- Parcels

N

0 0.2 0.4 Miles

1 inch = 0.4 mile

Imagery: Esri, 2016

Figure 3
Proposed Sampling Locations
Marine Corps Outlying Landing Field Atlantic
Atlantic Beach, North Carolina