Navy_CLEAN_PFAS_FOIA_request_covers_Nov2019.indd

NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 1803678

Marine Corps Air Station Yuma
Yuma, Arizona

November 2019

APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

December 04, 2018

Vista Work Order No. 1803678

Ms. Sabina Sudoko
Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614

Dear Ms. Sudoko,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on November 17, 2018 under your Project Name '4663.3803'.

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. 1803678
Case Narrative

Sample Condition on Receipt:

Four 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.

Analytical Notes:

PFAS Isotope Dilution Method

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

Holding Times

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

Quality Control

The Initial Calibration met the method acceptance criteria. The recoveries of PFTeDA were greater than 130% in the Continuing Calibration Verifications (CCV) "ST181203M1-1" and "ST181203M1-2". The recovery of MeFOSAA and was greater than 130% in CCV "ST181203M1-2". These analytes were not detected in the field samples. All other analytes met the method acceptance criteria

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recovery for PFTeDA was greater than 130%. The analyte was not detected in the samples. All other recoveries were within the method acceptance criteria.

The extracts of samples "A1-MW-42-SA2" and "B8K0153-MSD1" were re-injected because one or more Injection Internal Standard Analyte response areas were outside of criteria. The results were similar in the second injection of "A1-MW-42-SA2. The results from the original injections have been reported. The area criteria passed for the second injection of "B8K0153-MSD1" and the results from the re-injection have been reported.

As requested, an MS/MSD was performed on sample "A1-MW-01-SA2". The MS recovery and RPD were out of the acceptance criteria for "PFTeDA". All other MS/MSD recoveries and RPDs were within the acceptance criteria.
The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1803678-03	FRB-20181116	PFAS Isotope Dilution Method	d3-MeFOSAA	H	49.1

H = Recovery was outside laboratory acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1803678-01	A1-MW-01-SA2	MS/MSD16-Nov-18 08:12	17-Nov-18 12:02	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1803678-02	A1-MW-42-SA2	16-Nov-18 09:17	17-Nov-18 12:02	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1803678-03	FRB-20181116	16-Nov-18 09:40	17-Nov-18 12:02	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1803678-04	EB-20181116	16-Nov-18 09:50	17-Nov-18 12:02	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank **PFAS Isotope Dilution Method**

Client Data
Name: Tetra Tech EC, Inc. Matrix: Aqueous
Project: 4663.3803

Laboratory Data
Lab Sample: B8K0153-BLK1 Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFHxA	307-24-4	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFHpA	375-85-9	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFHxS	355-46-4	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFOA	335-67-1	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFNA	375-95-1	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFOS	1763-23-1	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFDA	335-76-2	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
MeFOSAA	2355-31-9	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
EtFOSAA	2991-50-6	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFUnA	2058-94-8	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFDoA	307-55-1	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFTrDA	72629-94-8	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
PFTeDA	376-06-7	ND	0.00137	0.00200	0.00400	U	B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	75.9	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C2-PFHxA	IS	95.6	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C4-PFHpA	IS	72.6	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
18O2-PFHxS	IS	83.7	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C2-PFOA	IS	74.8	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C5-PFNA	IS	95.2	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C8-PFOS	IS	98.6	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C2-PFDA	IS	79.0	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
d3-MeFOSAA	IS	58.7	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
d5-EtFOSAA	IS	74.5	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C2-PFUnA	IS	75.5	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C2-PFDoA	IS	86.4	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	1
13C2-PFTeDA	IS	72.4	50 - 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 15:29	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.

Sample ID: OPR **PFAS Isotope Dilution Method**

Client Data

Name: Tetra Tech EC, Inc.
Project: 4663.3803
Matrix: Aqueous

Laboratory Data

Lab Sample: B8K0153-BS1
Column: BEH C18

Analyte	CAS Number	Amt Found (ug/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0413	0.0400	103	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFHxA	307-24-4	0.0371	0.0400	92.6	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFHpA	375-85-9	0.0455	0.0400	114	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFHxS	355-46-4	0.0428	0.0400	107	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFOA	335-67-1	0.0473	0.0400	118	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFNA	375-95-1	0.0420	0.0400	105	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFOS	1763-23-1	0.0380	0.0400	95.1	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFDA	335-76-2	0.0431	0.0400	108	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
MeFOSAA	2355-31-9	0.0452	0.0400	113	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
EtFOSAA	2991-50-6	0.0406	0.0400	101	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFUnA	2058-94-8	0.0354	0.0400	88.5	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFDoA	307-55-1	0.0396	0.0400	99.1	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFTrDA	72629-94-8	0.0429	0.0400	107	70 - 130		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
PFTeDA	376-06-7	0.0559	0.0400	140	70 - 130	H	B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	81.5	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C2-PFHxA	IS	104	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C4-PFHpA	IS	80.3	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
18O2-PFHxS	IS	96.0	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C2-PFOA	IS	76.2	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C5-PFNA	IS	86.5	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C8-PFOS	IS	105	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C2-PFDA	IS	70.0	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
d3-MeFOSAA	IS	52.8	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
d5-EtFOSAA	IS	67.2	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C2-PFUnA	IS	68.3	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C2-PFDoA	IS	78.4	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1
13C2-PFTeDA	IS	72.9	50- 150		B8K0153	30-Nov-18	0.250 L	03-Dec-18 14:58	1

Sample ID: A1-MW-01-SA2

PFAS Isotope Dilution Method

Client Data

Name: Tetra Tech EC, Inc.
Project: 4663.3803
Location: YUMA, AZ

Matrix: Water
Date Collected: 16-Nov-18 08:12

Laboratory Data

Lab Sample: 1803678-01
Date Received: 17-Nov-18 12:02

Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0973	0.00306	0.00446	0.00894		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFHxA	307-24-4	0.216	0.00306	0.00446	0.00894		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFHpA	375-85-9	0.0156	0.00306	0.00446	0.00894	Q	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFHxS	355-46-4	0.0371	0.00306	0.00446	0.00894		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFOA	335-67-1	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFNA	375-95-1	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFOS	1763-23-1	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFDA	335-76-2	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
MeFOSAA	2355-31-9	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
EtFOSAA	2991-50-6	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFUnA	2058-94-8	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFDoA	307-55-1	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFTrDA	72629-94-8	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
PFTeDA	376-06-7	ND	0.00306	0.00446	0.00894	U	B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	71.6	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C2-PFHxA	IS	103	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C4-PFHpA	IS	80.4	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
18O2-PFHxS	IS	87.4	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C2-PFOA	IS	77.9	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C5-PFNA	IS	91.1	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C8-PFOS	IS	98.2	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C2-PFDA	IS	72.3	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
d3-MeFOSAA	IS	71.3	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
d5-EtFOSAA	IS	89.6	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C2-PFUnA	IS	70.6	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C2-PFDoA	IS	93.7	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	1
13C2-PFTeDA	IS	81.6	50 - 150		B8K0153	30-Nov-18	0.112 L	03-Dec-18 15:40	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.

Sample ID: A1-MW-01-SA2 **PFAS Isotope Dilution Method**

Name:	Tetra Tech EC, Inc.	Lab Sample:	B8K0153-MS1/B8K0153-MSD1	Source Lab Sample:	1803678-01
Project:	4663.3803	QC Batch:	B8K0153	Date Extracted:	30-Nov-18
Matrix:	Aqueous	Samp Size:	0.107/0.111 L	Column:	BEH C18

Analyte	CAS Number	Sample (ug/L)	MS (ug/L)	MS Spike Amt	MS % Rec	MS Quals	MSD (ug/L)	MSD Spike Amt	MSD % Rec	RPD	MSD Quals	%Rec Limits	RPD Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
PFBS	375-73-5	0.0973	0.200	0.0936	109		0.177	0.0899	89.2	20.0		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFHxA	307-24-4	0.216	0.295	0.0936	85.0		0.314	0.0899	109	24.7		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFHpA	375-85-9	0.0156	0.123	0.0936	115		0.100	0.0899	93.9	20.2		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFHxS	355-46-4	0.0371	0.144	0.0936	115		0.119	0.0899	91.3	23.0		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFOA	335-67-1	ND	0.107	0.0936	114		0.0898	0.0899	99.9	13.2		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFNA	375-95-1	ND	0.0978	0.0936	105		0.0860	0.0899	95.6	9.37		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFOS	1763-23-1	ND	0.0858	0.0936	91.7		0.0839	0.0899	93.4	1.84		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFDA	335-76-2	ND	0.100	0.0936	107		0.0875	0.0899	97.0	9.80		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
MeFOSAA	2355-31-9	ND	0.111	0.0936	118		0.0816	0.0899	90.8	26.1		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
EtFOSAA	2991-50-6	ND	0.114	0.0936	122		0.0843	0.0899	93.7	26.2		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFUnA	2058-94-8	ND	0.0823	0.0936	87.9		0.0821	0.0899	91.3	3.79		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFDoA	307-55-1	ND	0.0880	0.0936	94.0		0.0926	0.0899	103	9.14		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFTrDA	72629-94-8	ND	0.102	0.0936	109		0.0920	0.0899	102	6.64		70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1
PFTeDA	376-06-7	ND	0.130	0.0936	139	H	0.0910	0.0899	101	31.7	H	70-130	30	03-Dec-18 15:08	1	04-Dec-18 15:06	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C3-PFBS	IS	73.6		92.1		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C2-PFHxA	IS	104		97.2		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C4-PFHpA	IS	75.4		110		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
18O2-PFHxS	IS	89.0		94.1		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C2-PFOA	IS	78.6		96.5		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C5-PFNA	IS	90.4		93.1		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C8-PFOS	IS	107		89.5		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C2-PFDA	IS	75.7		77.0		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
d3-MeFOSAA	IS	71.9		86.5		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
d5-EtFOSAA	IS	85.1		86.7		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C2-PFUnA	IS	77.4		70.3		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C2-PFDoA	IS	93.9		69.8		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1
13C2-PFTeDA	IS	81.2		78.8		50-150	03-Dec-18 15:08	1	04-Dec-18 15:06	1

Sample ID: A1-MW-42-SA2

PFAS Isotope Dilution Method

Client Data

Name: Tetra Tech EC, Inc.
Project: 4663.3803
Location: YUMA, AZ
Matrix: Water
Date Collected: 16-Nov-18 09:17

Laboratory Data

Lab Sample: 1803678-02
Date Received: 17-Nov-18 12:02
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.289	0.00291	0.00424	0.00849		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFHxA	307-24-4	0.596	0.00291	0.00424	0.00849		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFHpA	375-85-9	0.0260	0.00291	0.00424	0.00849		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFHxS	355-46-4	0.141	0.00291	0.00424	0.00849		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFOA	335-67-1	0.0281	0.00291	0.00424	0.00849		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFNA	375-95-1	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFOS	1763-23-1	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFDA	335-76-2	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
MeFOSAA	2355-31-9	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
EtFOSAA	2991-50-6	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFUnA	2058-94-8	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFDoA	307-55-1	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFTrDA	72629-94-8	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
PFTeDA	376-06-7	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	72.2	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C2-PFHxA	IS	108	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C4-PFHpA	IS	76.2	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
18O2-PFHxS	IS	87.1	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C2-PFOA	IS	71.5	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C5-PFNA	IS	80.8	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C8-PFOS	IS	101	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C2-PFDA	IS	64.0	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
d3-MeFOSAA	IS	82.4	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
d5-EtFOSAA	IS	100	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C2-PFUnA	IS	66.8	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C2-PFDoA	IS	95.4	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	1
13C2-PFTeDA	IS	86.3	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 15:51	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.

Sample ID: FRB-20181116

PFAS Isotope Dilution Method

Client Data

Name: Tetra Tech EC, Inc.
Project: 4663.3803
Location: YUMA, AZ

Matrix: Water
Date Collected: 16-Nov-18 09:40

Laboratory Data

Lab Sample: 1803678-03
Date Received: 17-Nov-18 12:02

Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFHxA	307-24-4	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFHpA	375-85-9	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFHxS	355-46-4	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFOA	335-67-1	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFNA	375-95-1	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFOS	1763-23-1	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFDA	335-76-2	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
MeFOSAA	2355-31-9	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
EtFOSAA	2991-50-6	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFUnA	2058-94-8	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFDoA	307-55-1	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFTrDA	72629-94-8	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
PFTeDA	376-06-7	ND	0.00331	0.00481	0.00965	U	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	77.5	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C2-PFHxA	IS	96.4	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C4-PFHpA	IS	70.7	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
18O2-PFHxS	IS	88.5	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C2-PFOA	IS	67.5	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C5-PFNA	IS	69.8	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C8-PFOS	IS	98.3	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C2-PFDA	IS	60.5	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
d3-MeFOSAA	IS	49.1	50 - 150	H	B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
d5-EtFOSAA	IS	65.1	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C2-PFUnA	IS	56.6	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C2-PFDoA	IS	76.2	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	1
13C2-PFTeDA	IS	65.0	50 - 150		B8K0153	30-Nov-18	0.104 L	03-Dec-18 16:01	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.

Sample ID: EB-20181116

PFAS Isotope Dilution Method

Client Data

Name: Tetra Tech EC, Inc.
Project: 4663.3803
Location: YUMA, AZ

Matrix: Water
Date Collected: 16-Nov-18 09:50

Laboratory Data

Lab Sample: 1803678-04
Date Received: 17-Nov-18 12:02

Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFHxA	307-24-4	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFHpA	375-85-9	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFHxS	355-46-4	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFOA	335-67-1	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFNA	375-95-1	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFOS	1763-23-1	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFDA	335-76-2	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
MeFOSAA	2355-31-9	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
EtFOSAA	2991-50-6	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFUnA	2058-94-8	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFDoA	307-55-1	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFTrDA	72629-94-8	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
PFTeDA	376-06-7	ND	0.00291	0.00424	0.00849	U	B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	80.0	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C2-PFHxA	IS	109	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C4-PFHpA	IS	73.5	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
18O2-PFHxS	IS	91.8	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C2-PFOA	IS	72.6	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C5-PFNA	IS	78.8	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C8-PFOS	IS	106	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C2-PFDA	IS	66.0	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
d3-MeFOSAA	IS	59.3	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
d5-EtFOSAA	IS	72.4	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C2-PFUnA	IS	68.6	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C2-PFDoA	IS	77.2	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	1
13C2-PFTeDA	IS	70.6	50 - 150		B8K0153	30-Nov-18	0.118 L	03-Dec-18 16:12	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.

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.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
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.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	**Method**
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	**Method**
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	**Method**
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1803678 Temp: 0-8 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

Project ID: 4663.3803 PO#: 1152405 Sampler: Spencer Doolittle (name)

TAT (check one): Standard: ☐ 21 days; Rush (surcharge may apply): ☐ 14 days ☐ 7 days Specify: 10 BD

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Accts Payable	Tetra Tech EC, Inc.	1230 Columbia St. Suite 750	San Diego	CA	619-234-8696	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Garrett Belay	11/16/18	1030	FedEx	11/16/18	1030
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Fed Ex			B. Benedict Beth Benedict	11/17/18	1202

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

Method of Shipment: FED EX

ATTN: SAMPLE RECEIVING

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	UCMR3 PFAS List:6	PFAS List: 14	Comments
A1-MW-01-SA2	11/16/18	0812	YUMA, AZ	6	P	W			X						Run MS/MSD
~~A1-MW-31-SA2~~			~~YUMA, AZ~~	~~2~~	~~P~~	~~W~~			~~X~~		(31)				
A1-MW-42-SA2	11/16/18	0917	YUMA, AZ	2	P	W			X						
~~A1-MW-52-SA2~~			~~YUMA, AZ~~	~~6~~	~~P~~	~~W~~			~~X~~		(52)				
A1-MW-53-SA2			YUMA, AZ	2	P	W			X		(53)				
~~A1-MW-54-SA2~~			~~YUMA, AZ~~	~~2~~	~~P~~	~~W~~			~~X~~		(54)				
~~A1-EB-19-SA2~~			~~YUMA, AZ~~	~~2~~	~~P~~	~~W~~			~~X~~		(EB)				
FRB-20181116	11/16/18	0940	YUMA, AZ	2	P	W			X						
EB-20181116	11/16/18	0950	YUMA, AZ	2	P	W			X						

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:

Name: Sabina Sudoko
Company: Tetra Tech EC, Inc.
Address: 17885 Von Karman Avenue, Suite 500
City: Irvine State: CA Zip: 92614
Phone: 949-809-5022 Fax:
Email: sabina.sudoko@tetratech.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: W - WATER

Vista Analytical Laboratory

Sample Log-In Checklist

Vista Work Order #: 1803678 Page # 1 of 1 TAT 14

Samples Arrival:	**Date/Time** 11/17/18 1202	**Initials:** JSB	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 11/19/18 1143	**Initials:** KE	**Location:** WR-2 **Shelf/Rack:** A3/F4

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

Temp °C: 0.9 (uncorrected)	**Probe used:** Y / N	**Thermometer ID:** IR-4
Temp °C: 0.8 (corrected)		

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill Trk # 7838 1740 9825	✓		
Sample Container Intact?	✓		✓
Sample Custody Seals Intact?			
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed? N/A		KE 11/19/18	✓
If Chlorinated or Drinking Water Samples, Acceptable Preservation?	✓	X	
Preservation Documented: $Na_2S_2O_3$ Trizma None Other	Yes	No	NA
Shipping Container: Vista / Client / Retain / Return		Dispose	

Comments:

EXTRACTION INFORMATION

Process Sheet

Workorder: 1803678

Prep Expiration: 2018-Nov-30
Client: Tetra Tech EC, Inc.

Workorder Due: 03-Dec-18 00:00

TAT: 16

Method: **537M PFAS DOD (LOQ as mRL)**
Matrix: **Aqueous**

Prep Batch: B8K0153

Prep Data Entered: AE 12/02/18
Date and Initials

Version: 537 (14 Analyte)
DoD: DoD QSM 5.1

Initial Sequence: S8L0005

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
1803678-01	"ABC"	☑	☑	A1-MW-01-SA2	**MS/MSD**	WR-2 A-3	HDPE Bottle, 125 mL
1803678-02	"A"	☑	☑	A1-MW-42-SA2		WR-2 A-3	HDPE Bottle, 125 mL
1803678-03	↓	☑	☑	FRB-20181116		WR-2 A-3	HDPE Bottle, 125 mL
1803678-04	↓	☑	☑	EB-20181116		WR-2 A-3	HDPE Bottle, 125 mL

WO Comments: **Internal COC**

Pre-Prep Check Out: HB 11/26/18
Pre-Prep Check In: HB 11/26/18

Prep Check Out: MAC 11/30/18
Prep Check In: NA

Prep Reconciled Initals/Date: HB 11/26/18
Spike Reconciled Initals/Date: AE 11/30/18
VialBoxID: Santa Cruz

Matrix: Aqueous

Method: 537M PFAS DOD (LOQ as mRL)

PREPARATION BENCH SHEET

B8K0153

Chemist: AE

Prep Date: 11/30/18

Prep Time: 08:40

Prepared using: ☐ Sonication ☐ Shaker ☒ SPE Extraction ☐ Centrifuge ID: _____

Date/Initals: HB 11/26/18 | BalanceID: HRMS-9

Cen	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g) AE 12/02/18	Sample Amt. (L) AE 12/02/18	IS/NS CHEM/WIT DATE	SPE	ENVI-Carb	RS CHEM/WIT DATE
☐	B8K0153-BLK1 (A)	7	2	0	2	NA	NA	(0.250)	AE MAC 11/30/18	AE 11/30/18	AE 11/30/18	AE MJ 11/30/18
☐	B8K0153-BS1	7	2	0	2	↓	↓	(0.250)	↓	↓	↓	↓
☐	B8K0153-MS1 1803678-01	5	2	0	1	~~117.91~~ 133.72	~~26.97~~ 26.93 *	0.10680	✓			
☐	B8K0153-MSD1 1803678-01	5	2	0	1	~~118.35~~ 138.19	~~27.03~~ 26.96 *	0.11122	✓			
☐	1803676-01	5	2	0	2	143.23	26.97 26.93 AE 12/02/18	0.11626				
☐	1803676-02	5	2	0	2	137.45	27.03	0.11042				
☐	1803676-03	5	2	0	2	~~147~~ 143.23	26.94	0.11629				
☐	1803676-04	5	2	0	2	137.83	26.97	0.11086				
☐	1803676-05	5	2	0	2	144.50	26.97	0.11753				
☐	1803676-06	5	2	0	2	141.83	26.90	0.11493				
☐	1803676-07	4	2	0	2	137.59	26.92	0.11067				
☐	1803676-08	5	2	0	2	143.87	26.97	0.11690				
☐	1803678-01	5	2	0	1	138.96	27.14	0.11182	✓			
☐	1803678-02	5	2	0	2	144.92	27.11	0.11781	✓			

IS: 18J1502, 10 mL (V2)

IS SUP: NA

NS: 18J1505, 10 mL (V3)

NS SUP: NA

RS: 18J1503, 10 mL (V2)

SPE Chem: Strata X-AW 33 µm 200 mg / 6 mL

SPE Lot#: S18-003692

ENVI-Carb Lot#: 1026210

Ele SOLV: MeOH/0.5%NH4OH in MeOH

Final Volume(s) 1 mL

Notes: (A) 10. HB 11/26/18

* 12/02/18 AE

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

1 = Sample centrifuged twice
2 = Sample deeply colored after centrifuge
3 = Cartridge sorbent discolored after SPE
4 = Sample clogged cartridge, additioanl cartridge(s) used
5 = Sample recombined at final volume
6 = Sample took longer to SPE, required stronger vacuum
7 = Required Nitrogen line to finish SPE
8 = Required Nitrogen line to finish elution
9 = Sample arrived with low volume
10 = Trizma added to QC (5g/L)

Matrix: Aqueous

Method: 537M PFAS DOD (LOQ as mRL)

PREPARATION BENCH SHEET

B8K0153

Chemist: AE

Prep Date: 11/30/18

Prep Time: 08:40

Prepared using: ☐ Sonication ☐ Shaker ☒ SPE Extraction ☐ Centrifuge ID: _____

Date/Initals: HB 11/26/18 | BalanceID: HRMS-9

Cen	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g) AE 12/02/18	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE	ENVI-Carb	RS CHEM/WIT DATE
☐	1803678-03	4	2	0	1	130.64	27.04	0.10360	AE MK 11/30/18	AE 11/30/18	AE 11/30/18	AE MJ 11/30/18
☐	1803678-04	4	2	0	1	144.79	27.07	0.11772	↓	↓	↓	↓
☐	1803689-01	5	2	0	2	279.21	27.13	0.25208	↓	↓	↓	↓

IS: 18J1502, 10 mL (V3)

IS SUP: NA

NS: 18J1505, 10 mL (V3)

NS SUP: NA

RS: 18J1503, 10 mL (V2)

SPE Chem: Strata X-AW 33µm 200 mg/6 mL

SPE Lot#: S18-003692

ENVI-Carb Lot#: 1026201

Ele SOLV: MeOH/0.5%NH4OH in MeOH

Final Volume(s) 1 mL

Notes:

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

1 = Sample centrifuged twice
2 = Sample deeply colored after centrifuge
3 = Cartridge sorbent discolored after SPE
4 = Sample clogged cartridge, additioanl cartridge(s) used
5 = Sample recombined at final volume
6 = Sample took longer to SPE, required stronger vacuum
7 = Required Nitrogen line to finish SPE
8 = Required Nitrogen line to finish elution
9 = Sample arrived with low volume
10 = Trizma added to QC (5g/L)

Batch: B8K0153

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1803676-01	0.11626 ✓	NA	NA	1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803676-02	0.11042 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803676-03	0.11629 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803676-04	0.11086 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803676-05	0.11753 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803676-06	0.11493 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803676-07	0.11067 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803676-08	0.1169 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803678-01	0.11182 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803678-02	0.11781 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803678-03	0.1036 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803678-04	0.11772 ✓			1000	30-Nov-18 08:40	AME			Water	537M PFAS DOD (LOQ as
1803689-01	0.25208 ✓			1000	30-Nov-18 08:40	AME			Decon Water	537M PFAS DOD (LOQ as
B8K0153-BLK1	0.25 ✓			1000	30-Nov-18 08:40	AME				QC
B8K0153-BS1	0.25 ✓			1000	30-Nov-18 08:40	AME	18J1505 ✓	10 ✓		QC
B8K0153-MS1	0.1068 ✓			1000	30-Nov-18 08:40	AME	18J1505 ✓	10 ✓		QC
B8K0153-MSD1	0.11122 ✓			1000	30-Nov-18 08:40	AME	18J1505 ✓	10 ✓		QC

12/02/18
QE

Printed: 12/2/2018 12:46:19PM

Internal Chain of Custody
1803678

Vista Analytical Laboratory

Client: Tetra Tech EC, Inc. | Project Number: 4663.3803 | Received: 17-Nov-18 12:02 | Received By: Bettina Benedict

		Sample				Extract	
Vista Sample ID	Bottle	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location
1803678-01	A/B	KE 11/19/18 1143 WR-2 A:A3 B:F4	HB 11/26/18 11:00 Air Lab "A" bottles	HB 11/26/18 WR-2 ~~A3~~ (Monitor) back wall	MAC 11/30/18 0714 prep lab 2	AE 12/02/18 * Refridgerator #7	
1803678-02	A/B	KE 11/19/18 1143 WR-2 A:A3 B:F4					
1803678-03	A/B	KE 11/19/18 1143 WR-2 A:A3 B:F4					
1803678-04	A/B	KE 11/19/18 1143 WR-2 A:A3 B:F4					

* Did not record time. Samples placed in refridgerator on 11/30/18, recorded on 12/02/18 AE 12/02/18

Note in grid if sample or extract are depleted. See Login Checklist for initial location.

Internal Chain of Custody
1803678

Vista Analytical Laboratory

Client: Tetra Tech EC, Inc. | Project Number: 4663.3803 | Received: 17-Nov-18 12:02 | Received By: Bettina Benedict

		Sample				Extract	
Vista Sample ID	Bottle	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location
1803678-01	A/B	HR 12/03/18 8:06 Prep lab 2	HR 12/03/18 10:25 R-7			DM 12/3/18 1722 Instrument M	
1803678-02	A/B	HR 12/03/18 8:05 Prep lab 2					
1803678-03	A/B						
1803678-04	A/B						

Note in grid if sample or extract are depleted. See Login Checklist for initial location.

Sample Data – PFAS Isotope Dilution Method

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	RT	Respo...	Conc.	%Rec	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8		5.27e3	0.250							
2	2	PFPeA	263.1 > 218.9		6.65e3	0.250							
3	3	PFBS	299.0 > 79.7		1.12e3	0.250							
4	4	4:2 FTS	327.2>307.2		2.75e3	0.250							
5	5	PFHxA	313 > 269		4.70e3	0.250							
6	36	13C3-PFBA	216.1 > 171.8	5.27e3	6.76e3	0.250	0.861	1.41	9.74	45.2835	90.6		
7	37	13C3-PFPeA	266. > 221.8	6.65e3	1.37e4	0.250	0.604	2.68	6.09	40.3432	80.7		
8	38	13C3-PFBS	302. > 98.8	1.12e3	2.34e3	0.250	0.633	3.00	6.00	37.9389	75.9		
9	39	13C2-4:2 FTS	329.2>308.9	2.75e3	2.34e3	0.250	2.074	3.48	14.7	28.2875	56.6		
10	40	13C2-PFHxA	315 > 270	4.70e3	1.37e4	0.250	0.900	3.56	4.30	19.1137	95.6		
11	-1												
12	6	PFPeS	349.1>80.1		1.12e3	0.250							
13	7	PFHpA	363.0 > 318.9		6.88e3	0.250							
14	8	L-PFHxS	398.9 > 79.6	2.29e0	9.32e2	0.250		4.33	0.0306	0.0711		4.82	YES
15	68	Total PFHxS	398.9 > 79.6	2.29e0	9.32e2	0.250			0.0306	0.0711			
16	10	6:2 FTS	427.1 > 407		3.18e3	0.250							
17	38	13C3-PFBS	302. > 98.8	1.12e3	2.34e3	0.250	0.633	3.00	6.00	37.9389	75.9		
18	41	13C4-PFHpA	367.2 > 321.8	6.88e3	1.37e4	0.250	0.693	4.20	6.29	36.3146	72.6		
19	42	18O2-PFHxS	403.0 > 102.6	9.32e2	2.34e3	0.250	0.476	4.33	4.98	41.8420	83.7		
20	42	18O2-PFHxS	403.0 > 102.6	9.32e2	2.34e3	0.250	0.476	4.33	4.98	41.8420	83.7		
21	43	13C2-6:2 FTS	429.1 > 408.9	3.18e3	2.57e3	0.250	1.825	4.63	15.5	33.9782	68.0		
22	-1												
23	11	L-PFOA	412.8 > 368.9		1.21e4	0.250							
24	69	Total PFOA	412.8 > 368.9	0.00e0	1.21e4	0.250			0.000				
25	13	PFHpS	449 > 80.0		2.45e3	0.250							
26	16	L-PFOS	498.9 > 79.9		2.45e3	0.250							
27	70	Total PFOS	498.9 > 79.9	0.00e0	2.45e3	0.250			0.000				
28	44	13C2-PFOA	414.9 > 369.7	1.21e4	1.85e4	0.250	0.873	4.68	8.16	37.4063	74.8		
29	44	13C2-PFOA	414.9 > 369.7	1.21e4	1.85e4	0.250	0.873	4.68	8.16	37.4063	74.8		
30	47	13C8-PFOS	507.0 > 79.9	2.45e3	2.57e3	0.250	0.968	5.20	11.9	49.2918	98.6		
31	47	13C8-PFOS	507.0 > 79.9	2.45e3	2.57e3	0.250	0.968	5.20	11.9	49.2918	98.6		
32	47	13C8-PFOS	507.0 > 79.9	2.45e3	2.57e3	0.250	0.968	5.20	11.9	49.2918	98.6		
33	-1												
34	14	PFNA	463.0 > 418.8		1.27e4	0.250							
35	15	PFOSA	497.9 > 77.9		1.10e3	0.250							

CGH 12/4/2018

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	RT	Respo...	Conc.	%Rec	Ion Ratio	Ratio Out?
36	18	PFDA	513 > 468.8	5.59e0	1.32e4	0.250		5.49	0.00528	0.0832		4.46	NO
37	19	8:2 FTS	527 > 506.9		2.67e3	0.250							
38	20	PFNS	549.1 > 80.1		2.45e3	0.250							
39	45	13C5-PFNA	468.2 > 422.9	1.27e4	1.33e4	0.250	1.006	5.12	12.0	47.5785	95.2		
40	46	13C8-PFOSA	506.1 > 77.7	1.10e3	1.76e4	0.250	0.202	5.15	0.785	15.5710	31.1		
41	48	13C2-PFDA	515.1 > 469.9	1.32e4	1.49e4	0.250	1.125	5.49	11.1	39.4757	79.0		
42	49	13C2-8:2 FTS	529.1 > 508.7	2.67e3	2.57e3	0.250	1.086	5.46	13.0	47.8855	95.8		
43	47	13C8-PFOS	507.0 > 79.9	2.45e3	2.57e3	0.250	0.968	5.20	11.9	49.2918	98.6		
44	-1												
45	21	L-MeFOSAA	570 > 419		3.40e3	0.250							
46	71	Total N-MeFOSAA	570. > 419	0.00e0	3.40e3	0.250			0.000				
47	23	L-EtFOSAA	584.1 > 419		4.65e3	0.250							
48	72	Total N-EtFOSAA	584.1 > 419	0.00e0	4.65e3	0.250			0.000				
49	25	PFUdA	563.0 > 518.9	2.40e1	1.48e4	0.250		5.81	0.0204	0.0746		10.3	NO
50	50	d3-N-MeFOSAA	573.3 > 419	3.40e3	1.76e4	0.250	0.329	5.63	2.42	29.3713	58.7		
51	50	d3-N-MeFOSAA	573.3 > 419	3.40e3	1.76e4	0.250	0.329	5.63	2.42	29.3713	58.7		
52	52	d5-N-EtFOSAA	589.3 > 419	4.65e3	1.76e4	0.250	0.355	5.79	3.31	37.2650	74.5		
53	52	d5-N-EtFOSAA	589.3 > 419	4.65e3	1.76e4	0.250	0.355	5.79	3.31	37.2650	74.5		
54	51	13C2-PFUdA	565 > 519.8	1.48e4	1.76e4	0.250	1.111	5.81	10.5	37.7668	75.5		
55	-1												
56	26	PFDS	598.8 > 79.9		2.45e3	0.250							
57	27	PFDoA	612.9 > 569.0		1.28e4	0.250							
58	29	PFTrDA	662.9 > 618.9		1.28e4	0.250							
59	30	PFTeDA	713.0 > 669.0		9.54e3	0.250							
60	28	N-MeFOSA	512.1 > 168.9			0.250							
61	47	13C8-PFOS	507.0 > 79.9	2.45e3	2.57e3	0.250	0.968	5.20	11.9	49.2918	98.6		
62	53	13C2-PFDoA	615.0 > 569.7	1.28e4	1.49e4	0.250	0.993	6.09	10.7	43.2180	86.4		
63	53	13C2-PFDoA	615.0 > 569.7	1.28e4	1.49e4	0.250	0.993	6.09	10.7	43.2180	86.4		
64	55	13C2-PFTeDA	715.1 > 669.7	9.54e3	1.76e4	0.250	0.749	6.55	6.78	36.2184	72.4		
65	54	d3-N-MeFOSA	515.2 > 168.9		1.76e4	0.250	0.074						
66	-1												
67	31	N-EtFOSA	526.1 > 168.9			0.250							
68	32	PFHxDA	813.1 > 768.6		4.24e3	0.250							
69	33	PFODA	913.1 > 868.8	1.23e1	4.24e3	0.250		7.08	0.0145	0.0163			
70	34	N-MeFOSE	616.1 > 58.9			0.250							

CGH 12/4/2018

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	RT	Respo...	Conc.	%Rec	Ion Ratio	Ratio Out?
71	35	N-EtFOSE	630.1 > 58.9			0.250							
72	56	d5-N-ETFOSA	531.1 > 168.9		1.76e4	0.250	0.097						
73	57	13C2-PFHxDA	815 > 769.7	4.24e3	1.76e4	0.250	0.714	6.86	3.01	16.8826	84.4		
74	57	13C2-PFHxDA	815 > 769.7	4.24e3	1.76e4	0.250	0.714	6.86	3.01	16.8826	84.4		
75	58	d7-N-MeFOSE	623.1 > 58.9		1.76e4	0.250	0.036						
76	59	d9-N-EtFOSE	639.2 > 58.8		1.76e4	0.250	0.036						
77	-1												
78	73	TCDA	498.3>106.9			0.250							
79	61	13C5-PFHxA	318 > 272.9	1.37e4	1.37e4	0.250	1.000	3.56	12.5	50.0000	100.0		
80	60	13C4-PFBA	217. > 172	6.76e3	6.76e3	0.250	1.000	1.41	12.5	50.0000	100.0		
81	62	13C3-PFHxS	401.8 > 79.9	2.34e3	2.34e3	0.250	1.000	4.33	12.5	50.0000	100.0		
82	63	13C8-PFOA	420.9 > 376	1.85e4	1.85e4	0.250	1.000	4.68	12.5	50.0000	100.0		
83	47	13C8-PFOS	507.0 > 79.9	2.45e3	2.57e3	0.250	0.968	5.20	11.9	49.2918	98.6		
84	64	13C9-PFNA	472.2 > 426.9	1.33e4	1.33e4	0.250	1.000	5.12	12.5	50.0000	100.0		
85	65	13C4-PFOS	503 > 79.9	2.57e3	2.57e3	0.250	1.000	5.20	12.5	50.0000	100.0		
86	66	13C6-PFDA	519.1 > 473.7	1.49e4	1.49e4	0.250	1.000	5.49	12.5	50.0000	100.0		
87	67	13C7-PFUdA	570.1 > 524.8	1.76e4	1.76e4	0.250	1.000	5.81	12.5	50.0000	100.0		

CGH 12/4/2018

Vista Analytical Laboratory L30

MM 12/4/2018

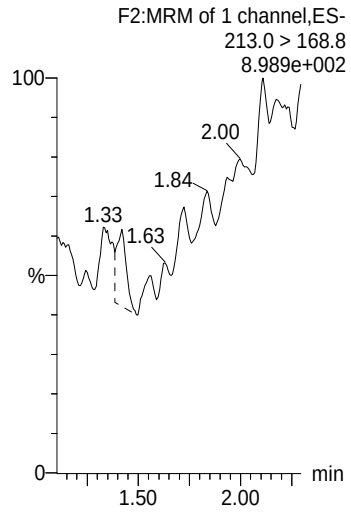
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

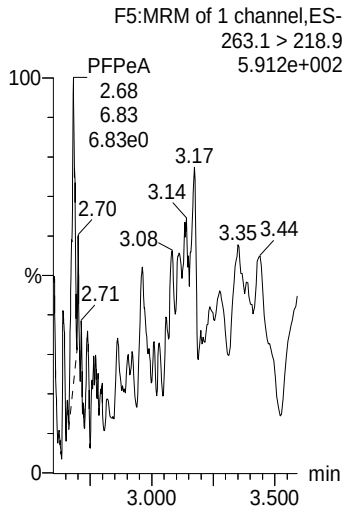
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

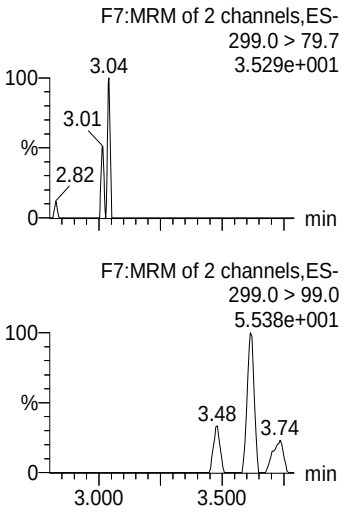
PFBA



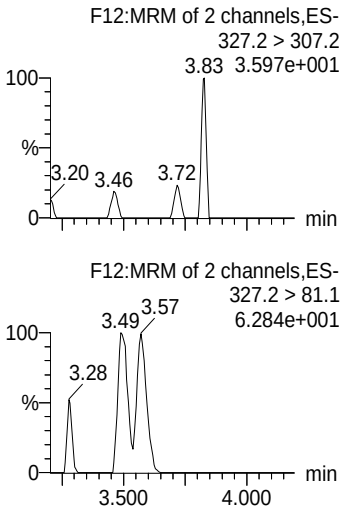
PFPeA



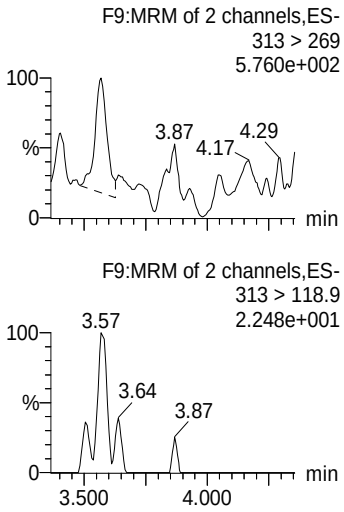
PFBS



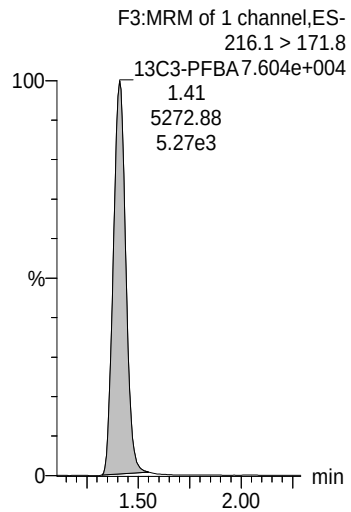
4:2 FTS



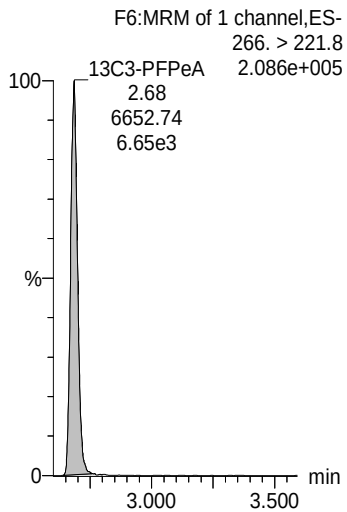
PFHxA



13C3-PFBA



13C3-PFPeA



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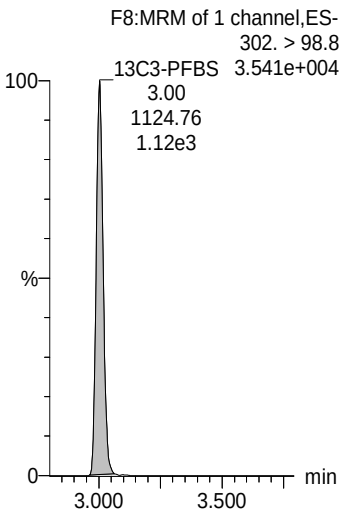
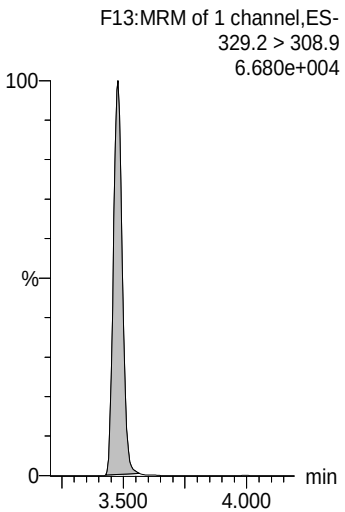
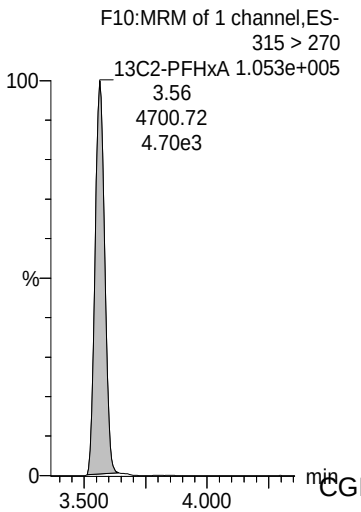


13C2-4:2 FTS



13C2-PFHxA



CGH 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

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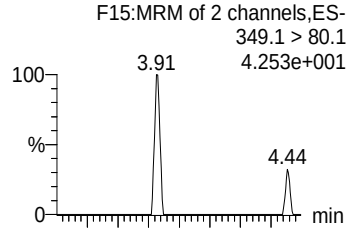
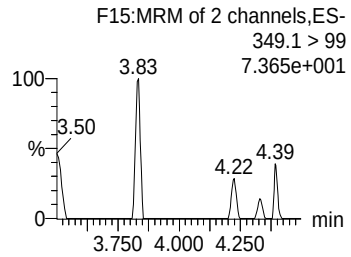
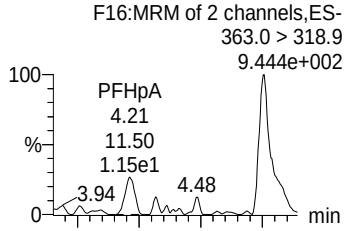
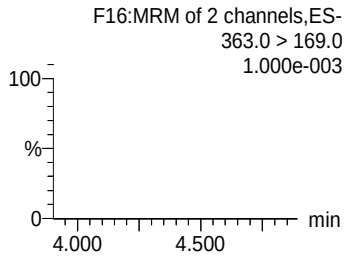


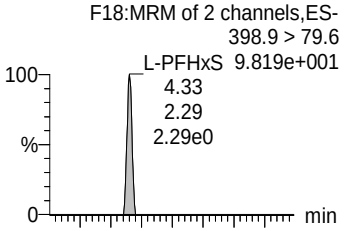


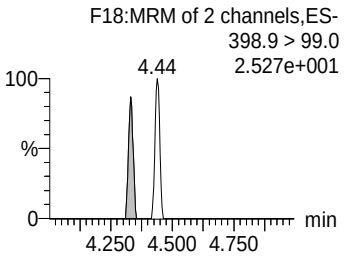
PFHpA



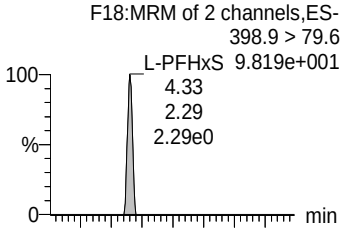


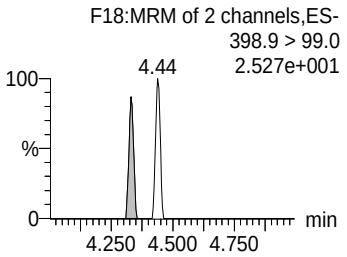
L-PFHxS



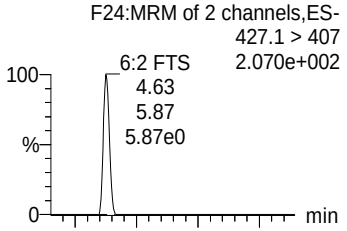


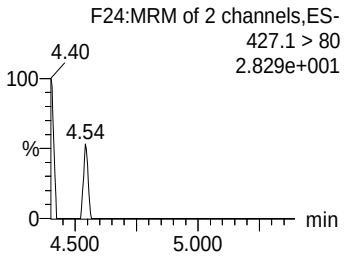
Total PFHxS



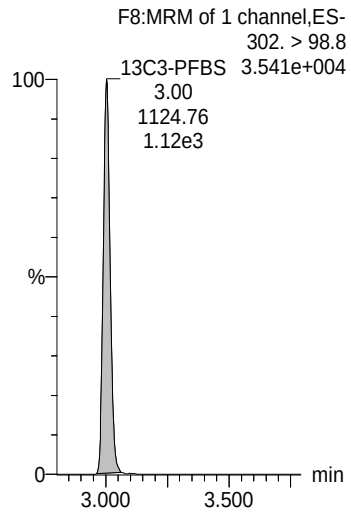


6:2 FTS

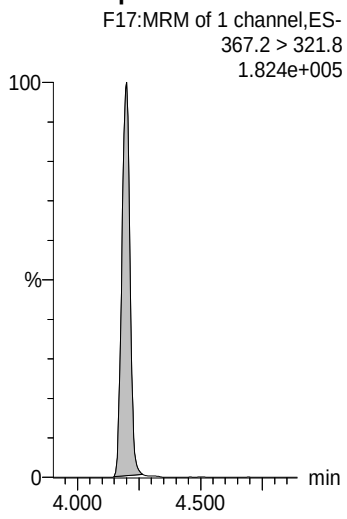




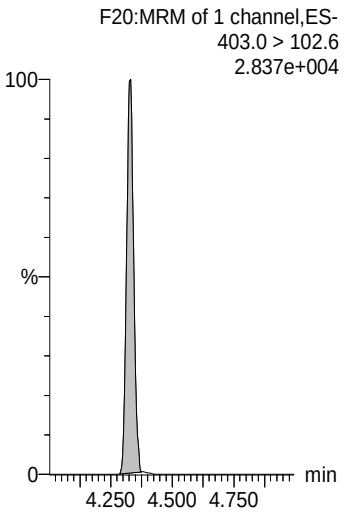
13C3-PFBS



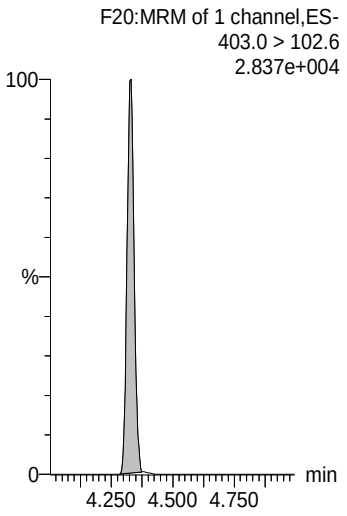
13C4-PFHpA



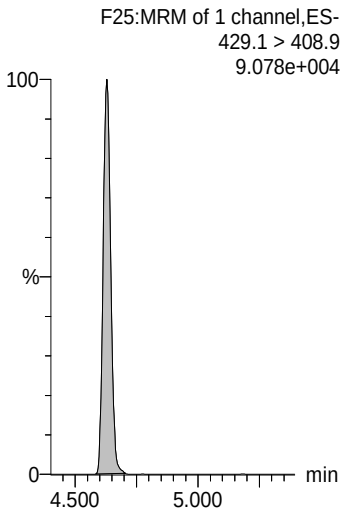
18O2-PFHxS



18O2-PFHxS



13C2-6:2 FTS



CGH 12/4/2018

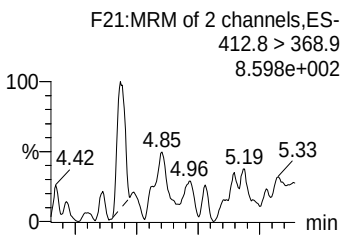
MM 12/4/2018

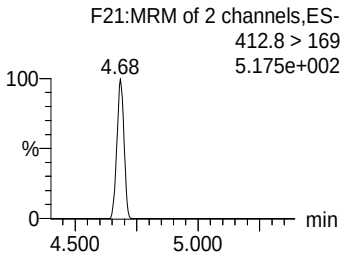
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

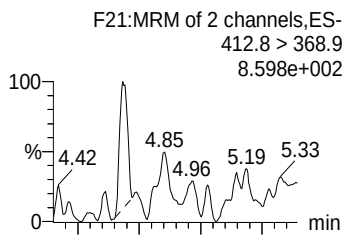
Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

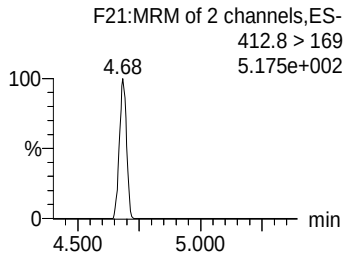
L-PFOA



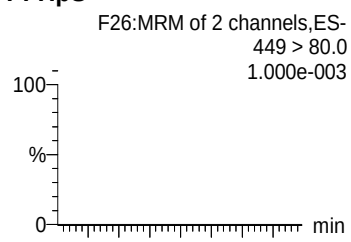


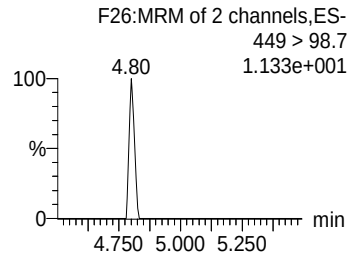
Total PFOA



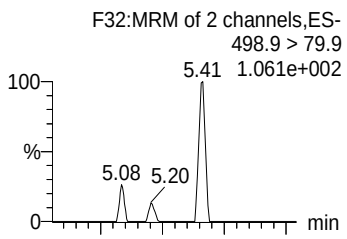


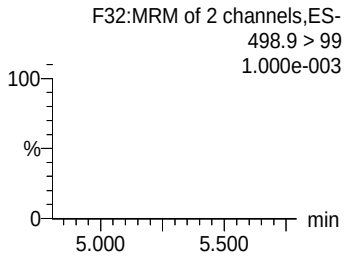
PFHpS



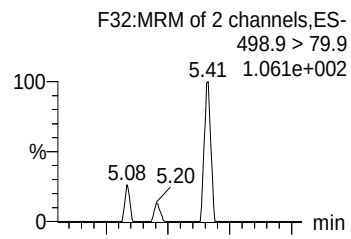


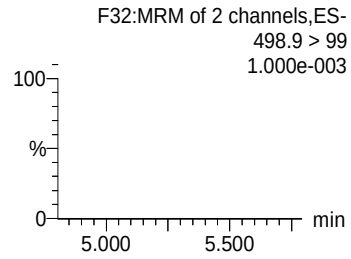
L-PFOS



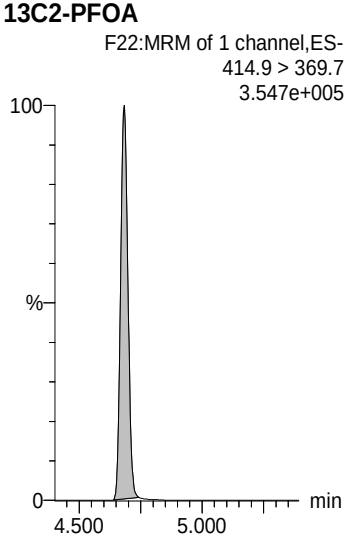


Total PFOS





13C2-PFOA



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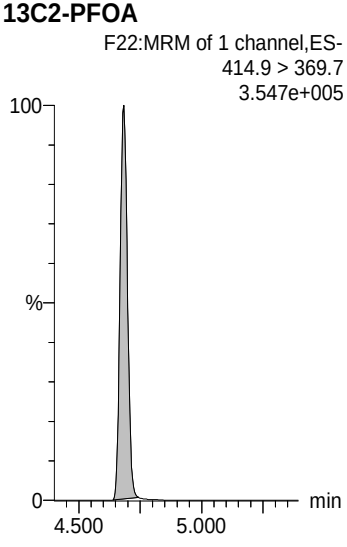
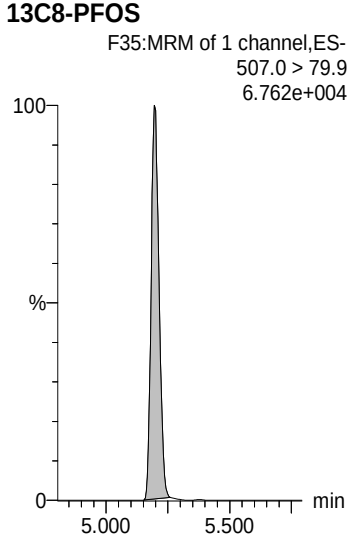


13C8-PFOS



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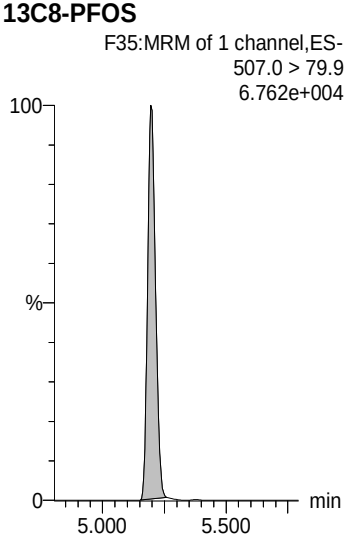
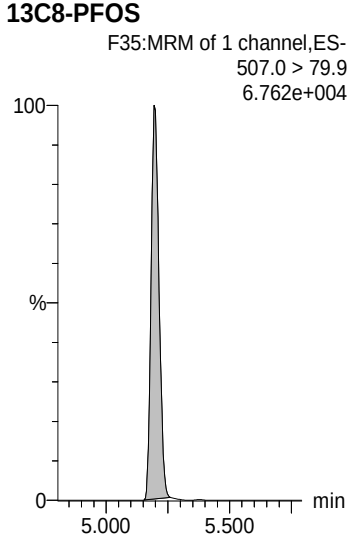


13C8-PFOS



CGH 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

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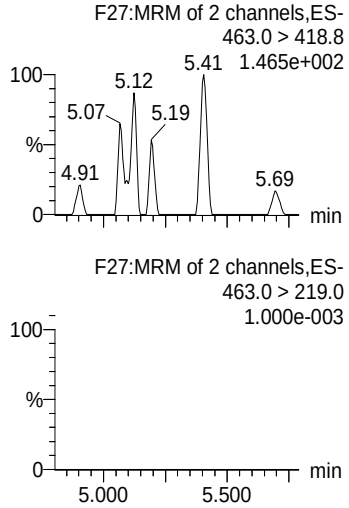
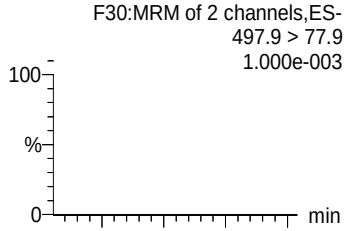
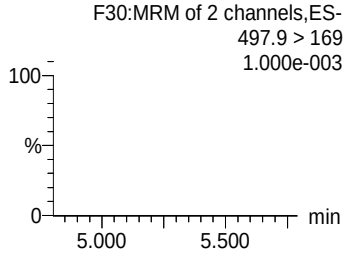
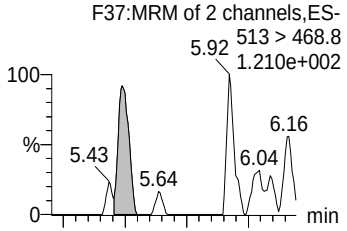


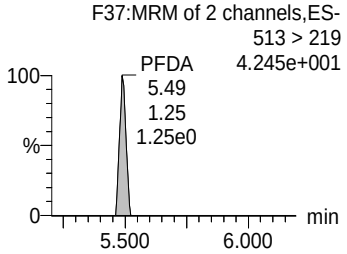
PFOSA



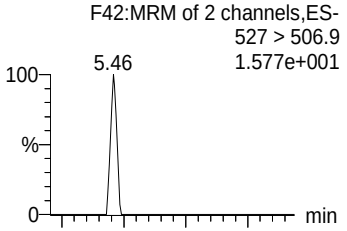


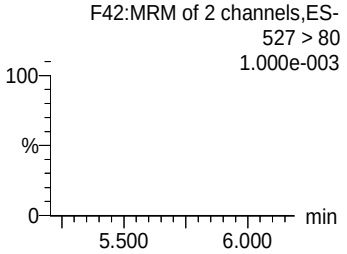
PFDA



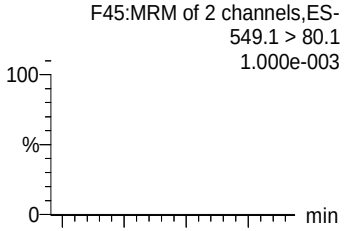


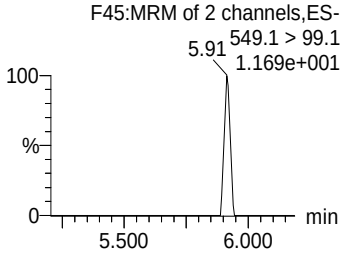
8:2 FTS



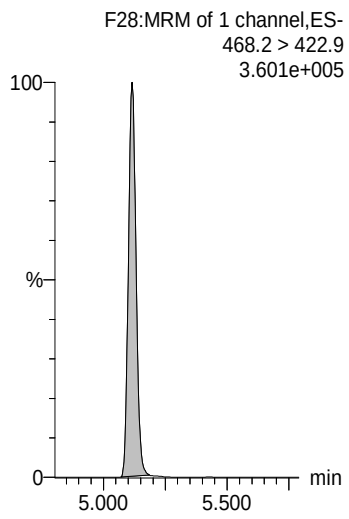


PFNS

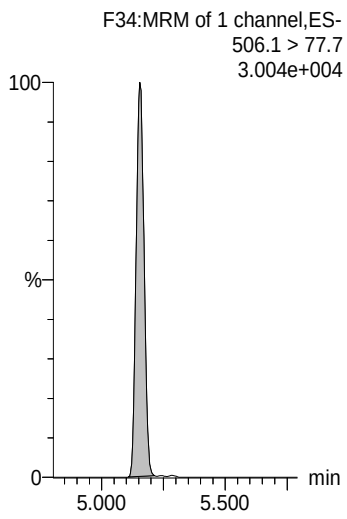




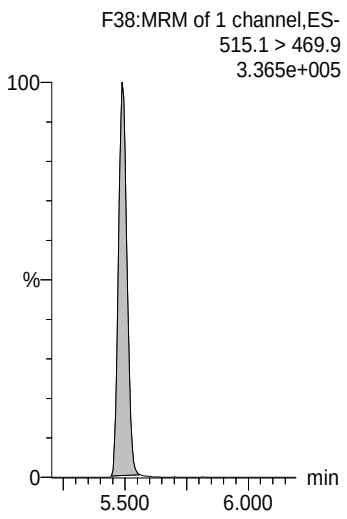
13C5-PFNA



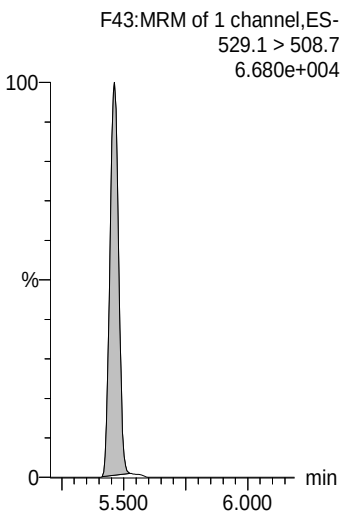
13C8-PFOSA



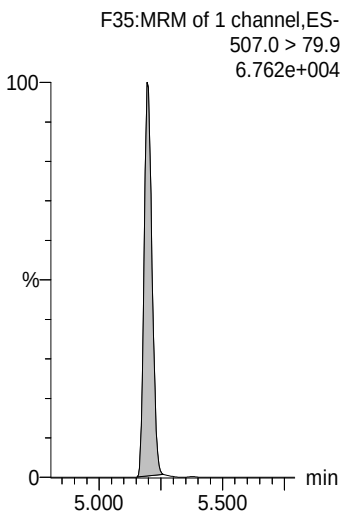
13C2-PFDA



13C2-8:2 FTS



13C8-PFOS



CGH 12/4/2018

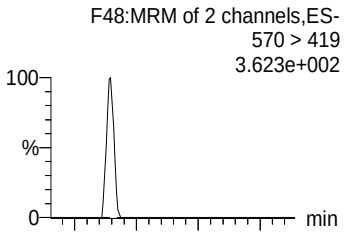
MM 12/4/2018

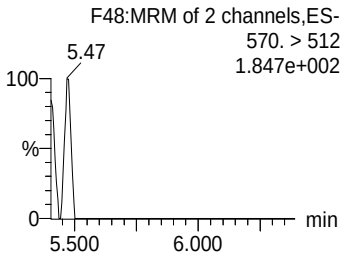
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

L-MeFOSAA





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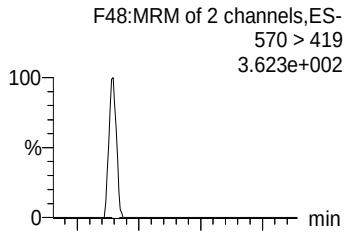

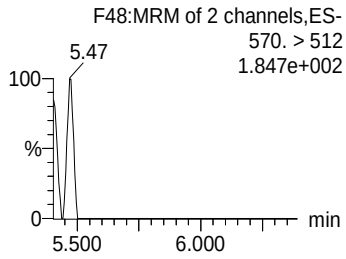

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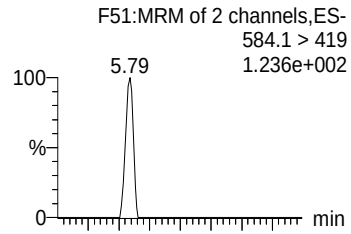

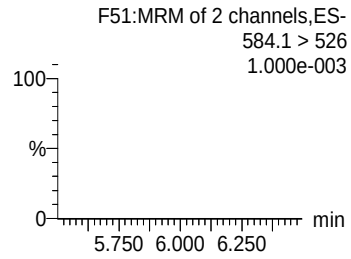

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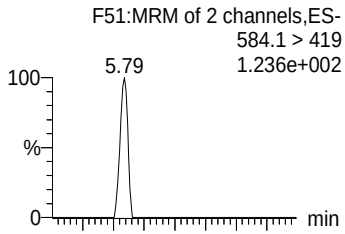
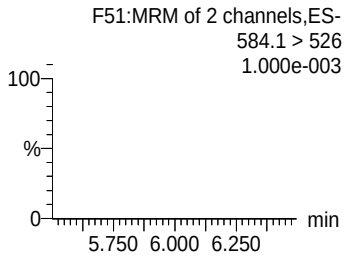
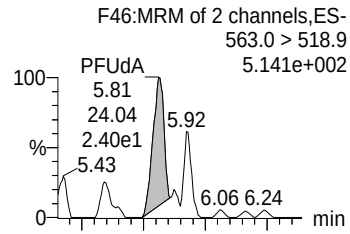
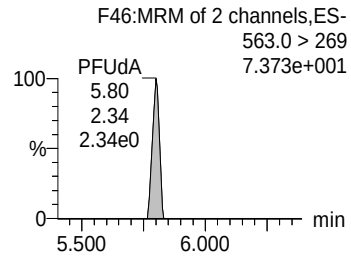


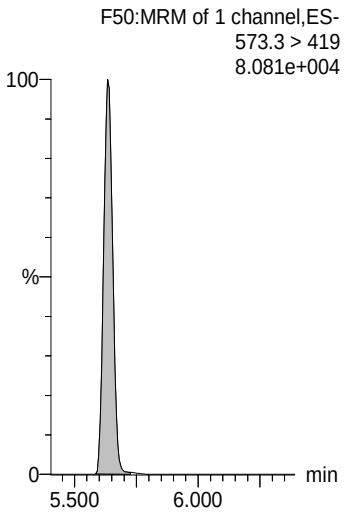


PFUdA





d3-N-MeFOSAA



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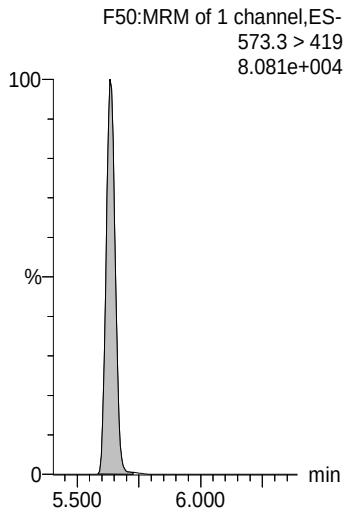

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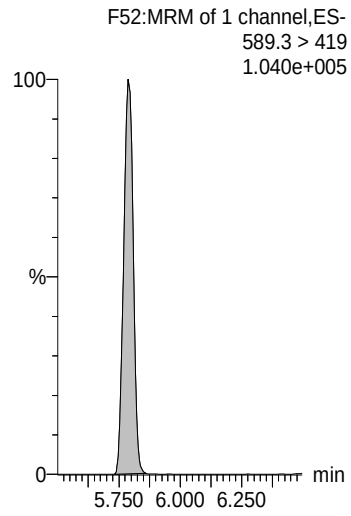

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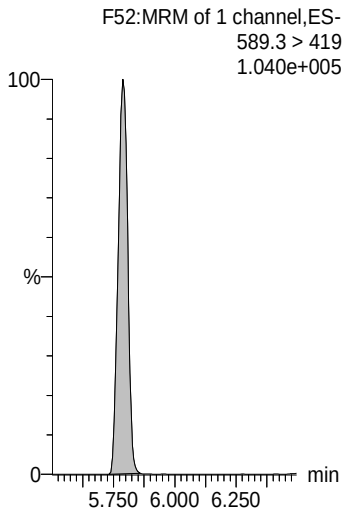
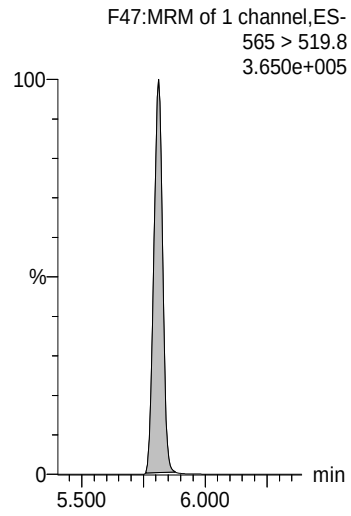


13C2-PFUdA



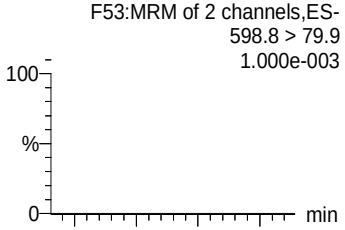
CGH 12/4/2018

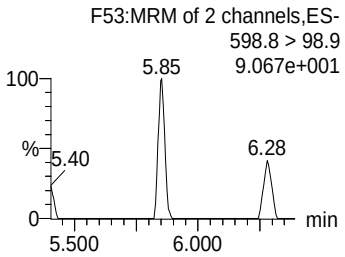
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

PFDS





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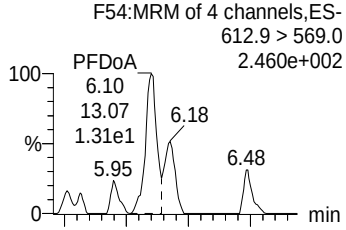

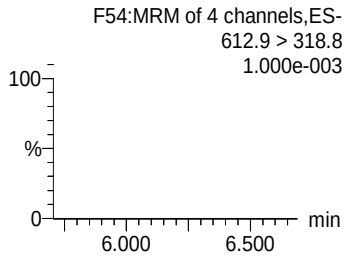

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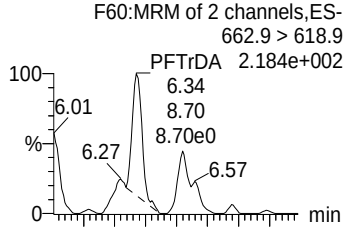

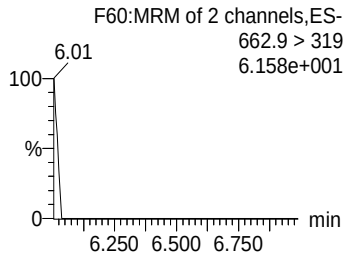

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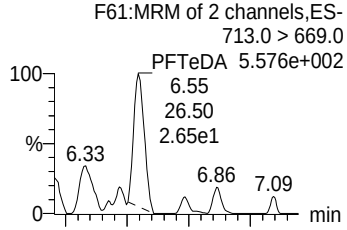
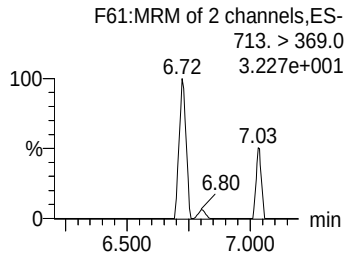
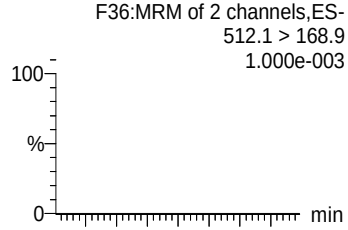
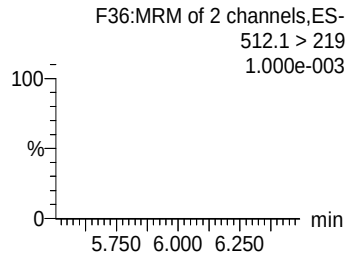


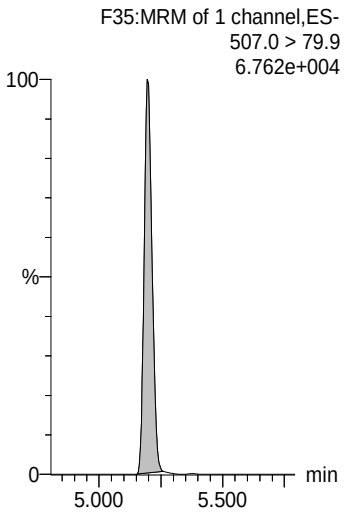


N-MeFOSA





13C8-PFOS



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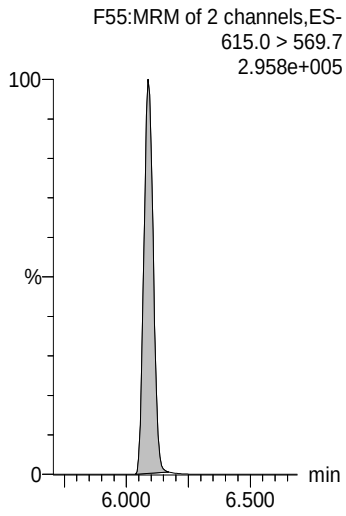

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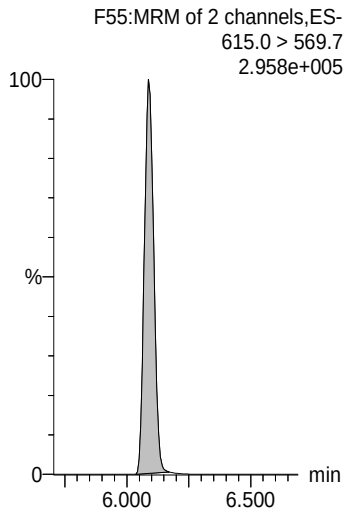

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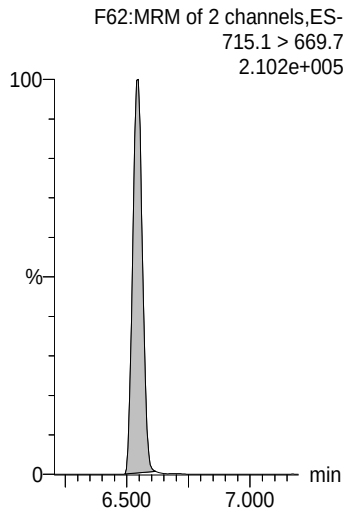
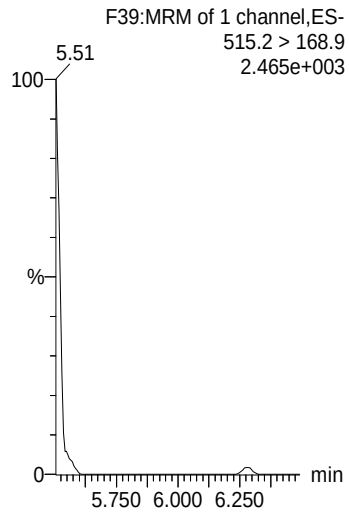


d3-N-MeFOSA



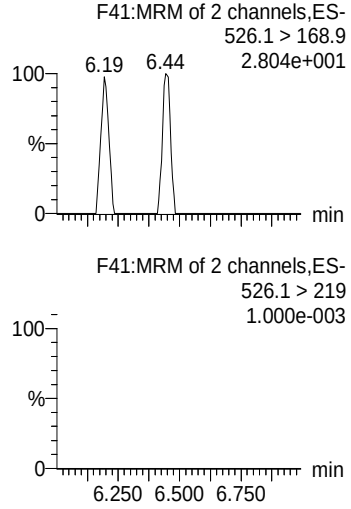
CGH 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

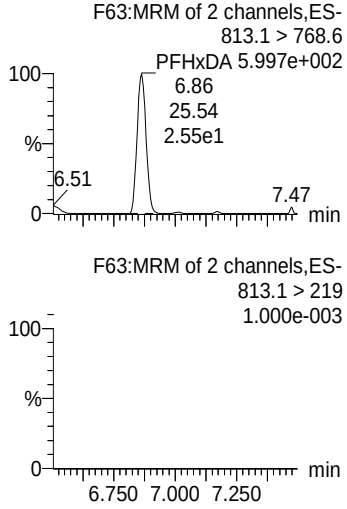
Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

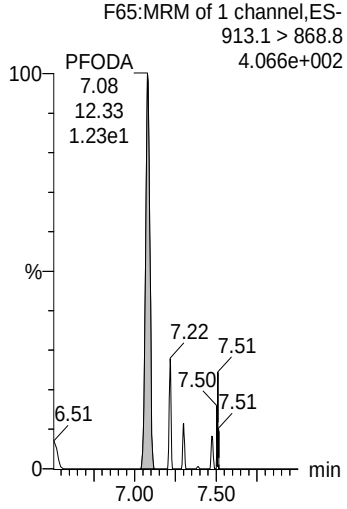
N-EtFOSA



PFHxDA



PFODA



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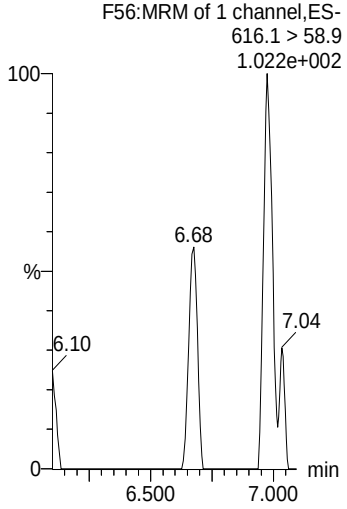
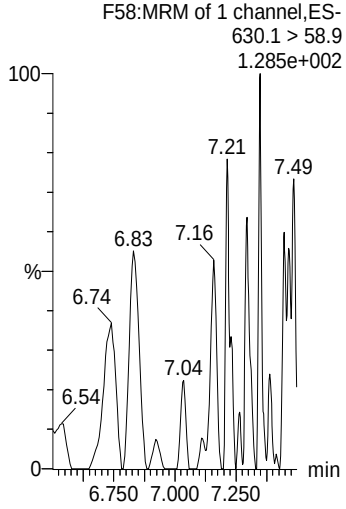
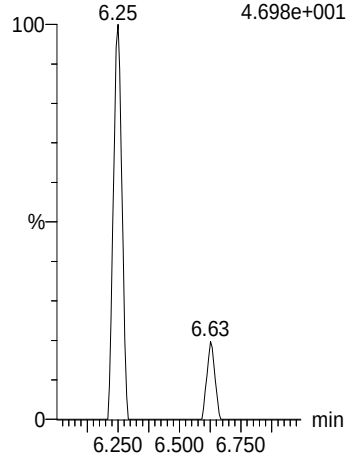


N-EtFOSE



d5-N-ETFOSA



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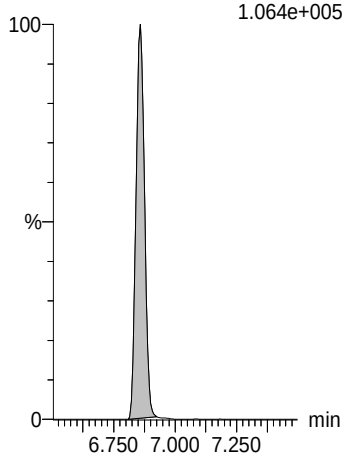

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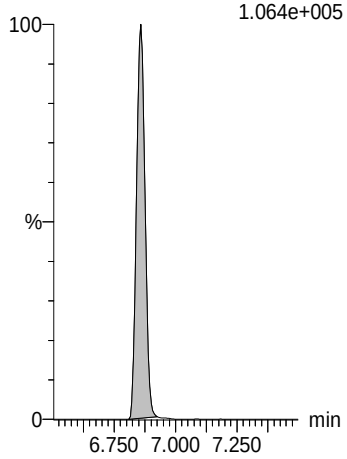
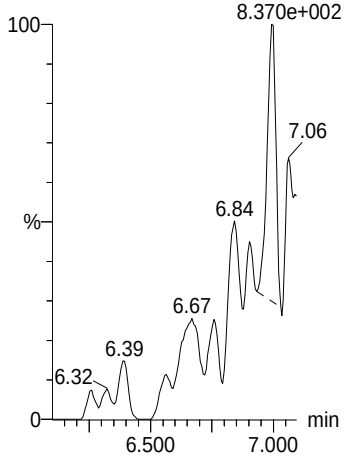
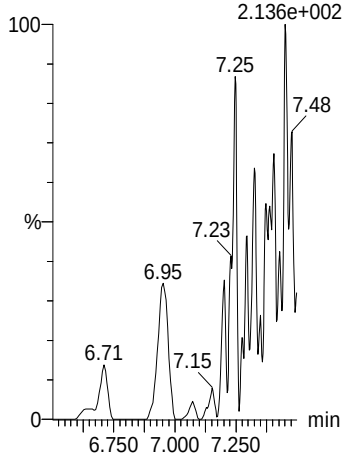


d7-N-MeFOSE



d9-N-EtFOSE



CGH 12/4/2018

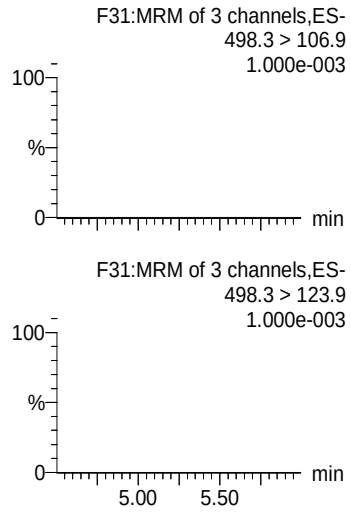
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-7.qld

Last Altered: Tuesday, December 04, 2018 12:44:00 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:52:03 Pacific Standard Time

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

TCDA



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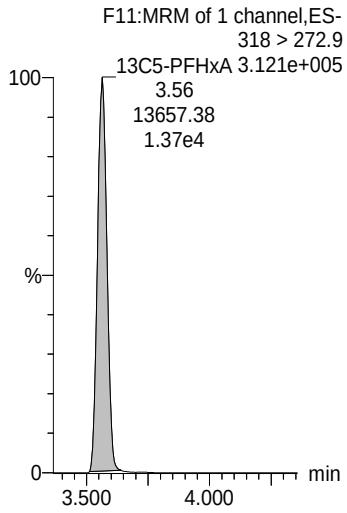

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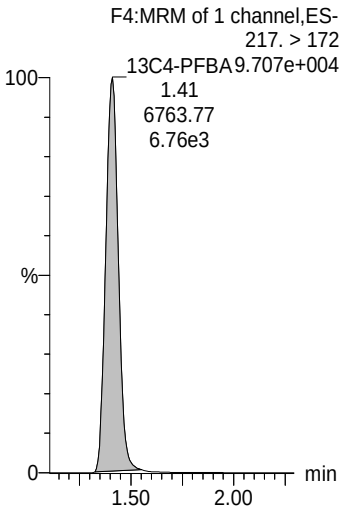

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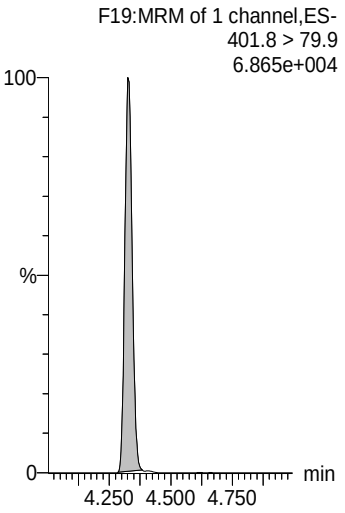
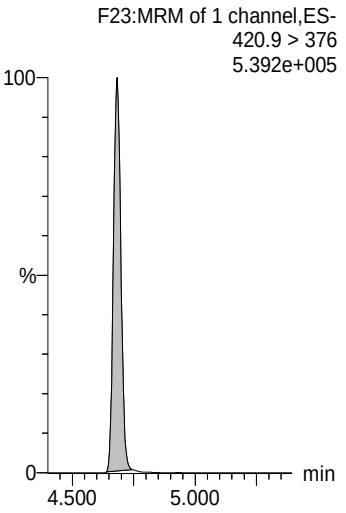
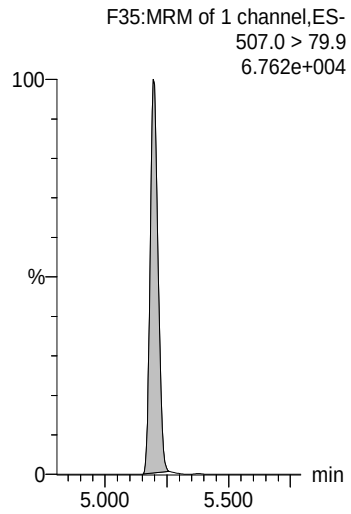


13C8-PFOA



13C8-PFOS



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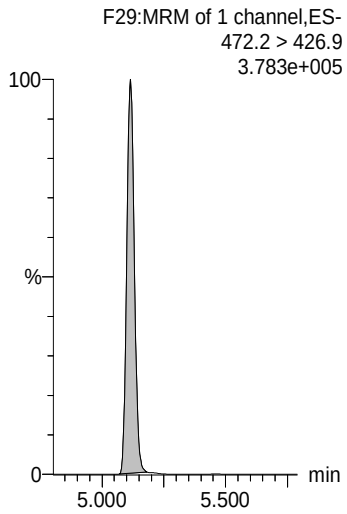

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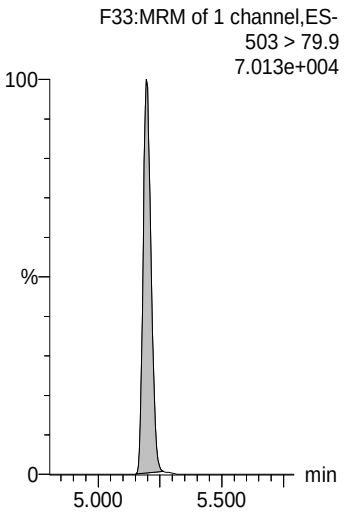

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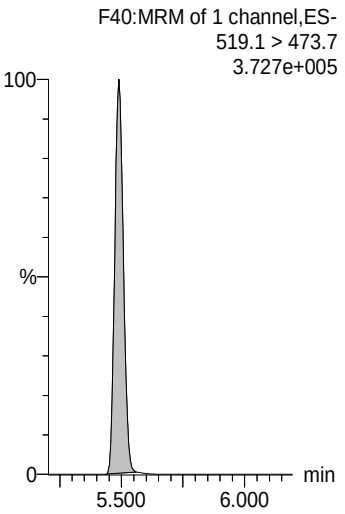

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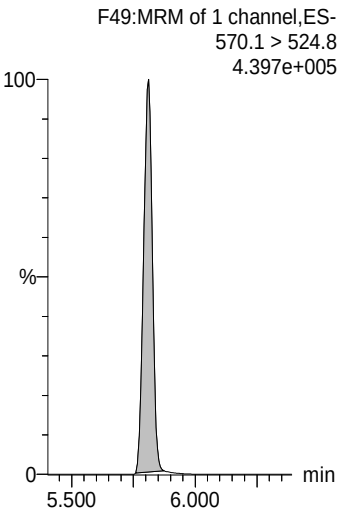

CGH 12/4/2018

Vista Analytical Laboratory L30

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

Last Altered: Tuesday, December 04, 2018 12:10:04 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:19:21 Pacific Standard Time

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	RT	Respo...	Conc.	%Rec	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	4.57e3	5.13e3	0.250		1.41	11.1	43.4281	108.6		
2	2	PFPeA	263.1 > 218.9	4.85e3	6.57e3	0.250		2.68	9.23	40.5799	101.4		
3	3	PFBS	299.0 > 79.7	1.89e3	1.14e3	0.250		3.00	20.8	41.3022	103.3	3.30	NO
4	4	4:2 FTS	327.2>307.2	2.45e3	2.95e3	0.250		3.48	10.4	51.1914	128.0	2.01	NO
5	5	PFHxA	313 > 269	9.28e3	4.78e3	0.250		3.56	9.70	37.0550	92.6	14.5	NO
6	36	13C3-PFBA	216.1 > 171.8	5.13e3	6.33e3	0.250	0.861	1.41	10.1	47.0582	94.1		
7	37	13C3-PFPeA	266. > 221.8	6.57e3	1.28e4	0.250	0.604	2.68	6.41	42.4725	84.9		
8	38	13C3-PFBS	302. > 98.8	1.14e3	2.20e3	0.250	0.633	3.00	6.45	40.7388	81.5		
9	39	13C2-4:2 FTS	329.2>308.9	2.95e3	2.20e3	0.250	2.074	3.47	16.8	32.3298	64.7		
10	40	13C2-PFHxA	315 > 270	4.78e3	1.28e4	0.250	0.900	3.56	4.66	20.7220	103.6		
11	-1												
12	6	PFPeS	349.1>80.1	1.27e3	1.14e3	0.250		3.77	13.9	37.7738	94.4	1.46	NO
13	7	PFHpA	363.0 > 318.9	7.55e3	7.13e3	0.250		4.20	13.2	45.5104	113.8	15.2	NO
14	8	L-PFHxS	398.9 > 79.6	1.70e3	1.01e3	0.250		4.33	21.1	42.8286	107.1	2.12	NO
15	68	Total PFHxS	398.9 > 79.6	1.70e3	1.01e3	0.250			21.1	42.8286			
16	10	6:2 FTS	427.1 > 407	3.47e3	3.30e3	0.250		4.63	13.1	55.7880	139.5	3.19	NO
17	38	13C3-PFBS	302. > 98.8	1.14e3	2.20e3	0.250	0.633	3.00	6.45	40.7388	81.5		
18	41	13C4-PFHpA	367.2 > 321.8	7.13e3	1.28e4	0.250	0.693	4.19	6.95	40.1340	80.3		
19	42	18O2-PFHxS	403.0 > 102.6	1.01e3	2.20e3	0.250	0.476	4.33	5.71	48.0073	96.0		
20	42	18O2-PFHxS	403.0 > 102.6	1.01e3	2.20e3	0.250	0.476	4.33	5.71	48.0073	96.0		
21	43	13C2-6:2 FTS	429.1 > 408.9	3.30e3	2.48e3	0.250	1.825	4.63	16.7	36.5259	73.1		
22	-1												
23	11	L-PFOA	412.8 > 368.9	1.35e4	1.17e4	0.250		4.68	14.5	47.3255	118.3	3.24	NO
24	69	Total PFOA	412.8 > 368.9	1.35e4	1.17e4	0.250			14.5	47.3255			
25	13	PFHpS	449 > 80.0	1.76e3	2.52e3	0.250		4.79	8.72	39.6499	99.1	1.81	NO
26	16	L-PFOS	498.9 > 79.9	2.11e3	2.52e3	0.250		5.19	10.5	38.0484	95.1	2.14	NO
27	70	Total PFOS	498.9 > 79.9	2.11e3	2.52e3	0.250			10.5	38.0484			
28	44	13C2-PFOA	414.9 > 369.7	1.17e4	1.75e4	0.250	0.873	4.68	8.32	38.1084	76.2		
29	44	13C2-PFOA	414.9 > 369.7	1.17e4	1.75e4	0.250	0.873	4.68	8.32	38.1084	76.2		
30	47	13C8-PFOS	507.0 > 79.9	2.52e3	2.48e3	0.250	0.968	5.19	12.7	52.6695	105.3		
31	47	13C8-PFOS	507.0 > 79.9	2.52e3	2.48e3	0.250	0.968	5.19	12.7	52.6695	105.3		
32	47	13C8-PFOS	507.0 > 79.9	2.52e3	2.48e3	0.250	0.968	5.19	12.7	52.6695	105.3		
33	-1												
34	14	PFNA	463.0 > 418.8	1.10e4	1.18e4	0.250		5.11	11.6	42.0483	105.1	4.87	NO
35	15	PFOSA	497.9 > 77.9	1.22e3	1.43e3	0.250		5.15	10.7	37.7042	94.3	41.0	YES

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

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Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	RT	Respo...	Conc.	%Rec	Ion Ratio	Ratio Out?	
36	18	PFDA	513 > 468.8	1.10e4	1.19e4	0.250		5.49	11.6	43.1038	107.8	6.04	NO	
37	19	8:2 FTS	527 > 506.9	3.23e3	2.81e3	0.250		5.46	14.4	44.1912	110.5	2.54	NO	
38	20	PFNS	549.1 > 80.1	1.27e3	2.52e3	0.250		5.55	6.28	32.4646	81.2	1.86	NO	
39	45	13C5-PFNA	468.2 > 422.9	1.18e4	1.36e4	0.250	1.006	5.11	10.9	43.2691	86.5			
40	46	13C8-PFOSA	506.1 > 77.7	1.43e3	1.77e4	0.250	0.202	5.15	1.01	19.9917	40.0			
41	48	13C2-PFDA	515.1 > 469.9	1.19e4	1.52e4	0.250	1.125	5.49	9.84	35.0012	70.0			
42	49	13C2-8:2 FTS	529.1 > 508.7	2.81e3	2.48e3	0.250	1.086	5.46	14.2	52.2239	104.4			
43	47	13C8-PFOS	507.0 > 79.9	2.52e3	2.48e3	0.250	0.968	5.19	12.7	52.6695	105.3			
44	-1													
45	21	L-MeFOSAA	570 > 419	4.18e3	3.07e3	0.250		5.64	17.0	45.1668	112.9	2.27	NO	
46	71	Total N-MeFOSAA	570. > 419	4.18e3	3.07e3	0.250			17.0	45.1668				
47	23	L-EtFOSAA	584.1 > 419	3.71e3	4.22e3	0.250		5.79	11.0	40.5764	101.4	1.28	NO	
48	72	Total N-EtFOSAA	584.1 > 419	3.71e3	4.22e3	0.250			11.0	40.5764				
49	25	PFUdA	563.0 > 518.9	1.02e4	1.34e4	0.250		5.81	9.52	35.3801	88.5	9.66	NO	
50	50	d3-N-MeFOSAA	573.3 > 419	3.07e3	1.77e4	0.250	0.329	5.63	2.17	26.3869	52.8			
51	50	d3-N-MeFOSAA	573.3 > 419	3.07e3	1.77e4	0.250	0.329	5.63	2.17	26.3869	52.8			
52	52	d5-N-EtFOSAA	589.3 > 419	4.22e3	1.77e4	0.250	0.355	5.79	2.98	33.6026	67.2			
53	52	d5-N-EtFOSAA	589.3 > 419	4.22e3	1.77e4	0.250	0.355	5.79	2.98	33.6026	67.2			
54	51	13C2-PFUdA	565 > 519.8	1.34e4	1.77e4	0.250	1.111	5.81	9.48	34.1373	68.3			
55	-1													
56	26	PFDS	598.8 > 79.9	1.79e3	2.52e3	0.250		5.85	8.88	43.3902	108.5	1.70	NO	
57	27	PFDoA	612.9 > 569.0	1.23e4	1.18e4	0.250		6.09	13.0	39.6393	99.1	8.70	NO	
58	29	PFTrDA	662.9 > 618.9	1.23e4	1.18e4	0.250		6.33	13.0	42.8956	107.2	26.4	NO	
59	30	PFTeDA	713.0 > 669.0	1.22e4	9.66e3	0.250		6.55	15.8	55.8544	139.6	14.6	NO	H
60	28	N-MeFOSA	512.1 > 168.9	7.31e2		0.250		6.01				1.63	NO	
61	47	13C8-PFOS	507.0 > 79.9	2.52e3	2.48e3	0.250	0.968	5.19	12.7	52.6695	105.3			
62	53	13C2-PFDoA	615.0 > 569.7	1.18e4	1.52e4	0.250	0.993	6.09	9.74	39.2178	78.4			
63	53	13C2-PFDoA	615.0 > 569.7	1.18e4	1.52e4	0.250	0.993	6.09	9.74	39.2178	78.4			
64	55	13C2-PFTeDA	715.1 > 669.7	9.66e3	1.77e4	0.250	0.749	6.54	6.82	36.4253	72.9			
65	54	d3-N-MeFOSA	515.2 > 168.9		1.77e4	0.250	0.074							
66	-1													
67	31	N-EtFOSA	526.1 > 168.9	9.50e2		0.250		6.45				1.66	NO	
68	32	PFHxDA	813.1 > 768.6	3.55e3	3.87e3	0.250		6.86	4.58	34.2852	85.7	18.8	NO	
69	33	PFODA	913.1 > 868.8	5.58e2	3.87e3	0.250		7.08	0.721	3.3092	8.3			
70	34	N-MeFOSE	616.1 > 58.9	1.13e3		0.250		6.68						

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

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Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	RT	Respo...	Conc.	%Rec	Ion Ratio	Ratio Out?
71	35	N-EtFOSE	630.1 > 58.9	1.40e3		0.250		6.82					
72	56	d5-N-ETFOSA	531.1 > 168.9		1.77e4	0.250	0.097						
73	57	13C2-PFHxDA	815 > 769.7	3.87e3	1.77e4	0.250	0.714	6.86	2.73	15.3060	76.5		
74	57	13C2-PFHxDA	815 > 769.7	3.87e3	1.77e4	0.250	0.714	6.86	2.73	15.3060	76.5		
75	58	d7-N-MeFOSE	623.1 > 58.9		1.77e4	0.250	0.036						
76	59	d9-N-EtFOSE	639.2 > 58.8		1.77e4	0.250	0.036						
77	-1												
78	73	TCDA	498.3>106.9			0.250							
79	61	13C5-PFHxA	318 > 272.9	1.28e4	1.28e4	0.250	1.000	3.56	12.5	50.0000	100.0		
80	60	13C4-PFBA	217. > 172	6.33e3	6.33e3	0.250	1.000	1.41	12.5	50.0000	100.0		
81	62	13C3-PFHxS	401.8 > 79.9	2.20e3	2.20e3	0.250	1.000	4.33	12.5	50.0000	100.0		
82	63	13C8-PFOA	420.9 > 376	1.75e4	1.75e4	0.250	1.000	4.68	12.5	50.0000	100.0		
83	47	13C8-PFOS	507.0 > 79.9	2.52e3	2.48e3	0.250	0.968	5.19	12.7	52.6695	105.3		
84	64	13C9-PFNA	472.2 > 426.9	1.36e4	1.36e4	0.250	1.000	5.11	12.5	50.0000	100.0		
85	65	13C4-PFOS	503 > 79.9	2.48e3	2.48e3	0.250	1.000	5.20	12.5	50.0000	100.0		
86	66	13C6-PFDA	519.1 > 473.7	1.52e4	1.52e4	0.250	1.000	5.49	12.5	50.0000	100.0		
87	67	13C7-PFUdA	570.1 > 524.8	1.77e4	1.77e4	0.250	1.000	5.81	12.5	50.0000	100.0		

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

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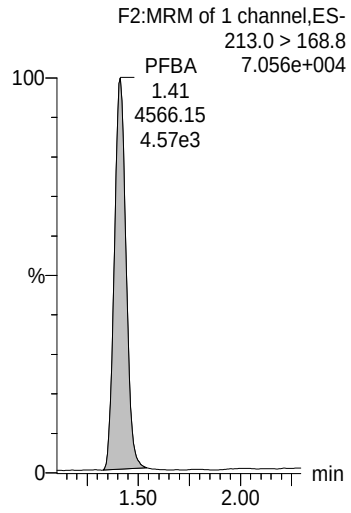
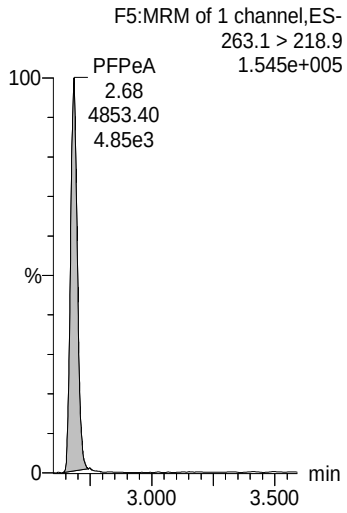
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

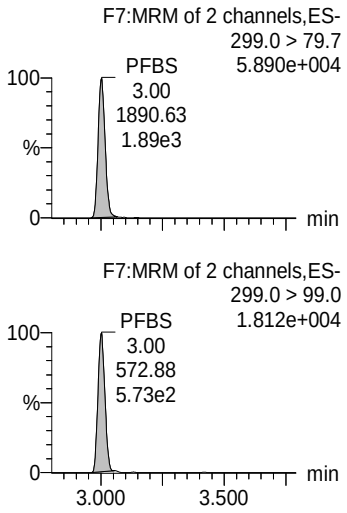
PFBA



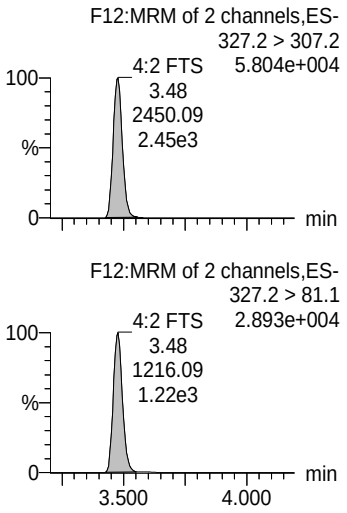
PFPeA



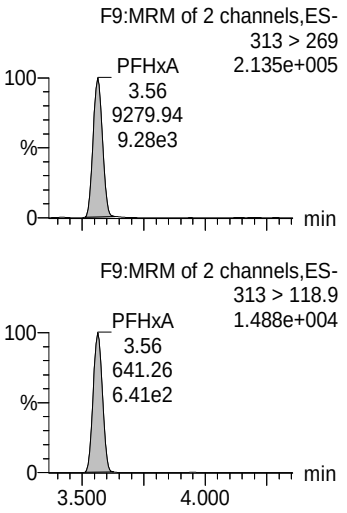
PFBS



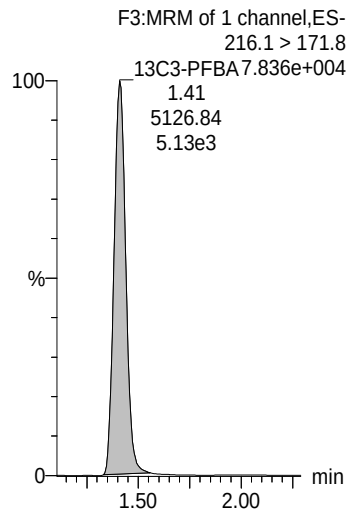
4:2 FTS



PFHxA



13C3-PFBA



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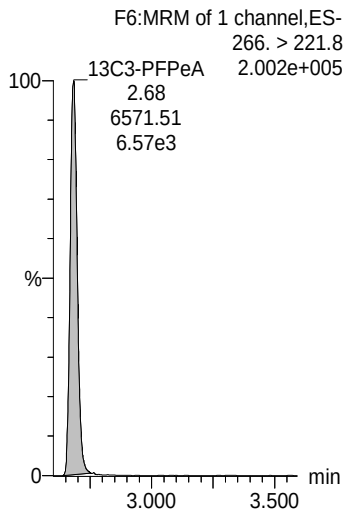

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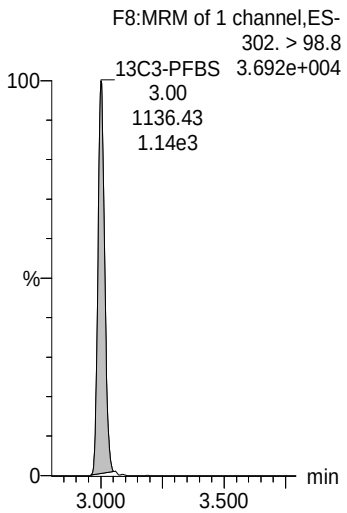

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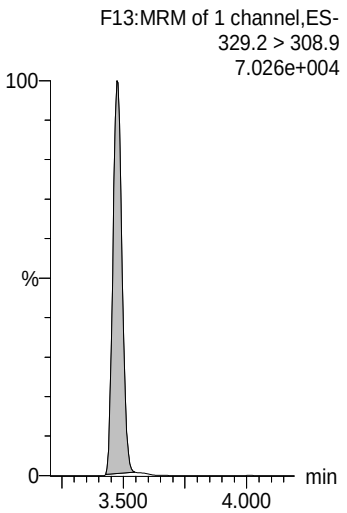
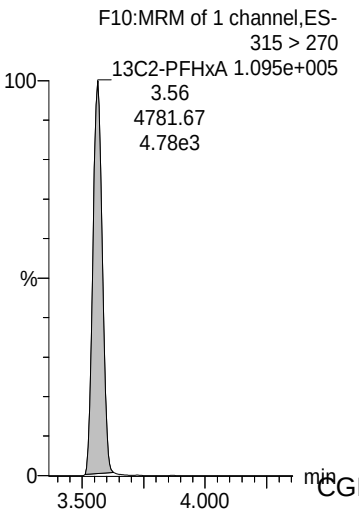


13C2-PFHxA



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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

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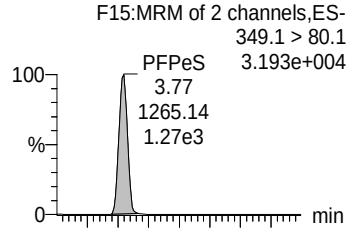
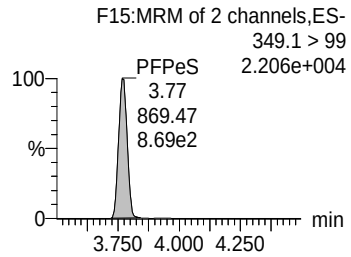
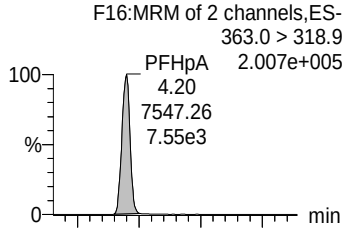
Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

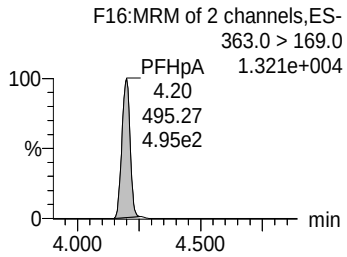
PFPeS



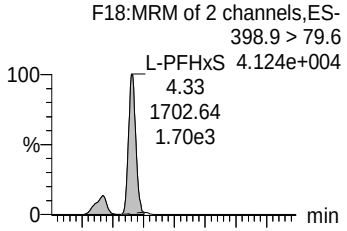


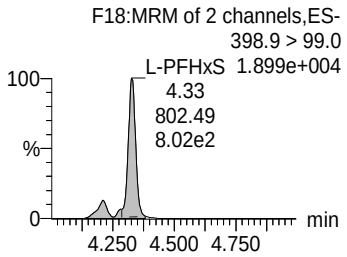
PFHpA



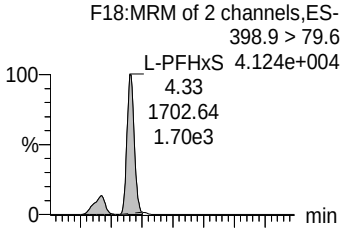


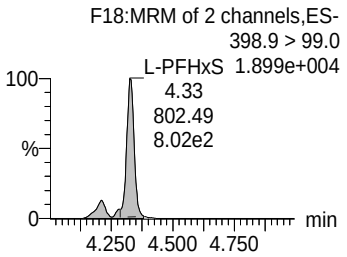
L-PFHxS



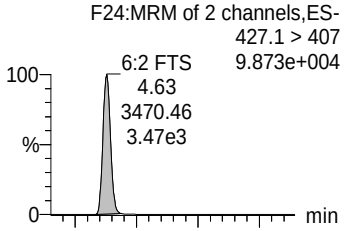


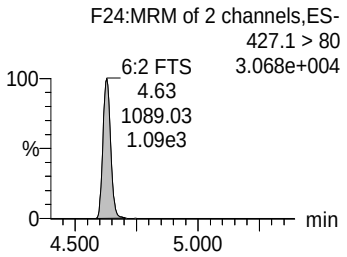
Total PFHxS



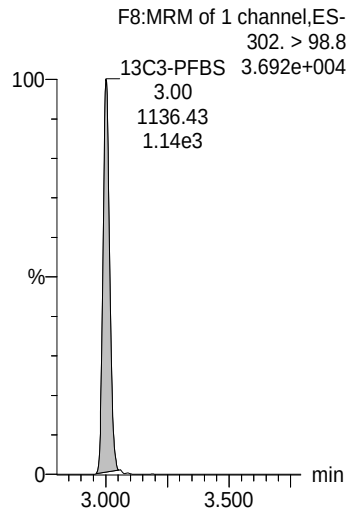


6:2 FTS

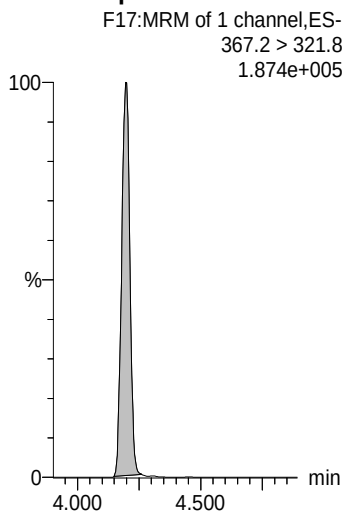




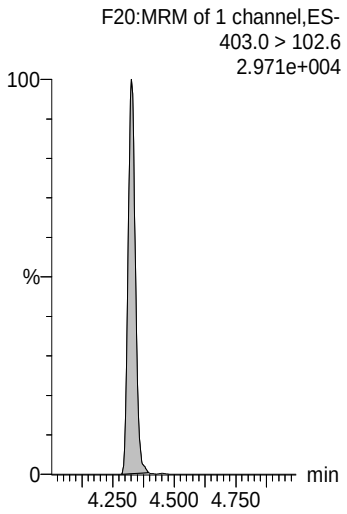
13C3-PFBS



13C4-PFHpA



18O2-PFHxS



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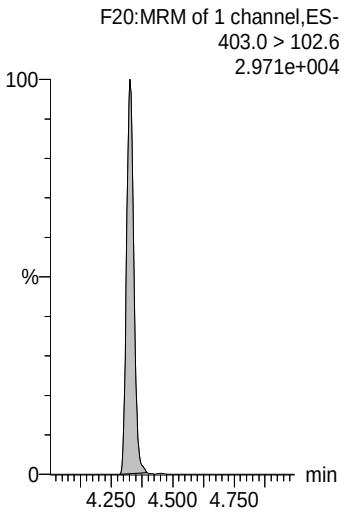
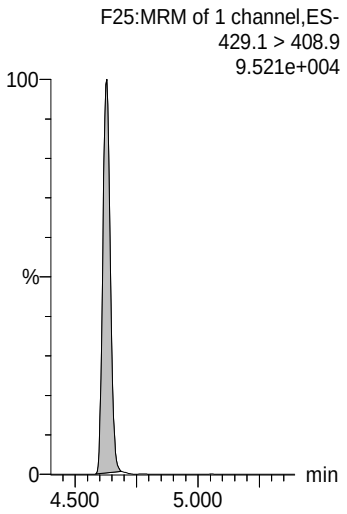


13C2-6:2 FTS



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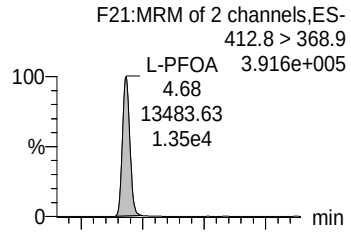
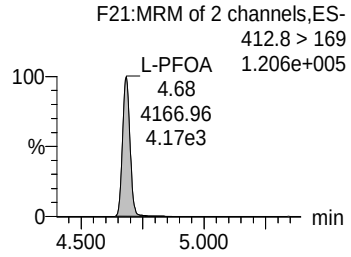
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

Last Altered: Tuesday, December 04, 2018 12:10:04 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:19:21 Pacific Standard Time

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

L-PFOA





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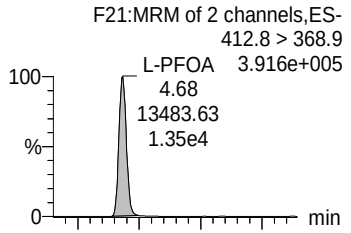

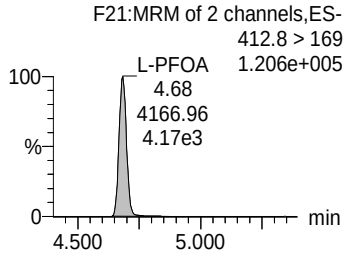

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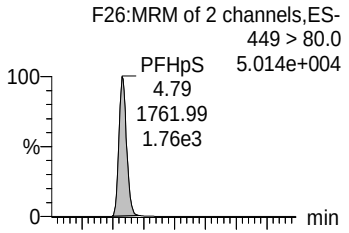
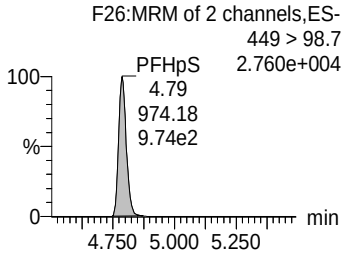
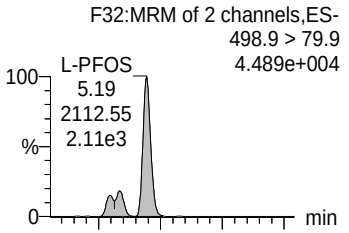
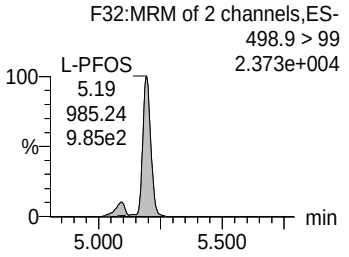




L-PFOS





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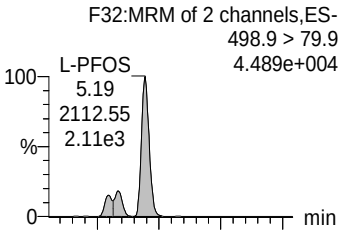
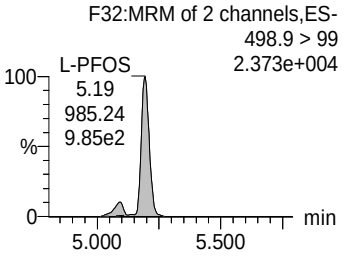
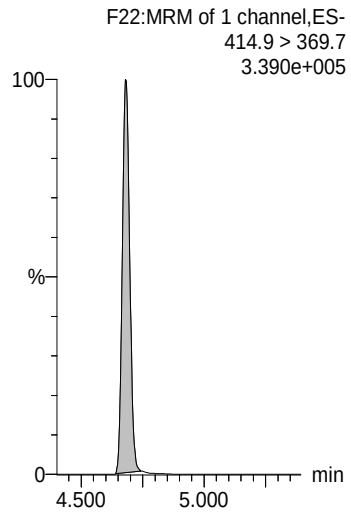




13C2-PFOA



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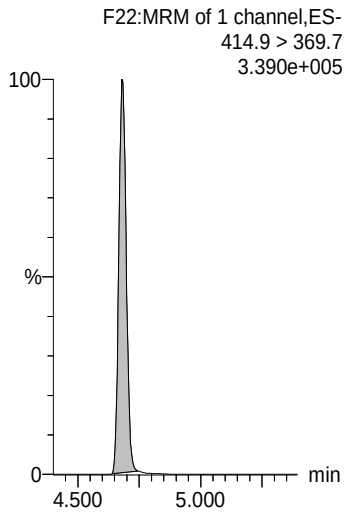
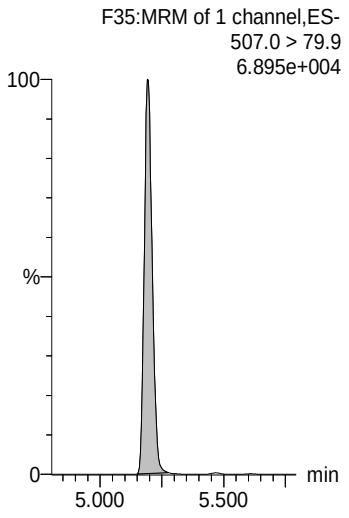


13C8-PFOS



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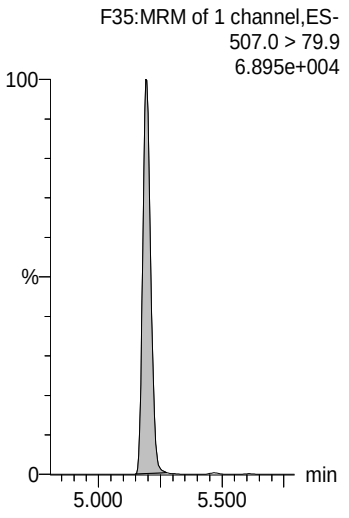

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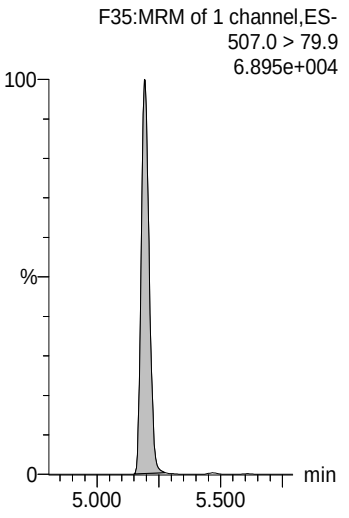

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

Last Altered: Tuesday, December 04, 2018 12:10:04 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:19:21 Pacific Standard Time

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

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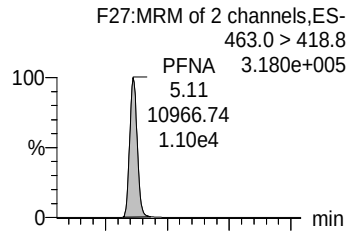

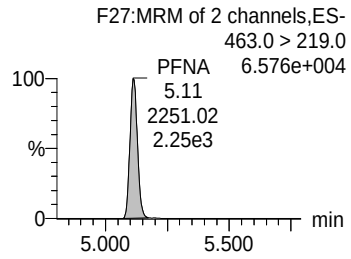

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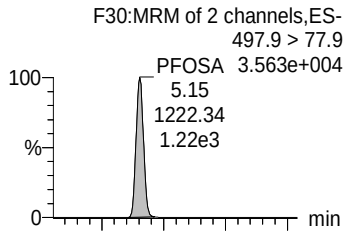

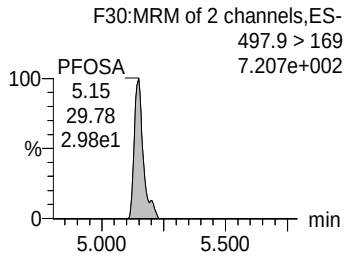

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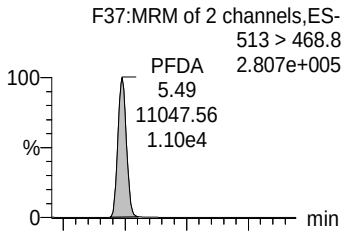
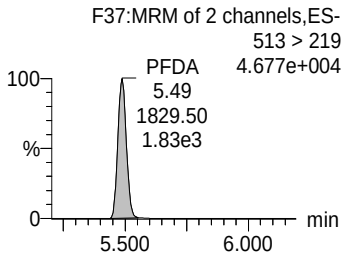
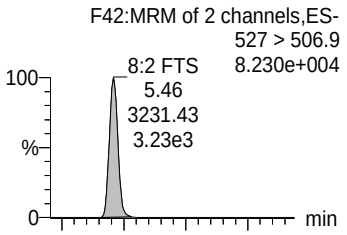
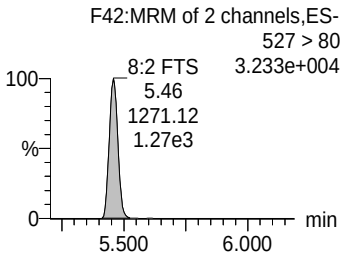




8:2 FTS





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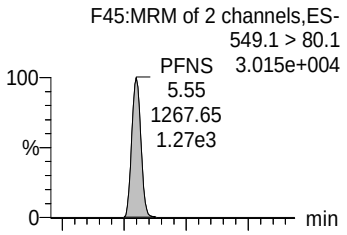
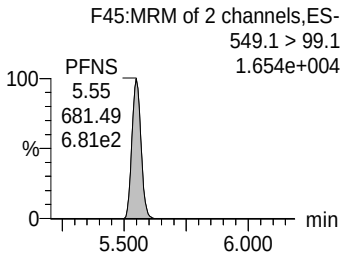
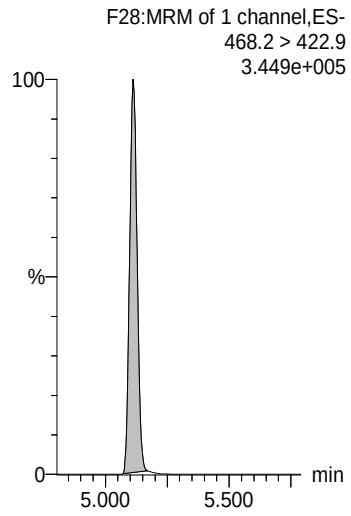
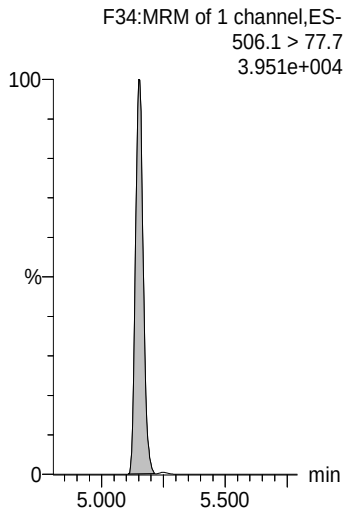




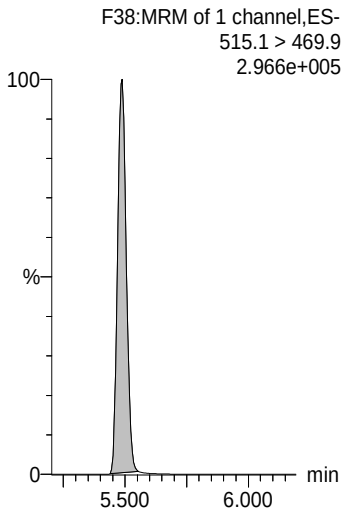
13C5-PFNA



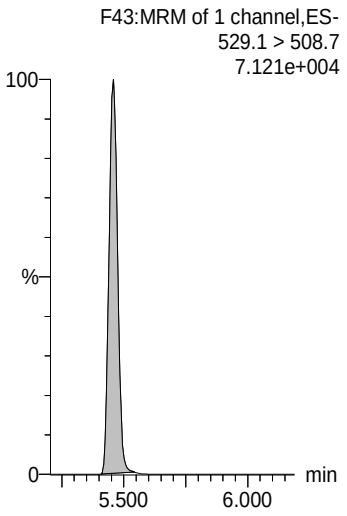
13C8-PFOSA



13C2-PFDA



13C2-8:2 FTS



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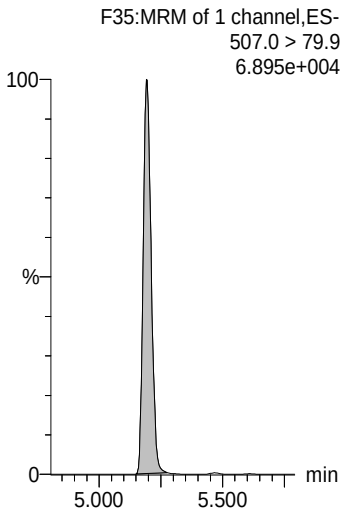

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

Last Altered: Tuesday, December 04, 2018 12:10:04 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:19:21 Pacific Standard Time

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

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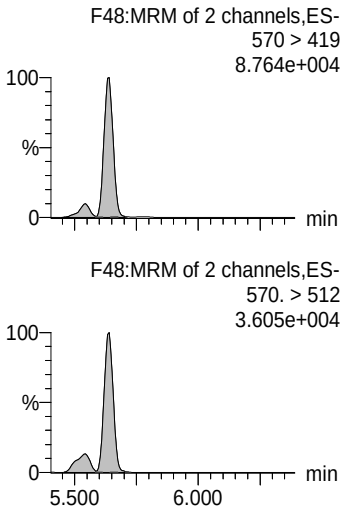

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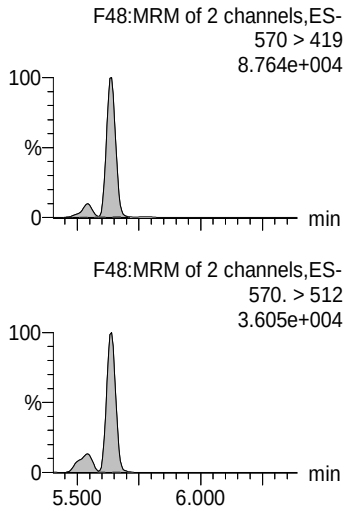
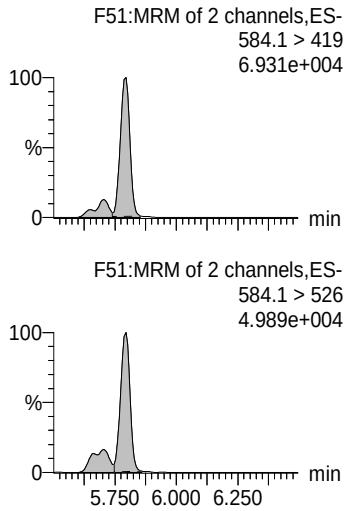


L-EtFOSAA



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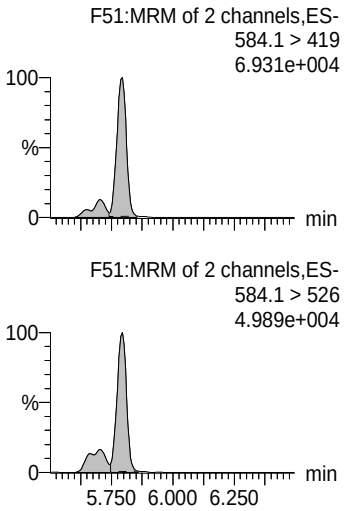
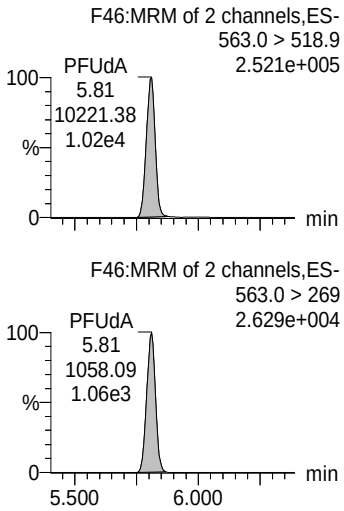
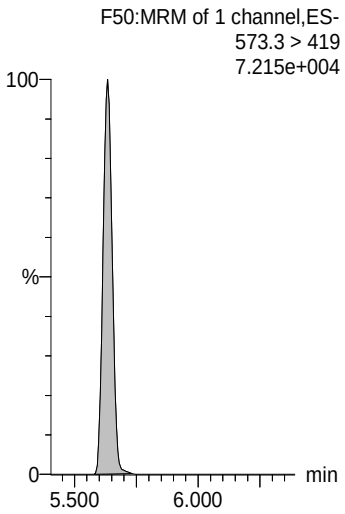


PFUdA



d3-N-MeFOSAA



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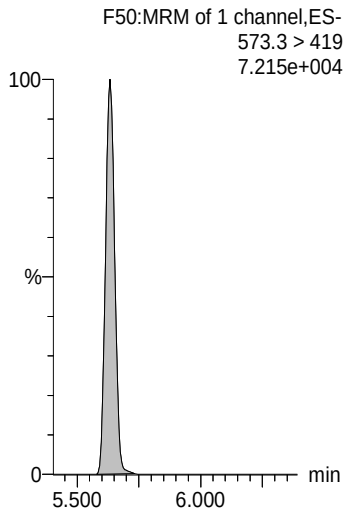

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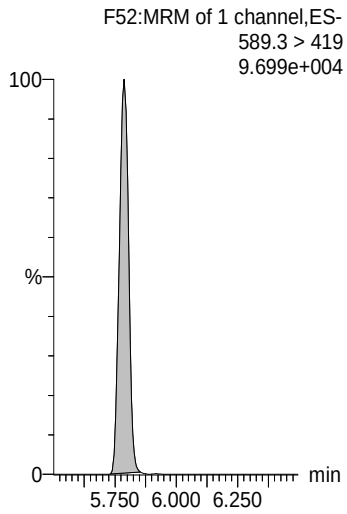

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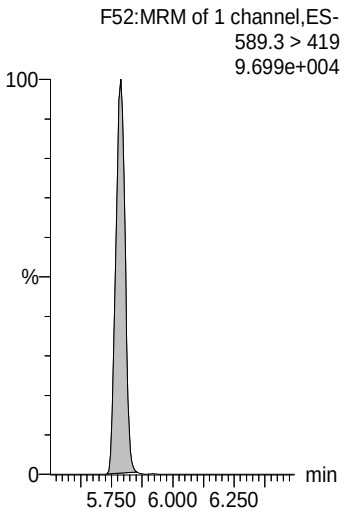

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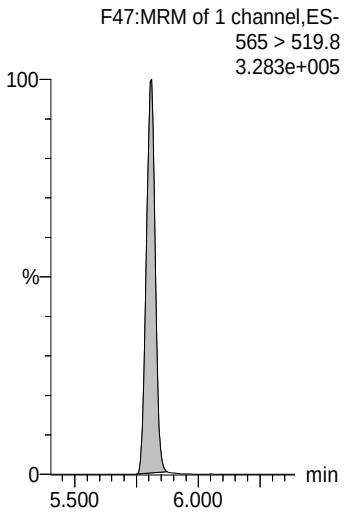

CGH 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

Last Altered: Tuesday, December 04, 2018 12:10:04 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:19:21 Pacific Standard Time

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

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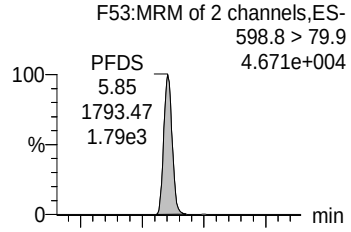

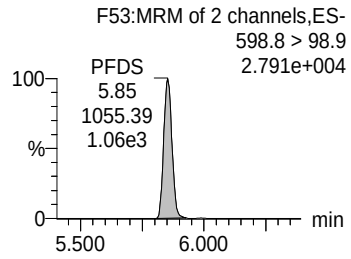

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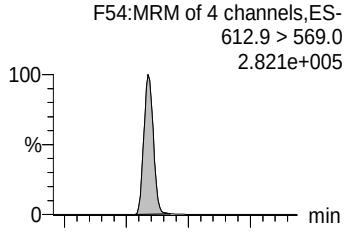

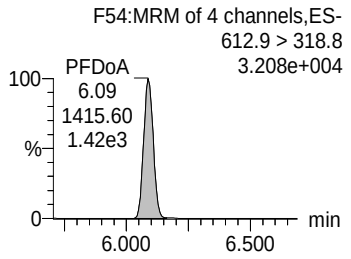

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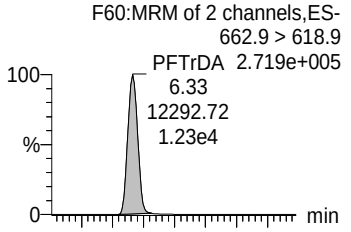
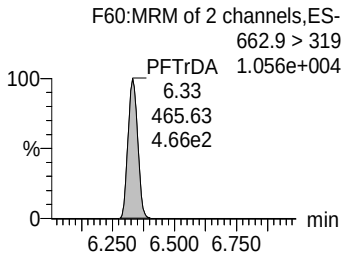
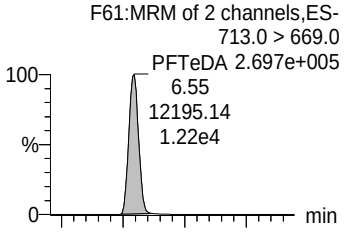
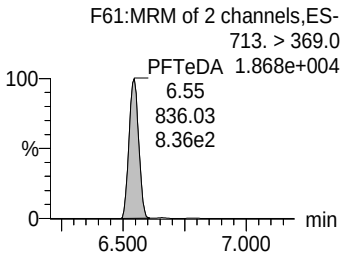


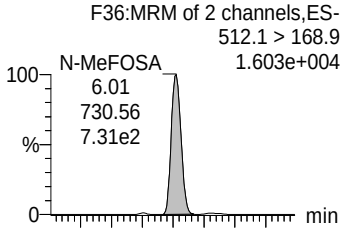


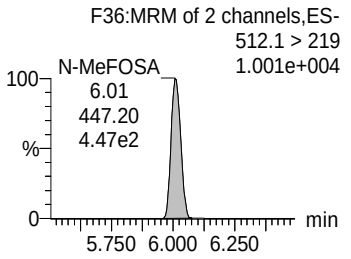
PFTeDA



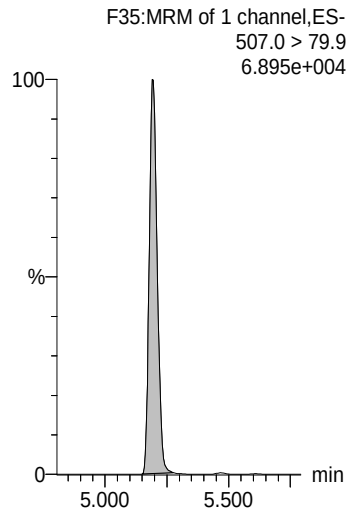


N-MeFOSA

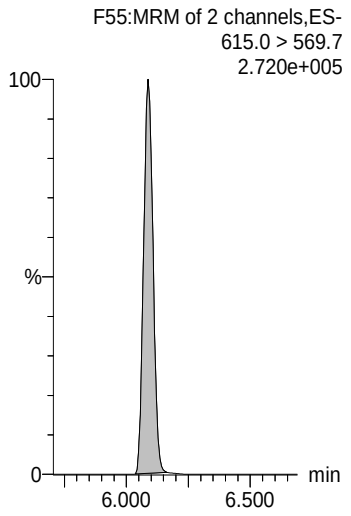




13C8-PFOS



13C2-PFDoA



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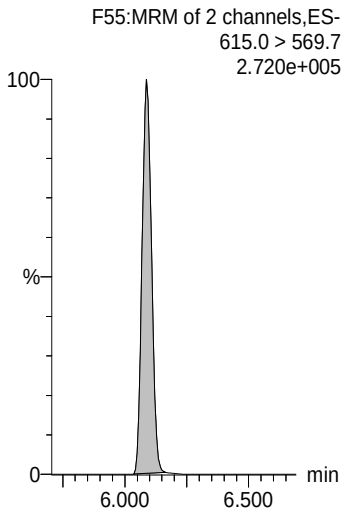
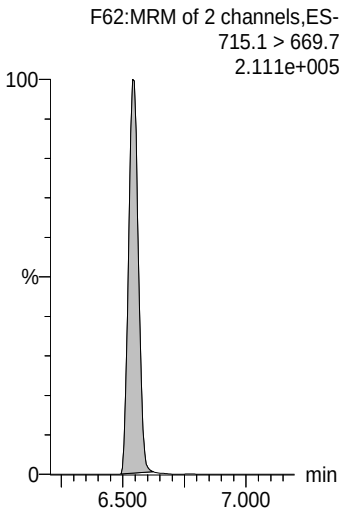
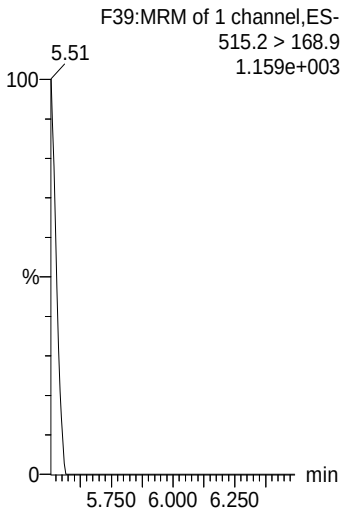


13C2-PFTeDA



d3-N-MeFOSA



CGH 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

Last Altered: Tuesday, December 04, 2018 12:10:04 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:19:21 Pacific Standard Time

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

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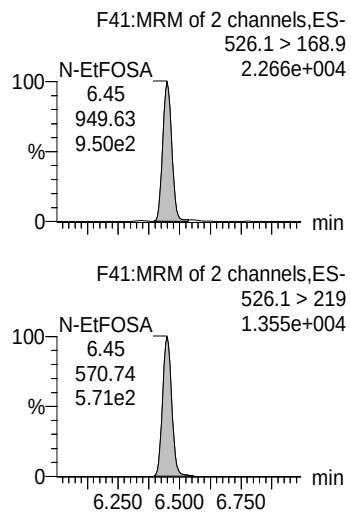
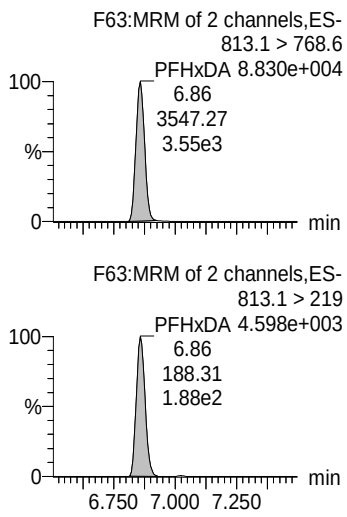
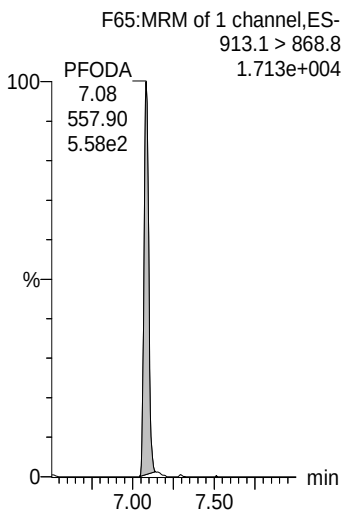


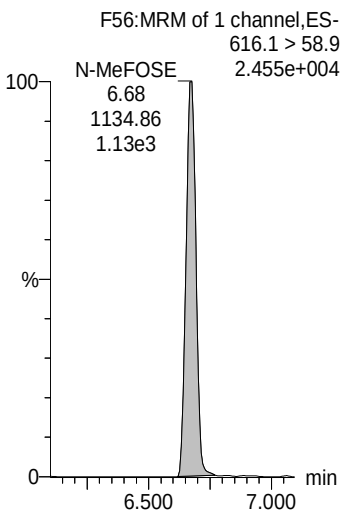
PFHxDA



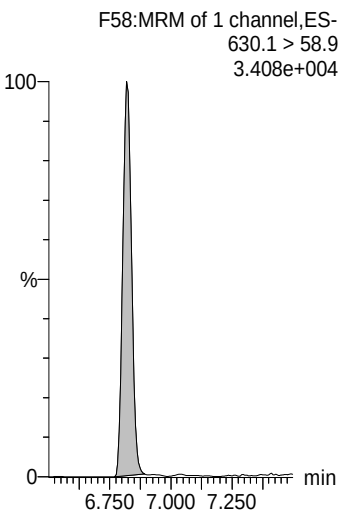
PFODA



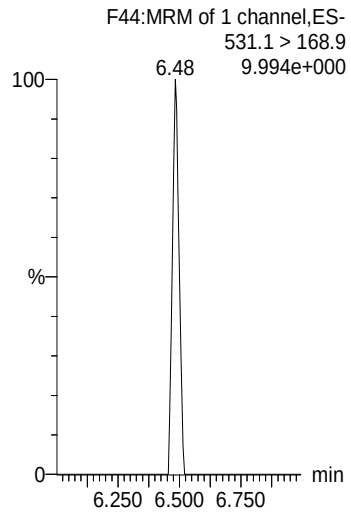
N-MeFOSE



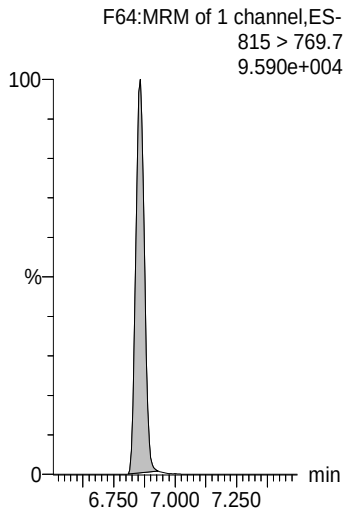
N-EtFOSE



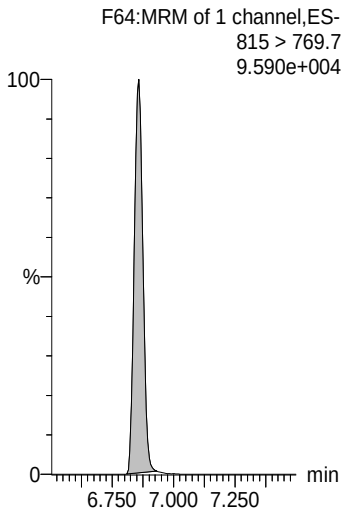
d5-N-ETFOSA



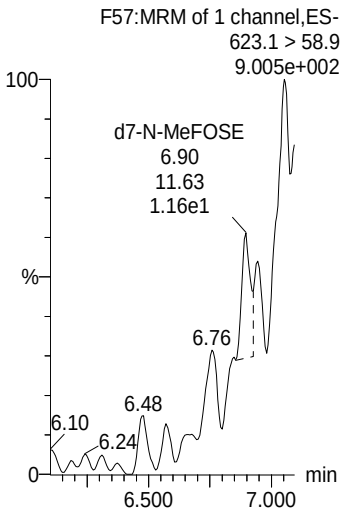
13C2-PFHxDA



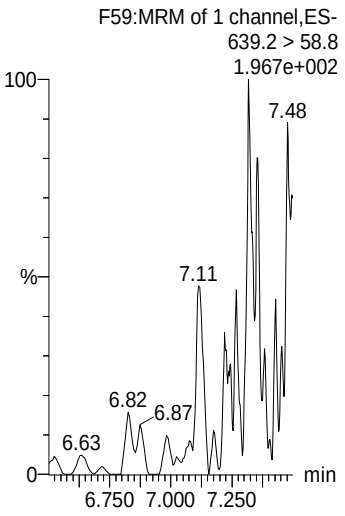
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



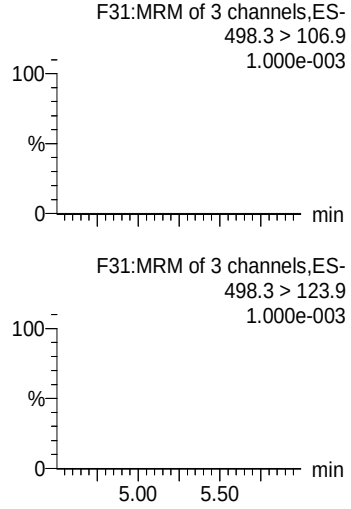
CGH 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-4.qld

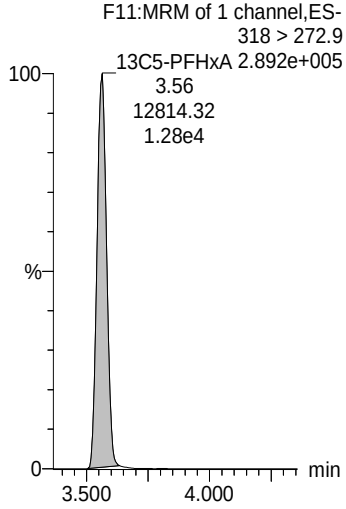
Last Altered: Tuesday, December 04, 2018 12:10:04 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:19:21 Pacific Standard Time

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

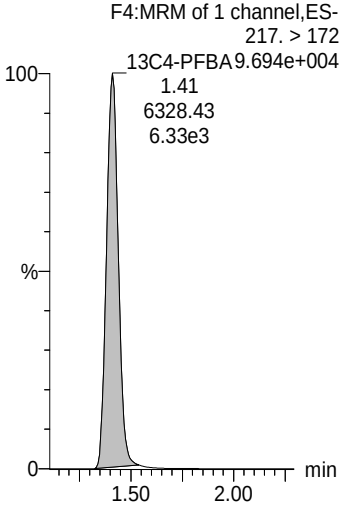
TCDA



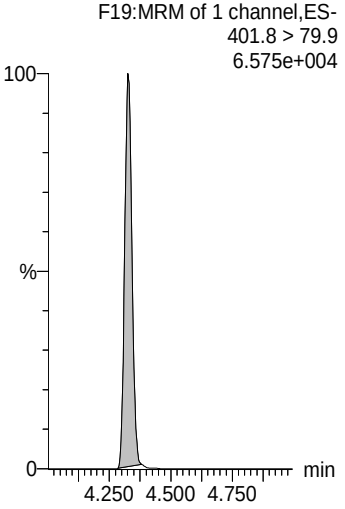
13C5-PFHxA



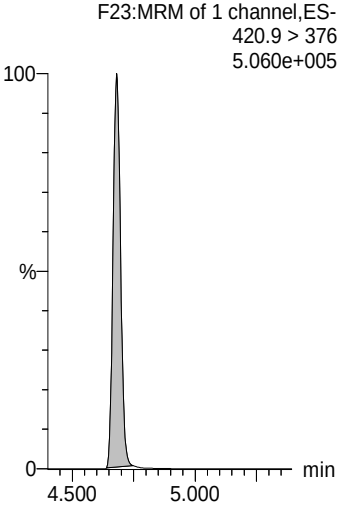
13C4-PFBA



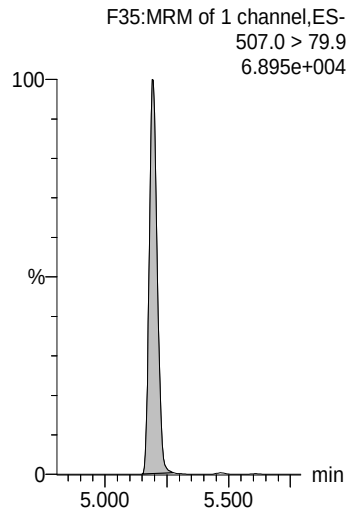
13C3-PFHxS



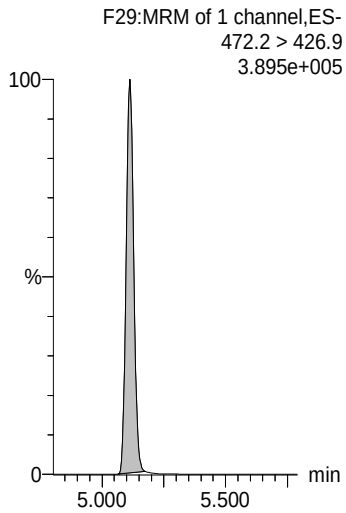
13C8-PFOA



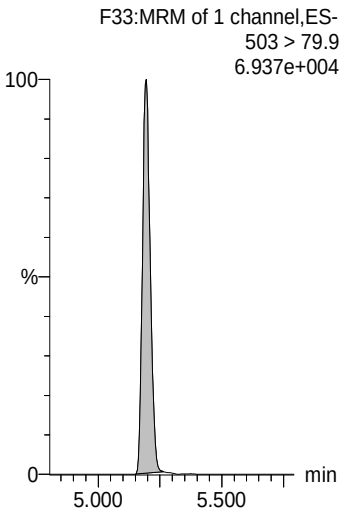
13C8-PFOS



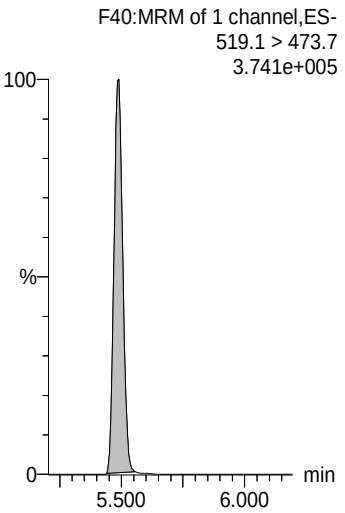
13C9-PFNA



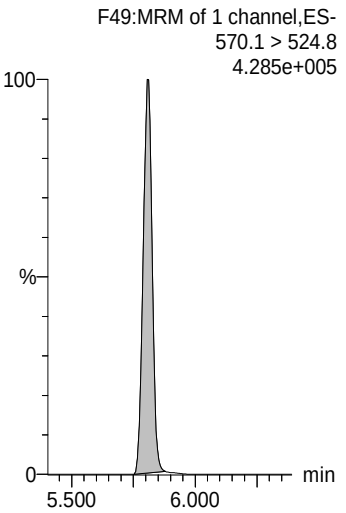
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-8.qld

Last Altered: Tuesday, December 04, 2018 12:56:27 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:21:12 Pacific Standard Time

Name: 181203M1_8, Date: 03-Dec-2018, Time: 15:40:24, ID: 1803678-01 A1-MW-01-SA2 0.11182, Description: A1-MW-01-SA2

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	3	PFBS	299.0 > 79.7	2.16e3	1.23e3	0.112		3.00	3.00	21.9	97.2864		3.052	NO
2	5	PFHxA	313 > 269	1.71e4	3.40e3	0.112		3.56	3.56	25.2	215.6644		15.055	NO
3	7	PFHpA	363.0 > 318.9	8.38e2	5.14e3	0.112		4.20	4.20	2.04	15.6475		30.323	YES
4	8	L-PFHxS	398.9 > 79.6	7.39e2	1.13e3	0.112		4.33	4.33	8.19	37.0751		2.250	NO
5	68	Total PFHxS	398.9 > 79.6	7.39e2	1.13e3	0.112		4.58		8.19	37.0751			
6	11	L-PFOA	412.8 > 368.9		9.58e3	0.112		4.58						
7	69	Total PFOA	412.8 > 368.9	0.00e0	9.58e3	0.112		4.97		0.000				
8	38	13C3-PFBS	302. > 98.8	1.23e3	2.71e3	0.112	0.633	3.00	3.00	5.67	80.0677	71.6		
9	40	13C2-PFHxA	315 > 270	3.40e3	9.22e3	0.112	0.900	3.56	3.56	4.61	45.8306	102.5		
10	41	13C4-PFHpA	367.2 > 321.8	5.14e3	9.22e3	0.112	0.693	4.19	4.20	6.97	89.9129	80.4		
11	42	18O2-PFHxS	403.0 > 102.6	1.13e3	2.71e3	0.112	0.476	4.33	4.33	5.20	97.7531	87.4		
12	42	18O2-PFHxS	403.0 > 102.6	1.13e3	2.71e3	0.112	0.476	4.33	4.33	5.20	97.7531	87.4		
13	44	13C2-PFOA	414.9 > 369.7	9.58e3	1.41e4	0.112	0.873	4.68	4.68	8.50	87.0741	77.9		
14	44	13C2-PFOA	414.9 > 369.7	9.58e3	1.41e4	0.112	0.873	4.68	4.68	8.50	87.0741	77.9		
15	-1													
16	14	PFNA	463.0 > 418.8		1.05e4	0.112		5.11						
17	16	L-PFOS	498.9 > 79.9		2.82e3	0.112		5.08						
18	70	Total PFOS	498.9 > 79.9	0.00e0	2.82e3	0.112		5.46		0.000				
19	18	PFDA	513 > 468.8	1.73e1	1.07e4	0.112		5.48	5.49	0.0202	0.3095		55.561	YES
20	21	L-MeFOSAA	570 > 419		3.81e3	0.112		5.63						
21	71	Total N-MeFOSAA	570. > 419	0.00e0	3.81e3	0.112		5.90		0.000				
22	25	PFUdA	563.0 > 518.9		1.27e4	0.112		5.81						
23	45	13C5-PFNA	468.2 > 422.9	1.05e4	1.14e4	0.112	1.006	5.11	5.12	11.5	101.8803	91.1		
24	47	13C8-PFOS	507.0 > 79.9	2.82e3	2.97e3	0.112	0.968	5.19	5.20	11.9	109.7840	98.2		
25	47	13C8-PFOS	507.0 > 79.9	2.82e3	2.97e3	0.112	0.968	5.19	5.20	11.9	109.7840	98.2		
26	48	13C2-PFDA	515.1 > 469.9	1.07e4	1.32e4	0.112	1.125	5.48	5.49	10.2	80.7964	72.3		
27	50	d3-N-MeFOSAA	573.3 > 419	3.81e3	1.62e4	0.112	0.329	5.63	5.63	2.93	79.7269	71.3		
28	50	d3-N-MeFOSAA	573.3 > 419	3.81e3	1.62e4	0.112	0.329	5.63	5.63	2.93	79.7269	71.3		
29	51	13C2-PFUdA	565 > 519.8	1.27e4	1.62e4	0.112	1.111	5.81	5.81	9.81	78.9629	70.6		
30	-1													
31	23	L-EtFOSAA	584.1 > 419		5.16e3	0.112		5.79						
32	72	Total N-EtFOSAA	584.1 > 419	0.00e0	5.16e3	0.112		6.06		0.000				
33	29	PFTrDA	662.9 > 618.9		1.23e4	0.112		6.32						
34	27	PFDoA	612.9 > 569.0		1.23e4	0.112		6.08						
35	30	PFTeDA	713.0 > 669.0	2.97e1	9.92e3	0.112		6.54	6.55	0.0374	0.2841		7.734	NO

CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-8.qld

Last Altered: Tuesday, December 04, 2018 12:56:27 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:21:12 Pacific Standard Time

Name: 181203M1_8, Date: 03-Dec-2018, Time: 15:40:24, ID: 1803678-01 A1-MW-01-SA2 0.11182, Description: A1-MW-01-SA2

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
36	73	TCDA	498.3>106.9			0.112		5.45						
37	61	13C5-PFHxA	318 > 272.9	9.22e3	9.22e3	0.112	1.000	3.56	3.56	12.5	111.7868	100.0		
38	52	d5-N-EtFOSAA	589.3 > 419	5.16e3	1.62e4	0.112	0.355	5.78	5.79	3.98	100.1794	89.6		
39	52	d5-N-EtFOSAA	589.3 > 419	5.16e3	1.62e4	0.112	0.355	5.78	5.79	3.98	100.1794	89.6		
40	53	13C2-PFDoA	615.0 > 569.7	1.23e4	1.32e4	0.112	0.993	6.08	6.09	11.6	104.7146	93.7		
41	53	13C2-PFDoA	615.0 > 569.7	1.23e4	1.32e4	0.112	0.993	6.08	6.09	11.6	104.7146	93.7		
42	55	13C2-PFTeDA	715.1 > 669.7	9.92e3	1.62e4	0.112	0.749	6.54	6.55	7.64	91.2527	81.6		
43	47	13C8-PFOS	507.0 > 79.9	2.82e3	2.97e3	0.112	0.968	5.19	5.20	11.9	109.7840	98.2		
44	63	13C8-PFOA	420.9 > 376	1.41e4	1.41e4	0.112	1.000	4.68	4.68	12.5	111.7868	100.0		
45	-1													
46	62	13C3-PFHxS	401.8 > 79.9	2.71e3	2.71e3	0.112	1.000	4.33	4.33	12.5	111.7868	100.0		
47	64	13C9-PFNA	472.2 > 426.9	1.14e4	1.14e4	0.112	1.000	5.11	5.12	12.5	111.7868	100.0		
48	65	13C4-PFOS	503 > 79.9	2.97e3	2.97e3	0.112	1.000	5.19	5.19	12.5	111.7868	100.0		
49	66	13C6-PFDA	519.1 > 473.7	1.32e4	1.32e4	0.112	1.000	5.48	5.49	12.5	111.7868	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	1.62e4	1.62e4	0.112	1.000	5.81	5.81	12.5	111.7868	100.0		

CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

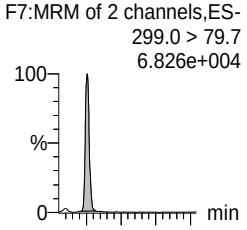
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-8.qld

Last Altered: Tuesday, December 04, 2018 12:56:27 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:21:12 Pacific Standard Time

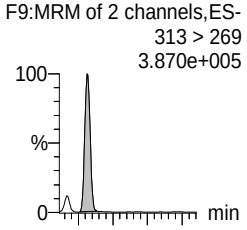
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_8, Date: 03-Dec-2018, Time: 15:40:24, ID: 1803678-01 A1-MW-01-SA2 0.11182, Description: A1-MW-01-SA2

PFBS



PFHxA



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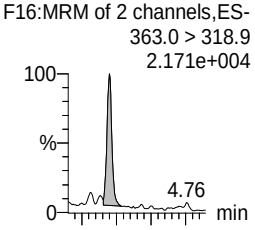
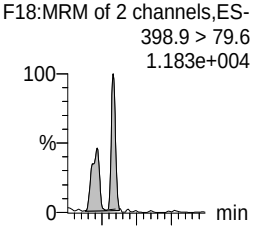


L-PFHxS



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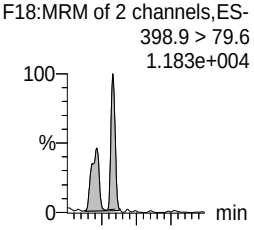

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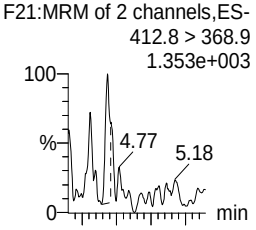

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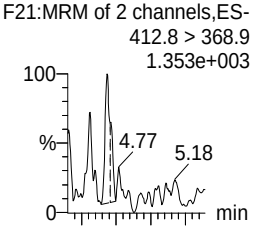
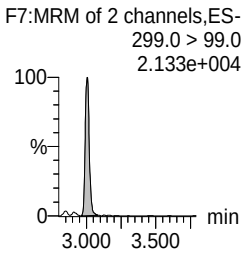
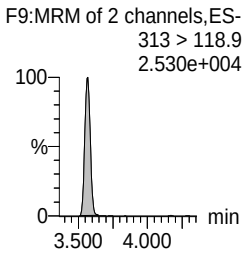
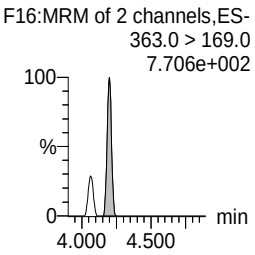
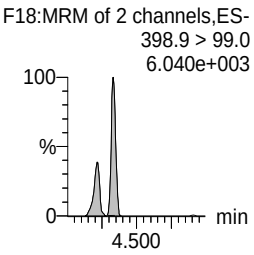
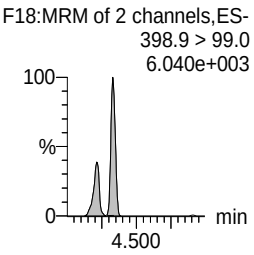


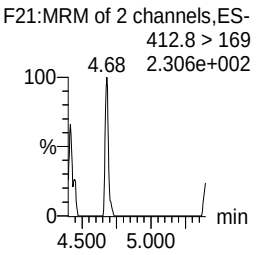


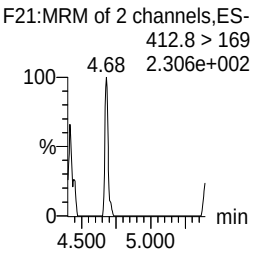




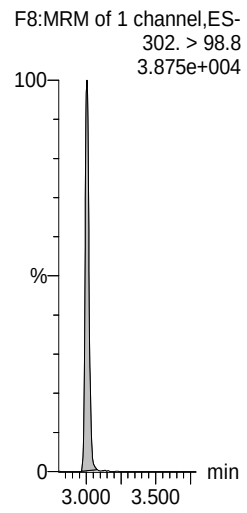




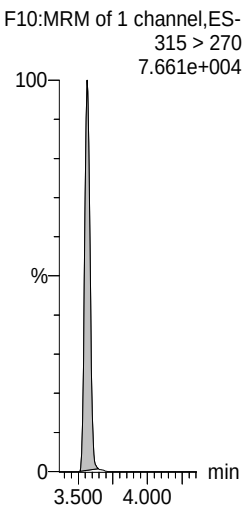




13C3-PFBS



13C2-PFHxA



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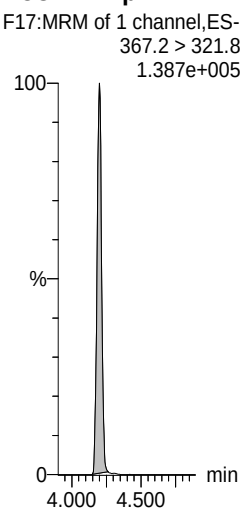

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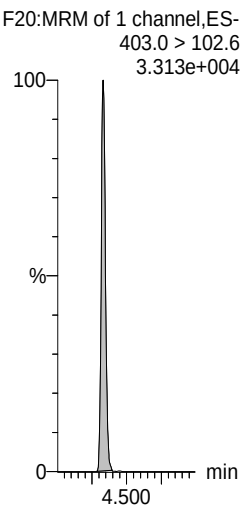

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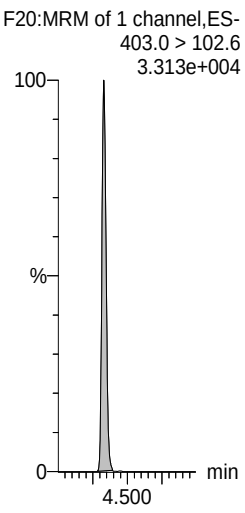

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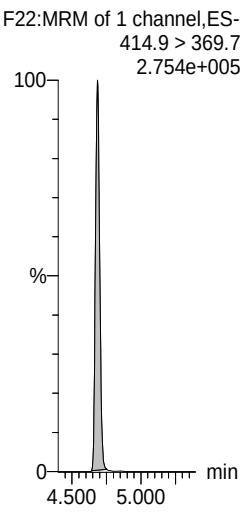

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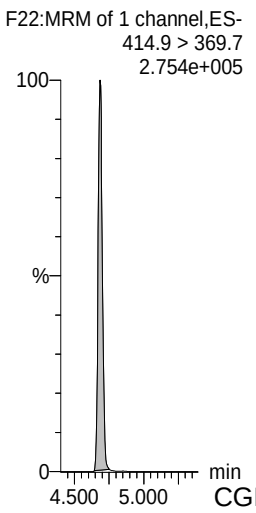

CGH 12/4/2018

MM 12/4/2018

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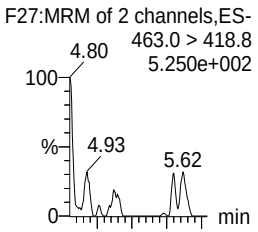

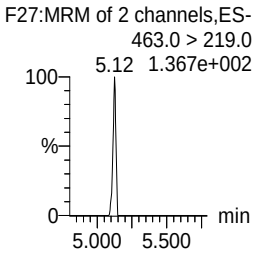

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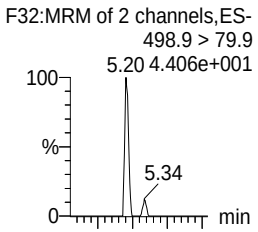

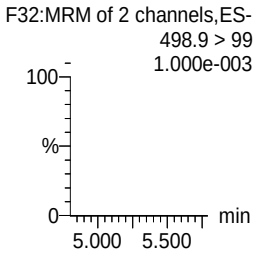

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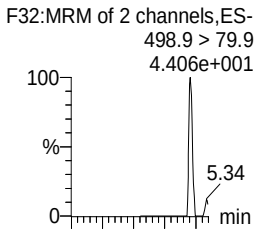

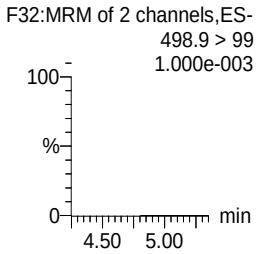

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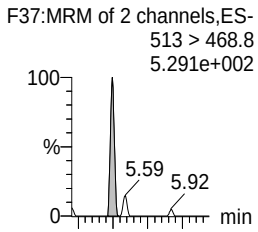

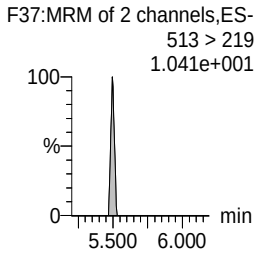

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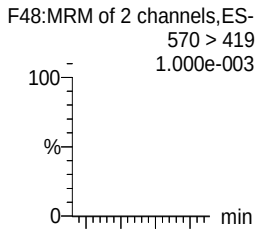

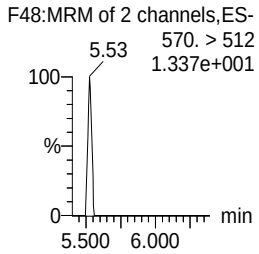

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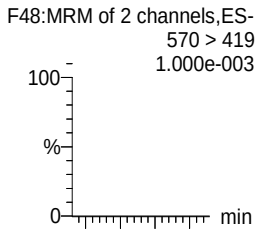

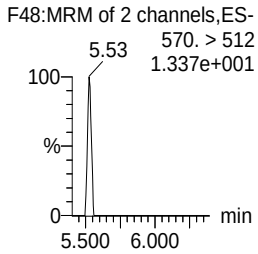

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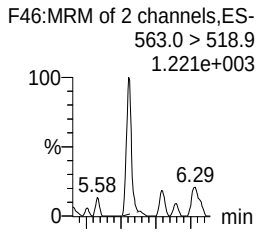

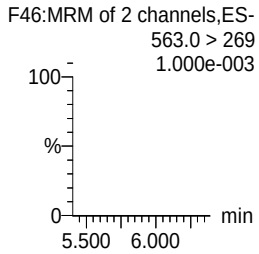

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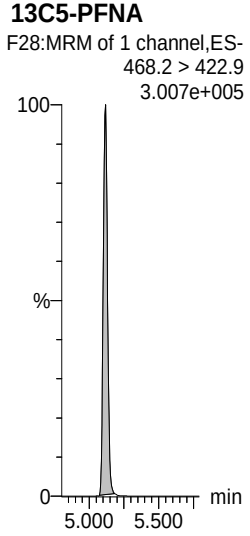
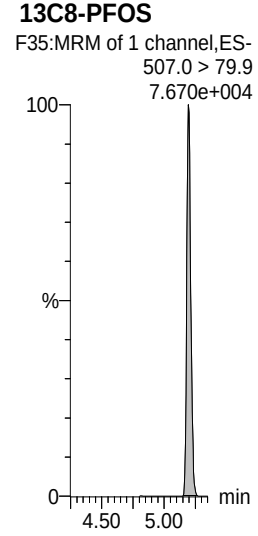


13C8-PFOS



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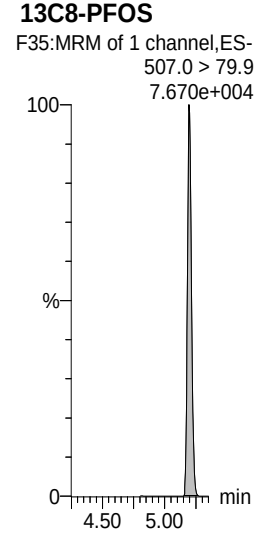

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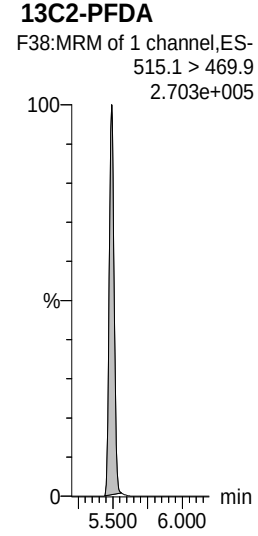

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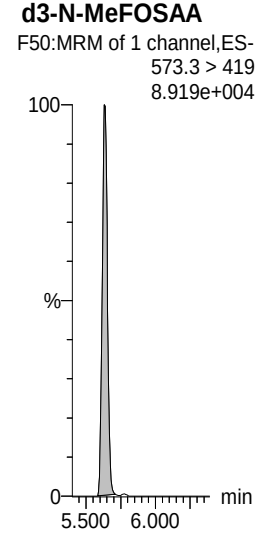

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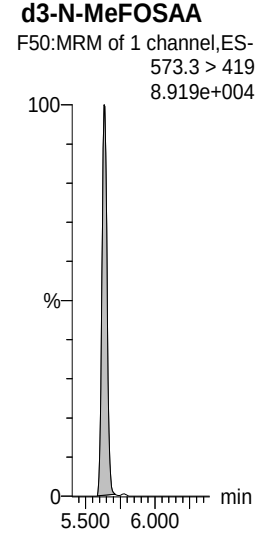

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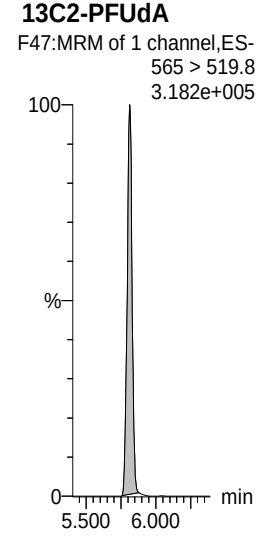

CGH 12/4/2018

MM 12/4/2018

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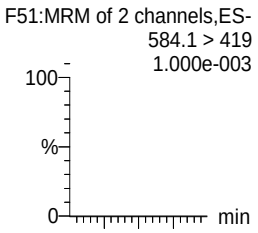
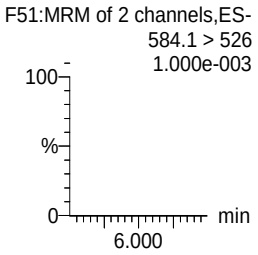
L-EtFOSAA





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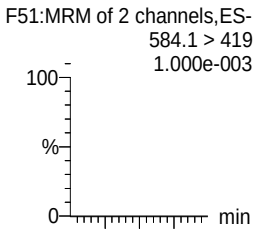

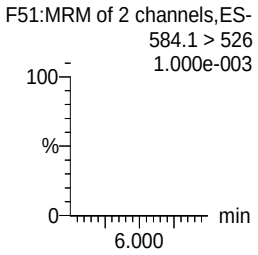

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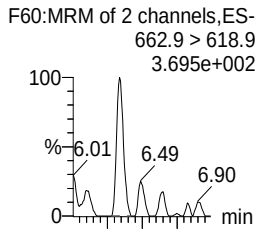
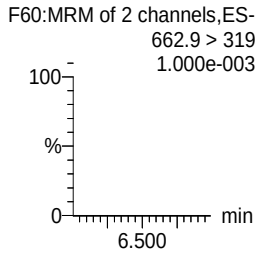
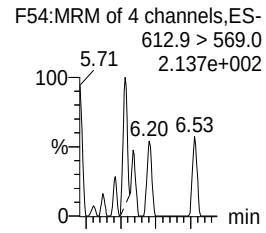
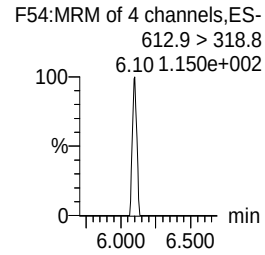




PFDoA





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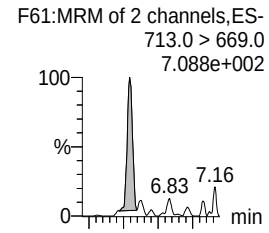

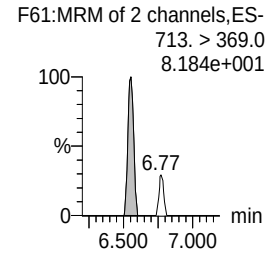

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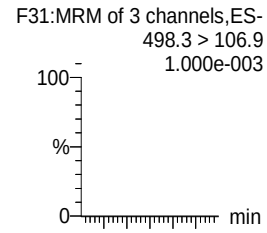

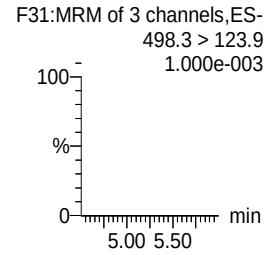

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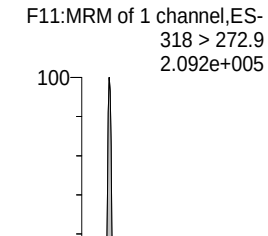

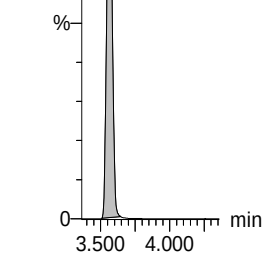

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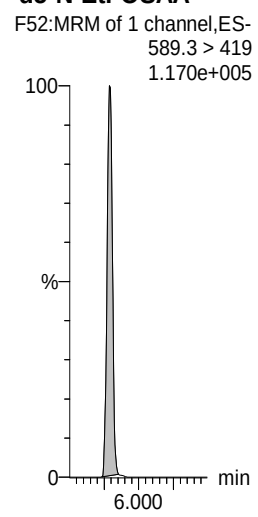
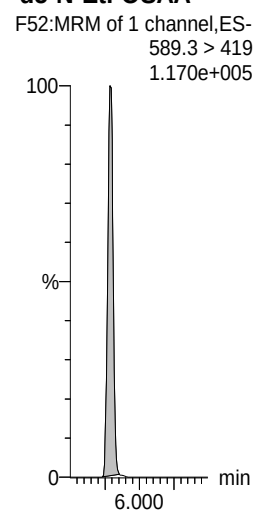
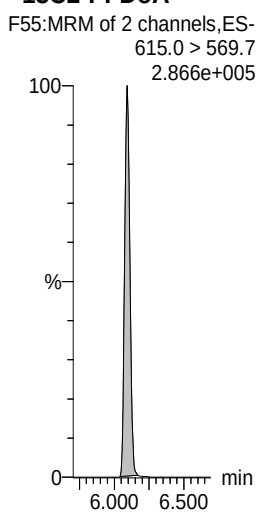


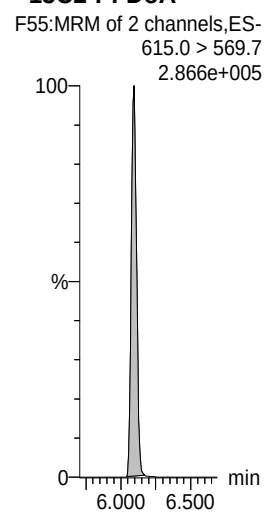
d5-N-EtFOSAA



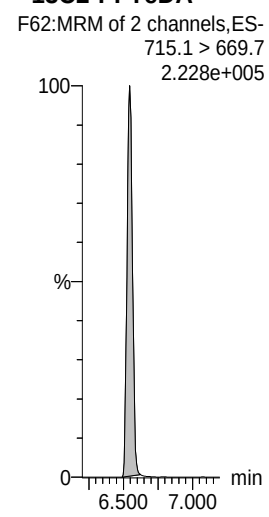
13C2-PFDoA



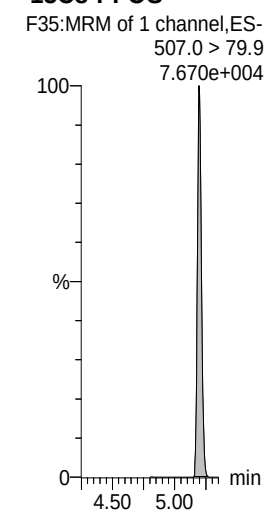
13C2-PFDoA



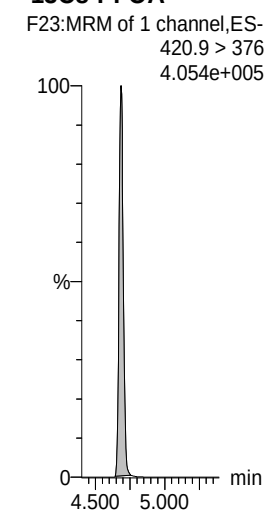
13C2-PFTeDA



13C8-PFOS



13C8-PFOA



CGH 12/4/2018

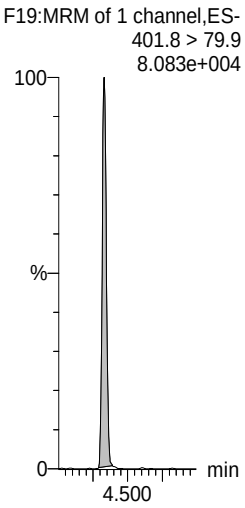
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-8.qld

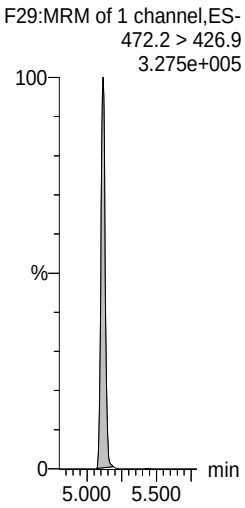
Last Altered: Tuesday, December 04, 2018 12:56:27 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:21:12 Pacific Standard Time

Name: 181203M1_8, Date: 03-Dec-2018, Time: 15:40:24, ID: 1803678-01 A1-MW-01-SA2 0.11182, Description: A1-MW-01-SA2

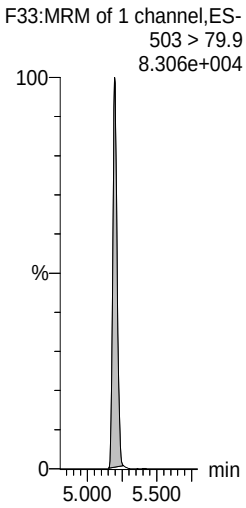
13C3-PFHxS



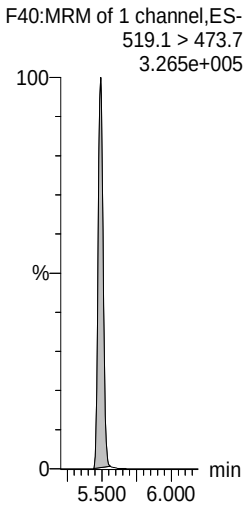
13C9-PFNA



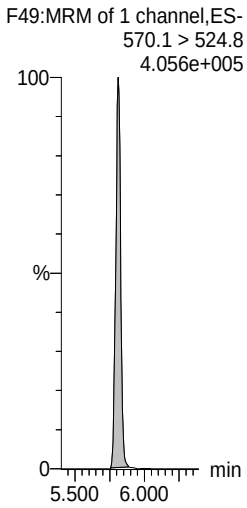
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-5.qld

Last Altered: Tuesday, December 04, 2018 12:37:28 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:39:01 Pacific Standard Time

Name: 181203M1_5, Date: 03-Dec-2018, Time: 15:08:39, ID: B8K0153-MS1 Matrix Spike 0.1068, Description: Matrix Spike

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	3	PFBS	299.0 > 79.7	3.95e3	1.15e3	0.107		3.00	3.00	43.0	199.7420		3.118	NO
2	5	PFHxA	313 > 269	2.95e4	4.49e3	0.107		3.56	3.56	32.9	295.2417		15.114	NO
3	7	PFHpA	363.0 > 318.9	7.71e3	6.29e3	0.107		4.20	4.20	15.3	123.2975		14.228	NO
4	8	L-PFHxS	398.9 > 79.6	2.54e3	1.04e3	0.107		4.33	4.33	30.4	144.3064		2.292	NO
5	68	Total PFHxS	398.9 > 79.6	2.54e3	1.04e3	0.107		4.58		30.4	144.3064			
6	11	L-PFOA	412.8 > 368.9	1.24e4	1.11e4	0.107		4.58	4.68	14.0	107.0826		3.274	NO
7	69	Total PFOA	412.8 > 368.9	1.24e4	1.11e4	0.107		4.97		14.0	107.0826			
8	38	13C3-PFBS	302. > 98.8	1.15e3	2.47e3	0.107	0.633	3.00	3.00	5.82	86.1233	73.6		
9	40	13C2-PFHxA	315 > 270	4.49e3	1.20e4	0.107	0.900	3.56	3.56	4.67	48.5476	103.7		
10	41	13C4-PFHpA	367.2 > 321.8	6.29e3	1.20e4	0.107	0.693	4.19	4.20	6.54	88.2998	75.4		
11	42	18O2-PFHxS	403.0 > 102.6	1.04e3	2.47e3	0.107	0.476	4.33	4.33	5.29	104.1863	89.0		
12	42	18O2-PFHxS	403.0 > 102.6	1.04e3	2.47e3	0.107	0.476	4.33	4.33	5.29	104.1863	89.0		
13	44	13C2-PFOA	414.9 > 369.7	1.11e4	1.62e4	0.107	0.873	4.68	4.68	8.58	92.0366	78.6		
14	44	13C2-PFOA	414.9 > 369.7	1.11e4	1.62e4	0.107	0.873	4.68	4.68	8.58	92.0366	78.6		
15	-1													
16	14	PFNA	463.0 > 418.8	9.82e3	1.06e4	0.107		5.11	5.11	11.5	97.8443		4.870	NO
17	16	L-PFOS	498.9 > 79.9	2.19e3	2.71e3	0.107		5.08	5.19	10.1	85.8204		2.010	NO
18	70	Total PFOS	498.9 > 79.9	2.19e3	2.71e3	0.107		5.46		10.1	85.8204			
19	18	PFDA	513 > 468.8	1.05e4	1.14e4	0.107		5.48	5.49	11.5	100.4505		6.305	NO
20	21	L-MeFOSAA	570 > 419	5.48e3	3.85e3	0.107		5.63	5.64	17.8	110.7174		2.466	NO
21	71	Total N-MeFOSAA	570. > 419	5.48e3	3.85e3	0.107		5.90		17.8	110.7174			
22	25	PFUdA	563.0 > 518.9	1.06e4	1.40e4	0.107		5.81	5.81	9.45	82.2735		11.215	NO
23	45	13C5-PFNA	468.2 > 422.9	1.06e4	1.17e4	0.107	1.006	5.11	5.12	11.4	105.8158	90.4		
24	47	13C8-PFOS	507.0 > 79.9	2.71e3	2.61e3	0.107	0.968	5.19	5.20	13.0	125.4547	107.2		
25	47	13C8-PFOS	507.0 > 79.9	2.71e3	2.61e3	0.107	0.968	5.19	5.20	13.0	125.4547	107.2		
26	48	13C2-PFDA	515.1 > 469.9	1.14e4	1.34e4	0.107	1.125	5.48	5.49	10.6	88.6398	75.7		
27	50	d3-N-MeFOSAA	573.3 > 419	3.85e3	1.63e4	0.107	0.329	5.63	5.63	2.96	84.2087	71.9		
28	50	d3-N-MeFOSAA	573.3 > 419	3.85e3	1.63e4	0.107	0.329	5.63	5.63	2.96	84.2087	71.9		
29	51	13C2-PFUdA	565 > 519.8	1.40e4	1.63e4	0.107	1.111	5.81	5.81	10.8	90.6323	77.4		
30	-1													
31	23	L-EtFOSAA	584.1 > 419	5.21e3	4.91e3	0.107		5.79	5.79	13.3	114.4462		1.465	NO
32	72	Total N-EtFOSAA	584.1 > 419	5.21e3	4.91e3	0.107		6.06		13.3	114.4462			
33	29	PFTrDA	662.9 > 618.9	1.32e4	1.24e4	0.107		6.32	6.33	13.2	102.0476		23.882	NO
34	27	PFDoA	612.9 > 569.0	1.23e4	1.24e4	0.107		6.08	6.09	12.4	87.9557		8.539	NO
35	30	PFTeDA	713.0 > 669.0	1.25e4	9.89e3	0.107		6.54	6.55	15.8	130.4906		14.291	NO

CGH 12/4/2018

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-5.qld

Last Altered: Tuesday, December 04, 2018 12:37:28 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:39:01 Pacific Standard Time

Name: 181203M1_5, Date: 03-Dec-2018, Time: 15:08:39, ID: B8K0153-MS1 Matrix Spike 0.1068, Description: Matrix Spike

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
36	73	TCDA	498.3>106.9			0.107		5.45						
37	61	13C5-PFHxA	318 > 272.9	1.20e4	1.20e4	0.107	1.000	3.56	3.56	12.5	117.0412	100.0		
38	52	d5-N-EtFOSAA	589.3 > 419	4.91e3	1.63e4	0.107	0.355	5.78	5.79	3.78	99.6385	85.1		
39	52	d5-N-EtFOSAA	589.3 > 419	4.91e3	1.63e4	0.107	0.355	5.78	5.79	3.78	99.6385	85.1		
40	53	13C2-PFDoA	615.0 > 569.7	1.24e4	1.34e4	0.107	0.993	6.08	6.09	11.7	109.8737	93.9		
41	53	13C2-PFDoA	615.0 > 569.7	1.24e4	1.34e4	0.107	0.993	6.08	6.09	11.7	109.8737	93.9		
42	55	13C2-PFTeDA	715.1 > 669.7	9.89e3	1.63e4	0.107	0.749	6.54	6.55	7.61	95.0859	81.2		
43	47	13C8-PFOS	507.0 > 79.9	2.71e3	2.61e3	0.107	0.968	5.19	5.20	13.0	125.4547	107.2		
44	63	13C8-PFOA	420.9 > 376	1.62e4	1.62e4	0.107	1.000	4.68	4.68	12.5	117.0412	100.0		
45	-1													
46	62	13C3-PFHxS	401.8 > 79.9	2.47e3	2.47e3	0.107	1.000	4.33	4.33	12.5	117.0412	100.0		
47	64	13C9-PFNA	472.2 > 426.9	1.17e4	1.17e4	0.107	1.000	5.11	5.11	12.5	117.0412	100.0		
48	65	13C4-PFOS	503 > 79.9	2.61e3	2.61e3	0.107	1.000	5.19	5.20	12.5	117.0412	100.0		
49	66	13C6-PFDA	519.1 > 473.7	1.34e4	1.34e4	0.107	1.000	5.48	5.49	12.5	117.0412	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	1.63e4	1.63e4	0.107	1.000	5.81	5.81	12.5	117.0412	100.0		

CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

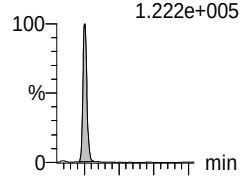
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-5.qld

Last Altered: Tuesday, December 04, 2018 12:37:28 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:39:01 Pacific Standard Time

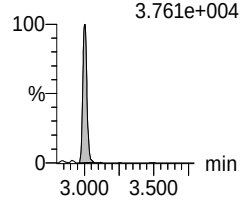
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_5, Date: 03-Dec-2018, Time: 15:08:39, ID: B8K0153-MS1 Matrix Spike 0.1068, Description: Matrix Spike

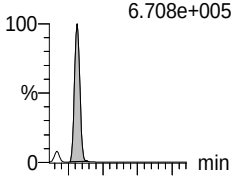
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
1.222e+005



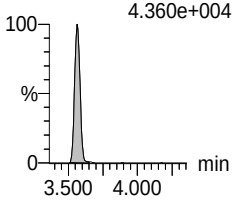
F7:MRM of 2 channels,ES-
299.0 > 99.0
3.761e+004



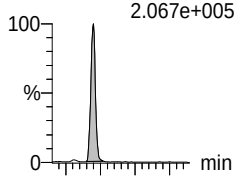
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
6.708e+005



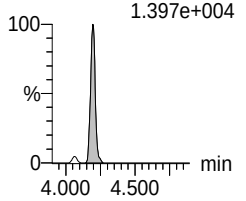
F9:MRM of 2 channels,ES-
313 > 118.9
4.360e+004



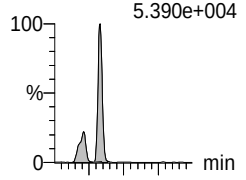
PFHpA
F16:MRM of 2 channels,ES-
363.0 > 318.9
2.067e+005



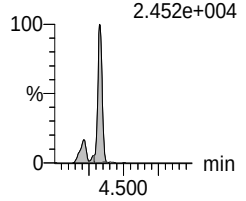
F16:MRM of 2 channels,ES-
363.0 > 169.0
1.397e+004



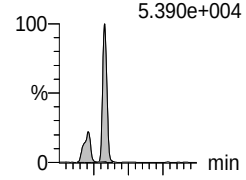
L-PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
5.390e+004



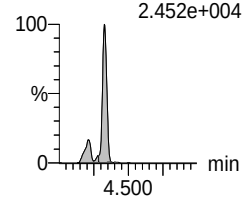
F18:MRM of 2 channels,ES-
398.9 > 99.0
2.452e+004



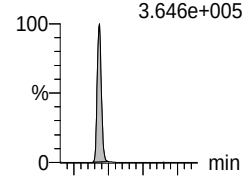
Total PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
5.390e+004



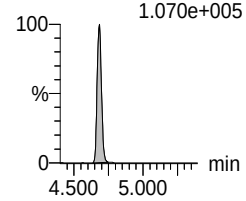
F18:MRM of 2 channels,ES-
398.9 > 99.0
2.452e+004



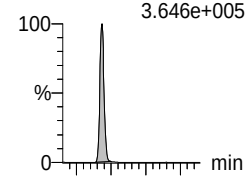
L-PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
3.646e+005



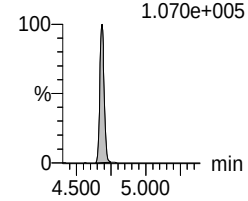
F21:MRM of 2 channels,ES-
412.8 > 169
1.070e+005



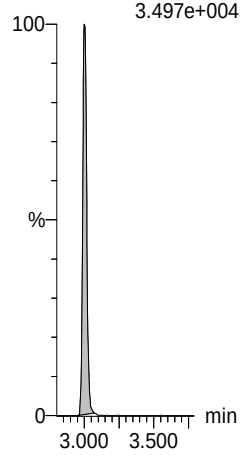
Total PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
3.646e+005



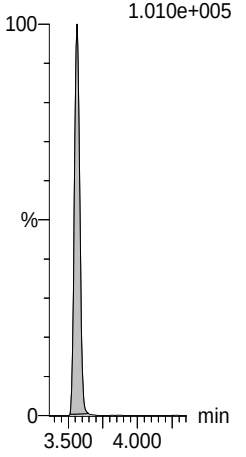
F21:MRM of 2 channels,ES-
412.8 > 169
1.070e+005



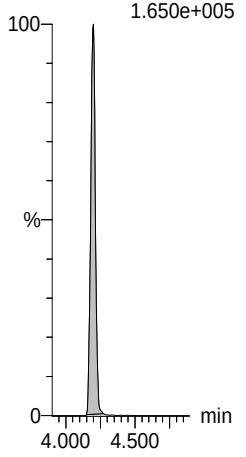
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.497e+004



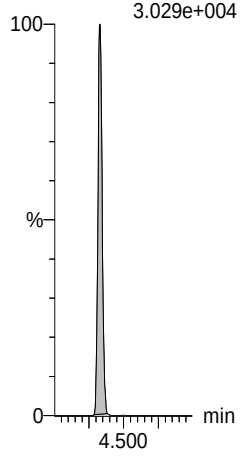
13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
1.010e+005



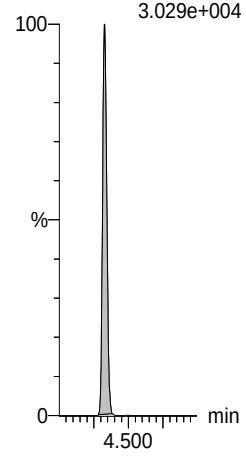
13C4-PFHpA
F17:MRM of 1 channel,ES-
367.2 > 321.8
1.650e+005



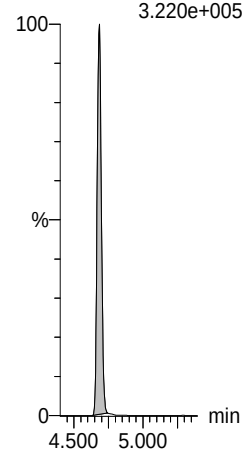
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
3.029e+004



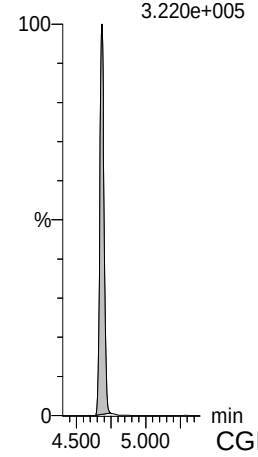
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
3.029e+004



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
3.220e+005



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
3.220e+005



CGH 12/4/2018

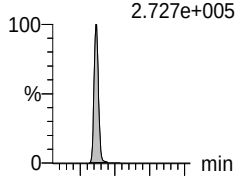
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-5.qld

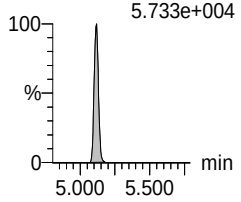
Last Altered: Tuesday, December 04, 2018 12:37:28 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:39:01 Pacific Standard Time

Name: 181203M1_5, Date: 03-Dec-2018, Time: 15:08:39, ID: B8K0153-MS1 Matrix Spike 0.1068, Description: Matrix Spike

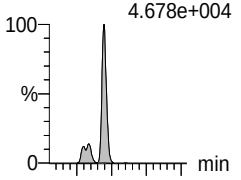
PFNA
F27:MRM of 2 channels,ES-
463.0 > 418.8
2.727e+005



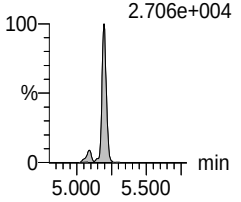
F27:MRM of 2 channels,ES-
463.0 > 219.0
5.733e+004



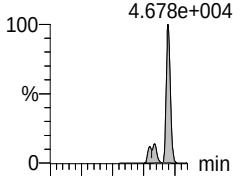
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
4.678e+004



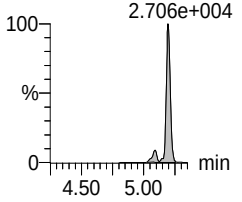
F32:MRM of 2 channels,ES-
498.9 > 99
2.706e+004



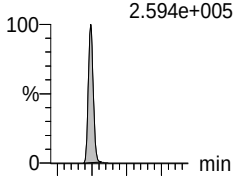
Total PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
4.678e+004



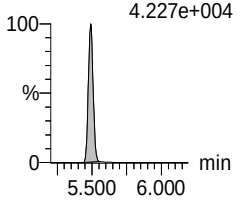
F32:MRM of 2 channels,ES-
498.9 > 99
2.706e+004



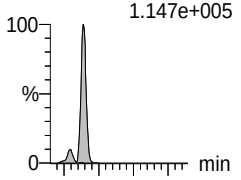
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
2.594e+005



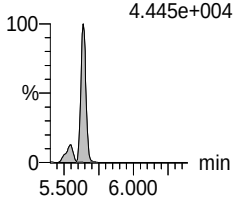
F37:MRM of 2 channels,ES-
513 > 219
4.227e+004



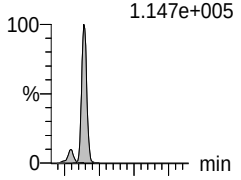
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
1.147e+005



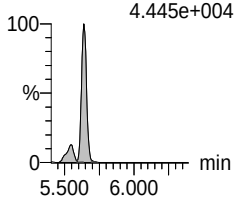
F48:MRM of 2 channels,ES-
570. > 512
4.445e+004



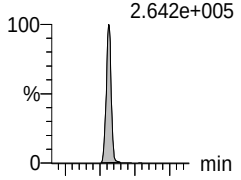
Total N-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
1.147e+005



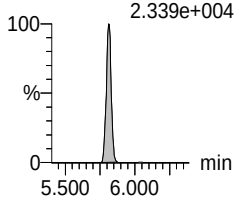
F48:MRM of 2 channels,ES-
570. > 512
4.445e+004



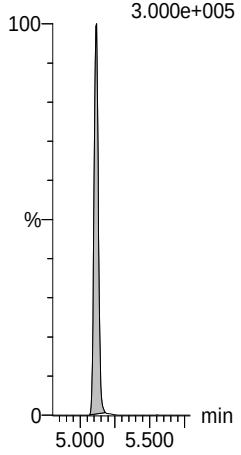
PFUdA
F46:MRM of 2 channels,ES-
563.0 > 518.9
2.642e+005



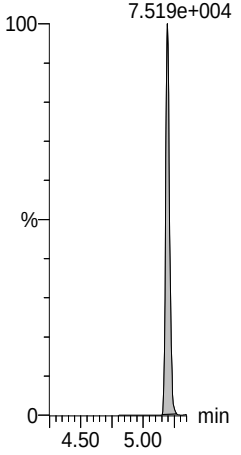
F46:MRM of 2 channels,ES-
563.0 > 269
2.339e+004



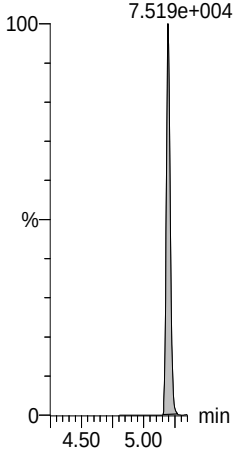
13C5-PFNA
F28:MRM of 1 channel,ES-
468.2 > 422.9
3.000e+005



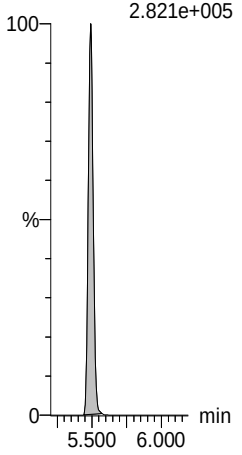
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
7.519e+004



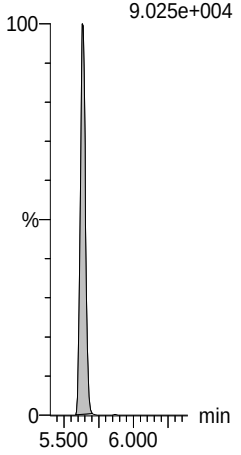
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
7.519e+004



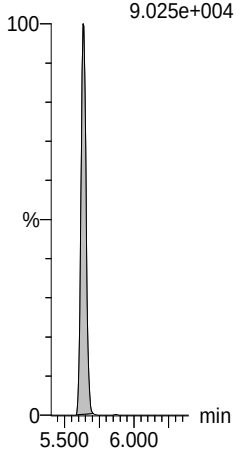
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
2.821e+005



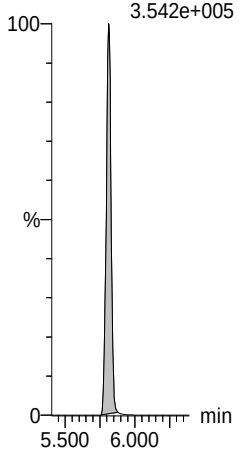
d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
9.025e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
9.025e+004



13C2-PFUdA
F47:MRM of 1 channel,ES-
565 > 519.8
3.542e+005



CGH 12/4/2018

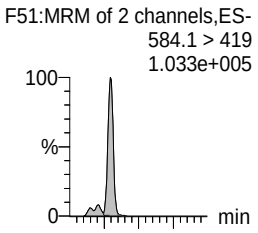
MM 12/4/2018

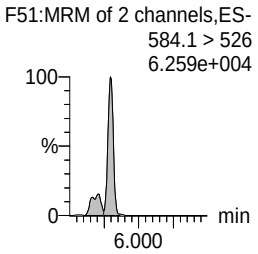
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-5.qld

Last Altered: Tuesday, December 04, 2018 12:37:28 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:39:01 Pacific Standard Time

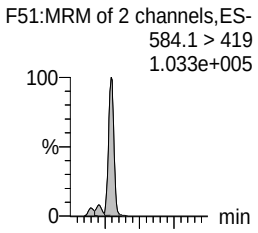
Name: 181203M1_5, Date: 03-Dec-2018, Time: 15:08:39, ID: B8K0153-MS1 Matrix Spike 0.1068, Description: Matrix Spike

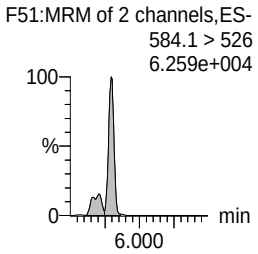
L-EtFOSAA



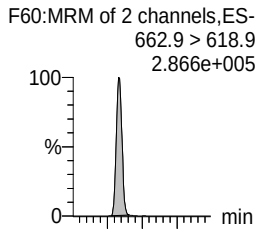


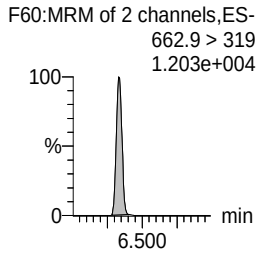
Total N-EtFOSAA



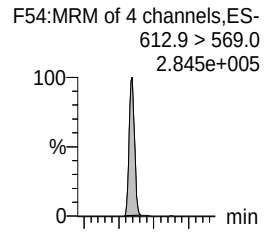


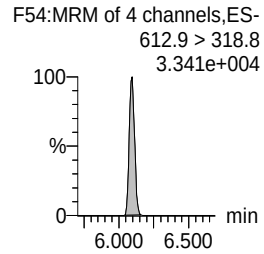
PFTrDA



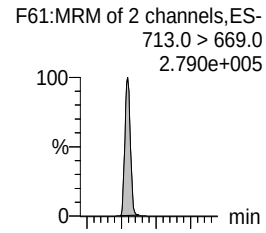


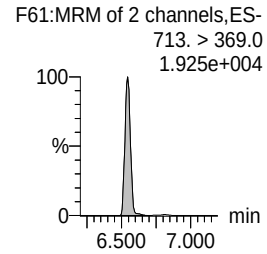
PFDoA



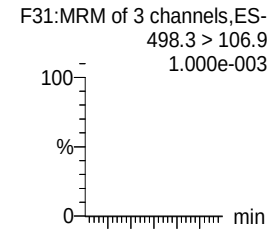


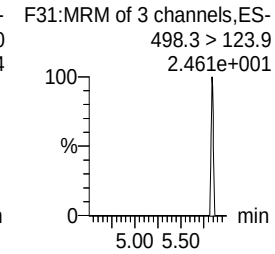
PFTeDA



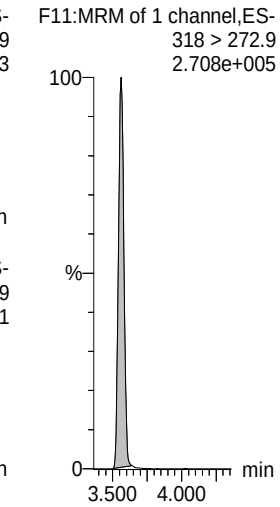


TCDA

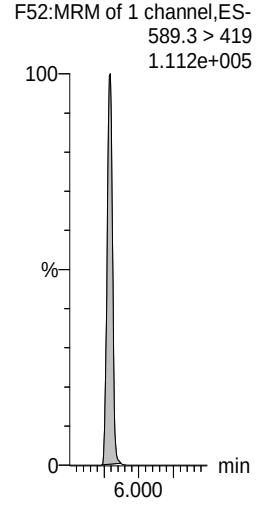




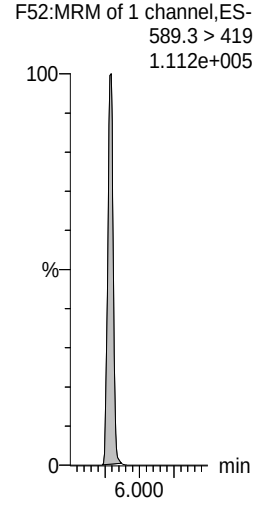
13C5-PFHxA



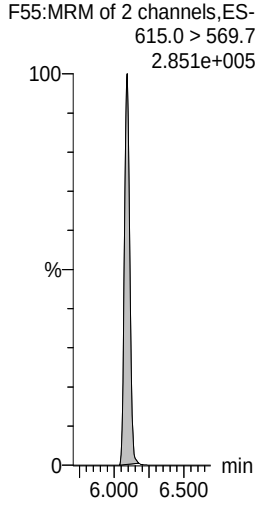
d5-N-EtFOSAA



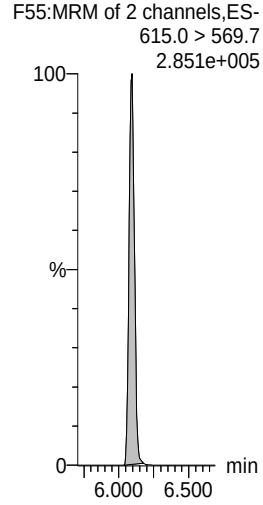
d5-N-EtFOSAA



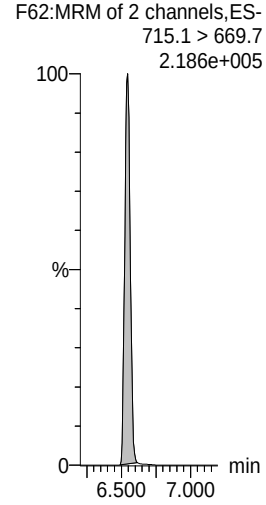
13C2-PFDoA



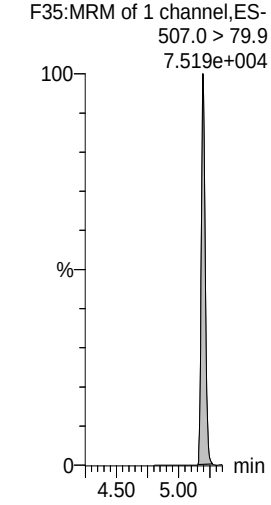
13C2-PFDoA



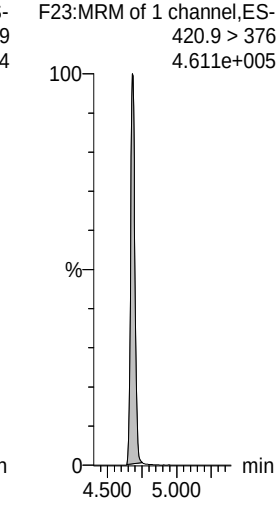
13C2-PFTeDA



13C8-PFOS



13C8-PFOA



CGH 12/4/2018

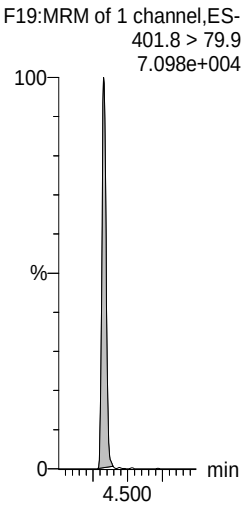
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-5.qld

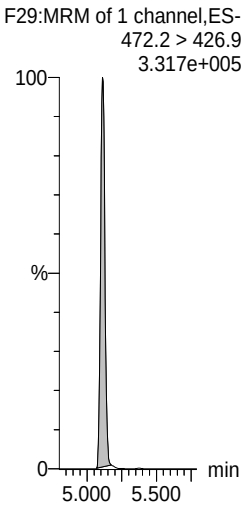
Last Altered: Tuesday, December 04, 2018 12:37:28 Pacific Standard Time
Printed: Tuesday, December 04, 2018 12:39:01 Pacific Standard Time

Name: 181203M1_5, Date: 03-Dec-2018, Time: 15:08:39, ID: B8K0153-MS1 Matrix Spike 0.1068, Description: Matrix Spike

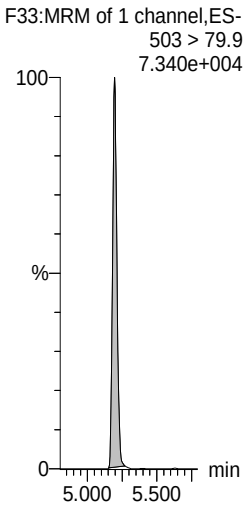
13C3-PFHxS



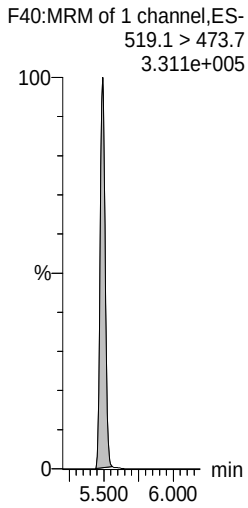
13C9-PFNA



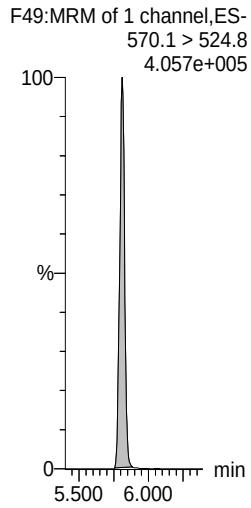
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 12/4/2018

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-21.qld

Last Altered: Tuesday, December 04, 2018 16:01:42 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:02:48 Pacific Standard Time

Name: 181204M1_21, Date: 04-Dec-2018, Time: 15:06:37, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	3	PFBS	299.0 > 79.7	3.40e3	1.01e3	0.111		2.96	2.96	42.2	177.4487		3.036	NO
2	5	PFHxA	313 > 269	2.18e4	3.21e3	0.111		3.52	3.53	34.0	313.7934		15.290	NO
3	7	PFHpA	363.0 > 318.9	5.62e3	4.77e3	0.111		4.17	4.17	14.7	100.0927		12.102	NO
4	8	L-PFHxS	398.9 > 79.6	2.14e3	9.41e2	0.111		4.30	4.30	28.5	119.1372		2.260	NO
5	68	Total PFHxS	398.9 > 79.6	2.14e3	9.41e2	0.111		4.58		28.5	119.1372			
6	11	L-PFOA	412.8 > 368.9	9.67e3	8.28e3	0.111		4.58	4.65	14.6	89.7680		3.296	NO
7	69	Total PFOA	412.8 > 368.9	9.67e3	8.28e3	0.111		4.97		14.6	89.7680			
8	38	13C3-PFBS	302. > 98.8	1.01e3	2.19e3	0.111	0.500	3.00	2.96	5.75	103.4610	92.1		
9	40	13C2-PFHxA	315 > 270	3.21e3	8.47e3	0.111	0.973	3.56	3.52	4.73	43.7083	97.2		
10	41	13C4-PFHpA	367.2 > 321.8	4.77e3	8.47e3	0.111	0.514	4.19	4.17	7.04	123.1284	109.6		
11	42	18O2-PFHxS	403.0 > 102.6	9.41e2	2.19e3	0.111	0.458	4.33	4.30	5.38	105.7330	94.1		
12	42	18O2-PFHxS	403.0 > 102.6	9.41e2	2.19e3	0.111	0.458	4.33	4.30	5.38	105.7330	94.1		
13	44	13C2-PFOA	414.9 > 369.7	8.28e3	1.24e4	0.111	0.691	4.68	4.65	8.34	108.4779	96.5		
14	44	13C2-PFOA	414.9 > 369.7	8.28e3	1.24e4	0.111	0.691	4.68	4.65	8.34	108.4779	96.5		
15	-1													
16	14	PFNA	463.0 > 418.8	7.77e3	8.34e3	0.111		5.11	5.09	11.6	85.9772		4.411	NO
17	16	L-PFOS	498.9 > 79.9	1.77e3	2.25e3	0.111		5.17	5.17	9.83	83.9461		2.061	NO
18	70	Total PFOS	498.9 > 79.9	1.77e3	2.25e3	0.111		5.46		9.83	83.9461			
19	18	PFDA	513 > 468.8	7.75e3	8.06e3	0.111		5.48	5.47	12.0	87.5001		5.814	NO
20	21	L-MeFOSAA	570 > 419	3.75e3	2.43e3	0.111		5.63	5.62	19.3	81.6313		2.283	NO
21	71	Total N-MeFOSAA	570. > 419	3.75e3	2.43e3	0.111		5.90		19.3	81.6313			
22	25	PFUdA	563.0 > 518.9	6.61e3	8.92e3	0.111		5.81	5.79	9.27	82.1021		9.614	NO
23	45	13C5-PFNA	468.2 > 422.9	8.34e3	8.88e3	0.111	1.008	5.11	5.09	11.7	104.6689	93.1		
24	47	13C8-PFOS	507.0 > 79.9	2.25e3	2.38e3	0.111	1.056	5.19	5.17	11.8	100.6091	89.5		
25	47	13C8-PFOS	507.0 > 79.9	2.25e3	2.38e3	0.111	1.056	5.19	5.17	11.8	100.6091	89.5		
26	48	13C2-PFDA	515.1 > 469.9	8.06e3	1.12e4	0.111	0.936	5.48	5.47	9.01	86.5137	77.0		
27	50	d3-N-MeFOSAA	573.3 > 419	2.43e3	1.29e4	0.111	0.217	5.63	5.61	2.35	97.1886	86.5		
28	50	d3-N-MeFOSAA	573.3 > 419	2.43e3	1.29e4	0.111	0.217	5.63	5.61	2.35	97.1886	86.5		
29	51	13C2-PFUdA	565 > 519.8	8.92e3	1.29e4	0.111	0.980	5.81	5.79	8.62	79.0581	70.3		
30	-1													
31	23	L-EtFOSAA	584.1 > 419	3.23e3	3.41e3	0.111		5.79	5.78	11.8	84.2625		1.295	NO
32	72	Total N-EtFOSAA	584.1 > 419	3.23e3	3.41e3	0.111		6.06		11.8	84.2625			
33	29	PFTrDA	662.9 > 618.9	8.87e3	8.07e3	0.111		6.32	6.32	13.7	91.9985		25.358	NO
34	27	PFDoA	612.9 > 569.0	8.76e3	8.07e3	0.111		6.08	6.07	13.6	92.5957		9.827	NO
35	30	PFTeDA	713.0 > 669.0	8.97e3	6.89e3	0.111		6.54	6.53	16.3	90.9994		13.486	NO

CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-21.qld

Last Altered: Tuesday, December 04, 2018 16:01:42 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:02:48 Pacific Standard Time

Name: 181204M1_21, Date: 04-Dec-2018, Time: 15:06:37, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
36	73	TCDA	498.3>106.9			0.111		5.45						
37	61	13C5-PFHxA	318 > 272.9	8.47e3	8.47e3	0.111	1.000	3.56	3.52	12.5	112.3899	100.0		
38	52	d5-N-EtFOSAA	589.3 > 419	3.41e3	1.29e4	0.111	0.304	5.78	5.77	3.30	97.4190	86.7		
39	52	d5-N-EtFOSAA	589.3 > 419	3.41e3	1.29e4	0.111	0.304	5.78	5.77	3.30	97.4190	86.7		
40	53	13C2-PFDoA	615.0 > 569.7	8.07e3	1.12e4	0.111	1.033	6.08	6.07	9.02	78.4857	69.8		
41	53	13C2-PFDoA	615.0 > 569.7	8.07e3	1.12e4	0.111	1.033	6.08	6.07	9.02	78.4857	69.8		
42	55	13C2-PFTeDA	715.1 > 669.7	6.89e3	1.29e4	0.111	0.676	6.54	6.53	6.65	88.5575	78.8		
43	47	13C8-PFOS	507.0 > 79.9	2.25e3	2.38e3	0.111	1.056	5.19	5.17	11.8	100.6091	89.5		
44	63	13C8-PFOA	420.9 > 376	1.24e4	1.24e4	0.111	1.000	4.68	4.65	12.5	112.3899	100.0		
45	-1													
46	62	13C3-PFHxS	401.8 > 79.9	2.19e3	2.19e3	0.111	1.000	4.33	4.30	12.5	112.3899	100.0		
47	64	13C9-PFNA	472.2 > 426.9	8.88e3	8.88e3	0.111	1.000	5.11	5.09	12.5	112.3899	100.0		
48	65	13C4-PFOS	503 > 79.9	2.38e3	2.38e3	0.111	1.000	5.19	5.17	12.5	112.3899	100.0		
49	66	13C6-PFDA	519.1 > 473.7	1.12e4	1.12e4	0.111	1.000	5.48	5.47	12.5	112.3899	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	1.29e4	1.29e4	0.111	1.000	5.81	5.79	12.5	112.3899	100.0		

CGH 12/4/2018

MM 12/4/2018

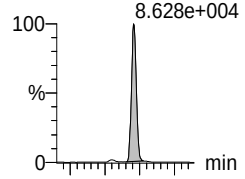
Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-21.qld

Last Altered: Tuesday, December 04, 2018 16:01:42 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:02:48 Pacific Standard Time

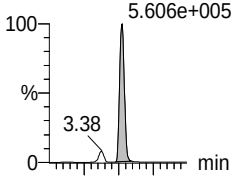
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_21, Date: 04-Dec-2018, Time: 15:06:37, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

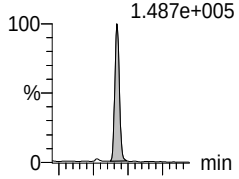
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
8.628e+004



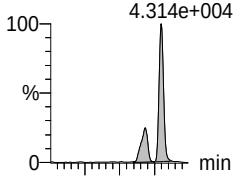
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
5.606e+005



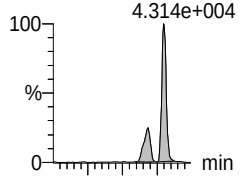
PFHpA
F16:MRM of 2 channels,ES-
363.0 > 318.9
1.487e+005



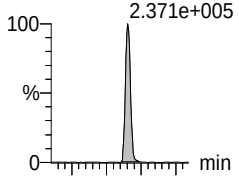
L-PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
4.314e+004



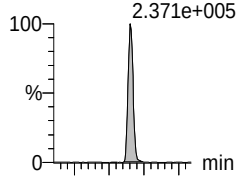
Total PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
4.314e+004



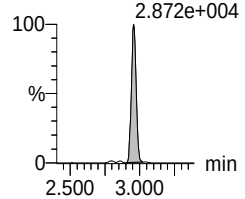
L-PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
2.371e+005



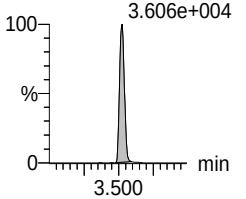
Total PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
2.371e+005



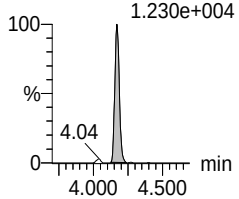
F7:MRM of 2 channels,ES-
299.0 > 99.0
2.872e+004



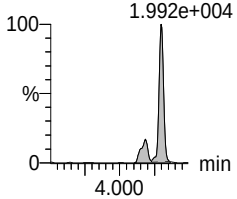
F9:MRM of 2 channels,ES-
313 > 118.9
3.606e+004



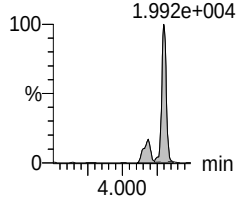
F16:MRM of 2 channels,ES-
363.0 > 169.0
1.230e+004



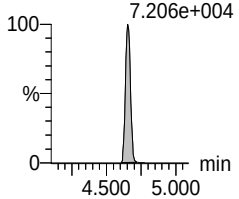
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.992e+004



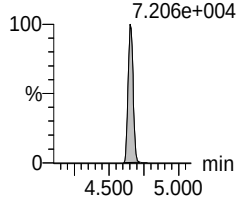
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.992e+004



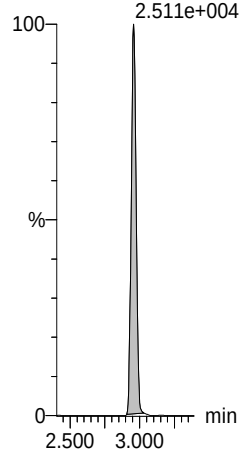
F21:MRM of 2 channels,ES-
412.8 > 169
7.206e+004



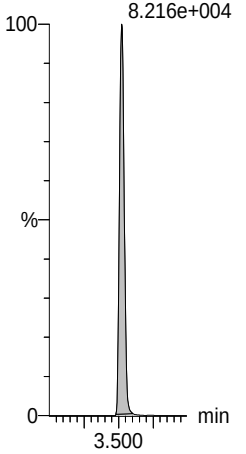
F21:MRM of 2 channels,ES-
412.8 > 169
7.206e+004



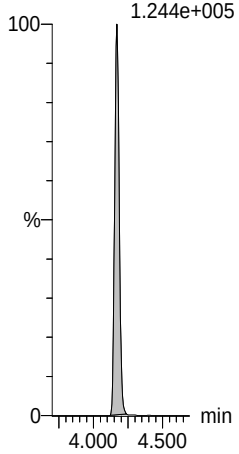
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.511e+004



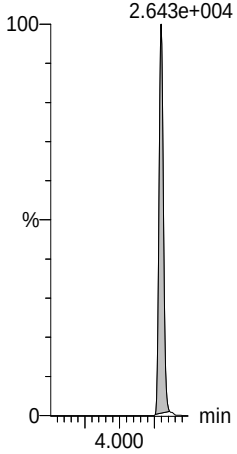
13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
8.216e+004



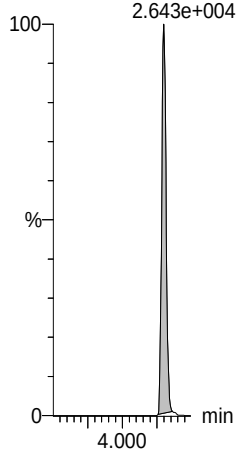
13C4-PFHpA
F17:MRM of 1 channel,ES-
367.2 > 321.8
1.244e+005



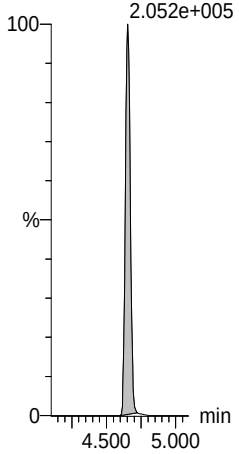
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.643e+004



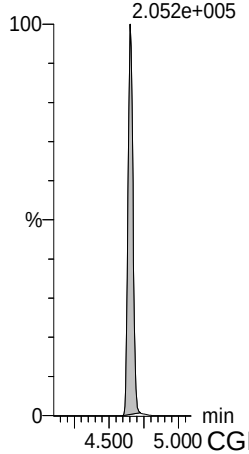
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.643e+004



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
2.052e+005



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
2.052e+005



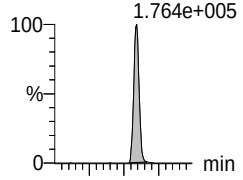
CGH 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-21.qld

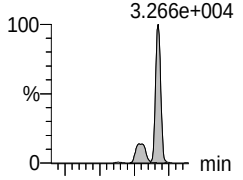
Last Altered: Tuesday, December 04, 2018 16:01:42 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:02:48 Pacific Standard Time

Name: 181204M1_21, Date: 04-Dec-2018, Time: 15:06:37, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

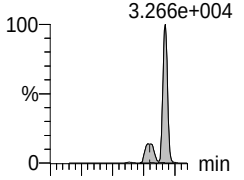
PFNA
F27:MRM of 2 channels,ES-
463.0 > 418.8
1.764e+005



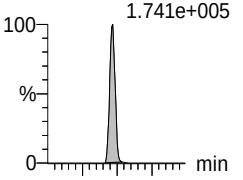
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
3.266e+004



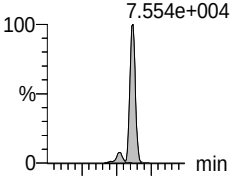
Total PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
3.266e+004



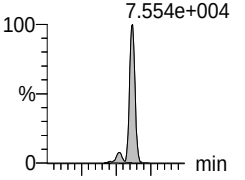
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
1.741e+005



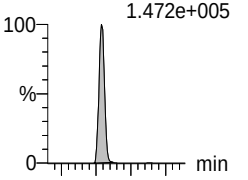
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
7.554e+004



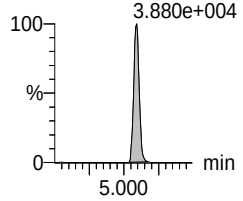
Total N-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
7.554e+004



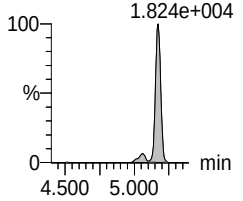
PFUdA
F46:MRM of 2 channels,ES-
563.0 > 518.9
1.472e+005



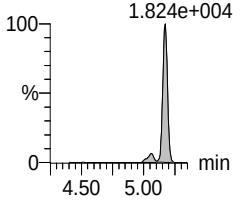
F27:MRM of 2 channels,ES-
463.0 > 219.0
3.880e+004



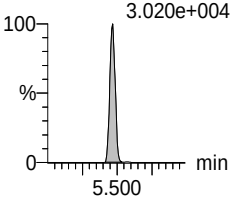
F32:MRM of 2 channels,ES-
498.9 > 99
1.824e+004



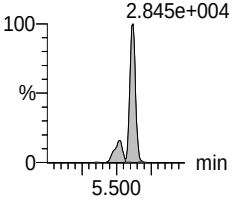
F32:MRM of 2 channels,ES-
498.9 > 99
1.824e+004



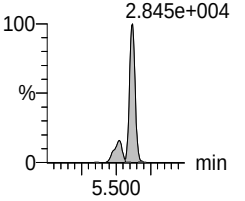
F37:MRM of 2 channels,ES-
513 > 219
3.020e+004



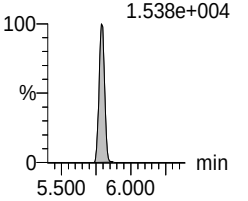
F48:MRM of 2 channels,ES-
570. > 512
2.845e+004



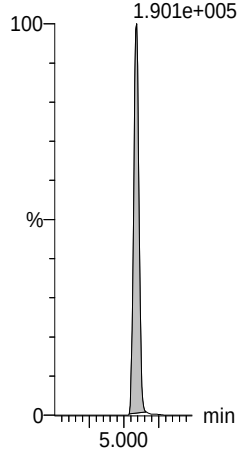
F48:MRM of 2 channels,ES-
570. > 512
2.845e+004



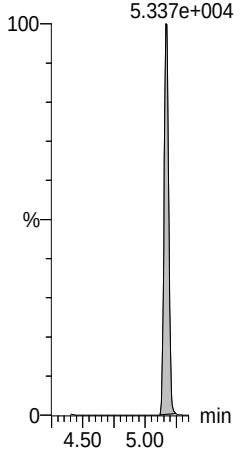
F46:MRM of 2 channels,ES-
563.0 > 269
1.538e+004



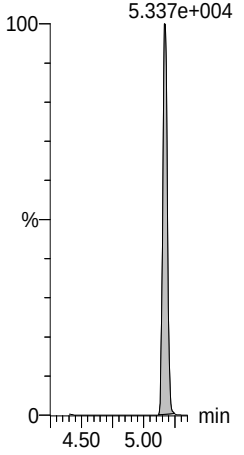
13C5-PFNA
F28:MRM of 1 channel,ES-
468.2 > 422.9
1.901e+005



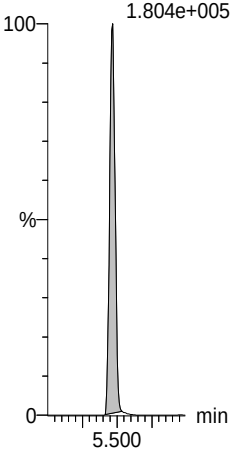
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
5.337e+004



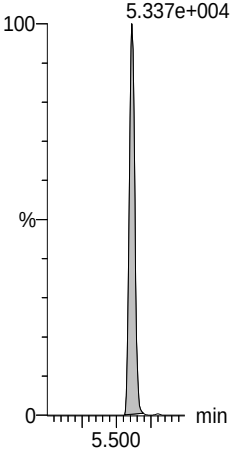
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
5.337e+004



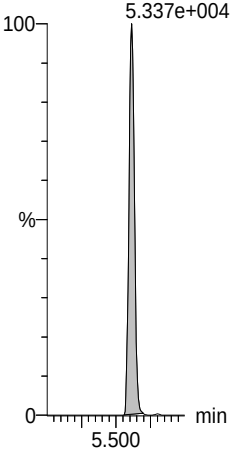
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
1.804e+005



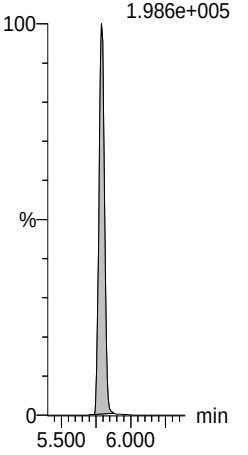
d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
5.337e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
5.337e+004



13C2-PFUdA
F47:MRM of 1 channel,ES-
565 > 519.8
1.986e+005



CGH 12/4/2018

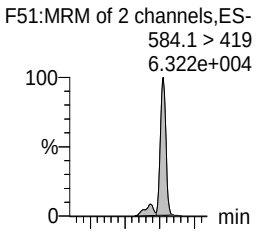
MM 12/4/2018

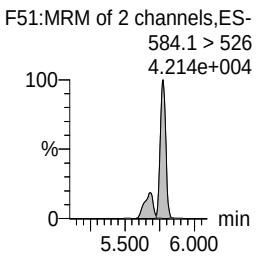
Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-21.qld

Last Altered: Tuesday, December 04, 2018 16:01:42 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:02:48 Pacific Standard Time

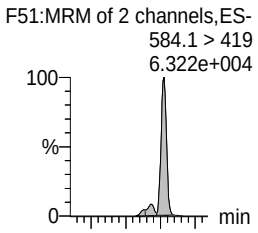
Name: 181204M1_21, Date: 04-Dec-2018, Time: 15:06:37, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

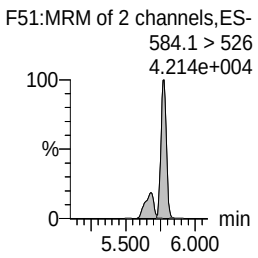
L-EtFOSAA



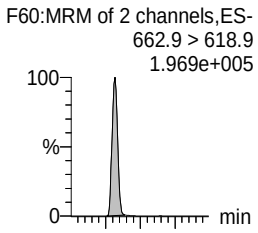


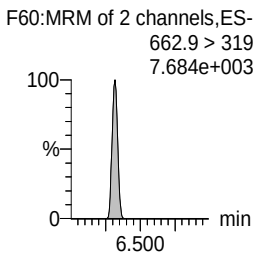
Total N-EtFOSAA



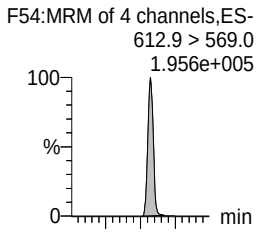


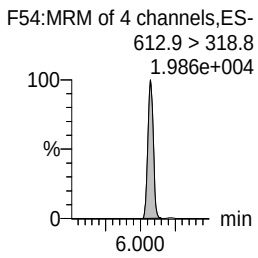
PFTrDA



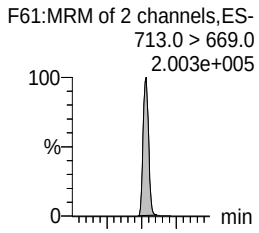


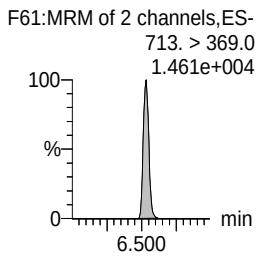
PFDoA



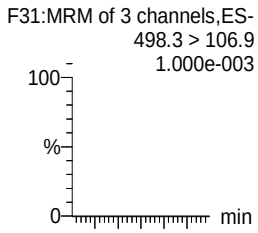


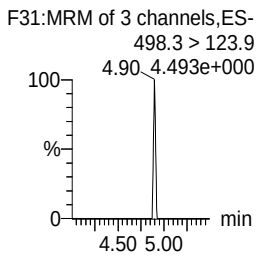
PFTeDA



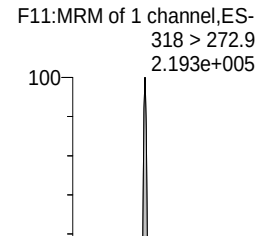


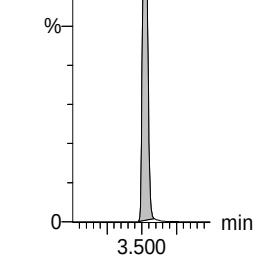
TCDA



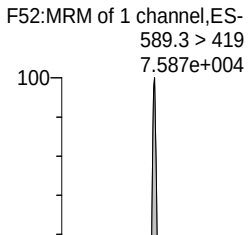


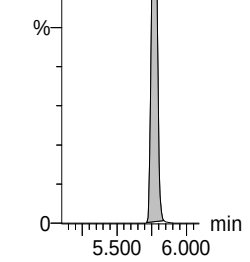
13C5-PFHxA



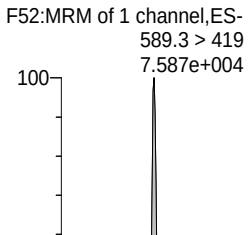


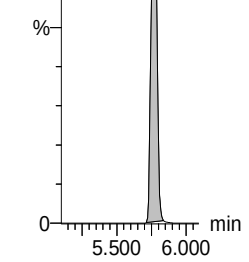
d5-N-EtFOSAA



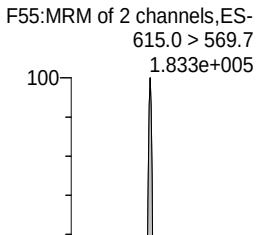


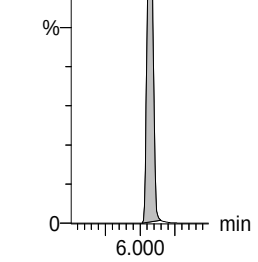
d5-N-EtFOSAA



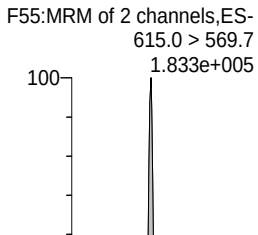


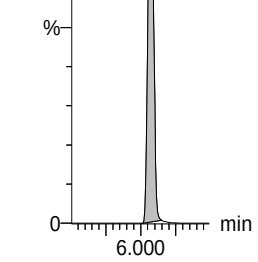
13C2-PFDoA



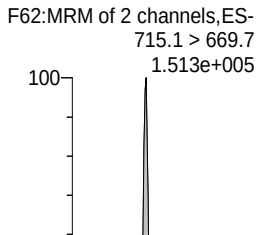


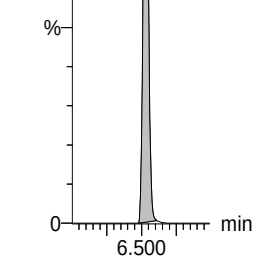
13C2-PFDoA



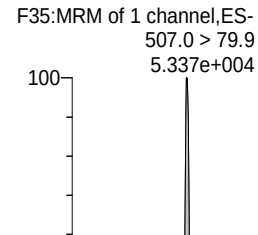


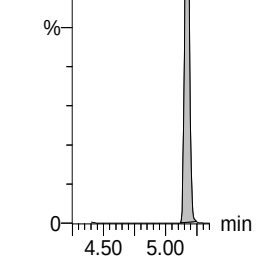
13C2-PFTeDA



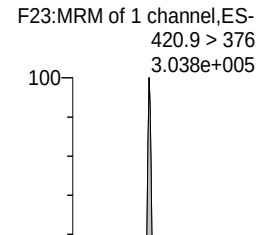


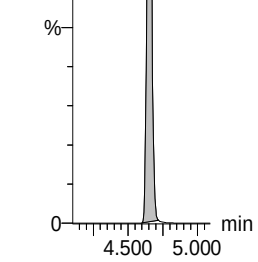
13C8-PFOS





13C8-PFOA





CGH 12/4/2018

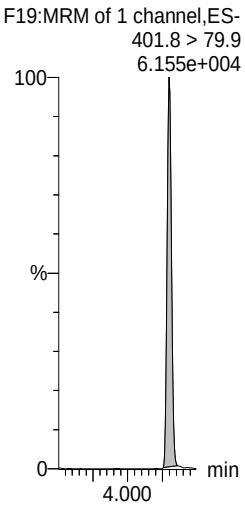
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-21.qld

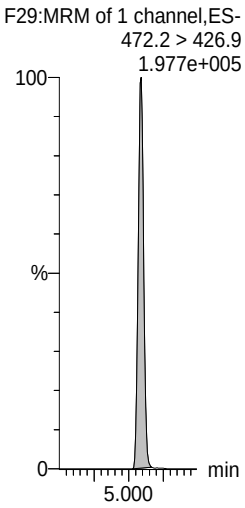
Last Altered: Tuesday, December 04, 2018 16:01:42 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:02:48 Pacific Standard Time

Name: 181204M1_21, Date: 04-Dec-2018, Time: 15:06:37, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

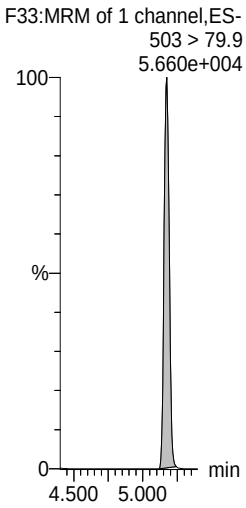
13C3-PFHxS



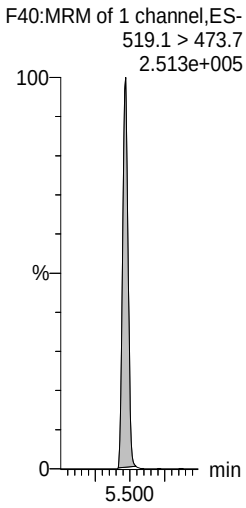
13C9-PFNA



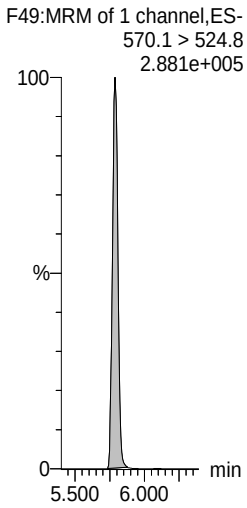
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-9.qld

Last Altered: Tuesday, December 04, 2018 16:08:31 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:10:17 Pacific Standard Time

Name: 181203M1_9, Date: 03-Dec-2018, Time: 15:51:02, ID: 1803678-02 A1-MW-42-SA2 0.11781, Description: A1-MW-42-SA2

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	3	PFBS	299.0 > 79.7	5.89e3	1.07e3	0.118		3.00	3.00	68.6	289.0925		3.047	NO
2	5	PFHxA	313 > 269	4.06e4	2.80e3	0.118		3.56	3.56	72.6	596.3460		15.002	NO
3	7	PFHpA	363.0 > 318.9	1.08e3	3.79e3	0.118		4.20	4.20	3.57	26.0106		14.560	NO
4	8	L-PFHxS	398.9 > 79.6	2.55e3	9.72e2	0.118		4.33	4.33	32.8	140.8849		2.278	NO
5	68	Total PFHxS	398.9 > 79.6	2.55e3	9.72e2	0.118		4.58		32.8	140.8849			
6	11	L-PFOA	412.8 > 368.9	2.07e3	6.35e3	0.118		4.58	4.68	4.08	28.0598		2.800	NO
7	69	Total PFOA	412.8 > 368.9	2.07e3	6.35e3	0.118		4.97		4.08	28.0598			
8	38	13C3-PFBS	302. > 98.8	1.07e3	2.35e3	0.118	0.633	3.00	3.00	5.71	76.5536	72.2		
9	40	13C2-PFHxA	315 > 270	2.80e3	7.17e3	0.118	0.900	3.56	3.56	4.88	45.9935	108.4		
10	41	13C4-PFHpA	367.2 > 321.8	3.79e3	7.17e3	0.118	0.693	4.19	4.20	6.60	80.8316	76.2		
11	42	18O2-PFHxS	403.0 > 102.6	9.72e2	2.35e3	0.118	0.476	4.33	4.33	5.18	92.3792	87.1		
12	42	18O2-PFHxS	403.0 > 102.6	9.72e2	2.35e3	0.118	0.476	4.33	4.33	5.18	92.3792	87.1		
13	44	13C2-PFOA	414.9 > 369.7	6.35e3	1.02e4	0.118	0.873	4.68	4.68	7.80	75.8674	71.5		
14	44	13C2-PFOA	414.9 > 369.7	6.35e3	1.02e4	0.118	0.873	4.68	4.68	7.80	75.8674	71.5		
15	-1													
16	14	PFNA	463.0 > 418.8		6.34e3	0.118		5.11						
17	16	L-PFOS	498.9 > 79.9	2.19e1	2.46e3	0.118		5.08	5.10	0.111	1.3348		1.865	NO
18	70	Total PFOS	498.9 > 79.9	2.19e1	2.46e3	0.118		5.46		0.111	1.3348			
19	18	PFDA	513 > 468.8		6.98e3	0.118		5.48						
20	21	L-MeFOSAA	570 > 419		3.43e3	0.118		5.63						
21	71	Total N-MeFOSAA	570. > 419	0.00e0	3.43e3	0.118		5.90		0.000				
22	25	PFUdA	563.0 > 518.9		9.40e3	0.118		5.81						
23	45	13C5-PFNA	468.2 > 422.9	6.34e3	7.80e3	0.118	1.006	5.11	5.12	10.2	85.7225	80.8		
24	47	13C8-PFOS	507.0 > 79.9	2.46e3	2.52e3	0.118	0.968	5.19	5.20	12.2	106.8910	100.7		
25	47	13C8-PFOS	507.0 > 79.9	2.46e3	2.52e3	0.118	0.968	5.19	5.20	12.2	106.8910	100.7		
26	48	13C2-PFDA	515.1 > 469.9	6.98e3	9.69e3	0.118	1.125	5.48	5.49	9.00	67.9238	64.0		
27	50	d3-N-MeFOSAA	573.3 > 419	3.43e3	1.27e4	0.118	0.329	5.63	5.63	3.39	87.3936	82.4		
28	50	d3-N-MeFOSAA	573.3 > 419	3.43e3	1.27e4	0.118	0.329	5.63	5.63	3.39	87.3936	82.4		
29	51	13C2-PFUdA	565 > 519.8	9.40e3	1.27e4	0.118	1.111	5.81	5.81	9.27	70.8473	66.8		
30	-1													
31	23	L-EtFOSAA	584.1 > 419		4.50e3	0.118		5.79						
32	72	Total N-EtFOSAA	584.1 > 419	0.00e0	4.50e3	0.118		6.06		0.000				
33	29	PFTrDA	662.9 > 618.9		9.17e3	0.118		6.32						
34	27	PFDoA	612.9 > 569.0	7.58e0	9.17e3	0.118		6.08	6.09	0.0103	0.0723		12.024	NO
35	30	PFTeDA	713.0 > 669.0		8.19e3	0.118		6.54						

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-9.qld

Last Altered: Tuesday, December 04, 2018 16:08:31 Pacific Standard Time
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Name: 181203M1_9, Date: 03-Dec-2018, Time: 15:51:02, ID: 1803678-02 A1-MW-42-SA2 0.11781, Description: A1-MW-42-SA2

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
36	73	TCDA	498.3>106.9			0.118		5.45						
37	61	13C5-PFHxA	318 > 272.9	7.17e3	7.17e3	0.118	1.000	3.56	3.56	12.5	106.1030	100.0		
38	52	d5-N-EtFOSAA	589.3 > 419	4.50e3	1.27e4	0.118	0.355	5.78	5.79	4.44	106.0508	100.0		
39	52	d5-N-EtFOSAA	589.3 > 419	4.50e3	1.27e4	0.118	0.355	5.78	5.79	4.44	106.0508	100.0		
40	53	13C2-PFDoA	615.0 > 569.7	9.17e3	9.69e3	0.118	0.993	6.08	6.09	11.8	101.1884	95.4		
41	53	13C2-PFDoA	615.0 > 569.7	9.17e3	9.69e3	0.118	0.993	6.08	6.09	11.8	101.1884	95.4		
42	55	13C2-PFTeDA	715.1 > 669.7	8.19e3	1.27e4	0.118	0.749	6.54	6.55	8.08	91.5328	86.3		
43	47	13C8-PFOS	507.0 > 79.9	2.46e3	2.52e3	0.118	0.968	5.19	5.20	12.2	106.8910	100.7		
44	63	13C8-PFOA	420.9 > 376	1.02e4	1.02e4	0.118	1.000	4.68	4.68	12.5	106.1030	100.0		
45	-1													
46	62	13C3-PFHxS	401.8 > 79.9	2.35e3	2.35e3	0.118	1.000	4.33	4.33	12.5	106.1030	100.0		
47	64	13C9-PFNA	472.2 > 426.9	7.80e3	7.80e3	0.118	1.000	5.11	5.12	12.5	106.1030	100.0		
48	65	13C4-PFOS	503 > 79.9	2.52e3	2.52e3	0.118	1.000	5.19	5.20	12.5	106.1030	100.0		
49	66	13C6-PFDA	519.1 > 473.7	9.69e3	9.69e3	0.118	1.000	5.48	5.49	12.5	106.1030	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	1.27e4	1.27e4	0.118	1.000	5.81	5.81	12.5	106.1030	100.0		

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-9.qld

Last Altered: Tuesday, December 04, 2018 16:08:31 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:10:17 Pacific Standard Time

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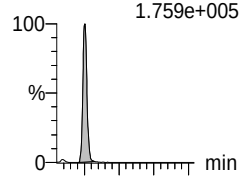
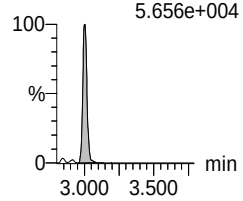
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_9, Date: 03-Dec-2018, Time: 15:51:02, ID: 1803678-02 A1-MW-42-SA2 0.11781, Description: A1-MW-42-SA2

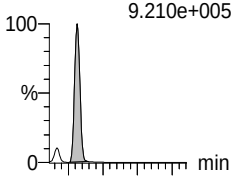
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
1.759e+005



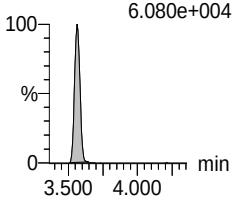
F7:MRM of 2 channels,ES-
299.0 > 99.0
5.656e+004



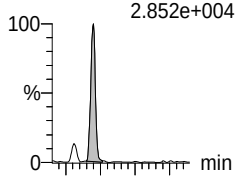
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
9.210e+005



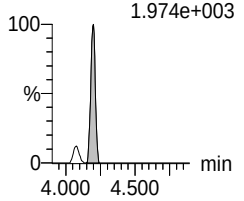
F9:MRM of 2 channels,ES-
313 > 118.9
6.080e+004



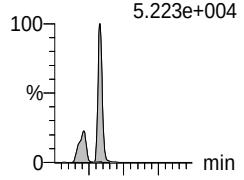
PFHpA
F16:MRM of 2 channels,ES-
363.0 > 318.9
2.852e+004



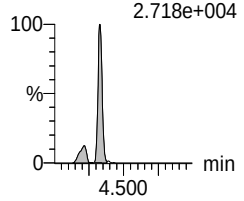
F16:MRM of 2 channels,ES-
363.0 > 169.0
1.974e+003



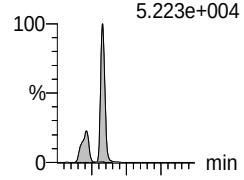
L-PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
5.223e+004



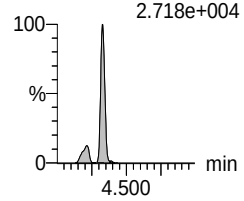
F18:MRM of 2 channels,ES-
398.9 > 99.0
2.718e+004



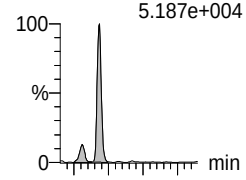
Total PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
5.223e+004



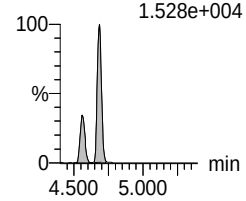
F18:MRM of 2 channels,ES-
398.9 > 99.0
2.718e+004



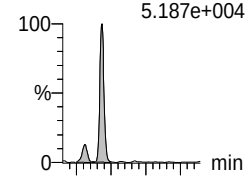
L-PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
5.187e+004



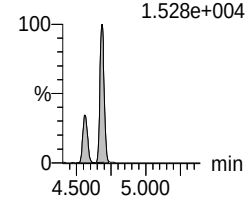
F21:MRM of 2 channels,ES-
412.8 > 169
1.528e+004



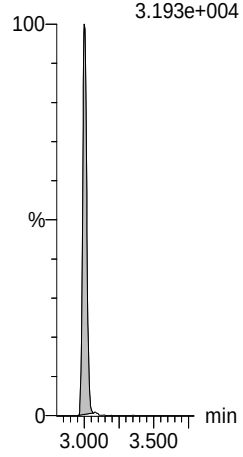
Total PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
5.187e+004



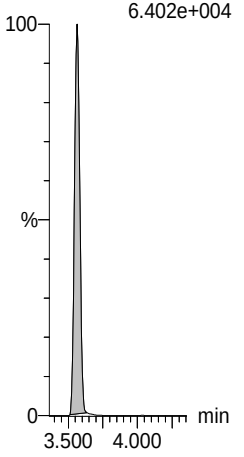
F21:MRM of 2 channels,ES-
412.8 > 169
1.528e+004



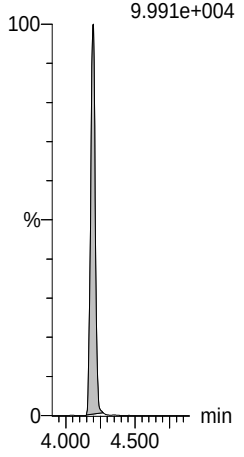
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.193e+004



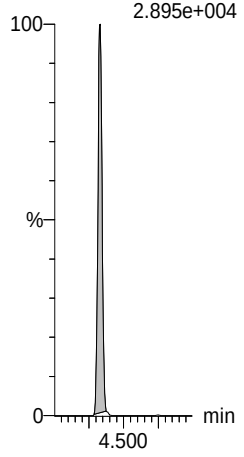
13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
6.402e+004



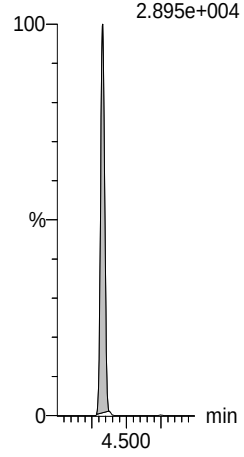
13C4-PFHpA
F17:MRM of 1 channel,ES-
367.2 > 321.8
9.991e+004



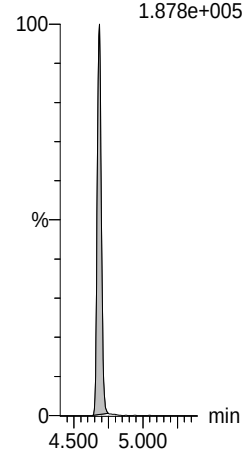
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.895e+004



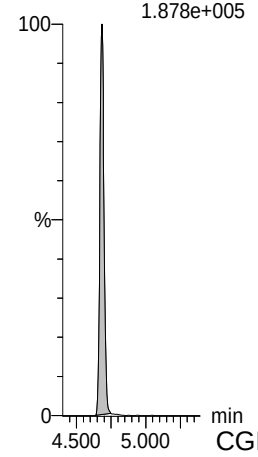
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.895e+004



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
1.878e+005



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
1.878e+005



CGH 12/4/2018

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-9.qld

Last Altered: Tuesday, December 04, 2018 16:08:31 Pacific Standard Time
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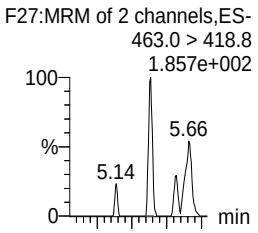
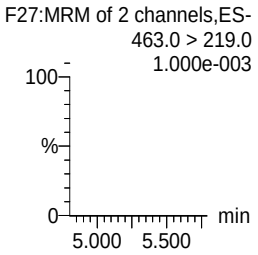
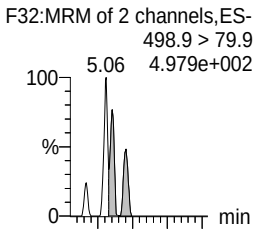
Name: 181203M1_9, Date: 03-Dec-2018, Time: 15:51:02, ID: 1803678-02 A1-MW-42-SA2 0.11781, Description: A1-MW-42-SA2

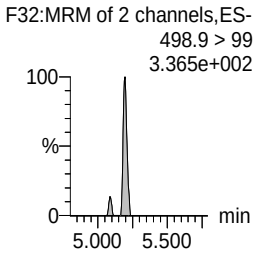
PFNA



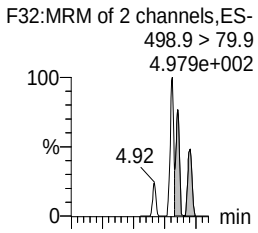


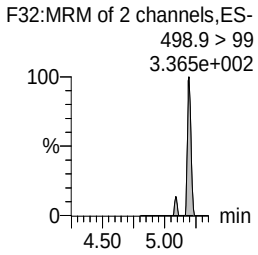
L-PFOS



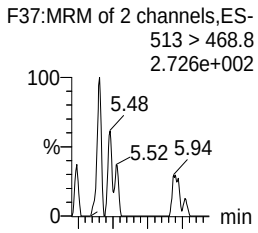


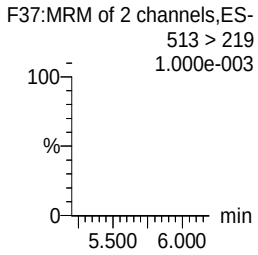
Total PFOS



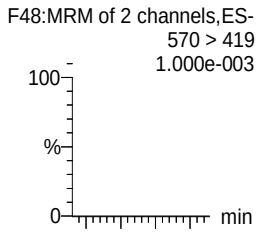


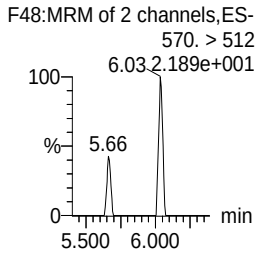
PFDA





L-MeFOSAA





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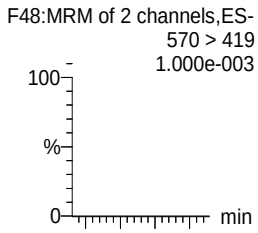

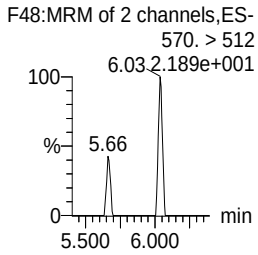

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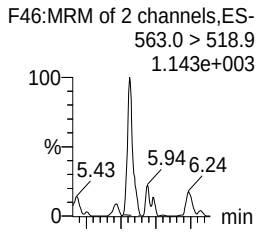

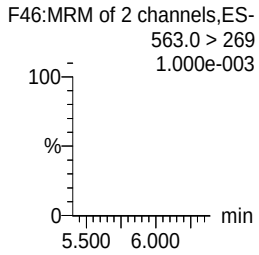

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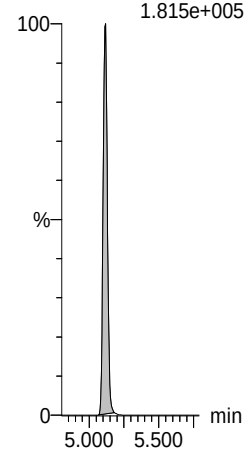

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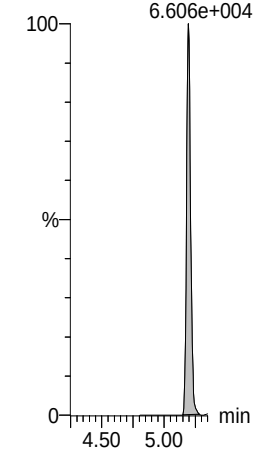

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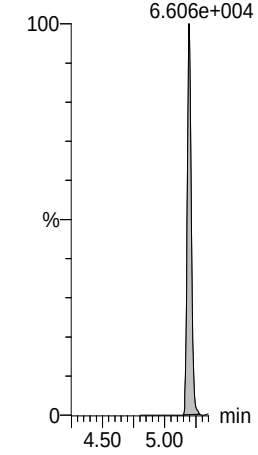

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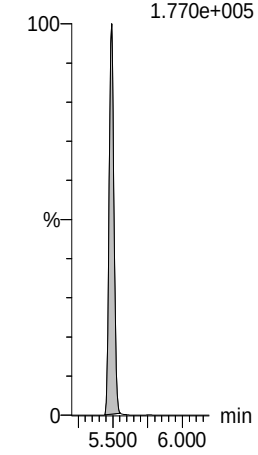
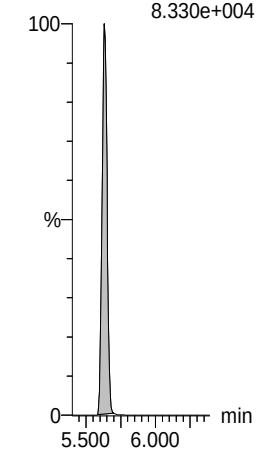


d3-N-MeFOSAA



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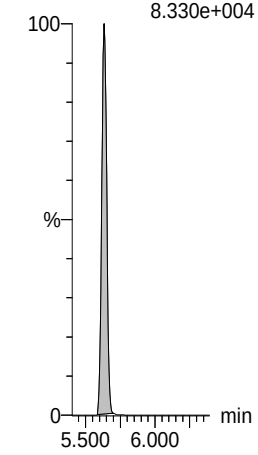

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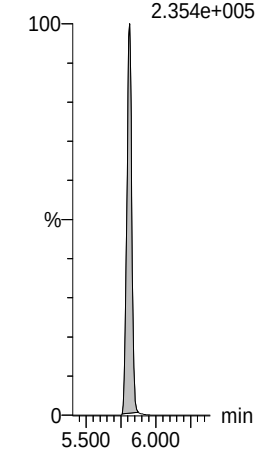

CGH 12/4/2018

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MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-9.qld

Last Altered: Tuesday, December 04, 2018 16:08:31 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:10:17 Pacific Standard Time

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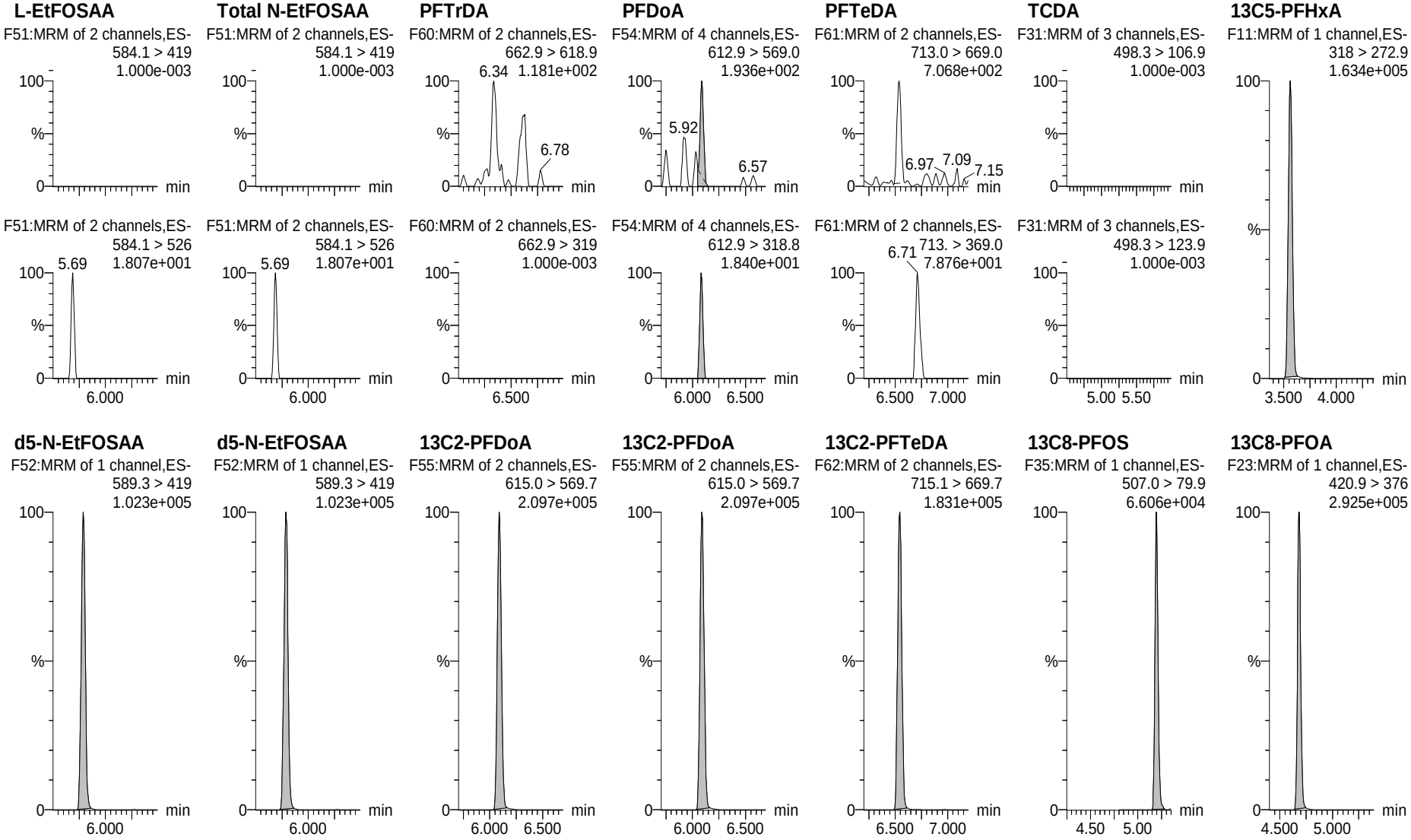

CGH 12/4/2018

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-9.qld

Last Altered: Tuesday, December 04, 2018 16:08:31 Pacific Standard Time
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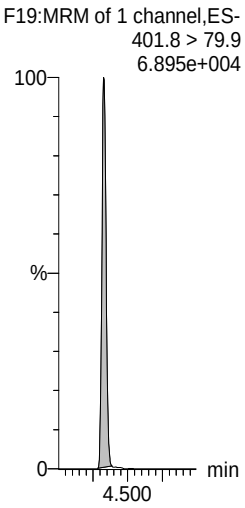
Name: 181203M1_9, Date: 03-Dec-2018, Time: 15:51:02, ID: 1803678-02 A1-MW-42-SA2 0.11781, Description: A1-MW-42-SA2

13C3-PFHxS



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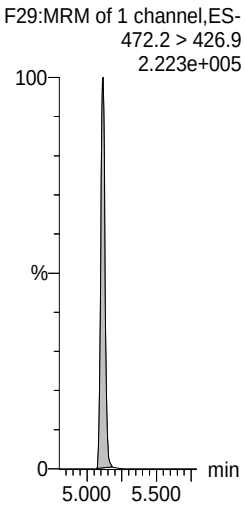
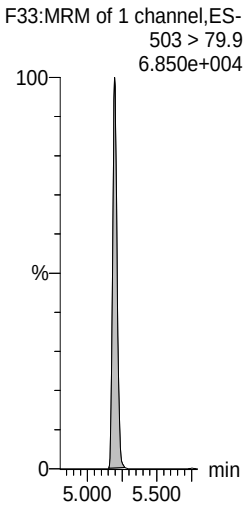
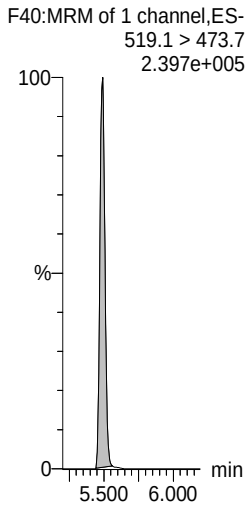


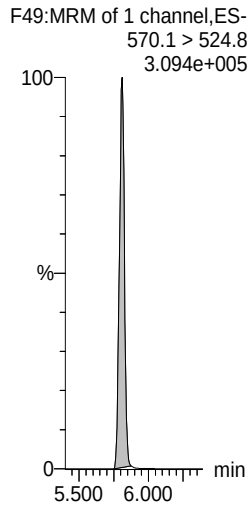
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 12/4/2018

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MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-10.qld

Last Altered: Tuesday, December 04, 2018 13:18:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:19:07 Pacific Standard Time

Name: 181203M1_10, Date: 03-Dec-2018, Time: 16:01:36, ID: 1803678-03 FRB-20181116 0.1036, Description: FRB-20181116

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?	
1	3	PFBS	299.0 > 79.7		1.19e3	0.104		3.00							
2	5	PFHxA	313 > 269		5.24e3	0.104		3.56							
3	7	PFHpA	363.0 > 318.9		7.39e3	0.104		4.20							
4	8	L-PFHxS	398.9 > 79.6	6.32e0	1.02e3	0.104		4.33	4.33	0.0774	0.3998		11.616	YES	
5	68	Total PFHxS	398.9 > 79.6	6.32e0	1.02e3	0.104		4.58		0.0774	0.3998				
6	11	L-PFOA	412.8 > 368.9		1.18e4	0.104		4.58							
7	69	Total PFOA	412.8 > 368.9	0.00e0	1.18e4	0.104		4.97		0.000					
8	38	13C3-PFBS	302. > 98.8	1.19e3	2.42e3	0.104	0.633	3.00	3.00	6.13	93.5439	77.5			
9	40	13C2-PFHxA	315 > 270	5.24e3	1.51e4	0.104	0.900	3.56	3.56	4.34	46.5243	96.4			
10	41	13C4-PFHpA	367.2 > 321.8	7.39e3	1.51e4	0.104	0.693	4.19	4.20	6.12	85.2746	70.7			
11	42	18O2-PFHxS	403.0 > 102.6	1.02e3	2.42e3	0.104	0.476	4.33	4.33	5.26	106.7848	88.5			
12	42	18O2-PFHxS	403.0 > 102.6	1.02e3	2.42e3	0.104	0.476	4.33	4.33	5.26	106.7848	88.5			
13	44	13C2-PFOA	414.9 > 369.7	1.18e4	2.00e4	0.104	0.873	4.68	4.68	7.37	81.4611	67.5			
14	44	13C2-PFOA	414.9 > 369.7	1.18e4	2.00e4	0.104	0.873	4.68	4.68	7.37	81.4611	67.5			
15	-1														
16	14	PFNA	463.0 > 418.8		1.02e4	0.104		5.11							
17	16	L-PFOS	498.9 > 79.9		2.64e3	0.104		5.08							
18	70	Total PFOS	498.9 > 79.9	0.00e0	2.64e3	0.104		5.46		0.000					
19	18	PFDA	513 > 468.8		1.05e4	0.104		5.48							
20	21	L-MeFOSAA	570 > 419		3.19e3	0.104		5.63							
21	71	Total N-MeFOSAA	570. > 419	0.00e0	3.19e3	0.104		5.90		0.000					
22	25	PFUdA	563.0 > 518.9		1.24e4	0.104		5.81							
23	45	13C5-PFNA	468.2 > 422.9	1.02e4	1.46e4	0.104	1.006	5.11	5.12	8.78	84.2119	69.8			
24	47	13C8-PFOS	507.0 > 79.9	2.64e3	2.77e3	0.104	0.968	5.19	5.20	11.9	118.6071	98.3			
25	47	13C8-PFOS	507.0 > 79.9	2.64e3	2.77e3	0.104	0.968	5.19	5.20	11.9	118.6071	98.3			
26	48	13C2-PFDA	515.1 > 469.9	1.05e4	1.54e4	0.104	1.125	5.48	5.49	8.50	72.9560	60.5			
27	50	d3-N-MeFOSAA	573.3 > 419	3.19e3	1.98e4	0.104	0.329	5.63	5.63	2.02	59.1972	49.1			H
28	50	d3-N-MeFOSAA	573.3 > 419	3.19e3	1.98e4	0.104	0.329	5.63	5.63	2.02	59.1972	49.1			H
29	51	13C2-PFUdA	565 > 519.8	1.24e4	1.98e4	0.104	1.111	5.81	5.81	7.86	68.3115	56.6			
30	-1														
31	23	L-EtFOSAA	584.1 > 419		4.57e3	0.104		5.79							
32	72	Total N-EtFOSAA	584.1 > 419	0.00e0	4.57e3	0.104		6.06		0.000					
33	29	PFTrDA	662.9 > 618.9		1.17e4	0.104		6.32							
34	27	PFDoA	612.9 > 569.0		1.17e4	0.104		6.08							
35	30	PFTeDA	713.0 > 669.0		9.63e3	0.104		6.54							

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-10.qld

Last Altered: Tuesday, December 04, 2018 13:18:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:19:07 Pacific Standard Time

Name: 181203M1_10, Date: 03-Dec-2018, Time: 16:01:36, ID: 1803678-03 FRB-20181116 0.1036, Description: FRB-20181116

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
36	73	TCDA	498.3>106.9			0.104		5.45						
37	61	13C5-PFHxA	318 > 272.9	1.51e4	1.51e4	0.104	1.000	3.56	3.56	12.5	120.6564	100.0		
38	52	d5-N-EtFOSAA	589.3 > 419	4.57e3	1.98e4	0.104	0.355	5.78	5.79	2.89	78.5043	65.1		
39	52	d5-N-EtFOSAA	589.3 > 419	4.57e3	1.98e4	0.104	0.355	5.78	5.79	2.89	78.5043	65.1		
40	53	13C2-PFDoA	615.0 > 569.7	1.17e4	1.54e4	0.104	0.993	6.08	6.09	9.46	91.9203	76.2		
41	53	13C2-PFDoA	615.0 > 569.7	1.17e4	1.54e4	0.104	0.993	6.08	6.09	9.46	91.9203	76.2		
42	55	13C2-PFTeDA	715.1 > 669.7	9.63e3	1.98e4	0.104	0.749	6.54	6.55	6.09	78.4389	65.0		
43	47	13C8-PFOS	507.0 > 79.9	2.64e3	2.77e3	0.104	0.968	5.19	5.20	11.9	118.6071	98.3		
44	63	13C8-PFOA	420.9 > 376	2.00e4	2.00e4	0.104	1.000	4.68	4.68	12.5	120.6564	100.0		
45	-1													
46	62	13C3-PFHxS	401.8 > 79.9	2.42e3	2.42e3	0.104	1.000	4.33	4.33	12.5	120.6564	100.0		
47	64	13C9-PFNA	472.2 > 426.9	1.46e4	1.46e4	0.104	1.000	5.11	5.12	12.5	120.6564	100.0		
48	65	13C4-PFOS	503 > 79.9	2.77e3	2.77e3	0.104	1.000	5.19	5.20	12.5	120.6564	100.0		
49	66	13C6-PFDA	519.1 > 473.7	1.54e4	1.54e4	0.104	1.000	5.48	5.49	12.5	120.6564	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	1.98e4	1.98e4	0.104	1.000	5.81	5.81	12.5	120.6564	100.0		

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MM 12/4/2018

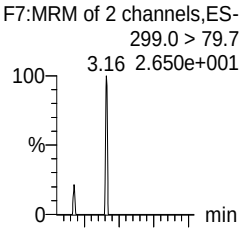
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-10.qld

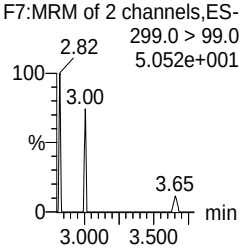
Last Altered: Tuesday, December 04, 2018 13:18:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:19:07 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_10, Date: 03-Dec-2018, Time: 16:01:36, ID: 1803678-03 FRB-20181116 0.1036, Description: FRB-20181116

PFBS





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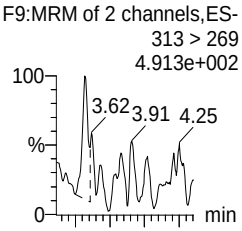

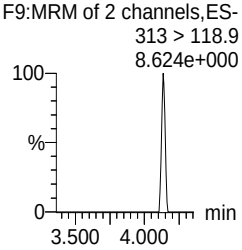

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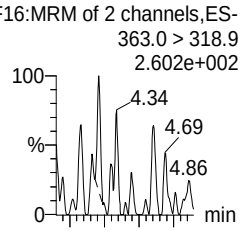
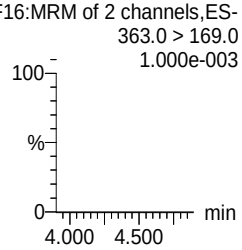
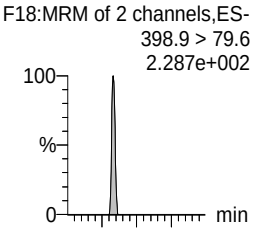
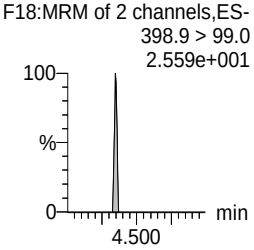




L-PFHxS





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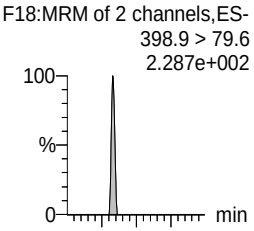
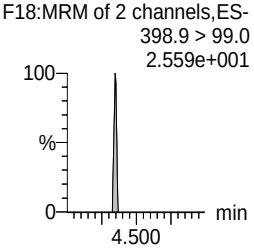
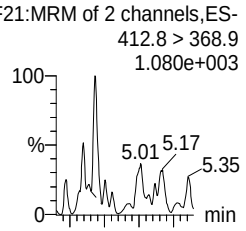
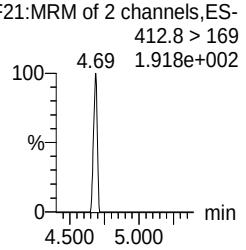


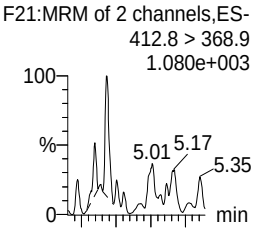


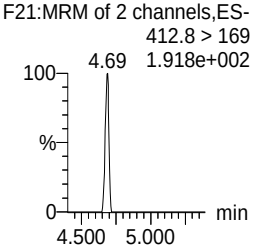
L-PFOA



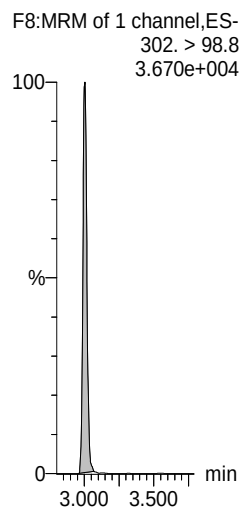


Total PFOA

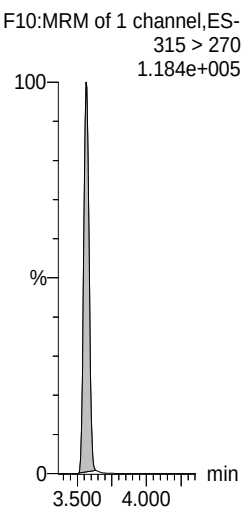




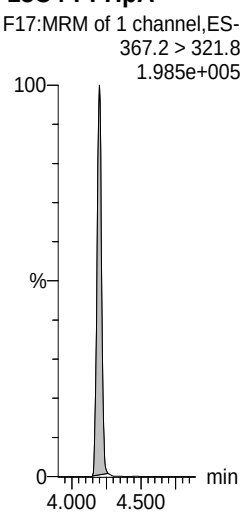
13C3-PFBS



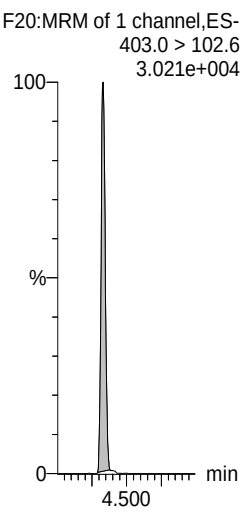
13C2-PFHxA



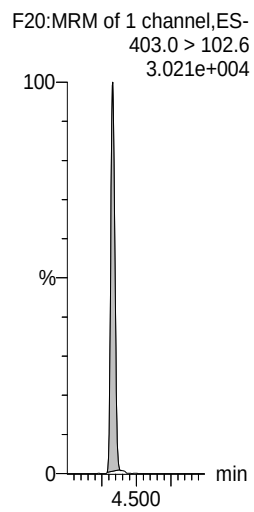
13C4-PFHpA



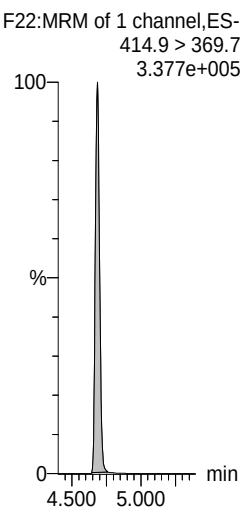
18O2-PFHxS



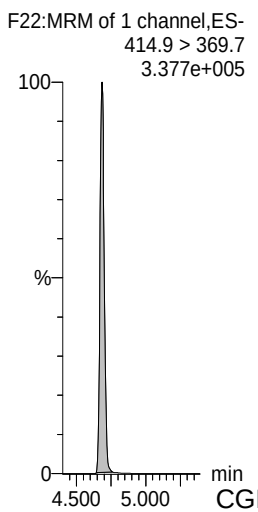
18O2-PFHxS



13C2-PFOA



13C2-PFOA



CGH 12/4/2018

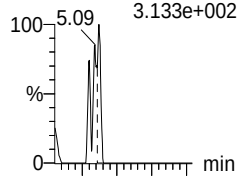
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-10.qld

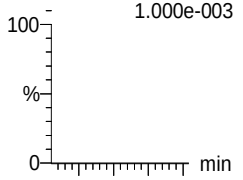
Last Altered: Tuesday, December 04, 2018 13:18:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:19:07 Pacific Standard Time

Name: 181203M1_10, Date: 03-Dec-2018, Time: 16:01:36, ID: 1803678-03 FRB-20181116 0.1036, Description: FRB-20181116

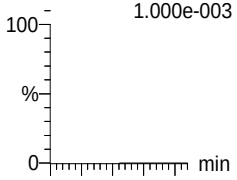
PFNA
F27:MRM of 2 channels,ES-
463.0 > 418.8
3.133e+002



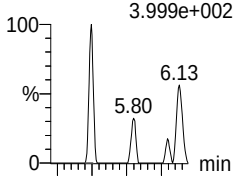
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
1.000e-003



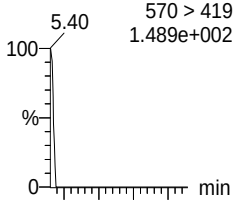
Total PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
1.000e-003



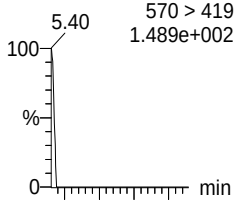
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
3.999e+002



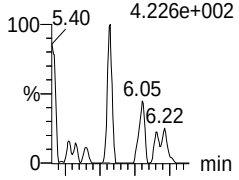
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
1.489e+002



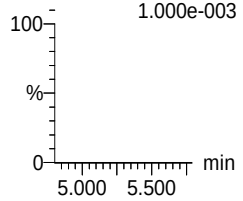
Total N-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
1.489e+002



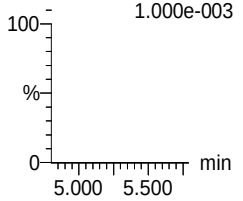
PFUdA
F46:MRM of 2 channels,ES-
563.0 > 518.9
4.226e+002



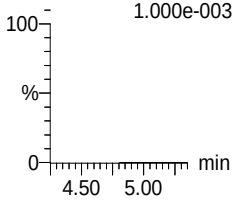
F27:MRM of 2 channels,ES-
463.0 > 219.0
1.000e-003



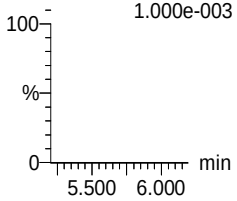
F32:MRM of 2 channels,ES-
498.9 > 99
1.000e-003



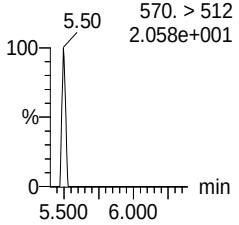
F32:MRM of 2 channels,ES-
498.9 > 99
1.000e-003



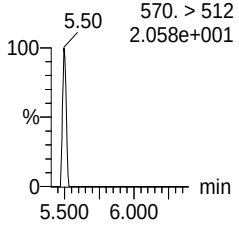
F37:MRM of 2 channels,ES-
513 > 219
1.000e-003



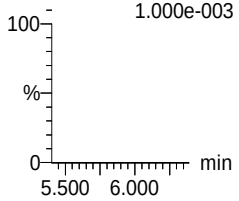
F48:MRM of 2 channels,ES-
570. > 512
2.058e+001



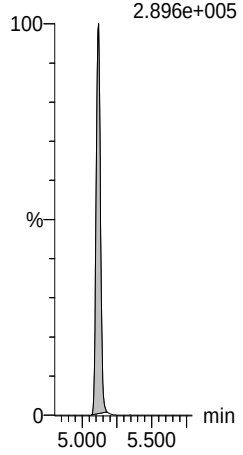
F48:MRM of 2 channels,ES-
570. > 512
2.058e+001



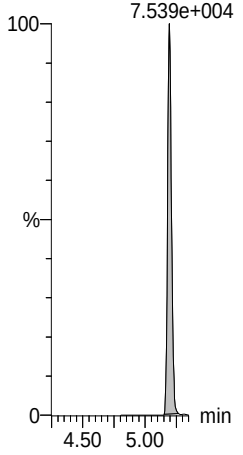
F46:MRM of 2 channels,ES-
563.0 > 269
1.000e-003



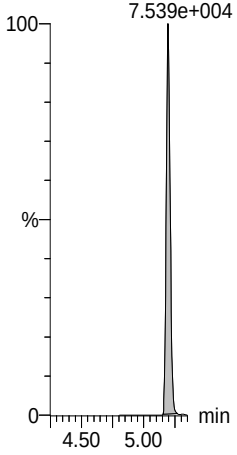
13C5-PFNA
F28:MRM of 1 channel,ES-
468.2 > 422.9
2.896e+005



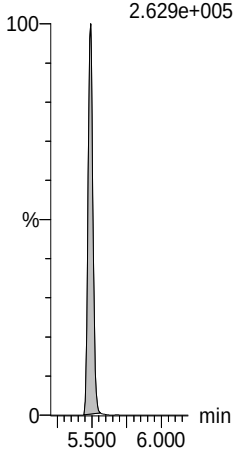
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
7.539e+004



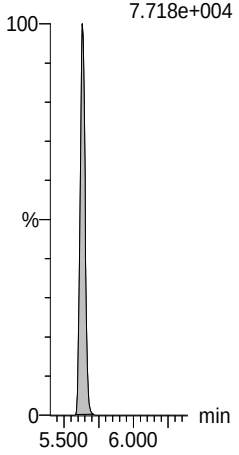
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
7.539e+004



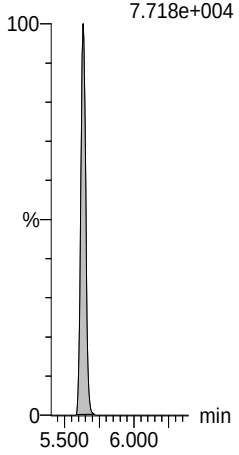
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
2.629e+005



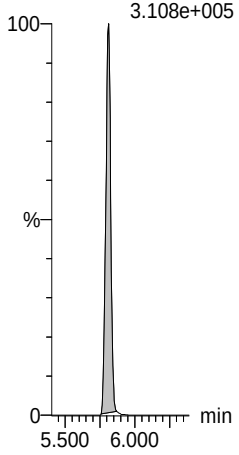
d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
7.718e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
7.718e+004



13C2-PFUdA
F47:MRM of 1 channel,ES-
565 > 519.8
3.108e+005



CGH 12/4/2018

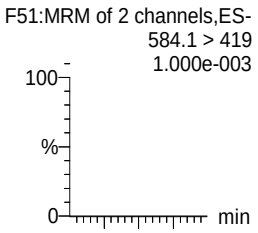
MM 12/4/2018

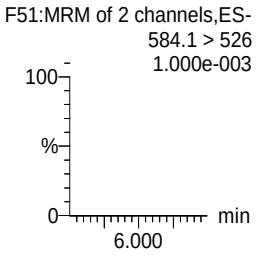
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-10.qld

Last Altered: Tuesday, December 04, 2018 13:18:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:19:07 Pacific Standard Time

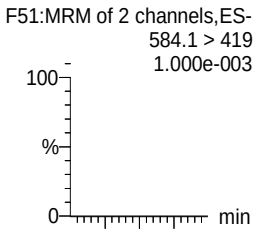
Name: 181203M1_10, Date: 03-Dec-2018, Time: 16:01:36, ID: 1803678-03 FRB-20181116 0.1036, Description: FRB-20181116

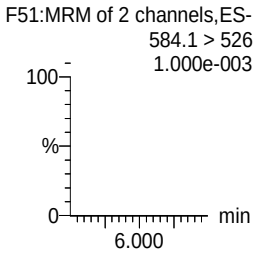
L-EtFOSAA



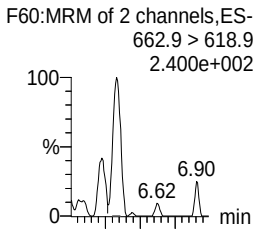


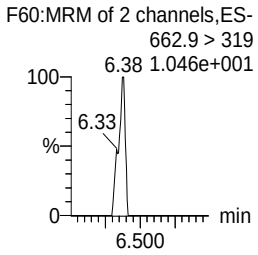
Total N-EtFOSAA



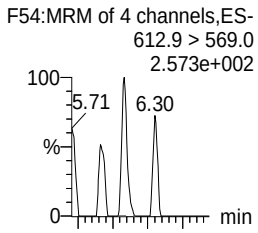


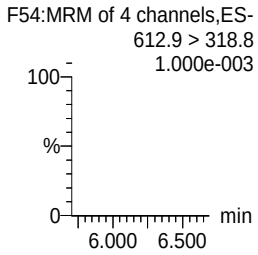
PFTrDA



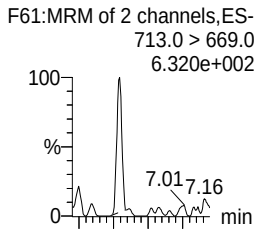


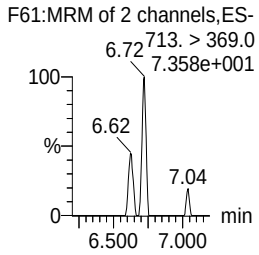
PFDoA



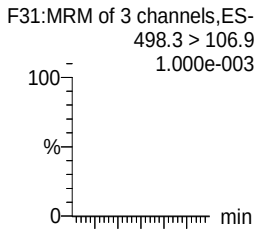


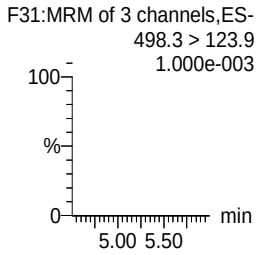
PFTeDA



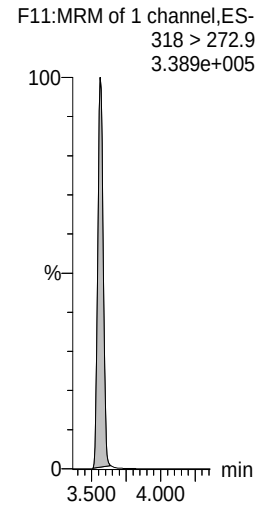


TCDA

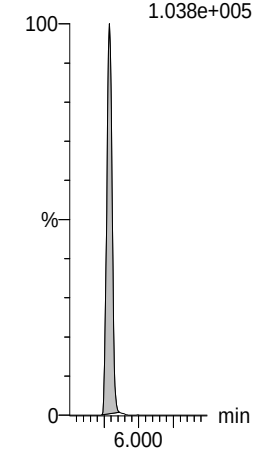




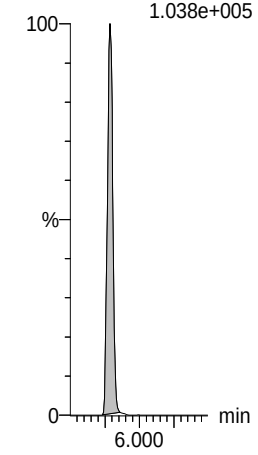
13C5-PFHxA



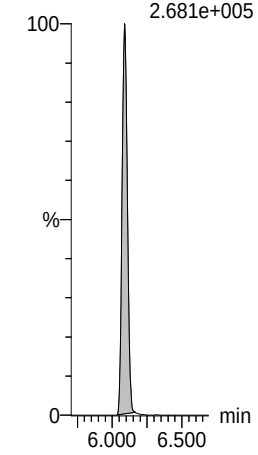
d5-N-EtFOSAA



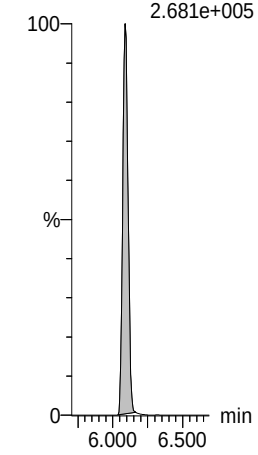
d5-N-EtFOSAA



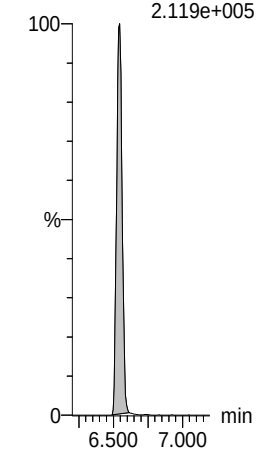
13C2-PFDoA



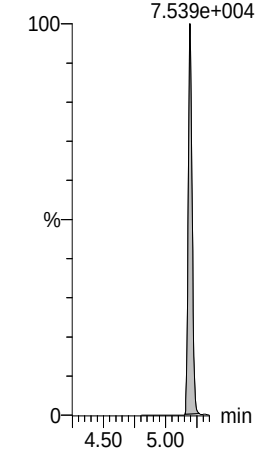
13C2-PFDoA



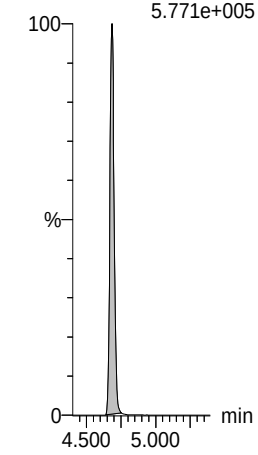
13C2-PFTeDA



13C8-PFOS



13C8-PFOA



CGH 12/4/2018

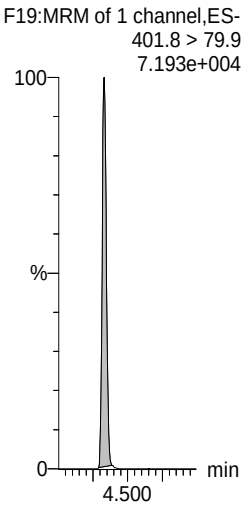
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-10.qld

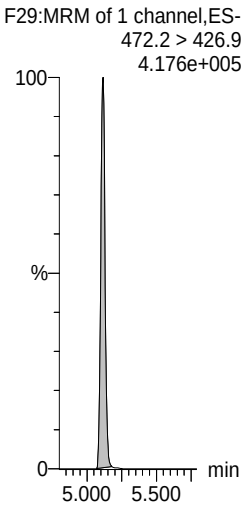
Last Altered: Tuesday, December 04, 2018 13:18:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:19:07 Pacific Standard Time

Name: 181203M1_10, Date: 03-Dec-2018, Time: 16:01:36, ID: 1803678-03 FRB-20181116 0.1036, Description: FRB-20181116

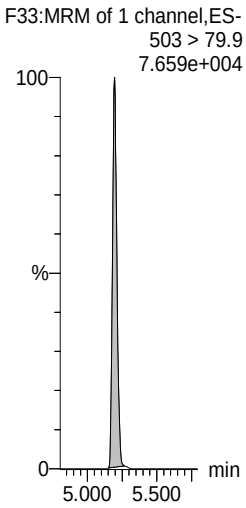
13C3-PFHxS



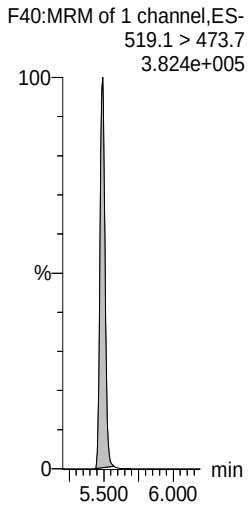
13C9-PFNA



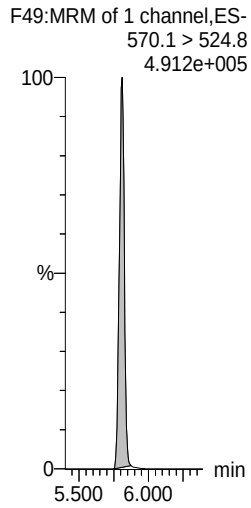
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-11.qld

Last Altered: Tuesday, December 04, 2018 13:27:09 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:27:43 Pacific Standard Time

Name: 181203M1_11, Date: 03-Dec-2018, Time: 16:12:14, ID: 1803678-04 EB-20181116 0.11772, Description: EB-20181116

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	3	PFBS	299.0 > 79.7		1.26e3	0.118		3.01						
2	5	PFHxA	313 > 269		6.13e3	0.118		3.57						
3	7	PFHpA	363.0 > 318.9		7.96e3	0.118		4.20						
4	8	L-PFHxS	398.9 > 79.6		1.09e3	0.118		4.33						
5	68	Total PFHxS	398.9 > 79.6	0.00e0	1.09e3	0.118		4.58		0.000				
6	11	L-PFOA	412.8 > 368.9	4.05e1	1.32e4	0.118		4.58	4.69	0.0385			3.042	NO
7	69	Total PFOA	412.8 > 368.9	4.05e1	1.32e4	0.118		4.97		0.000				
8	38	13C3-PFBS	302. > 98.8	1.26e3	2.49e3	0.118	0.633	3.00	3.00	6.33	84.9632	80.0		
9	40	13C2-PFHxA	315 > 270	6.13e3	1.56e4	0.118	0.900	3.56	3.57	4.90	46.2456	108.9		
10	41	13C4-PFHpA	367.2 > 321.8	7.96e3	1.56e4	0.118	0.693	4.19	4.20	6.37	78.0305	73.5		
11	42	18O2-PFHxS	403.0 > 102.6	1.09e3	2.49e3	0.118	0.476	4.33	4.33	5.46	97.4945	91.8		
12	42	18O2-PFHxS	403.0 > 102.6	1.09e3	2.49e3	0.118	0.476	4.33	4.33	5.46	97.4945	91.8		
13	44	13C2-PFOA	414.9 > 369.7	1.32e4	2.08e4	0.118	0.873	4.68	4.68	7.92	77.0690	72.6		
14	44	13C2-PFOA	414.9 > 369.7	1.32e4	2.08e4	0.118	0.873	4.68	4.68	7.92	77.0690	72.6		
15	-1													
16	14	PFNA	463.0 > 418.8		1.19e4	0.118		5.11						
17	16	L-PFOS	498.9 > 79.9		2.73e3	0.118		5.08						
18	70	Total PFOS	498.9 > 79.9	0.00e0	2.73e3	0.118		5.46		0.000				
19	18	PFDA	513 > 468.8		1.17e4	0.118		5.48						
20	21	L-MeFOSAA	570 > 419		3.64e3	0.118		5.63						
21	71	Total N-MeFOSAA	570. > 419	0.00e0	3.64e3	0.118		5.90		0.000				
22	25	PFUdA	563.0 > 518.9		1.42e4	0.118		5.81						
23	45	13C5-PFNA	468.2 > 422.9	1.19e4	1.50e4	0.118	1.006	5.11	5.11	9.91	83.6443	78.8		
24	47	13C8-PFOS	507.0 > 79.9	2.73e3	2.67e3	0.118	0.968	5.19	5.20	12.8	112.3693	105.8		
25	47	13C8-PFOS	507.0 > 79.9	2.73e3	2.67e3	0.118	0.968	5.19	5.20	12.8	112.3693	105.8		
26	48	13C2-PFDA	515.1 > 469.9	1.17e4	1.57e4	0.118	1.125	5.48	5.49	9.28	70.1078	66.0		
27	50	d3-N-MeFOSAA	573.3 > 419	3.64e3	1.86e4	0.118	0.329	5.63	5.63	2.44	63.0139	59.3		
28	50	d3-N-MeFOSAA	573.3 > 419	3.64e3	1.86e4	0.118	0.329	5.63	5.63	2.44	63.0139	59.3		
29	51	13C2-PFUdA	565 > 519.8	1.42e4	1.86e4	0.118	1.111	5.81	5.81	9.53	72.8384	68.6		
30	-1													
31	23	L-EtFOSAA	584.1 > 419		4.79e3	0.118		5.79						
32	72	Total N-EtFOSAA	584.1 > 419	0.00e0	4.79e3	0.118		6.06		0.000				
33	29	PFTrDA	662.9 > 618.9	8.90e0	1.21e4	0.118		6.32	6.34	0.00921			2.899	YES
34	27	PFDoA	612.9 > 569.0		1.21e4	0.118		6.08						
35	30	PFTeDA	713.0 > 669.0		9.84e3	0.118		6.54						

CGH 12/4/2018

MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-11.qld

Last Altered: Tuesday, December 04, 2018 13:27:09 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:27:43 Pacific Standard Time

Name: 181203M1_11, Date: 03-Dec-2018, Time: 16:12:14, ID: 1803678-04 EB-20181116 0.11772, Description: EB-20181116

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
36	73	TCDA	498.3>106.9			0.118		5.45						
37	61	13C5-PFHxA	318 > 272.9	1.56e4	1.56e4	0.118	1.000	3.56	3.56	12.5	106.1842	100.0		
38	52	d5-N-EtFOSAA	589.3 > 419	4.79e3	1.86e4	0.118	0.355	5.78	5.79	3.21	76.8415	72.4		
39	52	d5-N-EtFOSAA	589.3 > 419	4.79e3	1.86e4	0.118	0.355	5.78	5.79	3.21	76.8415	72.4		
40	53	13C2-PFDoA	615.0 > 569.7	1.21e4	1.57e4	0.118	0.993	6.08	6.09	9.59	82.0139	77.2		
41	53	13C2-PFDoA	615.0 > 569.7	1.21e4	1.57e4	0.118	0.993	6.08	6.09	9.59	82.0139	77.2		
42	55	13C2-PFTeDA	715.1 > 669.7	9.84e3	1.86e4	0.118	0.749	6.54	6.55	6.61	74.9345	70.6		
43	47	13C8-PFOS	507.0 > 79.9	2.73e3	2.67e3	0.118	0.968	5.19	5.20	12.8	112.3693	105.8		
44	63	13C8-PFOA	420.9 > 376	2.08e4	2.08e4	0.118	1.000	4.68	4.68	12.5	106.1842	100.0		
45	-1													
46	62	13C3-PFHxS	401.8 > 79.9	2.49e3	2.49e3	0.118	1.000	4.33	4.33	12.5	106.1842	100.0		
47	64	13C9-PFNA	472.2 > 426.9	1.50e4	1.50e4	0.118	1.000	5.11	5.12	12.5	106.1842	100.0		
48	65	13C4-PFOS	503 > 79.9	2.67e3	2.67e3	0.118	1.000	5.19	5.20	12.5	106.1842	100.0		
49	66	13C6-PFDA	519.1 > 473.7	1.57e4	1.57e4	0.118	1.000	5.48	5.49	12.5	106.1842	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	1.86e4	1.86e4	0.118	1.000	5.81	5.81	12.5	106.1842	100.0		

CGH 12/4/2018

Vista Analytical Laboratory L14

MM 12/4/2018

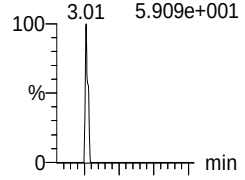
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-11.qld

Last Altered: Tuesday, December 04, 2018 13:27:09 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:27:43 Pacific Standard Time

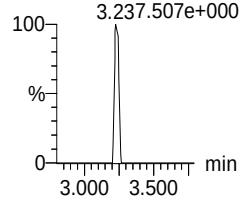
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_11, Date: 03-Dec-2018, Time: 16:12:14, ID: 1803678-04 EB-20181116 0.11772, Description: EB-20181116

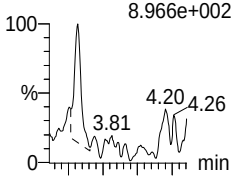
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
5.909e+001



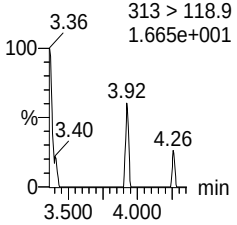
F7:MRM of 2 channels,ES-
299.0 > 99.0
3.237.507e+000



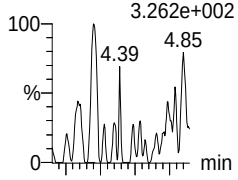
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
8.966e+002



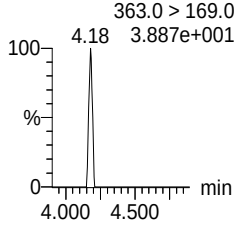
F9:MRM of 2 channels,ES-
313 > 118.9
1.665e+001



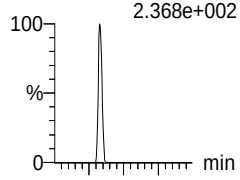
PFHpA
F16:MRM of 2 channels,ES-
363.0 > 318.9
3.262e+002



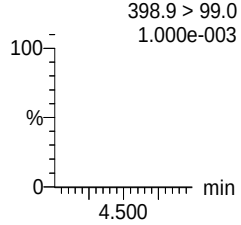
F16:MRM of 2 channels,ES-
363.0 > 169.0
3.887e+001



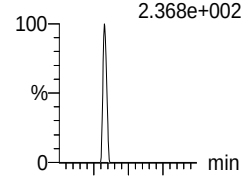
L-PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
2.368e+002



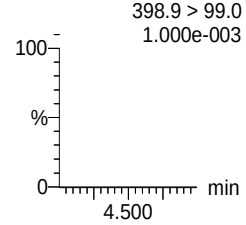
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.000e-003



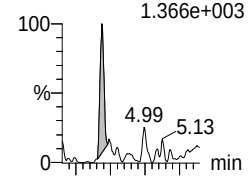
Total PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
2.368e+002



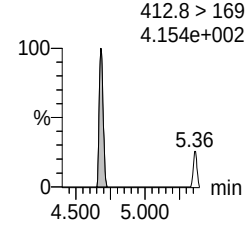
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.000e-003



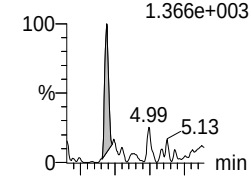
L-PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
1.366e+003



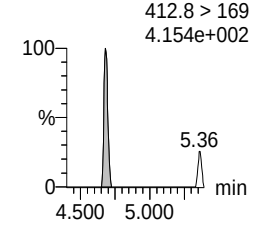
F21:MRM of 2 channels,ES-
412.8 > 169
4.154e+002



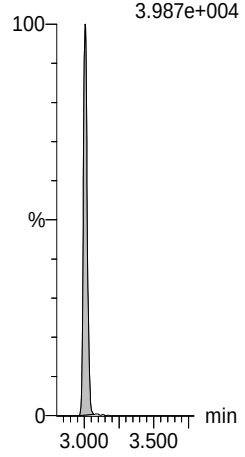
Total PFOA
F21:MRM of 2 channels,ES-
412.8 > 368.9
1.366e+003



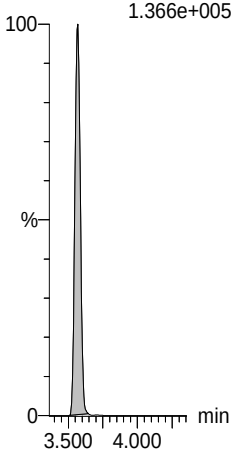
F21:MRM of 2 channels,ES-
412.8 > 169
4.154e+002



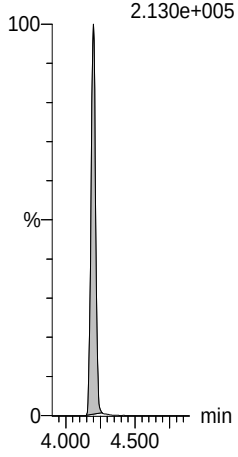
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.987e+004



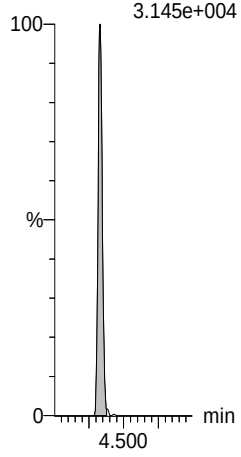
13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
1.366e+005



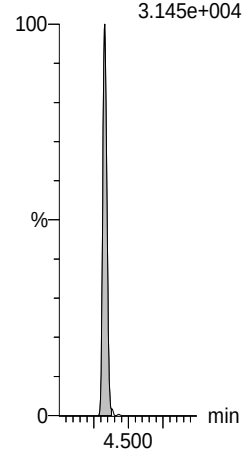
13C4-PFHpA
F17:MRM of 1 channel,ES-
367.2 > 321.8
2.130e+005



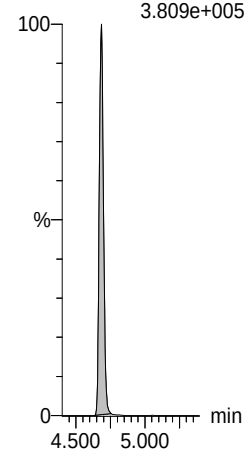
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
3.145e+004



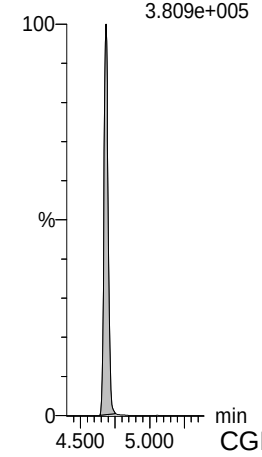
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
3.145e+004



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
3.809e+005



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
3.809e+005



CGH 12/4/2018

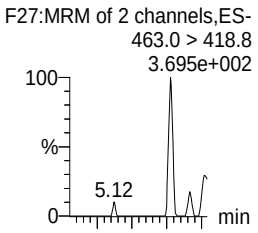
MM 12/4/2018

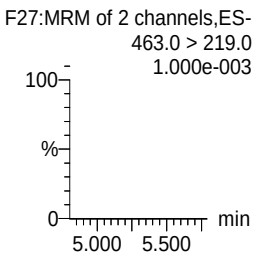
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-11.qld

Last Altered: Tuesday, December 04, 2018 13:27:09 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:27:43 Pacific Standard Time

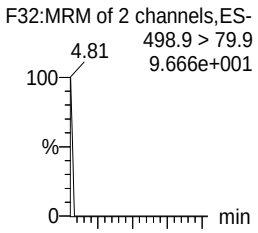
Name: 181203M1_11, Date: 03-Dec-2018, Time: 16:12:14, ID: 1803678-04 EB-20181116 0.11772, Description: EB-20181116

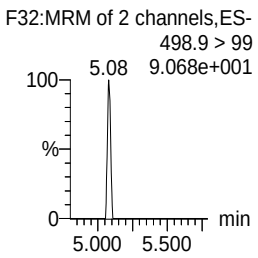
PFNA



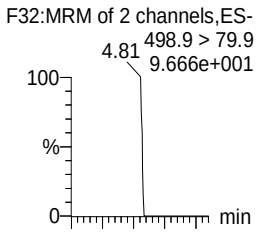


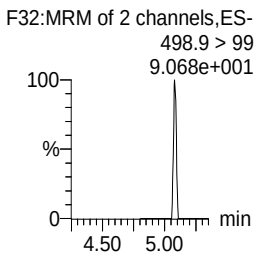
L-PFOS



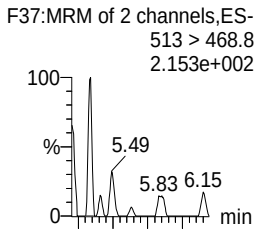


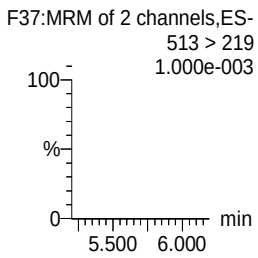
Total PFOS



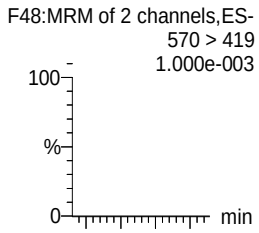


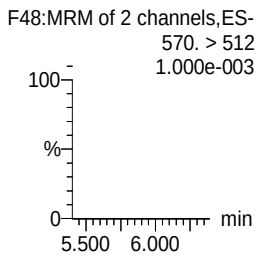
PFDA





L-MeFOSAA





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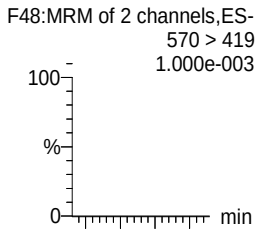
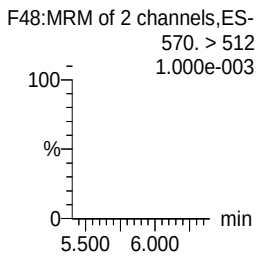
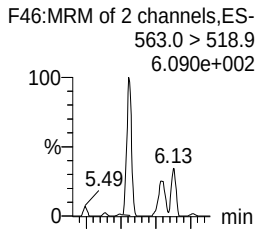
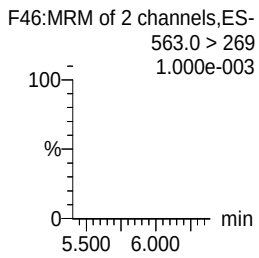


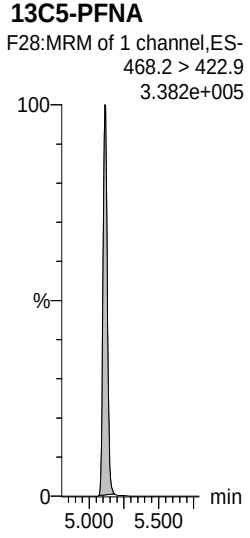


PFUdA

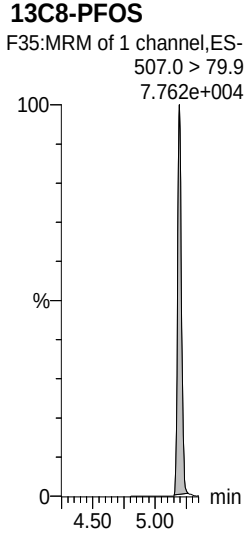




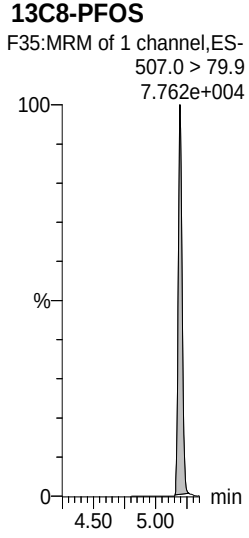
13C5-PFNA



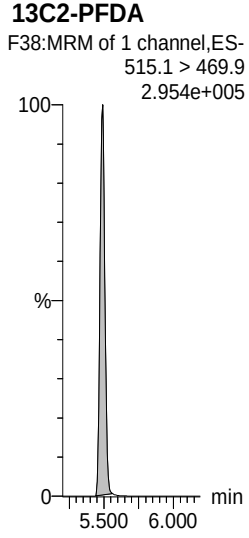
13C8-PFOS



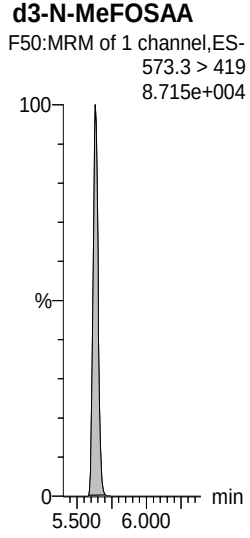
13C8-PFOS



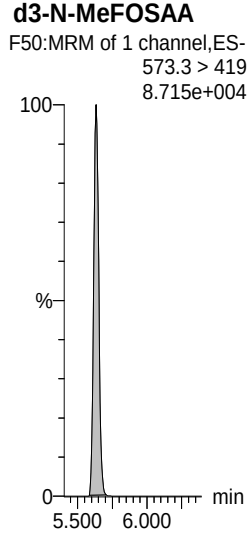
13C2-PFDA



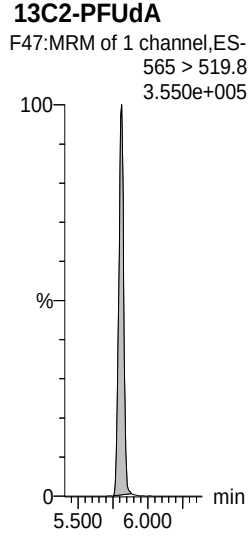
d3-N-MeFOSAA



d3-N-MeFOSAA



13C2-PFUdA



CGH 12/4/2018

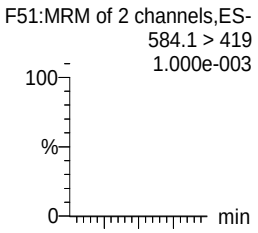
MM 12/4/2018

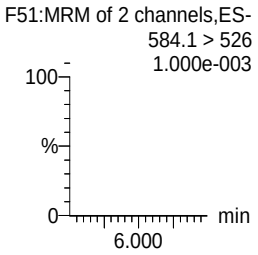
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-11.qld

Last Altered: Tuesday, December 04, 2018 13:27:09 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:27:43 Pacific Standard Time

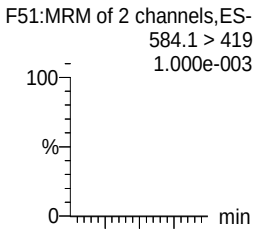
Name: 181203M1_11, Date: 03-Dec-2018, Time: 16:12:14, ID: 1803678-04 EB-20181116 0.11772, Description: EB-20181116

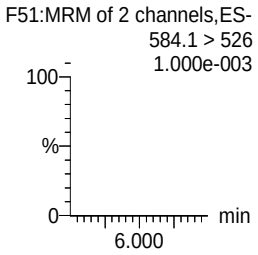
L-EtFOSAA



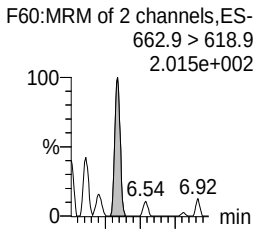


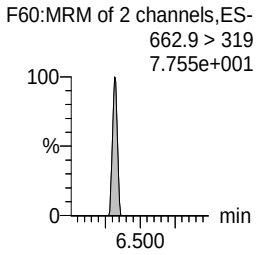
Total N-EtFOSAA



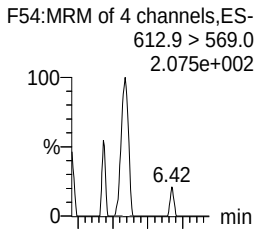


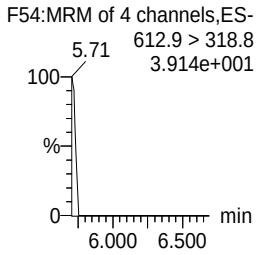
PFTrDA



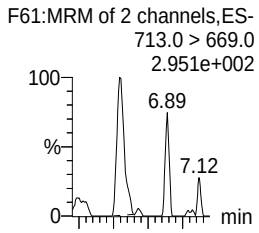


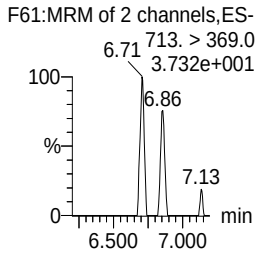
PFDoA



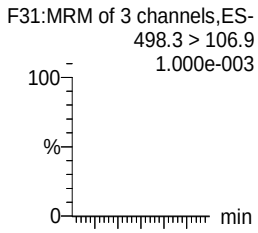


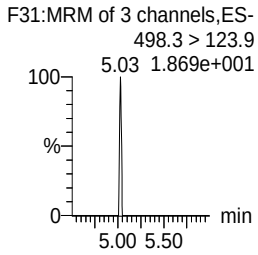
PFTeDA



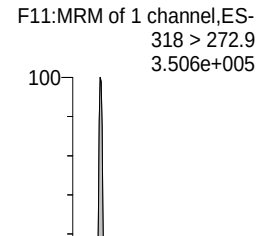


TCDA

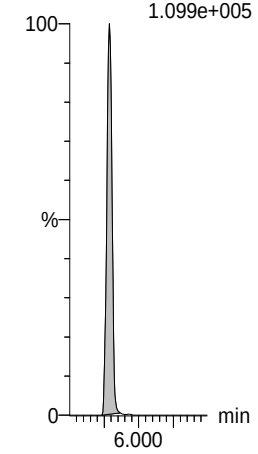




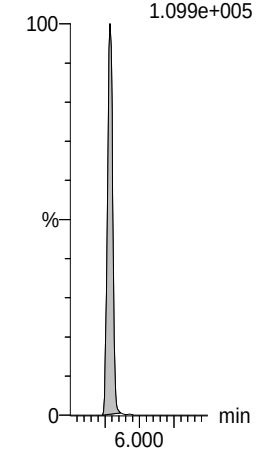
13C5-PFHxA



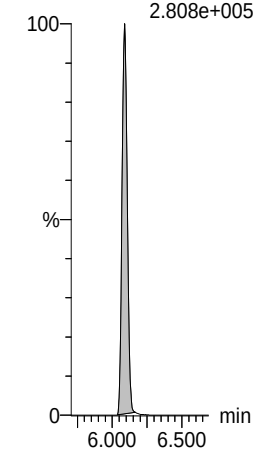
d5-N-EtFOSAA



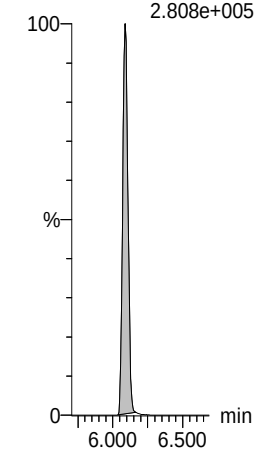
d5-N-EtFOSAA



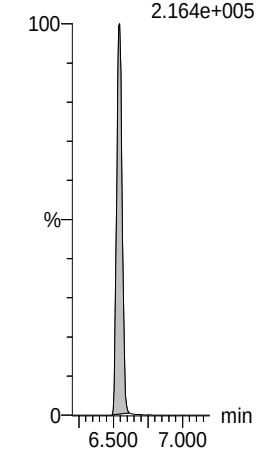
13C2-PFDoA



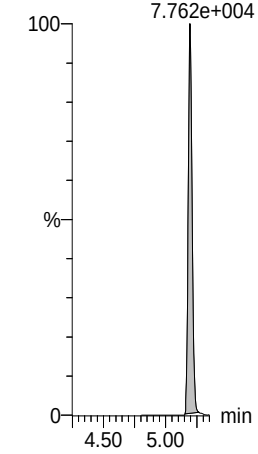
13C2-PFDoA



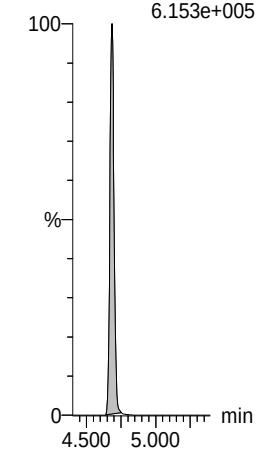
13C2-PFTeDA



13C8-PFOS



13C8-PFOA



CGH 12/4/2018

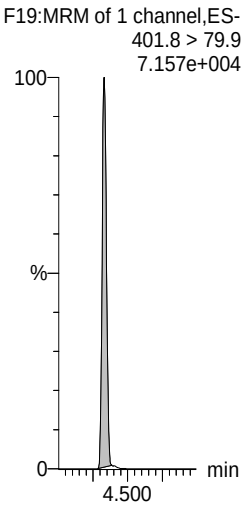
MM 12/4/2018

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-11.qld

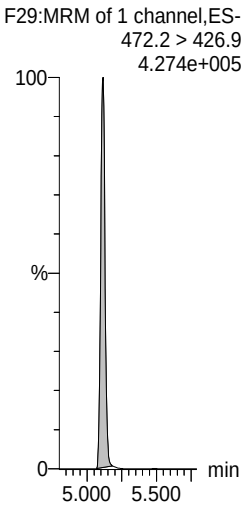
Last Altered: Tuesday, December 04, 2018 13:27:09 Pacific Standard Time
Printed: Tuesday, December 04, 2018 13:27:43 Pacific Standard Time

Name: 181203M1_11, Date: 03-Dec-2018, Time: 16:12:14, ID: 1803678-04 EB-20181116 0.11772, Description: EB-20181116

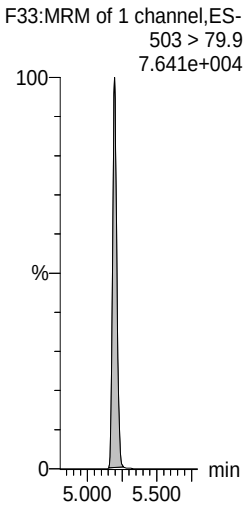
13C3-PFHxS



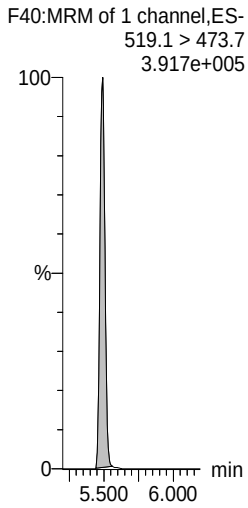
13C9-PFNA



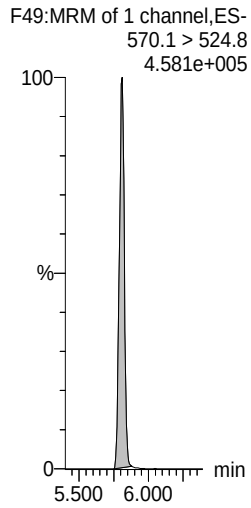
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 12/4/2018

INJECTION INTERNAL STANDARD (IIS) AREAS,

INSTRUMENT BLANKS (IB)

AND

CONTINUTING CALIBRATION VERIFICATIONS CCV)

Dataset: F:\Projects\PFAS.PRO\Results\181203M1\181203M1-IIS.qld

Last Altered: Tuesday, December 04, 2018 08:46:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:47:38 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_RS-12-03-18.mdb 03 Dec 2018 12:52:41
Calibration: 04 Dec 2018 08:45:01

Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181203M1-1 PFC CS0 18K3003	8.86e3	100.0	NO
2	2	13C5-PFHxA	ST181203M1-1 PFC CS0 18K3003	1.75e4	100.0	NO
3	3	13C3-PFHxS	ST181203M1-1 PFC CS0 18K3003	2.75e3	100.0	NO
4	4	13C8-PFOA	ST181203M1-1 PFC CS0 18K3003	2.30e4	100.0	NO
5	5	13C9-PFNA	ST181203M1-1 PFC CS0 18K3003	1.71e4	100.0	NO
6	6	13C4-PFOS	ST181203M1-1 PFC CS0 18K3003	3.15e3	100.0	NO
7	7	13C6-PFDA	ST181203M1-1 PFC CS0 18K3003	1.82e4	100.0	NO
8	8	13C7-PFUdA	ST181203M1-1 PFC CS0 18K3003	2.19e4	100.0	NO

Name: 181203M1_3, Date: 03-Dec-2018, Time: 14:47:29, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_4, Date: 03-Dec-2018, Time: 14:58:01, ID: B8K0153-BS1 OPR 0.25, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0153-BS1 OPR 0.25	6.33e3	71.4	NO
2	2	13C5-PFHxA	B8K0153-BS1 OPR 0.25	1.28e4	73.1	NO
3	3	13C3-PFHxS	B8K0153-BS1 OPR 0.25	2.20e3	80.2	NO
4	4	13C8-PFOA	B8K0153-BS1 OPR 0.25	1.75e4	76.1	NO
5	5	13C9-PFNA	B8K0153-BS1 OPR 0.25	1.35e4	79.2	NO
6	6	13C4-PFOS	B8K0153-BS1 OPR 0.25	2.48e3	78.6	NO
7	7	13C6-PFDA	B8K0153-BS1 OPR 0.25	1.52e4	83.5	NO
8	8	13C7-PFUdA	B8K0153-BS1 OPR 0.25	1.77e4	81.0	NO

Name: 181203M1_5, Date: 03-Dec-2018, Time: 15:08:39, ID: B8K0153-MS1 Matrix Spike 0.1068, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0153-MS1 Matrix Spike 0.1068	6.20e3	70.0	NO
2	2	13C5-PFHxA	B8K0153-MS1 Matrix Spike 0.1068	1.20e4	68.6	NO
3	3	13C3-PFHxS	B8K0153-MS1 Matrix Spike 0.1068	2.46e3	89.6	NO
4	4	13C8-PFOA	B8K0153-MS1 Matrix Spike 0.1068	1.62e4	70.3	NO
5	5	13C9-PFNA	B8K0153-MS1 Matrix Spike 0.1068	1.17e4	68.5	NO
6	6	13C4-PFOS	B8K0153-MS1 Matrix Spike 0.1068	2.61e3	82.9	NO
7	7	13C6-PFDA	B8K0153-MS1 Matrix Spike 0.1068	1.34e4	73.5	NO
8	8	13C7-PFUdA	B8K0153-MS1 Matrix Spike 0.1068	1.63e4	74.4	NO

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Name: 181203M1_6, Date: 03-Dec-2018, Time: 15:19:12, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0153-MSD1 Matrix Spike Dup 0.111...	4.23e3	47.8	YES
2	2	13C5-PFHxA	B8K0153-MSD1 Matrix Spike Dup 0.111...	9.19e3	52.4	NO
3	3	13C3-PFHxS	B8K0153-MSD1 Matrix Spike Dup 0.111...	2.45e3	89.0	NO
4	4	13C8-PFOA	B8K0153-MSD1 Matrix Spike Dup 0.111...	1.41e4	61.2	NO
5	5	13C9-PFNA	B8K0153-MSD1 Matrix Spike Dup 0.111...	9.97e3	58.3	NO
6	6	13C4-PFOS	B8K0153-MSD1 Matrix Spike Dup 0.111...	2.61e3	82.7	NO
7	7	13C6-PFDA	B8K0153-MSD1 Matrix Spike Dup 0.111...	1.14e4	63.0	NO
8	8	13C7-PFUdA	B8K0153-MSD1 Matrix Spike Dup 0.111...	1.42e4	65.0	NO

Name: 181203M1_7, Date: 03-Dec-2018, Time: 15:29:51, ID: B8K0153-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0153-BLK1 Method Blank 0.25	6.76e3	76.4	NO
2	2	13C5-PFHxA	B8K0153-BLK1 Method Blank 0.25	1.37e4	77.9	NO
3	3	13C3-PFHxS	B8K0153-BLK1 Method Blank 0.25	2.34e3	85.2	NO
4	4	13C8-PFOA	B8K0153-BLK1 Method Blank 0.25	1.85e4	80.4	NO
5	5	13C9-PFNA	B8K0153-BLK1 Method Blank 0.25	1.33e4	77.5	NO
6	6	13C4-PFOS	B8K0153-BLK1 Method Blank 0.25	2.57e3	81.4	NO
7	7	13C6-PFDA	B8K0153-BLK1 Method Blank 0.25	1.49e4	82.1	NO
8	8	13C7-PFUdA	B8K0153-BLK1 Method Blank 0.25	1.76e4	80.4	NO

Name: 181203M1_8, Date: 03-Dec-2018, Time: 15:40:24, ID: 1803678-01 A1-MW-01-SA2 0.11182, Description: A1-MW-01-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803678-01 A1-MW-01-SA2 0.11182	4.66e3	52.6	NO
2	2	13C5-PFHxA	1803678-01 A1-MW-01-SA2 0.11182	9.22e3	52.6	NO
3	3	13C3-PFHxS	1803678-01 A1-MW-01-SA2 0.11182	2.71e3	98.7	NO
4	4	13C8-PFOA	1803678-01 A1-MW-01-SA2 0.11182	1.41e4	61.4	NO
5	5	13C9-PFNA	1803678-01 A1-MW-01-SA2 0.11182	1.14e4	66.7	NO
6	6	13C4-PFOS	1803678-01 A1-MW-01-SA2 0.11182	2.97e3	94.1	NO
7	7	13C6-PFDA	1803678-01 A1-MW-01-SA2 0.11182	1.32e4	72.8	NO
8	8	13C7-PFUdA	1803678-01 A1-MW-01-SA2 0.11182	1.62e4	74.2	NO

Name: 181203M1_9, Date: 03-Dec-2018, Time: 15:51:02, ID: 1803678-02 A1-MW-42-SA2 0.11781, Description: A1-MW-42-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803678-02 A1-MW-42-SA2 0.11781	3.93e3	44.3	YES
2	2	13C5-PFHxA	1803678-02 A1-MW-42-SA2 0.11781	7.20e3	41.1	YES
3	3	13C3-PFHxS	1803678-02 A1-MW-42-SA2 0.11781	2.35e3	85.4	NO
4	4	13C8-PFOA	1803678-02 A1-MW-42-SA2 0.11781	1.02e4	44.3	YES
5	5	13C9-PFNA	1803678-02 A1-MW-42-SA2 0.11781	7.80e3	45.6	YES
6	6	13C4-PFOS	1803678-02 A1-MW-42-SA2 0.11781	2.52e3	80.0	NO
7	7	13C6-PFDA	1803678-02 A1-MW-42-SA2 0.11781	9.69e3	53.4	NO
8	8	13C7-PFUdA	1803678-02 A1-MW-42-SA2 0.11781	1.27e4	58.0	NO

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Name: 181203M1_10, Date: 03-Dec-2018, Time: 16:01:36, ID: 1803678-03 FRB-20181116 0.1036, Description: FRB-20181116

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803678-03 FRB-20181116 0.1036	7.24e3	81.7	NO
2	2	13C5-PFHxA	1803678-03 FRB-20181116 0.1036	1.51e4	86.0	NO
3	3	13C3-PFHxS	1803678-03 FRB-20181116 0.1036	2.42e3	88.2	NO
4	4	13C8-PFOA	1803678-03 FRB-20181116 0.1036	2.00e4	86.9	NO
5	5	13C9-PFNA	1803678-03 FRB-20181116 0.1036	1.46e4	85.3	NO
6	6	13C4-PFOS	1803678-03 FRB-20181116 0.1036	2.77e3	88.0	NO
7	7	13C6-PFDA	1803678-03 FRB-20181116 0.1036	1.54e4	84.9	NO
8	8	13C7-PFUdA	1803678-03 FRB-20181116 0.1036	1.98e4	90.5	NO

Name: 181203M1_11, Date: 03-Dec-2018, Time: 16:12:14, ID: 1803678-04 EB-20181116 0.11772, Description: EB-20181116

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803678-04 EB-20181116 0.11772	8.06e3	91.0	NO
2	2	13C5-PFHxA	1803678-04 EB-20181116 0.11772	1.56e4	89.1	NO
3	3	13C3-PFHxS	1803678-04 EB-20181116 0.11772	2.49e3	90.7	NO
4	4	13C8-PFOA	1803678-04 EB-20181116 0.11772	2.08e4	90.5	NO
5	5	13C9-PFNA	1803678-04 EB-20181116 0.11772	1.50e4	88.0	NO
6	6	13C4-PFOS	1803678-04 EB-20181116 0.11772	2.67e3	84.6	NO
7	7	13C6-PFDA	1803678-04 EB-20181116 0.11772	1.57e4	86.7	NO
8	8	13C7-PFUdA	1803678-04 EB-20181116 0.11772	1.86e4	85.2	NO

Name: 181203M1_12, Date: 03-Dec-2018, Time: 16:22:46, ID: 1803676-01 A1-MW-11-SA2 0.11626, Description: A1-MW-11-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-01 A1-MW-11-SA2 0.11626	4.43e3	50.0	NO
2	2	13C5-PFHxA	1803676-01 A1-MW-11-SA2 0.11626	8.44e3	48.1	YES
3	3	13C3-PFHxS	1803676-01 A1-MW-11-SA2 0.11626	2.59e3	94.1	NO
4	4	13C8-PFOA	1803676-01 A1-MW-11-SA2 0.11626	1.10e4	47.9	YES
5	5	13C9-PFNA	1803676-01 A1-MW-11-SA2 0.11626	7.74e3	45.3	YES
6	6	13C4-PFOS	1803676-01 A1-MW-11-SA2 0.11626	2.52e3	79.8	NO
7	7	13C6-PFDA	1803676-01 A1-MW-11-SA2 0.11626	9.12e3	50.2	NO
8	8	13C7-PFUdA	1803676-01 A1-MW-11-SA2 0.11626	1.11e4	50.9	NO

Name: 181203M1_13, Date: 03-Dec-2018, Time: 16:33:24, ID: 1803676-02 A1-MW-13-SA2 0.11042, Description: A1-MW-13-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-02 A1-MW-13-SA2 0.11042	5.56e3	62.8	NO
2	2	13C5-PFHxA	1803676-02 A1-MW-13-SA2 0.11042	1.10e4	62.8	NO
3	3	13C3-PFHxS	1803676-02 A1-MW-13-SA2 0.11042	2.44e3	88.8	NO
4	4	13C8-PFOA	1803676-02 A1-MW-13-SA2 0.11042	1.45e4	63.0	NO
5	5	13C9-PFNA	1803676-02 A1-MW-13-SA2 0.11042	1.12e4	65.4	NO
6	6	13C4-PFOS	1803676-02 A1-MW-13-SA2 0.11042	2.55e3	80.8	NO
7	7	13C6-PFDA	1803676-02 A1-MW-13-SA2 0.11042	1.27e4	69.9	NO
8	8	13C7-PFUdA	1803676-02 A1-MW-13-SA2 0.11042	1.51e4	69.1	NO

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Name: 181203M1_14, Date: 03-Dec-2018, Time: 16:43:58, ID: 1803676-03 A1-MW-14-SA2 0.11629, Description: A1-MW-14-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-03 A1-MW-14-SA2 0.11629	5.05e3	57.0	NO
2	2	13C5-PFHxA	1803676-03 A1-MW-14-SA2 0.11629	9.84e3	56.1	NO
3	3	13C3-PFHxS	1803676-03 A1-MW-14-SA2 0.11629	2.13e3	77.6	NO
4	4	13C8-PFOA	1803676-03 A1-MW-14-SA2 0.11629	1.35e4	58.8	NO
5	5	13C9-PFNA	1803676-03 A1-MW-14-SA2 0.11629	1.02e4	59.8	NO
6	6	13C4-PFOS	1803676-03 A1-MW-14-SA2 0.11629	2.42e3	76.9	NO
7	7	13C6-PFDA	1803676-03 A1-MW-14-SA2 0.11629	1.16e4	64.1	NO
8	8	13C7-PFUdA	1803676-03 A1-MW-14-SA2 0.11629	1.41e4	64.5	NO

Name: 181203M1_15, Date: 03-Dec-2018, Time: 16:54:36, ID: 1803676-04 A1-MW-15-SA2 0.11086, Description: A1-MW-15-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-04 A1-MW-15-SA2 0.11086	5.23e3	59.0	NO
2	2	13C5-PFHxA	1803676-04 A1-MW-15-SA2 0.11086	9.86e3	56.3	NO
3	3	13C3-PFHxS	1803676-04 A1-MW-15-SA2 0.11086	2.23e3	81.1	NO
4	4	13C8-PFOA	1803676-04 A1-MW-15-SA2 0.11086	1.32e4	57.4	NO
5	5	13C9-PFNA	1803676-04 A1-MW-15-SA2 0.11086	9.26e3	54.2	NO
6	6	13C4-PFOS	1803676-04 A1-MW-15-SA2 0.11086	2.50e3	79.3	NO
7	7	13C6-PFDA	1803676-04 A1-MW-15-SA2 0.11086	1.08e4	59.7	NO
8	8	13C7-PFUdA	1803676-04 A1-MW-15-SA2 0.11086	1.25e4	57.3	NO

Name: 181203M1_16, Date: 03-Dec-2018, Time: 18:13:52, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA	7.86e0	0.0	YES
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_17, Date: 03-Dec-2018, Time: 18:24:27, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 181203M1_18, Date: 03-Dec-2018, Time: 18:35:06, ID: 1803676-05 A1-MW-37-SA2 0.11753, Description: A1-MW-37-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-05 A1-MW-37-SA2 0.11753	4.70e3	53.1	NO
2	2	13C5-PFHxA	1803676-05 A1-MW-37-SA2 0.11753	8.32e3	47.5	YES
3	3	13C3-PFHxS	1803676-05 A1-MW-37-SA2 0.11753	2.22e3	81.0	NO
4	4	13C8-PFOA	1803676-05 A1-MW-37-SA2 0.11753	1.14e4	49.6	YES
5	5	13C9-PFNA	1803676-05 A1-MW-37-SA2 0.11753	7.65e3	44.7	YES
6	6	13C4-PFOS	1803676-05 A1-MW-37-SA2 0.11753	2.42e3	76.7	NO
7	7	13C6-PFDA	1803676-05 A1-MW-37-SA2 0.11753	8.27e3	45.6	YES
8	8	13C7-PFUdA	1803676-05 A1-MW-37-SA2 0.11753	9.42e3	43.1	YES

Name: 181203M1_19, Date: 03-Dec-2018, Time: 18:45:39, ID: 1803676-06 A1-MW-37-SA2D 0.11493, Description: A1-MW-37-SA2D

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-06 A1-MW-37-SA2D 0.11493	5.65e3	63.7	NO
2	2	13C5-PFHxA	1803676-06 A1-MW-37-SA2D 0.11493	1.02e4	58.2	NO
3	3	13C3-PFHxS	1803676-06 A1-MW-37-SA2D 0.11493	2.42e3	88.0	NO
4	4	13C8-PFOA	1803676-06 A1-MW-37-SA2D 0.11493	1.42e4	61.9	NO
5	5	13C9-PFNA	1803676-06 A1-MW-37-SA2D 0.11493	1.00e4	58.6	NO
6	6	13C4-PFOS	1803676-06 A1-MW-37-SA2D 0.11493	2.85e3	90.3	NO
7	7	13C6-PFDA	1803676-06 A1-MW-37-SA2D 0.11493	1.09e4	59.9	NO
8	8	13C7-PFUdA	1803676-06 A1-MW-37-SA2D 0.11493	1.35e4	61.8	NO

Name: 181203M1_20, Date: 03-Dec-2018, Time: 18:56:10, ID: 1803676-07 FRB-20181115 0.11067, Description: FRB-20181115

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-07 FRB-20181115 0.11067	6.27e3	70.8	NO
2	2	13C5-PFHxA	1803676-07 FRB-20181115 0.11067	1.31e4	74.5	NO
3	3	13C3-PFHxS	1803676-07 FRB-20181115 0.11067	2.50e3	90.9	NO
4	4	13C8-PFOA	1803676-07 FRB-20181115 0.11067	1.90e4	82.8	NO
5	5	13C9-PFNA	1803676-07 FRB-20181115 0.11067	1.40e4	81.7	NO
6	6	13C4-PFOS	1803676-07 FRB-20181115 0.11067	2.68e3	84.9	NO
7	7	13C6-PFDA	1803676-07 FRB-20181115 0.11067	1.54e4	84.9	NO
8	8	13C7-PFUdA	1803676-07 FRB-20181115 0.11067	1.79e4	82.0	NO

Name: 181203M1_21, Date: 03-Dec-2018, Time: 19:06:48, ID: 1803676-08 A1-MW-31-SA2 0.1169, Description: A1-MW-31-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803676-08 A1-MW-31-SA2 0.1169	5.32e3	60.0	NO
2	2	13C5-PFHxA	1803676-08 A1-MW-31-SA2 0.1169	1.04e4	59.1	NO
3	3	13C3-PFHxS	1803676-08 A1-MW-31-SA2 0.1169	2.36e3	86.0	NO
4	4	13C8-PFOA	1803676-08 A1-MW-31-SA2 0.1169	1.37e4	59.5	NO
5	5	13C9-PFNA	1803676-08 A1-MW-31-SA2 0.1169	1.03e4	60.3	NO
6	6	13C4-PFOS	1803676-08 A1-MW-31-SA2 0.1169	2.71e3	85.9	NO
7	7	13C6-PFDA	1803676-08 A1-MW-31-SA2 0.1169	1.14e4	62.8	NO
8	8	13C7-PFUdA	1803676-08 A1-MW-31-SA2 0.1169	1.34e4	61.5	NO

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Name: 181203M1_22, Date: 03-Dec-2018, Time: 19:17:20, ID: 1803689-01 Equipment Blank 1 0.25208, Description: Equipment Blank 1

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803689-01 Equipment Blank 1 0.25208	7.56e3	85.3	NO
2	2	13C5-PFHxA	1803689-01 Equipment Blank 1 0.25208	1.50e4	85.6	NO
3	3	13C3-PFHxS	1803689-01 Equipment Blank 1 0.25208	2.45e3	89.1	NO
4	4	13C8-PFOA	1803689-01 Equipment Blank 1 0.25208	1.89e4	82.5	NO
5	5	13C9-PFNA	1803689-01 Equipment Blank 1 0.25208	1.30e4	76.3	NO
6	6	13C4-PFOS	1803689-01 Equipment Blank 1 0.25208	2.74e3	87.0	NO
7	7	13C6-PFDA	1803689-01 Equipment Blank 1 0.25208	1.39e4	76.5	NO
8	8	13C7-PFUdA	1803689-01 Equipment Blank 1 0.25208	1.64e4	75.1	NO

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181203M1-2 PFC CS3 18K3006	9.48e3	107.1	NO
2	2	13C5-PFHxA	ST181203M1-2 PFC CS3 18K3006	1.87e4	106.5	NO
3	3	13C3-PFHxS	ST181203M1-2 PFC CS3 18K3006	2.72e3	99.1	NO
4	4	13C8-PFOA	ST181203M1-2 PFC CS3 18K3006	2.43e4	106.0	NO
5	5	13C9-PFNA	ST181203M1-2 PFC CS3 18K3006	1.73e4	101.1	NO
6	6	13C4-PFOS	ST181203M1-2 PFC CS3 18K3006	3.21e3	101.8	NO
7	7	13C6-PFDA	ST181203M1-2 PFC CS3 18K3006	1.93e4	106.2	NO
8	8	13C7-PFUdA	ST181203M1-2 PFC CS3 18K3006	2.29e4	105.0	NO

Name: 181203M1_24, Date: 03-Dec-2018, Time: 19:38:28, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_25, Date: 03-Dec-2018, Time: 19:49:07, ID: B8K0190-BSD1 LCSD 0.25, Description: LCSD

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0190-BSD1 LCSD 0.25	4.43e3	50.0	NO
2	2	13C5-PFHxA	B8K0190-BSD1 LCSD 0.25	9.72e3	55.4	NO
3	3	13C3-PFHxS	B8K0190-BSD1 LCSD 0.25	2.44e3	88.9	NO
4	4	13C8-PFOA	B8K0190-BSD1 LCSD 0.25	1.65e4	71.9	NO
5	5	13C9-PFNA	B8K0190-BSD1 LCSD 0.25	1.27e4	74.3	NO
6	6	13C4-PFOS	B8K0190-BSD1 LCSD 0.25	2.78e3	88.2	NO
7	7	13C6-PFDA	B8K0190-BSD1 LCSD 0.25	1.47e4	80.8	NO
8	8	13C7-PFUdA	B8K0190-BSD1 LCSD 0.25	1.77e4	80.9	NO

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Name: 181203M1_26, Date: 03-Dec-2018, Time: 19:59:45, ID: 1803745-03 PFC-AF-01-03-112618 0.24673, Description: PFC-AF-01-03-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803745-03 PFC-AF-01-03-112618 0.2...	6.62e3	74.7	NO
2	2	13C5-PFHxA	1803745-03 PFC-AF-01-03-112618 0.2...	1.02e4	58.0	NO
3	3	13C3-PFHxS	1803745-03 PFC-AF-01-03-112618 0.2...	1.43e3	52.1	NO
4	4	13C8-PFOA	1803745-03 PFC-AF-01-03-112618 0.2...	1.64e4	71.5	NO
5	5	13C9-PFNA	1803745-03 PFC-AF-01-03-112618 0.2...	1.13e4	66.4	NO
6	6	13C4-PFOS	1803745-03 PFC-AF-01-03-112618 0.2...	4.78e2	15.2	YES
7	7	13C6-PFDA	1803745-03 PFC-AF-01-03-112618 0.2...	1.54e4	84.8	NO
8	8	13C7-PFUdA	1803745-03 PFC-AF-01-03-112618 0.2...	1.87e4	85.7	NO

Name: 181203M1_27, Date: 03-Dec-2018, Time: 20:10:19, ID: 1803746-01 PFC-AF-02-01-112618 0.23986, Description: PFC-AF-02-01-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803746-01 PFC-AF-02-01-112618 0.2...	4.37e3	49.3	YES
2	2	13C5-PFHxA	1803746-01 PFC-AF-02-01-112618 0.2...	3.30e3	18.8	YES
3	3	13C3-PFHxS	1803746-01 PFC-AF-02-01-112618 0.2...	6.07e2	22.1	YES
4	4	13C8-PFOA	1803746-01 PFC-AF-02-01-112618 0.2...	3.46e3	15.1	YES
5	5	13C9-PFNA	1803746-01 PFC-AF-02-01-112618 0.2...	6.50e3	38.0	YES
6	6	13C4-PFOS	1803746-01 PFC-AF-02-01-112618 0.2...	9.13e2	29.0	YES
7	7	13C6-PFDA	1803746-01 PFC-AF-02-01-112618 0.2...	5.95e3	32.8	YES
8	8	13C7-PFUdA	1803746-01 PFC-AF-02-01-112618 0.2...	1.15e4	52.8	NO

Name: 181203M1_28, Date: 03-Dec-2018, Time: 20:20:57, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_29, Date: 03-Dec-2018, Time: 20:31:30, ID: 1803746-02 PFC-AF-02-02-112618 0.2365, Description: PFC-AF-02-02-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803746-02 PFC-AF-02-02-112618 0.2...	6.61e3	74.6	NO
2	2	13C5-PFHxA	1803746-02 PFC-AF-02-02-112618 0.2...	8.03e3	45.8	YES
3	3	13C3-PFHxS	1803746-02 PFC-AF-02-02-112618 0.2...	1.24e3	45.0	YES
4	4	13C8-PFOA	1803746-02 PFC-AF-02-02-112618 0.2...	1.11e4	48.2	YES
5	5	13C9-PFNA	1803746-02 PFC-AF-02-02-112618 0.2...	1.03e4	60.3	NO
6	6	13C4-PFOS	1803746-02 PFC-AF-02-02-112618 0.2...	1.28e3	40.6	YES
7	7	13C6-PFDA	1803746-02 PFC-AF-02-02-112618 0.2...	1.12e4	61.6	NO
8	8	13C7-PFUdA	1803746-02 PFC-AF-02-02-112618 0.2...	1.80e4	82.4	NO

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Name: 181203M1_30, Date: 03-Dec-2018, Time: 20:42:08, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_31, Date: 03-Dec-2018, Time: 20:52:42, ID: 1803746-03 PFC-AF-02-03-112618 0.23672, Description: PFC-AF-02-03-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803746-03 PFC-AF-02-03-112618 0.2...	7.97e3	89.9	NO
2	2	13C5-PFHxA	1803746-03 PFC-AF-02-03-112618 0.2...	1.60e4	91.0	NO
3	3	13C3-PFHxS	1803746-03 PFC-AF-02-03-112618 0.2...	2.41e3	87.7	NO
4	4	13C8-PFOA	1803746-03 PFC-AF-02-03-112618 0.2...	2.11e4	91.7	NO
5	5	13C9-PFNA	1803746-03 PFC-AF-02-03-112618 0.2...	1.55e4	90.7	NO
6	6	13C4-PFOS	1803746-03 PFC-AF-02-03-112618 0.2...	2.25e3	71.4	NO
7	7	13C6-PFDA	1803746-03 PFC-AF-02-03-112618 0.2...	1.61e4	88.6	NO
8	8	13C7-PFUdA	1803746-03 PFC-AF-02-03-112618 0.2...	1.82e4	83.4	NO

Name: 181203M1_32, Date: 03-Dec-2018, Time: 21:03:20, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_33, Date: 03-Dec-2018, Time: 21:13:54, ID: 1803762-04 PFC-AF-01-04-112718 0.24232, Description: PFC-AF-01-04-112718

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803762-04 PFC-AF-01-04-112718 0.2...	3.56e3	40.2	YES
2	2	13C5-PFHxA	1803762-04 PFC-AF-01-04-112718 0.2...	8.35e3	47.6	YES
3	3	13C3-PFHxS	1803762-04 PFC-AF-01-04-112718 0.2...	2.61e3	94.9	NO
4	4	13C8-PFOA	1803762-04 PFC-AF-01-04-112718 0.2...	1.31e4	56.8	NO
5	5	13C9-PFNA	1803762-04 PFC-AF-01-04-112718 0.2...	1.05e4	61.4	NO
6	6	13C4-PFOS	1803762-04 PFC-AF-01-04-112718 0.2...	2.97e3	94.1	NO
7	7	13C6-PFDA	1803762-04 PFC-AF-01-04-112718 0.2...	1.27e4	70.0	NO
8	8	13C7-PFUdA	1803762-04 PFC-AF-01-04-112718 0.2...	1.56e4	71.4	NO

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Name: 181203M1_34, Date: 03-Dec-2018, Time: 21:24:32, ID: 1803618-02 1811353-02A 0.2386, Description: 1811353-02A

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803618-02 1811353-02A 0.2386	6.68e3	75.4	NO
2	2	13C5-PFHxA	1803618-02 1811353-02A 0.2386	1.34e4	76.4	NO
3	3	13C3-PFHxS	1803618-02 1811353-02A 0.2386	2.36e3	85.7	NO
4	4	13C8-PFOA	1803618-02 1811353-02A 0.2386	1.86e4	81.1	NO
5	5	13C9-PFNA	1803618-02 1811353-02A 0.2386	1.33e4	77.8	NO
6	6	13C4-PFOS	1803618-02 1811353-02A 0.2386	2.60e3	82.4	NO
7	7	13C6-PFDA	1803618-02 1811353-02A 0.2386	1.45e4	79.7	NO
8	8	13C7-PFUdA	1803618-02 1811353-02A 0.2386	1.60e4	73.4	NO

Name: 181203M1_35, Date: 03-Dec-2018, Time: 21:35:10, ID: 1803618-01@10X 1811353-01A 0.23448, Description: 1811353-01A

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803618-01@10X 1811353-01A 0.23448	6.07e2	6.9	YES
2	2	13C5-PFHxA	1803618-01@10X 1811353-01A 0.23448	1.32e3	7.5	YES
3	3	13C3-PFHxS	1803618-01@10X 1811353-01A 0.23448	2.64e2	9.6	YES
4	4	13C8-PFOA	1803618-01@10X 1811353-01A 0.23448	1.89e3	8.2	YES
5	5	13C9-PFNA	1803618-01@10X 1811353-01A 0.23448	1.57e3	9.2	YES
6	6	13C4-PFOS	1803618-01@10X 1811353-01A 0.23448	2.91e2	9.2	YES
7	7	13C6-PFDA	1803618-01@10X 1811353-01A 0.23448	1.58e3	8.7	YES
8	8	13C7-PFUdA	1803618-01@10X 1811353-01A 0.23448	1.82e3	8.3	YES

Name: 181203M1_36, Date: 03-Dec-2018, Time: 21:45:43, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_37, Date: 03-Dec-2018, Time: 21:56:21, ID: B8K0215-BS1 OPR 0.125, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0215-BS1 OPR 0.125	6.96e3	78.5	NO
2	2	13C5-PFHxA	B8K0215-BS1 OPR 0.125	1.38e4	78.4	NO
3	3	13C3-PFHxS	B8K0215-BS1 OPR 0.125	2.16e3	78.6	NO
4	4	13C8-PFOA	B8K0215-BS1 OPR 0.125	1.70e4	73.8	NO
5	5	13C9-PFNA	B8K0215-BS1 OPR 0.125	1.21e4	70.7	NO
6	6	13C4-PFOS	B8K0215-BS1 OPR 0.125	2.57e3	81.4	NO
7	7	13C6-PFDA	B8K0215-BS1 OPR 0.125	1.31e4	72.4	NO
8	8	13C7-PFUdA	B8K0215-BS1 OPR 0.125	1.58e4	72.5	NO

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Name: 181203M1_38, Date: 03-Dec-2018, Time: 22:06:56, ID: B8K0215-BSD1 LCSD 0.125, Description: LCSD

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0215-BSD1 LCSD 0.125	7.69e3	86.8	NO
2	2	13C5-PFHxA	B8K0215-BSD1 LCSD 0.125	1.52e4	86.9	NO
3	3	13C3-PFHxS	B8K0215-BSD1 LCSD 0.125	2.33e3	84.9	NO
4	4	13C8-PFOA	B8K0215-BSD1 LCSD 0.125	1.95e4	85.0	NO
5	5	13C9-PFNA	B8K0215-BSD1 LCSD 0.125	1.44e4	84.3	NO
6	6	13C4-PFOS	B8K0215-BSD1 LCSD 0.125	2.64e3	83.9	NO
7	7	13C6-PFDA	B8K0215-BSD1 LCSD 0.125	1.56e4	85.7	NO
8	8	13C7-PFUdA	B8K0215-BSD1 LCSD 0.125	1.76e4	80.8	NO

Name: 181203M1_39, Date: 03-Dec-2018, Time: 22:17:34, ID: B8K0215-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0215-BLK1 Method Blank 0.125	7.04e3	79.5	NO
2	2	13C5-PFHxA	B8K0215-BLK1 Method Blank 0.125	1.45e4	82.5	NO
3	3	13C3-PFHxS	B8K0215-BLK1 Method Blank 0.125	2.47e3	89.8	NO
4	4	13C8-PFOA	B8K0215-BLK1 Method Blank 0.125	1.78e4	77.7	NO
5	5	13C9-PFNA	B8K0215-BLK1 Method Blank 0.125	1.33e4	77.8	NO
6	6	13C4-PFOS	B8K0215-BLK1 Method Blank 0.125	2.77e3	87.7	NO
7	7	13C6-PFDA	B8K0215-BLK1 Method Blank 0.125	1.44e4	79.3	NO
8	8	13C7-PFUdA	B8K0215-BLK1 Method Blank 0.125	1.73e4	79.3	NO

Name: 181203M1_40, Date: 03-Dec-2018, Time: 22:28:07, ID: 1803788-01 PFC-AF-01-01-112918 0.11457, Description: PFC-AF-01-01-112918

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803788-01 PFC-AF-01-01-112918 0.11..	6.61e3	74.6	NO
2	2	13C5-PFHxA	1803788-01 PFC-AF-01-01-112918 0.11..	1.34e4	76.5	NO
3	3	13C3-PFHxS	1803788-01 PFC-AF-01-01-112918 0.11..	2.18e3	79.3	NO
4	4	13C8-PFOA	1803788-01 PFC-AF-01-01-112918 0.11..	1.76e4	76.6	NO
5	5	13C9-PFNA	1803788-01 PFC-AF-01-01-112918 0.11..	1.36e4	79.4	NO
6	6	13C4-PFOS	1803788-01 PFC-AF-01-01-112918 0.11..	2.13e3	67.6	NO
7	7	13C6-PFDA	1803788-01 PFC-AF-01-01-112918 0.11..	1.55e4	85.2	NO
8	8	13C7-PFUdA	1803788-01 PFC-AF-01-01-112918 0.11..	1.70e4	77.9	NO

Name: 181203M1_41, Date: 03-Dec-2018, Time: 22:38:45, ID: 1803788-02 PFC-AF-01-02-112918 0.11773, Description: PFC-AF-01-02-112918

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803788-02 PFC-AF-01-02-112918 0.11..	7.44e3	84.0	NO
2	2	13C5-PFHxA	1803788-02 PFC-AF-01-02-112918 0.11..	1.51e4	86.4	NO
3	3	13C3-PFHxS	1803788-02 PFC-AF-01-02-112918 0.11..	2.48e3	90.1	NO
4	4	13C8-PFOA	1803788-02 PFC-AF-01-02-112918 0.11..	2.03e4	88.4	NO
5	5	13C9-PFNA	1803788-02 PFC-AF-01-02-112918 0.11..	1.47e4	86.3	NO
6	6	13C4-PFOS	1803788-02 PFC-AF-01-02-112918 0.11..	2.66e3	84.3	NO
7	7	13C6-PFDA	1803788-02 PFC-AF-01-02-112918 0.11..	1.58e4	87.1	NO
8	8	13C7-PFUdA	1803788-02 PFC-AF-01-02-112918 0.11..	1.82e4	83.1	NO

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Name: 181203M1_42, Date: 03-Dec-2018, Time: 22:49:19, ID: 1803788-03 PFC-AF-01-03-112918 0.11732, Description: PFC-AF-01-03-112918

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803788-03 PFC-AF-01-03-112918 0.11..	7.74e3	87.3	NO
2	2	13C5-PFHxA	1803788-03 PFC-AF-01-03-112918 0.11..	1.53e4	87.2	NO
3	3	13C3-PFHxS	1803788-03 PFC-AF-01-03-112918 0.11..	2.45e3	89.0	NO
4	4	13C8-PFOA	1803788-03 PFC-AF-01-03-112918 0.11..	2.00e4	87.2	NO
5	5	13C9-PFNA	1803788-03 PFC-AF-01-03-112918 0.11..	1.42e4	82.9	NO
6	6	13C4-PFOS	1803788-03 PFC-AF-01-03-112918 0.11..	2.78e3	88.1	NO
7	7	13C6-PFDA	1803788-03 PFC-AF-01-03-112918 0.11..	1.58e4	86.9	NO
8	8	13C7-PFUdA	1803788-03 PFC-AF-01-03-112918 0.11..	1.77e4	81.2	NO

Name: 181203M1_43, Date: 03-Dec-2018, Time: 22:59:57, ID: ST181203M1-3 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181203M1-3 PFC CS3 18K3006	9.50e3	107.3	NO
2	2	13C5-PFHxA	ST181203M1-3 PFC CS3 18K3006	1.96e4	111.5	NO
3	3	13C3-PFHxS	ST181203M1-3 PFC CS3 18K3006	2.88e3	104.9	NO
4	4	13C8-PFOA	ST181203M1-3 PFC CS3 18K3006	2.43e4	106.0	NO
5	5	13C9-PFNA	ST181203M1-3 PFC CS3 18K3006	1.81e4	106.0	NO
6	6	13C4-PFOS	ST181203M1-3 PFC CS3 18K3006	3.25e3	103.0	NO
7	7	13C6-PFDA	ST181203M1-3 PFC CS3 18K3006	1.95e4	107.3	NO
8	8	13C7-PFUdA	ST181203M1-3 PFC CS3 18K3006	2.28e4	104.2	NO

Name: 181203M1_44, Date: 03-Dec-2018, Time: 23:10:29, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_45, Date: 03-Dec-2018, Time: 23:21:08, ID: B8K0197-BS1 OPR 0.125, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0197-BS1 OPR 0.125	6.90e3	77.8	NO
2	2	13C5-PFHxA	B8K0197-BS1 OPR 0.125	1.29e4	73.8	NO
3	3	13C3-PFHxS	B8K0197-BS1 OPR 0.125	2.21e3	80.4	NO
4	4	13C8-PFOA	B8K0197-BS1 OPR 0.125	1.64e4	71.3	NO
5	5	13C9-PFNA	B8K0197-BS1 OPR 0.125	1.07e4	62.4	NO
6	6	13C4-PFOS	B8K0197-BS1 OPR 0.125	1.46e3	46.4	YES
7	7	13C6-PFDA	B8K0197-BS1 OPR 0.125	7.61e3	41.9	YES
8	8	13C7-PFUdA	B8K0197-BS1 OPR 0.125	3.03e3	13.9	YES

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Name: 181203M1_46, Date: 03-Dec-2018, Time: 23:31:46, ID: B8K0197-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0197-BLK1 Method Blank 0.125	7.18e3	81.0	NO
2	2	13C5-PFHxA	B8K0197-BLK1 Method Blank 0.125	1.39e4	79.4	NO
3	3	13C3-PFHxS	B8K0197-BLK1 Method Blank 0.125	2.28e3	82.8	NO
4	4	13C8-PFOA	B8K0197-BLK1 Method Blank 0.125	1.72e4	74.7	NO
5	5	13C9-PFNA	B8K0197-BLK1 Method Blank 0.125	1.06e4	62.3	NO
6	6	13C4-PFOS	B8K0197-BLK1 Method Blank 0.125	1.23e3	39.0	YES
7	7	13C6-PFDA	B8K0197-BLK1 Method Blank 0.125	6.64e3	36.5	YES
8	8	13C7-PFUdA	B8K0197-BLK1 Method Blank 0.125	3.04e3	13.9	YES

Name: 181203M1_47, Date: 03-Dec-2018, Time: 23:42:19, ID: 1803754-01 CMW-18-01 0.11781, Description: CMW-18-01

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-01 CMW-18-01 0.11781	6.67e3	75.3	NO
2	2	13C5-PFHxA	1803754-01 CMW-18-01 0.11781	1.36e4	77.8	NO
3	3	13C3-PFHxS	1803754-01 CMW-18-01 0.11781	2.12e3	77.2	NO
4	4	13C8-PFOA	1803754-01 CMW-18-01 0.11781	1.84e4	80.2	NO
5	5	13C9-PFNA	1803754-01 CMW-18-01 0.11781	1.26e4	73.9	NO
6	6	13C4-PFOS	1803754-01 CMW-18-01 0.11781	2.39e3	75.7	NO
7	7	13C6-PFDA	1803754-01 CMW-18-01 0.11781	1.22e4	67.1	NO
8	8	13C7-PFUdA	1803754-01 CMW-18-01 0.11781	1.15e4	52.5	NO

Name: 181203M1_48, Date: 03-Dec-2018, Time: 23:52:57, ID: 1803754-02 CMW-101B 0.11273, Description: CMW-101B

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-02 CMW-101B 0.11273	6.96e3	78.5	NO
2	2	13C5-PFHxA	1803754-02 CMW-101B 0.11273	1.40e4	79.8	NO
3	3	13C3-PFHxS	1803754-02 CMW-101B 0.11273	2.47e3	89.7	NO
4	4	13C8-PFOA	1803754-02 CMW-101B 0.11273	1.91e4	83.2	NO
5	5	13C9-PFNA	1803754-02 CMW-101B 0.11273	1.23e4	71.8	NO
6	6	13C4-PFOS	1803754-02 CMW-101B 0.11273	2.25e3	71.3	NO
7	7	13C6-PFDA	1803754-02 CMW-101B 0.11273	1.11e4	61.1	NO
8	8	13C7-PFUdA	1803754-02 CMW-101B 0.11273	8.02e3	36.7	YES

Name: 181203M1_49, Date: 04-Dec-2018, Time: 00:03:30, ID: 1803754-03 MW-97701 0.11474, Description: MW-97701

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-03 MW-97701 0.11474	7.11e3	80.3	NO
2	2	13C5-PFHxA	1803754-03 MW-97701 0.11474	1.37e4	78.2	NO
3	3	13C3-PFHxS	1803754-03 MW-97701 0.11474	2.26e3	82.2	NO
4	4	13C8-PFOA	1803754-03 MW-97701 0.11474	1.81e4	79.0	NO
5	5	13C9-PFNA	1803754-03 MW-97701 0.11474	1.18e4	68.8	NO
6	6	13C4-PFOS	1803754-03 MW-97701 0.11474	1.56e3	49.4	YES
7	7	13C6-PFDA	1803754-03 MW-97701 0.11474	8.67e3	47.8	YES
8	8	13C7-PFUdA	1803754-03 MW-97701 0.11474	5.86e3	26.8	YES

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Name: 181203M1_50, Date: 04-Dec-2018, Time: 00:14:08, ID: 1803754-04 MW-97702 0.11219, Description: MW-97702

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-04 MW-97702 0.11219	6.98e3	78.8	NO
2	2	13C5-PFHxA	1803754-04 MW-97702 0.11219	1.40e4	80.1	NO
3	3	13C3-PFHxS	1803754-04 MW-97702 0.11219	2.33e3	84.8	NO
4	4	13C8-PFOA	1803754-04 MW-97702 0.11219	1.78e4	77.5	NO
5	5	13C9-PFNA	1803754-04 MW-97702 0.11219	1.23e4	72.1	NO
6	6	13C4-PFOS	1803754-04 MW-97702 0.11219	2.36e3	74.7	NO
7	7	13C6-PFDA	1803754-04 MW-97702 0.11219	1.18e4	65.1	NO
8	8	13C7-PFUdA	1803754-04 MW-97702 0.11219	8.64e3	39.5	YES

Name: 181203M1_51, Date: 04-Dec-2018, Time: 00:24:42, ID: 1803754-05 CSW-3 0.12087, Description: CSW-3

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-05 CSW-3 0.12087	7.35e3	83.0	NO
2	2	13C5-PFHxA	1803754-05 CSW-3 0.12087	1.41e4	80.7	NO
3	3	13C3-PFHxS	1803754-05 CSW-3 0.12087	2.53e3	92.2	NO
4	4	13C8-PFOA	1803754-05 CSW-3 0.12087	1.83e4	79.7	NO
5	5	13C9-PFNA	1803754-05 CSW-3 0.12087	1.34e4	78.6	NO
6	6	13C4-PFOS	1803754-05 CSW-3 0.12087	2.41e3	76.6	NO
7	7	13C6-PFDA	1803754-05 CSW-3 0.12087	1.19e4	65.4	NO
8	8	13C7-PFUdA	1803754-05 CSW-3 0.12087	7.81e3	35.7	YES

Name: 181203M1_52, Date: 04-Dec-2018, Time: 00:35:20, ID: 1803754-06 CSW-4 0.11744, Description: CSW-4

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-06 CSW-4 0.11744	7.99e3	90.2	NO
2	2	13C5-PFHxA	1803754-06 CSW-4 0.11744	1.61e4	92.0	NO
3	3	13C3-PFHxS	1803754-06 CSW-4 0.11744	2.51e3	91.3	NO
4	4	13C8-PFOA	1803754-06 CSW-4 0.11744	2.01e4	87.5	NO
5	5	13C9-PFNA	1803754-06 CSW-4 0.11744	1.37e4	80.4	NO
6	6	13C4-PFOS	1803754-06 CSW-4 0.11744	2.35e3	74.4	NO
7	7	13C6-PFDA	1803754-06 CSW-4 0.11744	1.19e4	65.6	NO
8	8	13C7-PFUdA	1803754-06 CSW-4 0.11744	8.78e3	40.2	YES

Name: 181203M1_53, Date: 04-Dec-2018, Time: 00:45:53, ID: 1803754-07 CUD-1 0.11598, Description: CUD-1

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-07 CUD-1 0.11598	7.92e3	89.4	NO
2	2	13C5-PFHxA	1803754-07 CUD-1 0.11598	1.55e4	88.5	NO
3	3	13C3-PFHxS	1803754-07 CUD-1 0.11598	2.52e3	91.6	NO
4	4	13C8-PFOA	1803754-07 CUD-1 0.11598	1.88e4	81.8	NO
5	5	13C9-PFNA	1803754-07 CUD-1 0.11598	1.22e4	71.4	NO
6	6	13C4-PFOS	1803754-07 CUD-1 0.11598	1.51e3	48.0	YES
7	7	13C6-PFDA	1803754-07 CUD-1 0.11598	7.80e3	43.0	YES
8	8	13C7-PFUdA	1803754-07 CUD-1 0.11598	3.72e3	17.0	YES

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Name: 181203M1_54, Date: 04-Dec-2018, Time: 00:56:31, ID: 1803754-08 CUD-2 0.1153, Description: CUD-2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-08 CUD-2 0.1153	7.25e3	81.9	NO
2	2	13C5-PFHxA	1803754-08 CUD-2 0.1153	1.41e4	80.1	NO
3	3	13C3-PFHxS	1803754-08 CUD-2 0.1153	2.45e3	89.0	NO
4	4	13C8-PFOA	1803754-08 CUD-2 0.1153	1.84e4	80.2	NO
5	5	13C9-PFNA	1803754-08 CUD-2 0.1153	1.24e4	72.8	NO
6	6	13C4-PFOS	1803754-08 CUD-2 0.1153	2.14e3	67.9	NO
7	7	13C6-PFDA	1803754-08 CUD-2 0.1153	1.11e4	61.1	NO
8	8	13C7-PFUdA	1803754-08 CUD-2 0.1153	7.81e3	35.8	YES

Name: 181203M1_55, Date: 04-Dec-2018, Time: 01:07:05, ID: 1803754-09 CUD-3 0.11905, Description: CUD-3

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-09 CUD-3 0.11905	4.83e3	54.5	NO
2	2	13C5-PFHxA	1803754-09 CUD-3 0.11905	9.72e3	55.4	NO
3	3	13C3-PFHxS	1803754-09 CUD-3 0.11905	1.87e3	67.9	NO
4	4	13C8-PFOA	1803754-09 CUD-3 0.11905	1.24e4	53.9	NO
5	5	13C9-PFNA	1803754-09 CUD-3 0.11905	8.77e3	51.3	NO
6	6	13C4-PFOS	1803754-09 CUD-3 0.11905	1.71e3	54.3	NO
7	7	13C6-PFDA	1803754-09 CUD-3 0.11905	8.40e3	46.2	YES
8	8	13C7-PFUdA	1803754-09 CUD-3 0.11905	4.44e3	20.3	YES

Name: 181203M1_56, Date: 04-Dec-2018, Time: 01:17:43, ID: 1803754-10 CUD-4 0.11711, Description: CUD-4

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-10 CUD-4 0.11711	6.39e3	72.2	NO
2	2	13C5-PFHxA	1803754-10 CUD-4 0.11711	1.18e4	67.0	NO
3	3	13C3-PFHxS	1803754-10 CUD-4 0.11711	2.11e3	76.8	NO
4	4	13C8-PFOA	1803754-10 CUD-4 0.11711	1.44e4	62.6	NO
5	5	13C9-PFNA	1803754-10 CUD-4 0.11711	7.88e3	46.1	YES
6	6	13C4-PFOS	1803754-10 CUD-4 0.11711	1.11e3	35.1	YES
7	7	13C6-PFDA	1803754-10 CUD-4 0.11711	4.75e3	26.1	YES
8	8	13C7-PFUdA	1803754-10 CUD-4 0.11711	3.62e3	16.6	YES

Name: 181203M1_57, Date: 04-Dec-2018, Time: 01:28:16, ID: ST181203M1-4 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181203M1-4 PFC CS3 18K3006	9.97e3	112.6	NO
2	2	13C5-PFHxA	ST181203M1-4 PFC CS3 18K3006	1.94e4	110.5	NO
3	3	13C3-PFHxS	ST181203M1-4 PFC CS3 18K3006	2.92e3	106.2	NO
4	4	13C8-PFOA	ST181203M1-4 PFC CS3 18K3006	2.50e4	108.7	NO
5	5	13C9-PFNA	ST181203M1-4 PFC CS3 18K3006	1.81e4	105.9	NO
6	6	13C4-PFOS	ST181203M1-4 PFC CS3 18K3006	3.45e3	109.5	NO
7	7	13C6-PFDA	ST181203M1-4 PFC CS3 18K3006	2.03e4	111.8	NO
8	8	13C7-PFUdA	ST181203M1-4 PFC CS3 18K3006	2.24e4	102.4	NO

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Name: 181203M1_58, Date: 04-Dec-2018, Time: 01:38:54, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_59, Date: 04-Dec-2018, Time: 01:49:32, ID: 1803762-01 PFC-AF-01-01-112718 0.23808, Description: PFC-AF-01-01-112718

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803762-01 PFC-AF-01-01-112718 0.2...	5.52e3	62.3	NO
2	2	13C5-PFHxA	1803762-01 PFC-AF-01-01-112718 0.2...	1.08e4	61.7	NO
3	3	13C3-PFHxS	1803762-01 PFC-AF-01-01-112718 0.2...	2.32e3	84.5	NO
4	4	13C8-PFOA	1803762-01 PFC-AF-01-01-112718 0.2...	1.51e4	65.8	NO
5	5	13C9-PFNA	1803762-01 PFC-AF-01-01-112718 0.2...	1.18e4	68.8	NO
6	6	13C4-PFOS	1803762-01 PFC-AF-01-01-112718 0.2...	2.63e3	83.4	NO
7	7	13C6-PFDA	1803762-01 PFC-AF-01-01-112718 0.2...	1.30e4	71.8	NO
8	8	13C7-PFUdA	1803762-01 PFC-AF-01-01-112718 0.2...	1.58e4	72.2	NO

Name: 181203M1_60, Date: 04-Dec-2018, Time: 02:00:05, ID: 1803754-11 Sump 1 0.11876, Description: Sump 1

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-11 Sump 1 0.11876	7.74e3	87.3	NO
2	2	13C5-PFHxA	1803754-11 Sump 1 0.11876	1.55e4	88.4	NO
3	3	13C3-PFHxS	1803754-11 Sump 1 0.11876	2.61e3	95.0	NO
4	4	13C8-PFOA	1803754-11 Sump 1 0.11876	1.98e4	86.1	NO
5	5	13C9-PFNA	1803754-11 Sump 1 0.11876	1.33e4	77.8	NO
6	6	13C4-PFOS	1803754-11 Sump 1 0.11876	2.49e3	79.0	NO
7	7	13C6-PFDA	1803754-11 Sump 1 0.11876	1.24e4	68.3	NO
8	8	13C7-PFUdA	1803754-11 Sump 1 0.11876	8.73e3	39.9	YES

Name: 181203M1_61, Date: 04-Dec-2018, Time: 02:10:44, ID: 1803754-12 Sump 2 0.11443, Description: Sump 2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-12 Sump 2 0.11443	7.20e3	81.3	NO
2	2	13C5-PFHxA	1803754-12 Sump 2 0.11443	1.48e4	84.3	NO
3	3	13C3-PFHxS	1803754-12 Sump 2 0.11443	2.38e3	86.5	NO
4	4	13C8-PFOA	1803754-12 Sump 2 0.11443	1.96e4	85.4	NO
5	5	13C9-PFNA	1803754-12 Sump 2 0.11443	1.31e4	76.7	NO
6	6	13C4-PFOS	1803754-12 Sump 2 0.11443	2.44e3	77.4	NO
7	7	13C6-PFDA	1803754-12 Sump 2 0.11443	1.29e4	71.2	NO
8	8	13C7-PFUdA	1803754-12 Sump 2 0.11443	1.02e4	46.8	YES

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Name: 181203M1_62, Date: 04-Dec-2018, Time: 02:21:17, ID: 1803754-13 SW-5 0.11647, Description: SW-5

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-13 SW-5 0.11647	7.32e3	82.6	NO
2	2	13C5-PFHxA	1803754-13 SW-5 0.11647	1.40e4	79.8	NO
3	3	13C3-PFHxS	1803754-13 SW-5 0.11647	2.35e3	85.5	NO
4	4	13C8-PFOA	1803754-13 SW-5 0.11647	1.59e4	69.4	NO
5	5	13C9-PFNA	1803754-13 SW-5 0.11647	1.07e4	62.7	NO
6	6	13C4-PFOS	1803754-13 SW-5 0.11647	2.16e3	68.5	NO
7	7	13C6-PFDA	1803754-13 SW-5 0.11647	9.43e3	51.9	NO
8	8	13C7-PFUdA	1803754-13 SW-5 0.11647	7.46e3	34.2	YES

Name: 181203M1_63, Date: 04-Dec-2018, Time: 02:31:56, ID: 1803754-14 Shelby St. Sump 0.11682, Description: Shelby St. Sump

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803754-14 Shelby St. Sump 0.11682	7.24e3	81.8	NO
2	2	13C5-PFHxA	1803754-14 Shelby St. Sump 0.11682	1.38e4	78.9	NO
3	3	13C3-PFHxS	1803754-14 Shelby St. Sump 0.11682	2.30e3	83.6	NO
4	4	13C8-PFOA	1803754-14 Shelby St. Sump 0.11682	1.73e4	75.4	NO
5	5	13C9-PFNA	1803754-14 Shelby St. Sump 0.11682	1.19e4	69.8	NO
6	6	13C4-PFOS	1803754-14 Shelby St. Sump 0.11682	2.38e3	75.5	NO
7	7	13C6-PFDA	1803754-14 Shelby St. Sump 0.11682	1.25e4	69.1	NO
8	8	13C7-PFUdA	1803754-14 Shelby St. Sump 0.11682	1.16e4	53.3	NO

Name: 181203M1_64, Date: 04-Dec-2018, Time: 02:42:29, ID: 1803746-01@150X PFC-AF-02-01-112618 0.23986, Description: PFC-AF-02-01-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803746-01@150X PFC-AF-02-01-112...	7.28e1	0.8	YES
2	2	13C5-PFHxA	1803746-01@150X PFC-AF-02-01-112...	1.31e2	0.7	YES
3	3	13C3-PFHxS	1803746-01@150X PFC-AF-02-01-112...	2.54e1	0.9	YES
4	4	13C8-PFOA	1803746-01@150X PFC-AF-02-01-112...	1.59e2	0.7	YES
5	5	13C9-PFNA	1803746-01@150X PFC-AF-02-01-112...	1.31e2	0.8	YES
6	6	13C4-PFOS	1803746-01@150X PFC-AF-02-01-112...	3.64e1	1.2	YES
7	7	13C6-PFDA	1803746-01@150X PFC-AF-02-01-112...	1.76e2	1.0	YES
8	8	13C7-PFUdA	1803746-01@150X PFC-AF-02-01-112...	1.60e2	0.7	YES

Name: 181203M1_65, Date: 04-Dec-2018, Time: 02:53:07, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 181203M1_66, Date: 04-Dec-2018, Time: 03:03:39, ID: 1803746-02@10X PFC-AF-02-02-112618 0.2365, Description: PFC-AF-02-02-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803746-02@10X PFC-AF-02-02-1126...	9.52e2	10.8	YES
2	2	13C5-PFHxA	1803746-02@10X PFC-AF-02-02-1126...	1.66e3	9.4	YES
3	3	13C3-PFHxS	1803746-02@10X PFC-AF-02-02-1126...	2.50e2	9.1	YES
4	4	13C8-PFOA	1803746-02@10X PFC-AF-02-02-1126...	2.18e3	9.5	YES
5	5	13C9-PFNA	1803746-02@10X PFC-AF-02-02-1126...	1.83e3	10.7	YES
6	6	13C4-PFOS	1803746-02@10X PFC-AF-02-02-1126...	2.85e2	9.0	YES
7	7	13C6-PFDA	1803746-02@10X PFC-AF-02-02-1126...	1.91e3	10.5	YES
8	8	13C7-PFUdA	1803746-02@10X PFC-AF-02-02-1126...	2.35e3	10.8	YES

Name: 181203M1_67, Date: 04-Dec-2018, Time: 03:14:18, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181203M1_68, Date: 04-Dec-2018, Time: 03:24:51, ID: 1803746-03@5X PFC-AF-02-03-112618 0.23672, Description: PFC-AF-02-03-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803746-03@5X PFC-AF-02-03-11261...	1.65e3	18.6	YES
2	2	13C5-PFHxA	1803746-03@5X PFC-AF-02-03-11261...	3.38e3	19.3	YES
3	3	13C3-PFHxS	1803746-03@5X PFC-AF-02-03-11261...	5.52e2	20.1	YES
4	4	13C8-PFOA	1803746-03@5X PFC-AF-02-03-11261...	4.32e3	18.8	YES
5	5	13C9-PFNA	1803746-03@5X PFC-AF-02-03-11261...	3.20e3	18.7	YES
6	6	13C4-PFOS	1803746-03@5X PFC-AF-02-03-11261...	5.62e2	17.8	YES
7	7	13C6-PFDA	1803746-03@5X PFC-AF-02-03-11261...	3.53e3	19.4	YES
8	8	13C7-PFUdA	1803746-03@5X PFC-AF-02-03-11261...	3.84e3	17.6	YES

Name: 181203M1_69, Date: 04-Dec-2018, Time: 03:35:29, ID: ST181203M1-5 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181203M1-5 PFC CS3 18K3006	1.01e4	114.5	NO
2	2	13C5-PFHxA	ST181203M1-5 PFC CS3 18K3006	1.95e4	111.2	NO
3	3	13C3-PFHxS	ST181203M1-5 PFC CS3 18K3006	3.02e3	109.8	NO
4	4	13C8-PFOA	ST181203M1-5 PFC CS3 18K3006	2.59e4	112.9	NO
5	5	13C9-PFNA	ST181203M1-5 PFC CS3 18K3006	1.89e4	110.6	NO
6	6	13C4-PFOS	ST181203M1-5 PFC CS3 18K3006	3.35e3	106.4	NO
7	7	13C6-PFDA	ST181203M1-5 PFC CS3 18K3006	2.04e4	112.3	NO
8	8	13C7-PFUdA	ST181203M1-5 PFC CS3 18K3006	2.27e4	104.0	NO

Dataset: F:\Projects\PFAS.PRO\Results\181203M1\181203M1-IIS.qld

Last Altered: Tuesday, December 04, 2018 08:46:15 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:47:38 Pacific Standard Time

Name: 181203M1_70, Date: 04-Dec-2018, Time: 03:46:02, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 10:17:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 10:18:02 Pacific Standard Time

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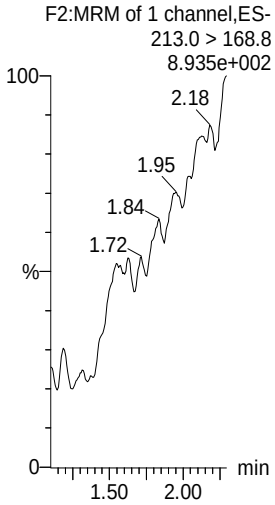
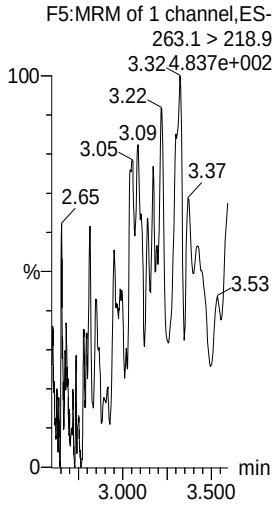
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_3, Date: 03-Dec-2018, Time: 14:47:29, ID: IPA, Description: IPA

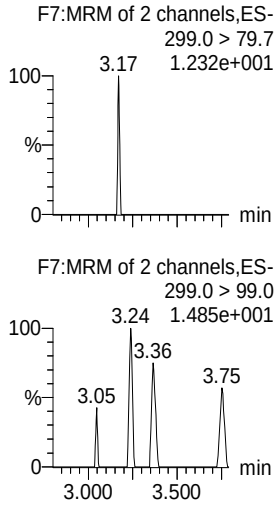
PFBA



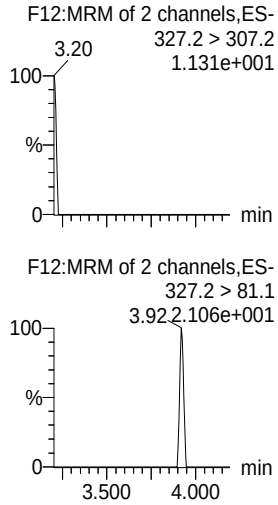
PFPeA



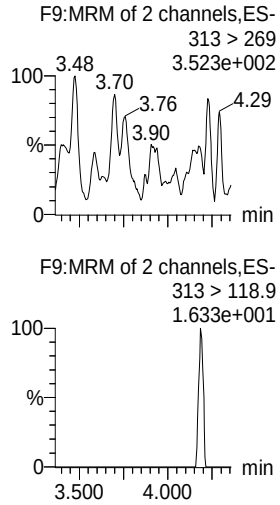
PFBS



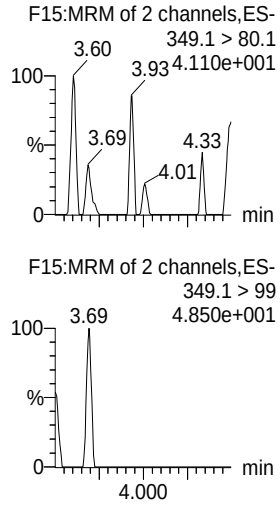
4:2 FTS



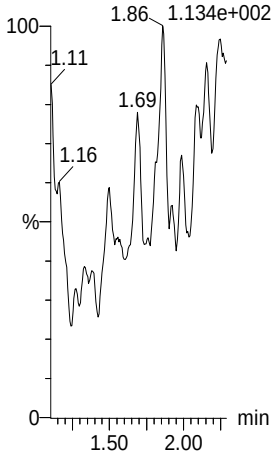
PFHxA



PFPeS



13C3-PFBA



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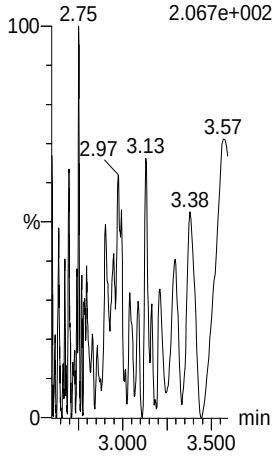

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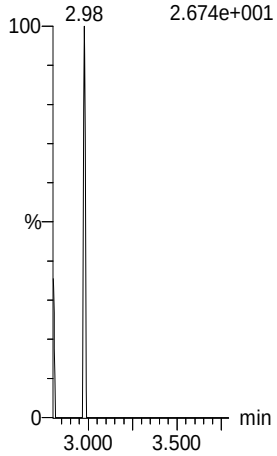
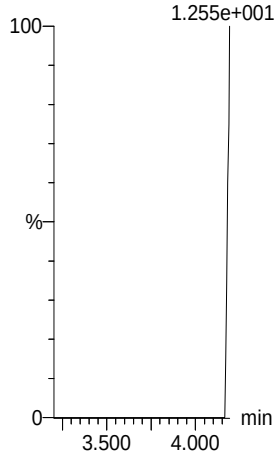


13C2-4:2 FTS



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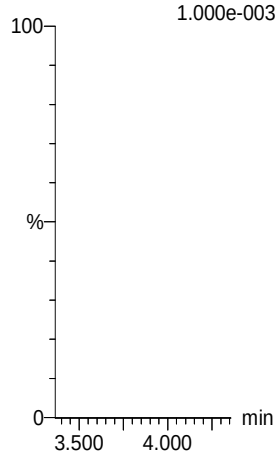

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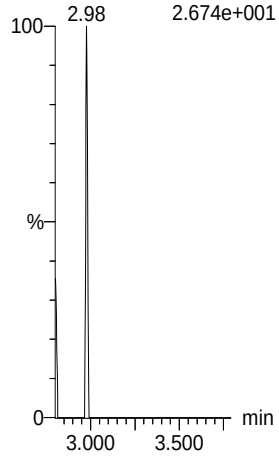

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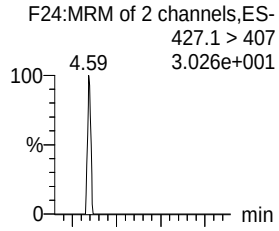
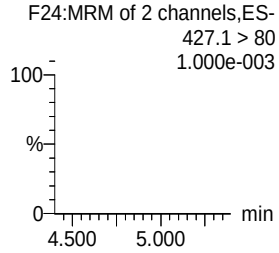
Last Altered: Tuesday, December 04, 2018 10:17:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 10:18:02 Pacific Standard Time

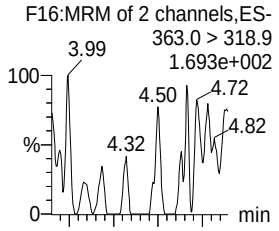
Name: 181203M1_3, Date: 03-Dec-2018, Time: 14:47:29, ID: IPA, Description: IPA

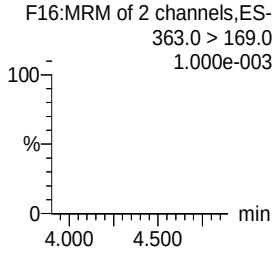
6:2 FTS



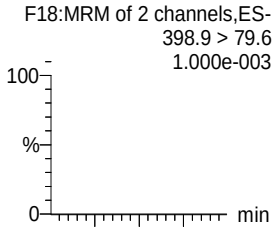


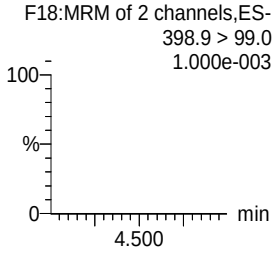
PFHpA



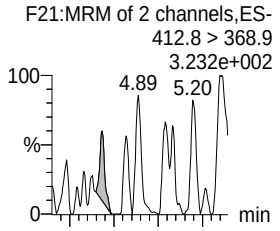


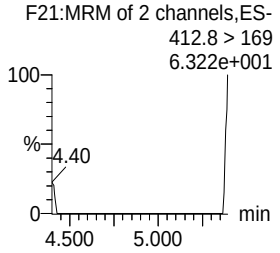
L-PFHxS





L-PFOA





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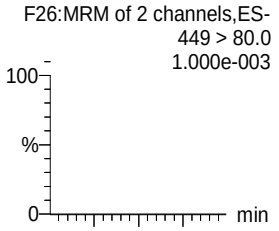

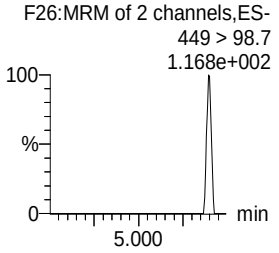

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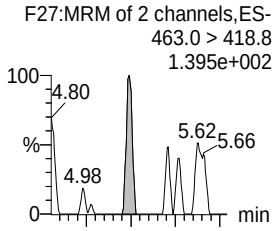
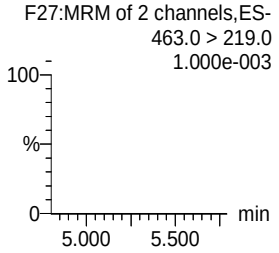
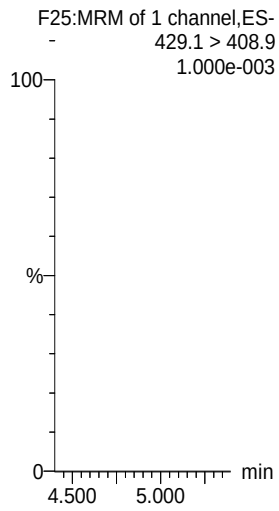
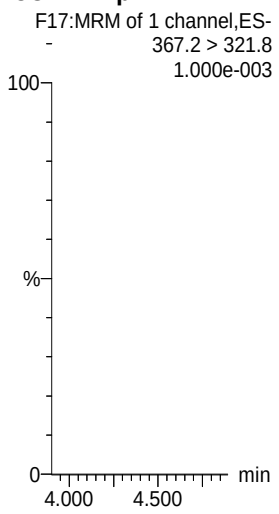




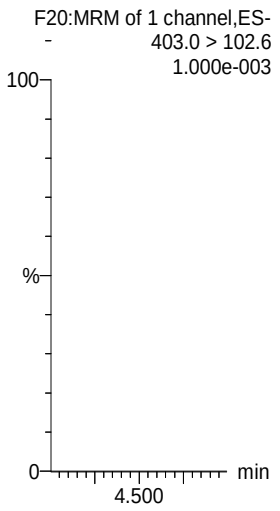
13C2-6:2 FTS



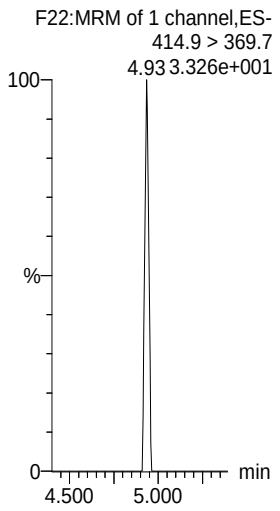
13C4-PFHpA



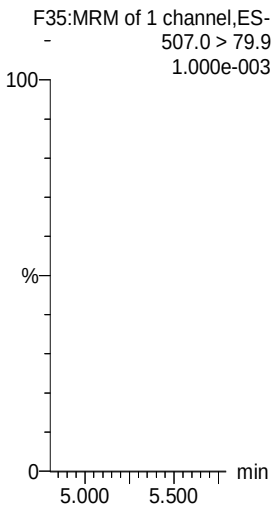
18O2-PFHxS



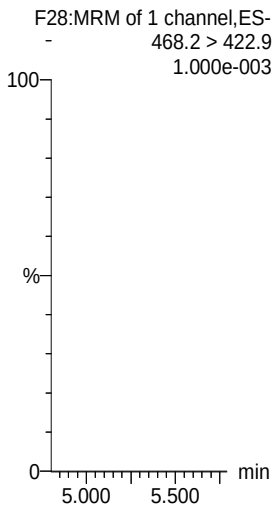
13C2-PFOA



13C8-PFOS



13C5-PFNA



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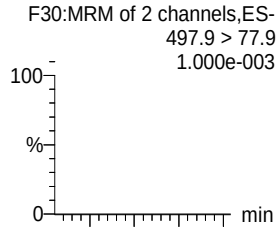
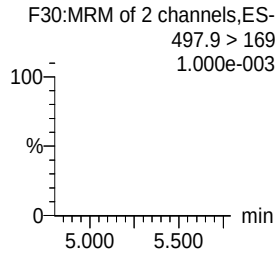
Last Altered: Tuesday, December 04, 2018 10:17:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 10:18:02 Pacific Standard Time

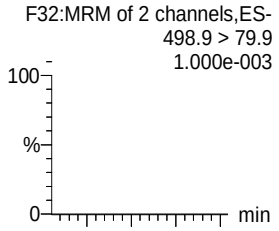
Name: 181203M1_3, Date: 03-Dec-2018, Time: 14:47:29, ID: IPA, Description: IPA

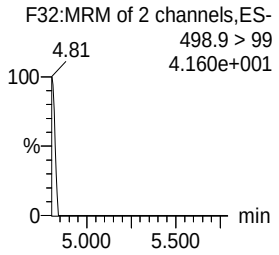
PFOSA



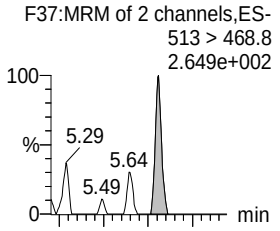


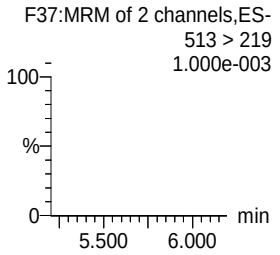
L-PFOS



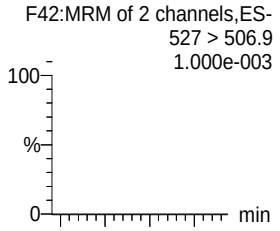


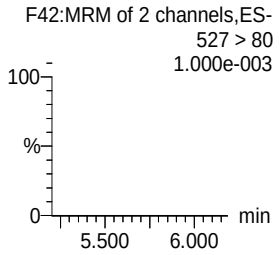
PFDA



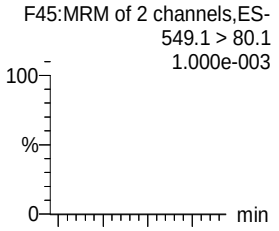


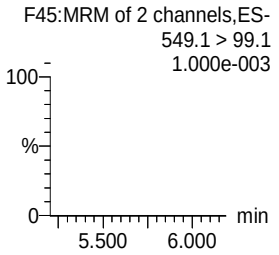
8:2 FTS



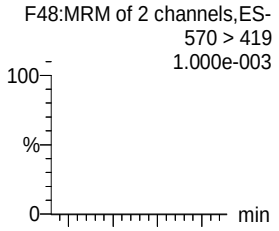


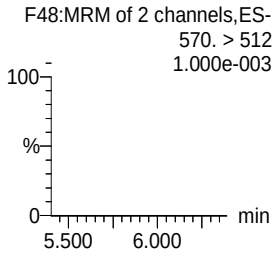
PFNS



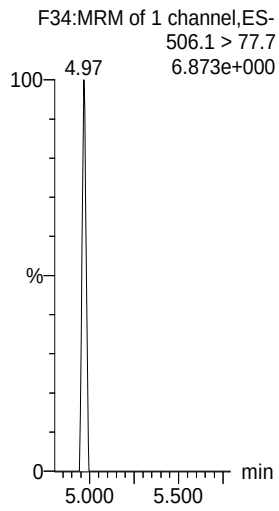


L-MeFOSAA





13C8-PFOSA



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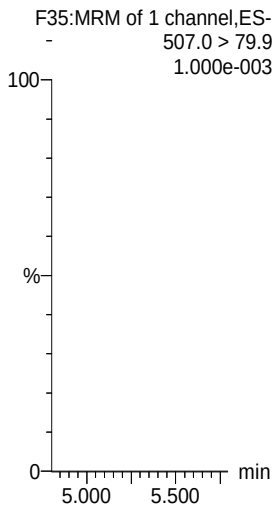

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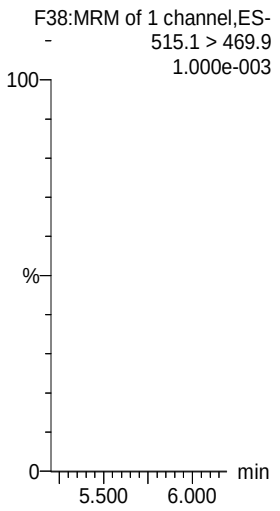
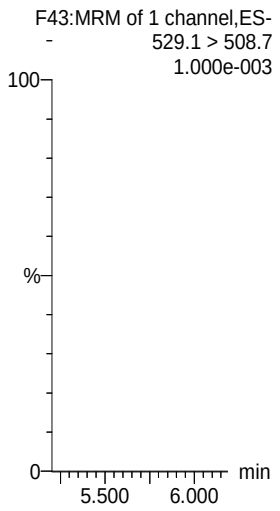
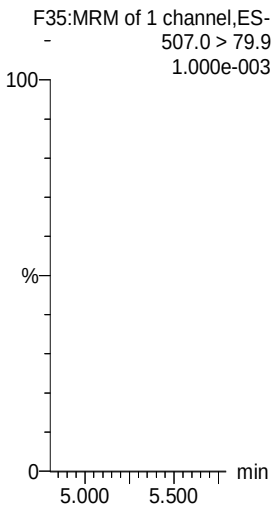


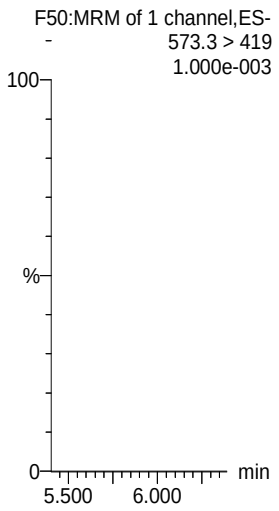
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA



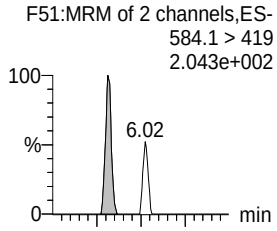
Vista Analytical Laboratory

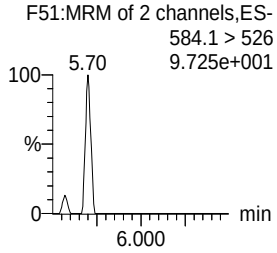
Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 10:17:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 10:18:02 Pacific Standard Time

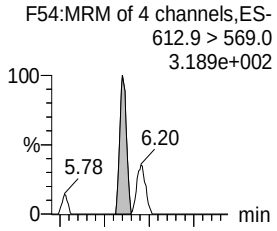
Name: 181203M1_3, Date: 03-Dec-2018, Time: 14:47:29, ID: IPA, Description: IPA

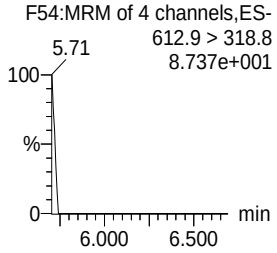
L-EtFOSAA



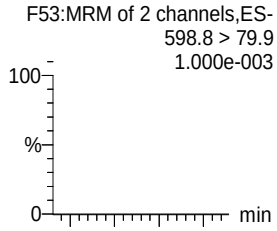


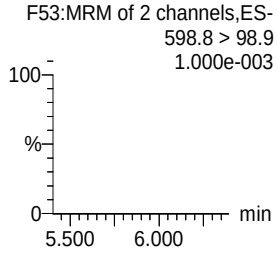
PFDoA



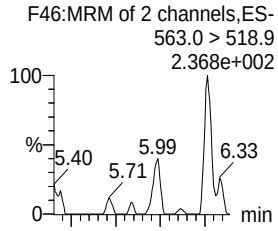


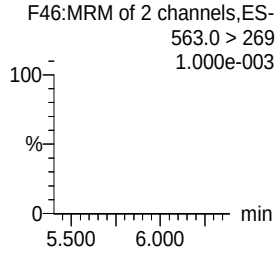
PFDS



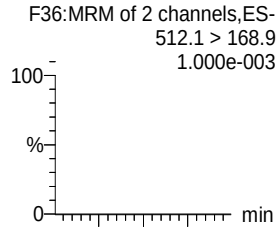


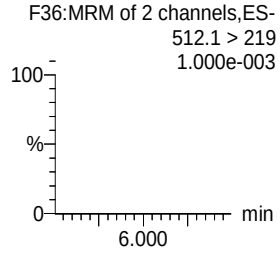
PFUdA



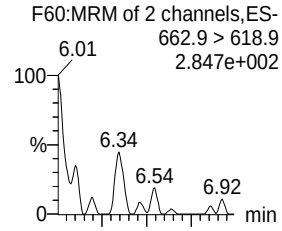


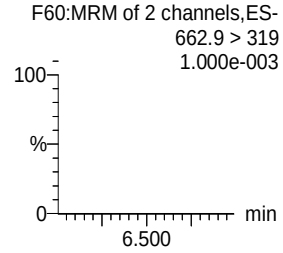
N-MeFOSA



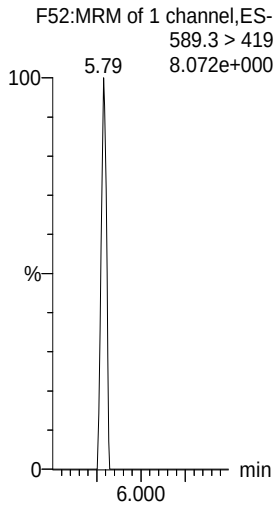


PFTrDA

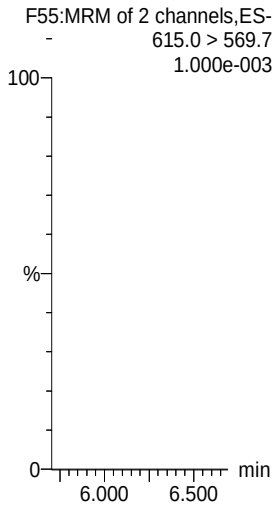




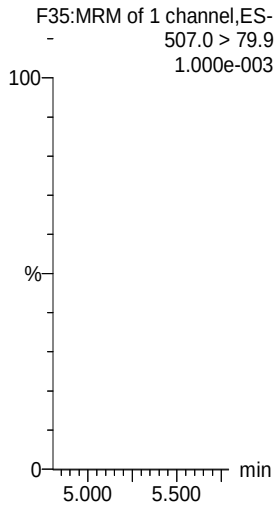
d5-N-EtFOSAA



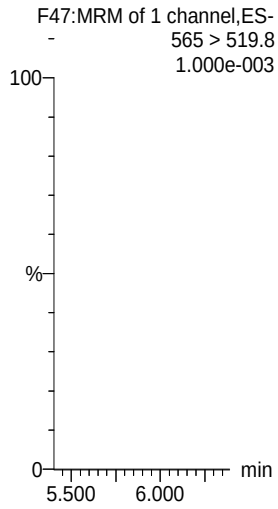
13C2-PFDoA



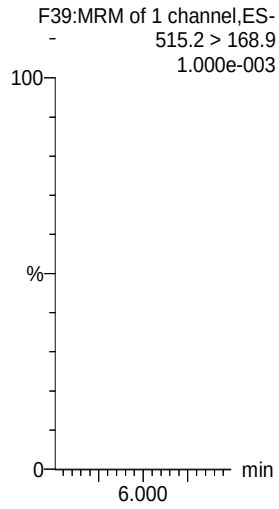
13C8-PFOS



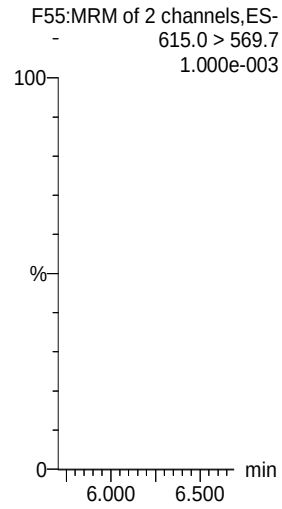
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA



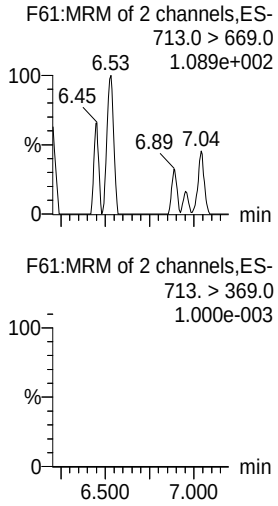
Vista Analytical Laboratory

Dataset: Untitled

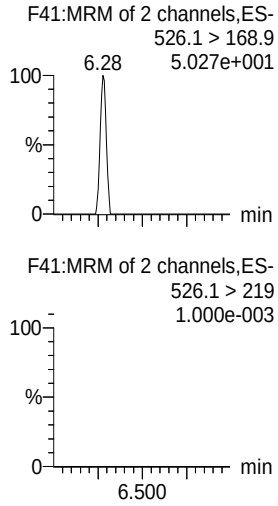
Last Altered: Tuesday, December 04, 2018 10:17:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 10:18:02 Pacific Standard Time

Name: 181203M1_3, Date: 03-Dec-2018, Time: 14:47:29, ID: IPA, Description: IPA

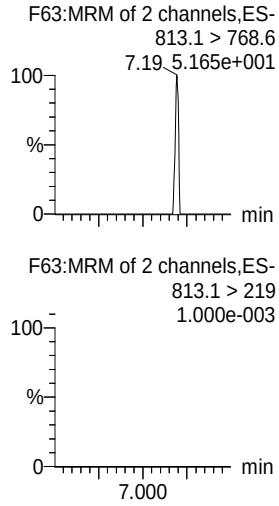
PFTeDA



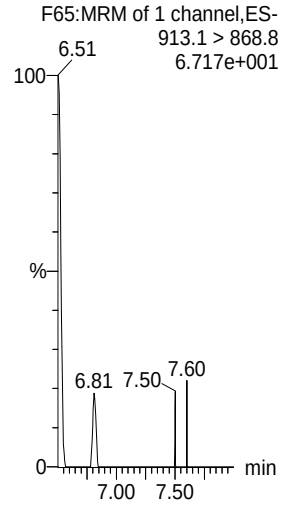
N-EtFOSA



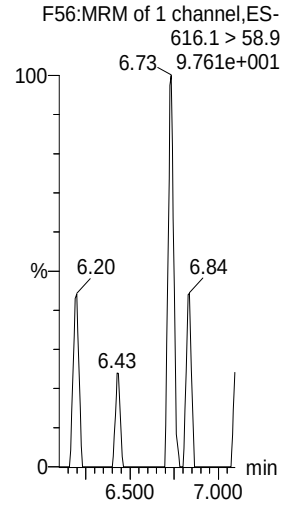
PFHxDA



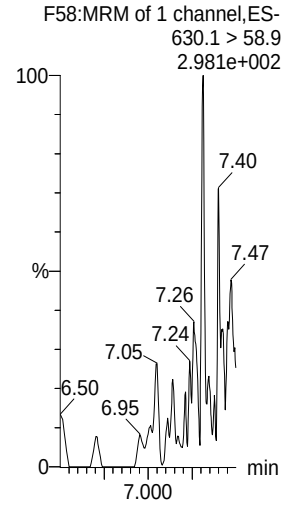
PFODA



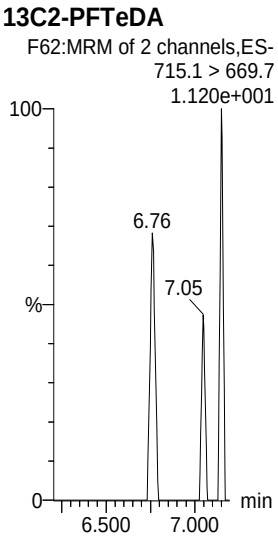
N-MeFOSE



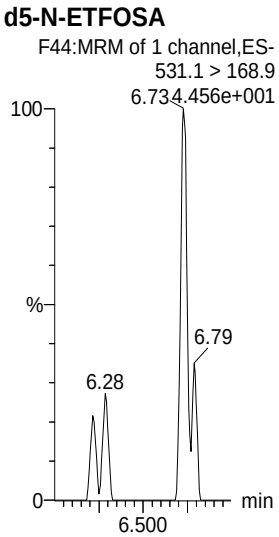
N-EtFOSE



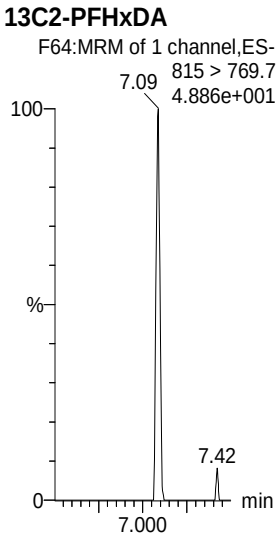
13C2-PFTeDA



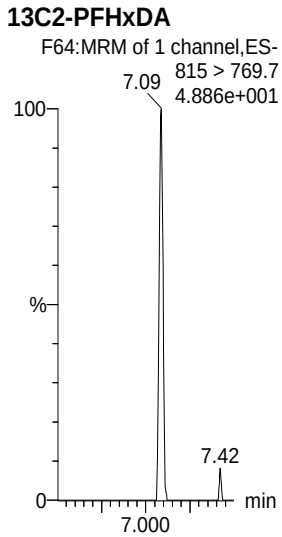
d5-N-ETFOSA



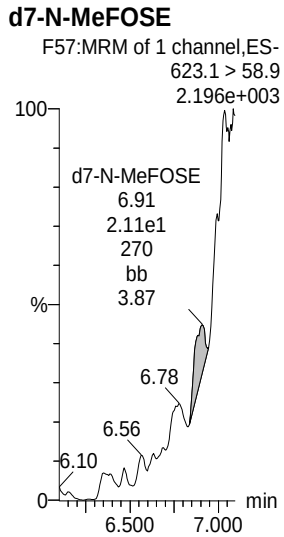
13C2-PFHxDA



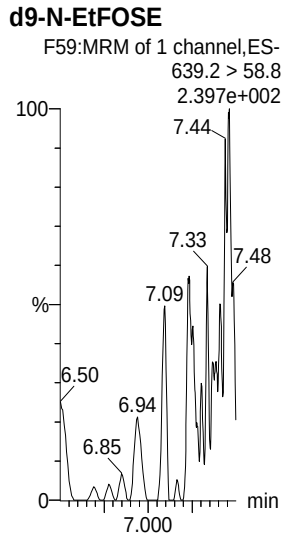
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Vista Analytical Laboratory

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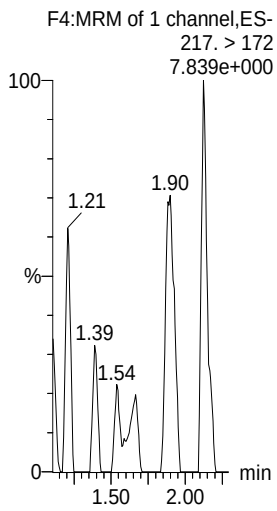
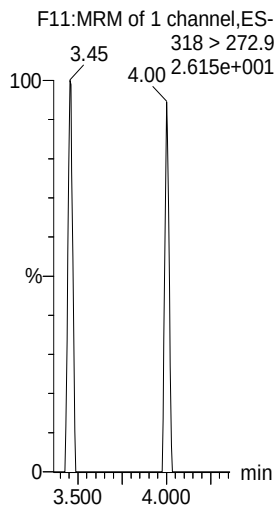
Last Altered: Tuesday, December 04, 2018 10:17:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 10:18:02 Pacific Standard Time

Name: 181203M1_3, Date: 03-Dec-2018, Time: 14:47:29, ID: IPA, Description: IPA

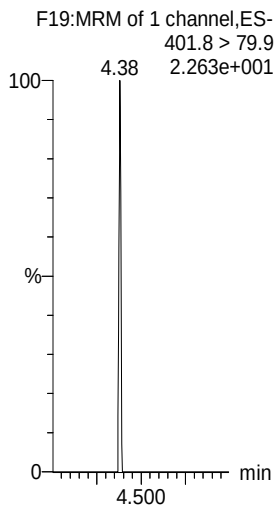
13C4-PFBA



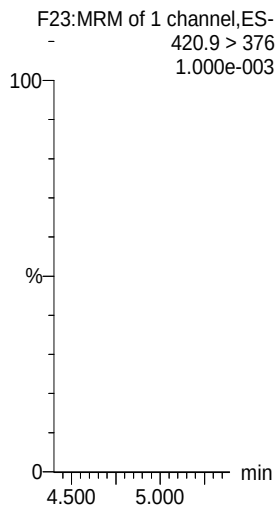
13C5-PFHxA



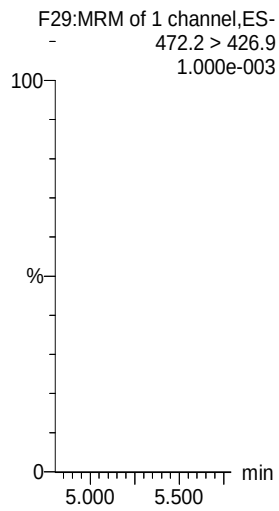
13C3-PFHxS



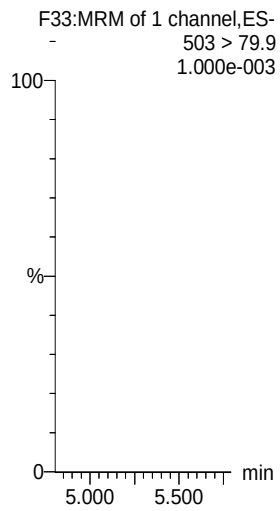
13C8-PFOA



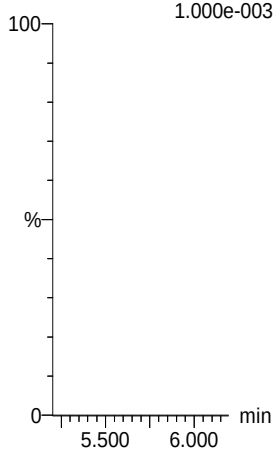
13C9-PFNA



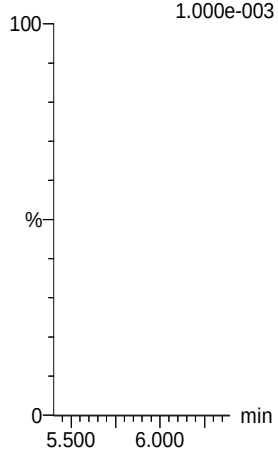
13C4-PFOS



13C6-PFDA



13C7-PFUdA



LC Calibration Standards Review Checklist Q2

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	N/A
Calibration ID: STI81203M1-1	L M H	☑	☑ (A)	☑	☑	☑	☐	☐
Calibration ID: -2	L M H	☑	☑ (B)	☑	☑	☑	☐	☐
Calibration ID: -3	L M H	☑	☑ (C)	☑	☑	☑	☐	☐
Calibration ID: -4	L M H	☑	☑ (D)	☑	☑	☑	☐	☐
Calibration ID: -5	L M H	☑	☑ (E)	☑	☑	☑	☐	☑
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: 12/03/18

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☑

IIS Area Saved ☑

Reviewed By: JM 12/4/18
Initials/Date

Comments:

(A) PFNS 65%, PFTeDA 142%
(B) 6:2 FTS 142%, MeFOSAA 131%, PFTeDA 156%
(C) 4:2 FTS 132%, 6:2 FTS 143%, MeFOSAA 136%, PFTeDA 149%
(D) 6:2 FTS 150%, MeFOSAA, 139%, PFTeDA 150%
(E) 4:2 FTS 136%, 6:2 FTS 143%, 8:2 FTS 134%, PFDS 131%, PFTeDA 145%.

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:05:06 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

	Name	Ion Ratio	Ratio out?
1	PFBA		
2	PFPeA		
3	PFBS	3.295	NO
4	4:2 FTS	1.924	NO
5	PFHxA	14.329	NO
6	PFPeS	1.425	NO
7	PFHpA	13.986	NO
8	L-PFHxS	2.298	NO
9	6:2 FTS	3.074	NO
10	L-PFOA	3.208	NO
11	PFHpS	1.959	NO
12	PFNA	4.572	NO
13	PFOSA	26.635	NO
14	L-PFOS	2.053	NO
15	PFDA	5.880	NO
16	8:2 FTS	2.741	NO
17	PFNS	1.795	NO
18	L-MeFOSAA	2.432	NO
19	L-EtFOSAA	1.270	NO

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:05:22 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

	Name	Ion Ratio	Ratio out?
1	PFUdA	9.496	NO
2	PFDS	1.734	NO
3	PFDoA	9.321	NO
4	N-MeFOSA	1.532	NO
5	PFTrDA	26.710	NO
6	PFTeDA	14.120	NO
7	N-EtFOSA	1.718	NO
8	PFHxDA	20.076	NO
9	PFODA		
10	N-MeFOSE		
11	N-EtFOSE		

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-2.qld

Last Altered: Tuesday, December 04, 2018 07:51:12 Pacific Standard Time
Printed: Tuesday, December 04, 2018 07:52:08 Pacific Standard Time

VCM 12/4/18

Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	594.103	7183.595	1.00	1.43	1.034	1.0	103.7	NO		
2	2	PFPeA	263.1 > 218.9	648.272	8275.581	1.00	2.68	0.979	1.1	108.6	NO		
3	3	PFBS	299.0 > 79.7	222.754	1320.445	1.00	3.00	2.109	1.1	109.0	NO	3.479	NO
4	4	4:2 FTS	327.2>307.2	273.948	3486.537	1.00	3.47	0.982	1.2	119.5	NO	1.804	NO
5	5	PFHxA	313 > 269	1287.676	6647.235	1.00	3.56	0.969	0.9	92.4	NO	17.720	NO
6	6	PFPeS	349.1>80.1	132.306	1320.445	1.00	3.76	1.252	0.9	89.1	NO	1.110	NO
7	36	13C3-PFBA	216.1 > 171.8	7183.595	8914.291	1.00	1.43	10.073	11.7	93.6	NO		
8	37	13C3-PFPeA	266. > 221.8	8275.581	17533.865	1.00	2.68	5.900	9.8	78.2	NO		
9	38	13C3-PFBS	302. > 98.8	1320.445	2748.223	1.00	3.00	6.006	9.5	75.9	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3486.537	2748.223	1.00	3.47	15.858	7.6	61.2	NO		
11	40	13C2-PFHxA	315 > 270	6647.235	17533.865	1.00	3.56	4.739	5.3	105.3	NO		
12	38	13C3-PFBS	302. > 98.8	1320.445	2748.223	1.00	3.00	6.006	9.5	75.9	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	381.720	4173.213	1.00	4.63	1.143	1.2	117.3	NO	3.248	NO
15	7	PFHpA	363.0 > 318.9	963.224	9266.807	1.00	4.19	1.299	1.1	111.5	NO	13.235	NO
16	8	L-PFHxS	398.9 > 79.6	170.015	1138.399	1.00	4.33	1.867	0.9	94.7	NO	1.941	NO
17	11	L-PFOA	412.8 > 368.9	1968.085	16558.258	1.00	4.68	1.486	1.2	117.7	NO	3.115	NO
18	13	PFHpS	449 > 80.0	231.603	3228.403	1.00	4.78	0.897	1.1	108.3	NO	1.787	NO
19	14	PFNA	463.0 > 418.8	1600.616	16381.929	1.00	5.11	1.221	1.1	114.7	NO	4.866	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	4173.213	3152.432	1.00	4.63	16.548	9.1	72.6	NO		
21	41	13C4-PFHpA	367.2 > 321.8	9266.807	17533.865	1.00	4.19	6.606	9.5	76.2	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1138.399	2748.223	1.00	4.32	5.178	10.9	87.1	NO		
23	44	13C2-PFOA	414.9 > 369.7	16558.258	22963.975	1.00	4.68	9.013	10.3	82.6	NO		
24	47	13C8-PFOS	507.0 > 79.9	3228.403	3152.432	1.00	5.19	12.801	13.2	105.8	NO		
25	45	13C5-PFNA	468.2 > 422.9	16381.929	17092.428	1.00	5.11	11.980	11.9	95.2	NO		
26	-1												
27	15	PFOSA	497.9 > 77.9	251.192	3142.330	1.00	5.15	0.999	0.9	90.2	NO	89.647	YES
28	16	L-PFOS	498.9 > 79.9	291.984	3228.403	1.00	5.19	1.131	1.1	107.9	NO	2.509	NO
29	18	PFDA	513 > 468.8	1700.253	18563.361	1.00	5.49	1.145	1.1	107.9	NO	5.375	NO
30	19	8:2 FTS	527 > 506.9	414.607	3308.934	1.00	5.46	1.566	1.2	122.9	NO	2.794	NO
31	20	PFNS	549.1 > 80.1	138.970	3228.403	1.00	5.55	0.538	0.6	64.9	YES	1.736	NO
32	21	L-MeFOSAA	570 > 419	726.439	5250.850	1.00	5.64	1.729	1.2	115.9	NO	2.250	NO
33	46	13C8-PFOSA	506.1 > 77.7	3142.330	21850.656	1.00	5.15	1.798	8.9	71.3	NO		
34	47	13C8-PFOS	507.0 > 79.9	3228.403	3152.432	1.00	5.19	12.801	13.2	105.8	NO		
35	48	13C2-PFDA	515.1 > 469.9	18563.361	18159.445	1.00	5.48	12.778	11.4	90.9	NO		

(A) < 70%
(B) 71 30%

CCH 12/4/18

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-2.qld

Last Altered: Tuesday, December 04, 2018 07:51:12 Pacific Standard Time
Printed: Tuesday, December 04, 2018 07:52:08 Pacific Standard Time

Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
36	49	13C2-8:2 FTS	529.1 > 508.7	3308.934	3152.432	1.00	5.46	13.121	12.1	96.6	NO		
37	47	13C8-PFOS	507.0 > 79.9	3228.403	3152.432	1.00	5.19	12.801	13.2	105.8	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	5250.850	21850.656	1.00	5.63	3.004	9.1	73.0	NO		
39	-1												
40	23	L-EtFOSAA	584.1 > 419	579.442	6965.227	1.00	5.79	1.040	1.0	103.4	NO	1.294	NO
41	27	PFDoA	612.9 > 569.0	2090.360	20266.320	1.00	6.09	1.289	1.0	97.8	NO	7.689	NO
42	26	PFDS	598.8 > 79.9	223.746	3228.403	1.00	5.85	0.866	1.0	98.7	NO	1.372	NO
43	25	PFUdA	563.0 > 518.9	1848.869	21335.264	1.00	5.81	1.083	1.0	100.5	NO	10.118	NO
44	28	N-MeFOSA	512.1 > 168.9	364.911	11082.254	1.00	6.01	4.939	4.7	94.3	NO	1.953	NO
45	29	PFTrDA	662.9 > 618.9	1906.586	20266.320	1.00	6.33	1.176	1.0	96.0	NO	25.441	NO
46	52	d5-N-EtFOSAA	589.3 > 419	6965.227	21850.656	1.00	5.79	3.985	11.2	89.8	NO		
47	53	13C2-PFDoA	615.0 > 569.7	20266.320	18159.445	1.00	6.09	13.950	14.0	112.4	NO		
48	47	13C8-PFOS	507.0 > 79.9	3228.403	3152.432	1.00	5.19	12.801	13.2	105.8	NO		
49	51	13C2-PFUdA	565 > 519.8	21335.264	21850.656	1.00	5.81	12.205	11.0	87.9	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	11082.254	21850.656	1.00	6.04	6.340	85.8	57.2	NO		
51	53	13C2-PFDoA	615.0 > 569.7	20266.320	18159.445	1.00	6.09	13.950	14.0	112.4	NO		
52	-1												
53	30	PFTeDA	713.0 > 669.0	1906.702	14739.551	1.00	6.55	1.617	1.4	142.4	YES	15.162	NO (B)
54	31	N-EtFOSA	526.1 > 168.9	543.886	18328.141	1.00	6.45	4.451	4.6	91.7	NO	1.743	NO
55	32	PFHxDA	813.1 > 768.6	776.110	6598.428	1.00	6.86	0.588	1.0	100.4	NO	22.077	NO
56	33	PFODA	913.1 > 868.8	1331.708	6598.428	1.00	7.08	1.009	1.2	116.3	NO		
57	34	N-MeFOSE	616.1 > 58.9	277.771	9568.519	1.00	6.68	4.354	5.2	103.3	NO		
58	35	N-EtFOSE	630.1 > 58.9	342.496	10424.546	1.00	6.82	4.928	4.6	92.9	NO		
59	55	13C2-PFTeDA	715.1 > 669.7	14739.551	21850.656	1.00	6.55	8.432	11.3	90.1	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	18328.141	21850.656	1.00	6.47	10.485	108.2	72.2	NO		
61	57	13C2-PFHxDA	815 > 769.7	6598.428	21850.656	1.00	6.86	3.775	5.3	105.7	NO		
62	57	13C2-PFHxDA	815 > 769.7	6598.428	21850.656	1.00	6.86	3.775	5.3	105.7	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	9568.519	21850.656	1.00	6.66	5.474	152.1	101.4	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	10424.546	21850.656	1.00	6.81	5.964	165.1	110.1	NO		
65	-1												
66	60	13C4-PFBA	217. > 172	8914.291	8914.291	1.00	1.43	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	17533.865	17533.865	1.00	3.56	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.8 > 79.9	2748.223	2748.223	1.00	4.32	12.500	12.5	100.0	NO		
69	63	13C8-PFOA	420.9 > 376	22963.975	22963.975	1.00	4.68	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	17092.428	17092.428	1.00	5.11	12.500	12.5	100.0	NO		

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-2.qld

Last Altered: Tuesday, December 04, 2018 07:51:12 Pacific Standard Time
Printed: Tuesday, December 04, 2018 07:52:08 Pacific Standard Time

Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

	# Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
71	65 13C4-PFOS	503 > 79.9	3152.432	3152.432	1.00	5.19	12.500	12.5	100.0	NO		
72	66 13C6-PFDA	519.1 > 473.7	18159.445	18159.445	1.00	5.48	12.500	12.5	100.0	NO		
73	67 13C7-PFUdA	570.1 > 524.8	21850.656	21850.656	1.00	5.81	12.500	12.5	100.0	NO		

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Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 08:03:25 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:04:05 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 07:50:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	181203M1_1	IPA	03-Dec-18	14:26:17
2	2	181203M1_2	ST181203M1-1 PFC CS0 18K3003	03-Dec-18	14:36:50
3	3	181203M1_3	IPA	03-Dec-18	14:47:29
4	4	181203M1_4	B8K0153-BS1 OPR 0.25	03-Dec-18	14:58:01
5	5	181203M1_5	B8K0153-MS1 Matrix Spike 0.1068	03-Dec-18	15:08:39
6	6	181203M1_6	B8K0153-MSD1 Matrix Spike Dup 0.11122	03-Dec-18	15:19:12
7	7	181203M1_7	B8K0153-BLK1 Method Blank 0.25	03-Dec-18	15:29:51
8	8	181203M1_8	1803678-01 A1-MW-01-SA2 0.11182	03-Dec-18	15:40:24
9	9	181203M1_9	1803678-02 A1-MW-42-SA2 0.11781	03-Dec-18	15:51:02
10	10	181203M1_10	1803678-03 FRB-20181116 0.1036	03-Dec-18	16:01:36
11	11	181203M1_11	1803678-04 EB-20181116 0.11772	03-Dec-18	16:12:14
12	12	181203M1_12	1803676-01 A1-MW-11-SA2 0.11626	03-Dec-18	16:22:46
13	13	181203M1_13	1803676-02 A1-MW-13-SA2 0.11042	03-Dec-18	16:33:24
14	14	181203M1_14	1803676-03 A1-MW-14-SA2 0.11629	03-Dec-18	16:43:58
15	15	181203M1_15	1803676-04 A1-MW-15-SA2 0.11086	03-Dec-18	16:54:36
16	16	181203M1_16	IPA	03-Dec-18	18:13:52
17	17	181203M1_17	IPA	03-Dec-18	18:24:27
18	18	181203M1_18	1803676-05 A1-MW-37-SA2 0.11753	03-Dec-18	18:35:06
19	19	181203M1_19	1803676-06 A1-MW-37-SA2D 0.11493	03-Dec-18	18:45:39
20	20	181203M1_20	1803676-07 FRB-20181115 0.11067	03-Dec-18	18:56:10
21	21	181203M1_21	1803676-08 A1-MW-31-SA2 0.1169	03-Dec-18	19:06:48
22	22	181203M1_22	1803689-01 Equipment Blank 1 0.25208	03-Dec-18	19:17:20
23	23	181203M1_23	ST181203M1-2 PFC CS3 18K3006	03-Dec-18	19:27:59
24	24	181203M1_24	IPA	03-Dec-18	19:38:28
25	25	181203M1_25	B8K0190-BSD1 LCSD 0.25	03-Dec-18	19:49:07
26	26	181203M1_26	1803745-03 PFC-AF-01-03-112618 0.24673	03-Dec-18	19:59:45
27	27	181203M1_27	1803746-01 PFC-AF-02-01-112618 0.23986	03-Dec-18	20:10:19
28	28	181203M1_28	IPA	03-Dec-18	20:20:57
29	29	181203M1_29	1803746-02 PFC-AF-02-02-112618 0.2365	03-Dec-18	20:31:30
30	30	181203M1_30	IPA	03-Dec-18	20:42:08
31	31	181203M1_31	1803746-03 PFC-AF-02-03-112618 0.23672	03-Dec-18	20:52:42
32	32	181203M1_32	IPA	03-Dec-18	21:03:20

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Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 08:03:25 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:04:05 Pacific Standard Time

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
33	33	181203M1_33	1803762-04 PFC-AF-01-04-112718 0.24232	03-Dec-18	21:13:54
34	34	181203M1_34	1803618-02 1811353-02A 0.2386	03-Dec-18	21:24:32
35	35	181203M1_35	1803618-01@10X 1811353-01A 0.23448	03-Dec-18	21:35:10
36	36	181203M1_36	IPA	03-Dec-18	21:45:43
37	37	181203M1_37	B8K0215-BS1 OPR 0.125	03-Dec-18	21:56:21
38	38	181203M1_38	B8K0215-BSD1 LCSD 0.125	03-Dec-18	22:06:56
39	39	181203M1_39	B8K0215-BLK1 Method Blank 0.125	03-Dec-18	22:17:34
40	40	181203M1_40	1803788-01 PFC-AF-01-01-112918 0.11457	03-Dec-18	22:28:07
41	41	181203M1_41	1803788-02 PFC-AF-01-02-112918 0.11773	03-Dec-18	22:38:45
42	42	181203M1_42	1803788-03 PFC-AF-01-03-112918 0.11732	03-Dec-18	22:49:19
43	43	181203M1_43	ST181203M1-3 PFC CS3 18K3006	03-Dec-18	22:59:57
44	44	181203M1_44	IPA	03-Dec-18	23:10:29
45	45	181203M1_45	B8K0197-BS1 OPR 0.125	03-Dec-18	23:21:08
46	46	181203M1_46	B8K0197-BLK1 Method Blank 0.125	03-Dec-18	23:31:46
47	47	181203M1_47	1803754-01 CMW-18-01 0.11781	03-Dec-18	23:42:19
48	48	181203M1_48	1803754-02 CMW-101B 0.11273	03-Dec-18	23:52:57
49	49	181203M1_49	1803754-03 MW-97701 0.11474	04-Dec-18	00:03:30
50	50	181203M1_50	1803754-04 MW-97702 0.11219	04-Dec-18	00:14:08
51	51	181203M1_51	1803754-05 CSW-3 0.12087	04-Dec-18	00:24:42
52	52	181203M1_52	1803754-06 CSW-4 0.11744	04-Dec-18	00:35:20
53	53	181203M1_53	1803754-07 CUD-1 0.11598	04-Dec-18	00:45:53
54	54	181203M1_54	1803754-08 CUD-2 0.1153	04-Dec-18	00:56:31
55	55	181203M1_55	1803754-09 CUD-3 0.11905	04-Dec-18	01:07:05
56	56	181203M1_56	1803754-10 CUD-4 0.11711	04-Dec-18	01:17:43
57	57	181203M1_57	ST181203M1-4 PFC CS3 18K3006	04-Dec-18	01:28:16
58	58	181203M1_58	IPA	04-Dec-18	01:38:54
59	59	181203M1_59	1803762-01 PFC-AF-01-01-112718 0.23808	04-Dec-18	01:49:32
60	60	181203M1_60	1803754-11 Sump 1 0.11876	04-Dec-18	02:00:05
61	61	181203M1_61	1803754-12 Sump 2 0.11443	04-Dec-18	02:10:44
62	62	181203M1_62	1803754-13 SW-5 0.11647	04-Dec-18	02:21:17
63	63	181203M1_63	1803754-14 Shelby St. Sump 0.11682	04-Dec-18	02:31:56
64	64	181203M1_64	1803746-01@150X PFC-AF-02-01-112618 0.23986	04-Dec-18	02:42:29
65	65	181203M1_65	IPA	04-Dec-18	02:53:07
66	66	181203M1_66	1803746-02@10X PFC-AF-02-02-112618 0.2365	04-Dec-18	03:03:39
67	67	181203M1_67	IPA	04-Dec-18	03:14:18
68	68	181203M1_68	1803746-03@5X PFC-AF-02-03-112618 0.23672	04-Dec-18	03:24:51

Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 08:03:25 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:04:05 Pacific Standard Time

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
69	69	181203M1_69	ST181203M1-5 PFC CS3 18K3006	04-Dec-18	03:35:29
70	70	181203M1_70	IPA	04-Dec-18	03:46:02

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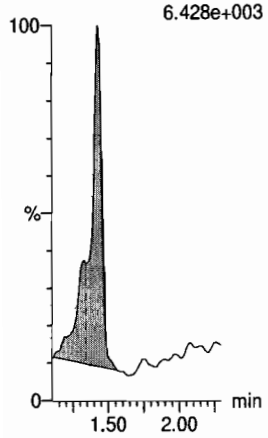
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-2.qld

Last Altered: Tuesday, December 04, 2018 07:51:12 Pacific Standard Time
Printed: Tuesday, December 04, 2018 07:52:08 Pacific Standard Time

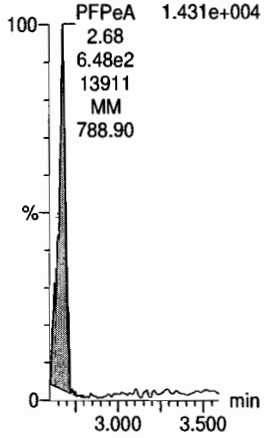
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 07:33:51
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

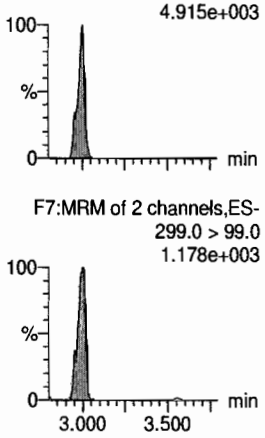
PFBA



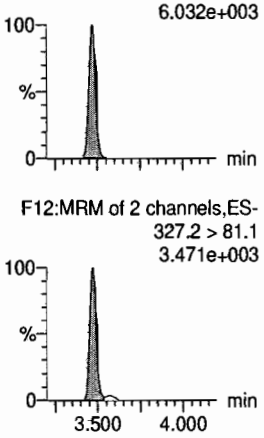
PFPeA



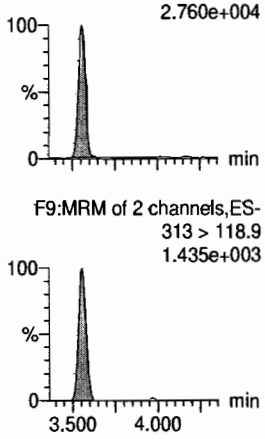
PFBS



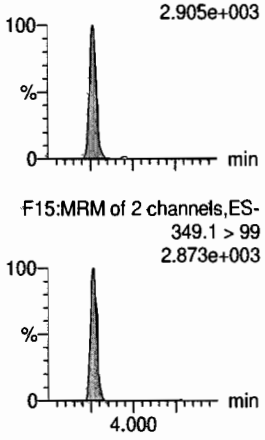
4:2 FTS



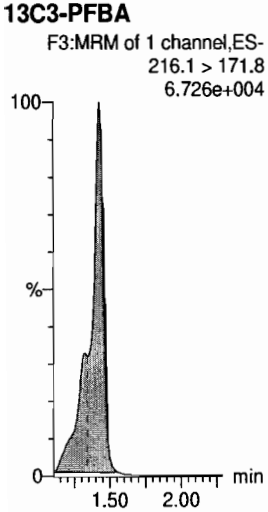
PFHxA



PFPeS



13C3-PFBA



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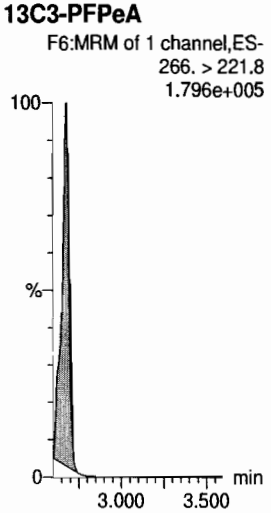

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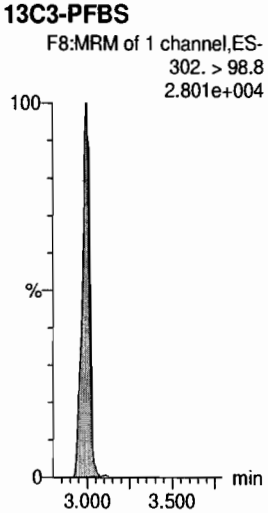
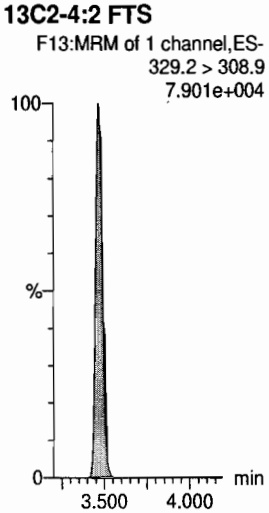


13C2-4:2 FTS



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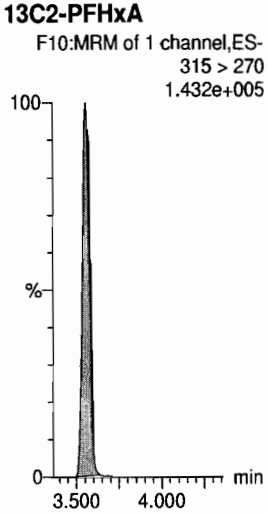

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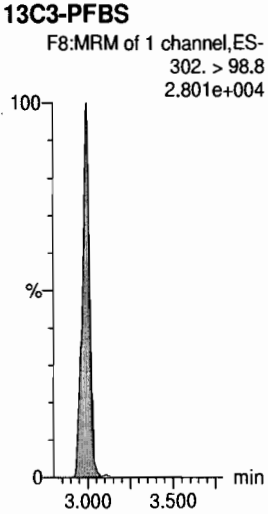

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Last Altered: Tuesday, December 04, 2018 07:51:12 Pacific Standard Time
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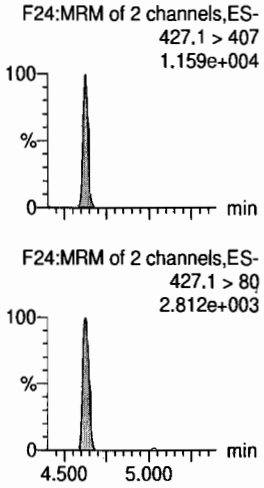
Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

6:2 FTS



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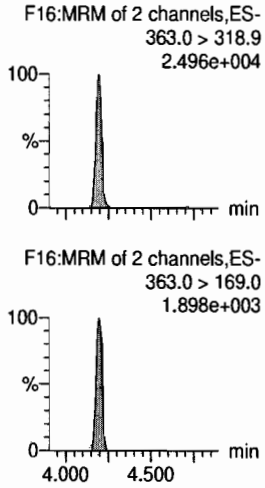
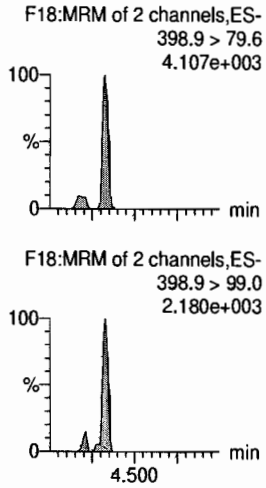


L-PFHxS



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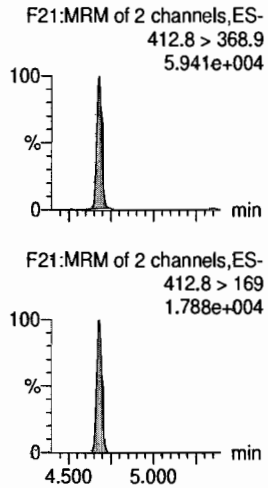

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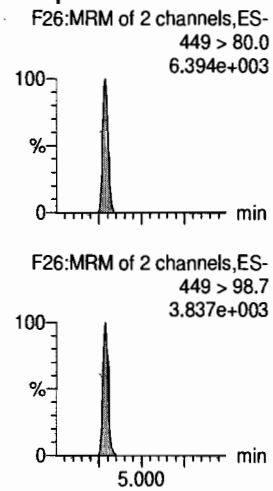

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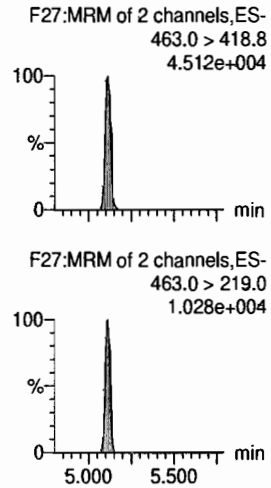
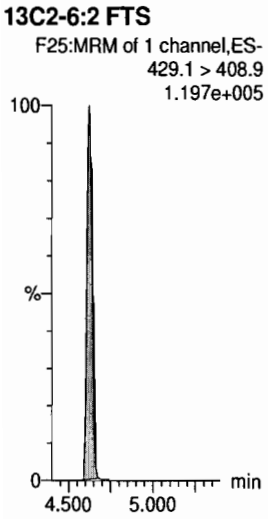
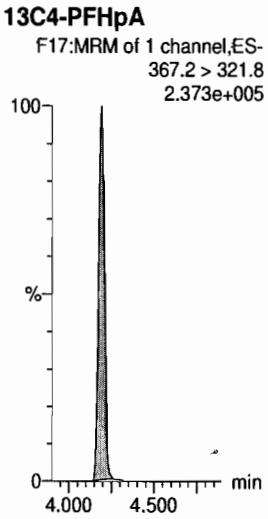


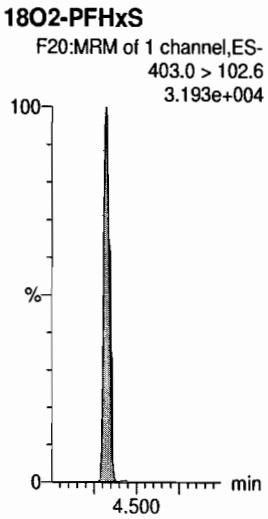
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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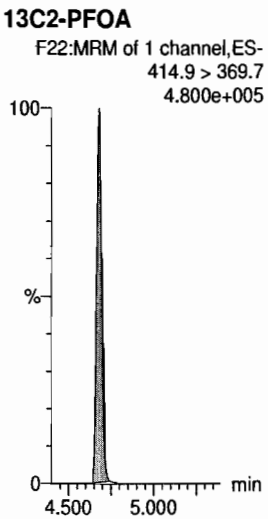
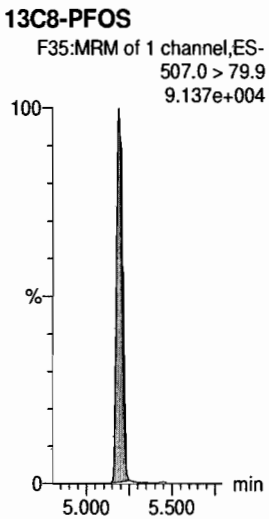


13C8-PFOS



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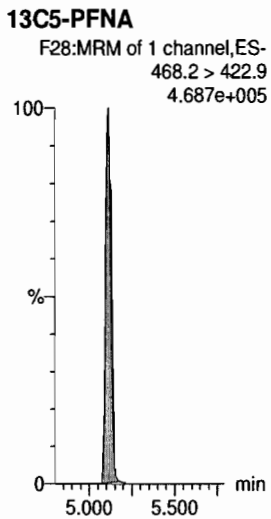

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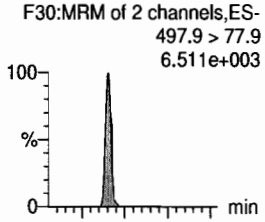
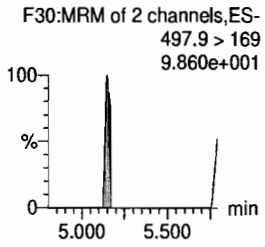
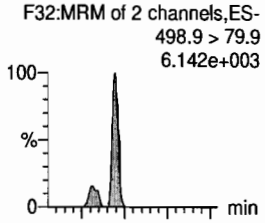
Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

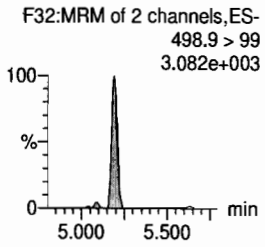
PFOSA





L-PFOS





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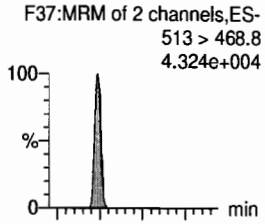
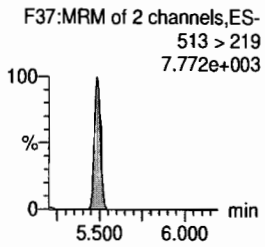
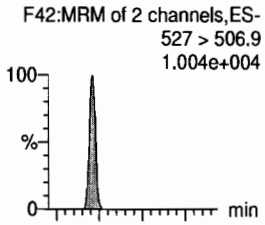
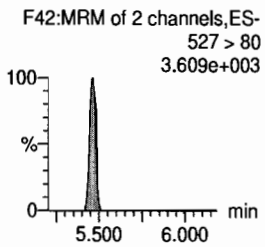




8:2 FTS





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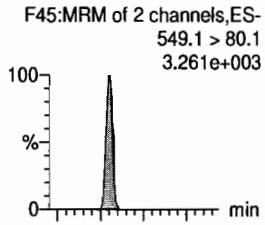

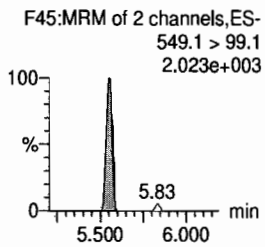

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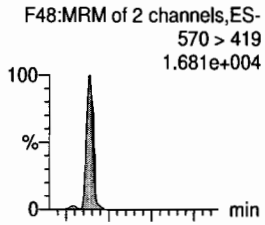
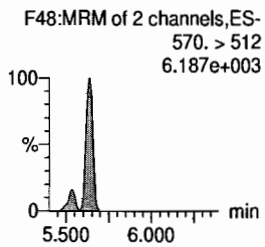
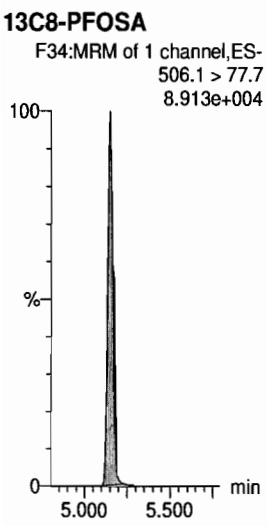
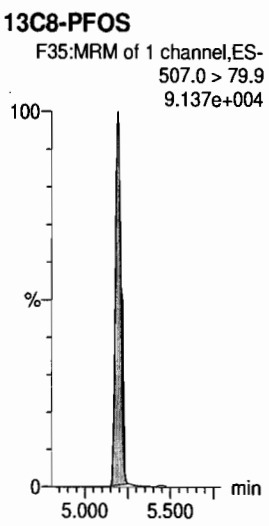




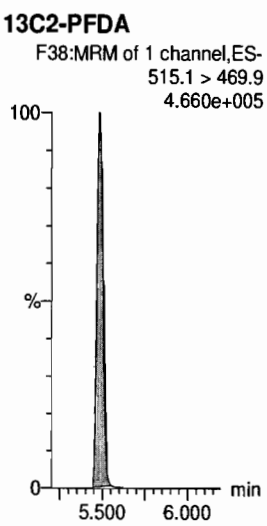
13C8-PFOSA



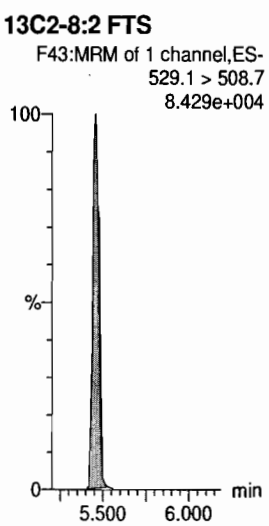
13C8-PFOS



13C2-PFDA



13C2-8:2 FTS



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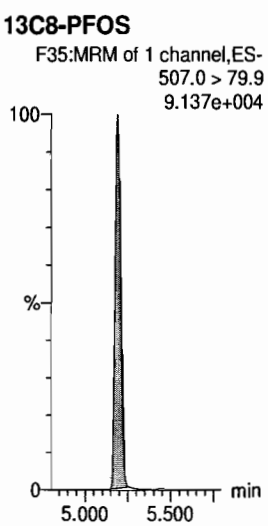
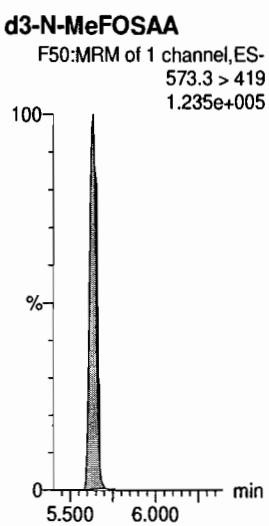


d3-N-MeFOSAA



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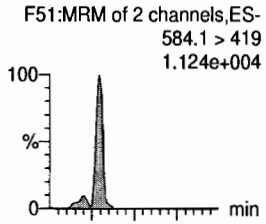
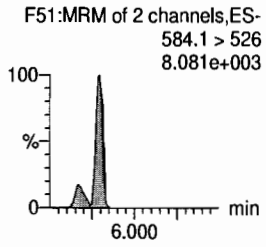
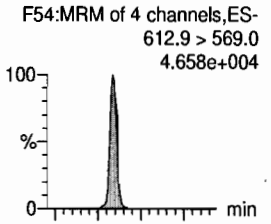
Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

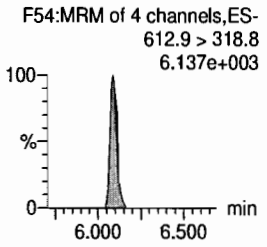
L-EtFOSAA





PFDoA





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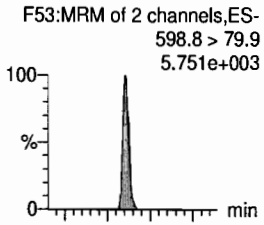

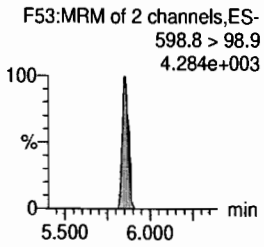

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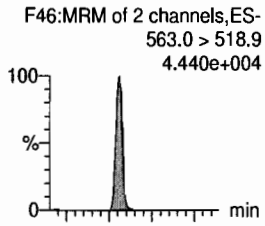
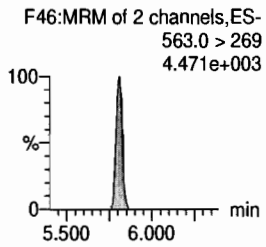
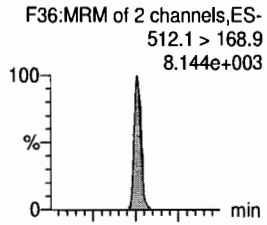
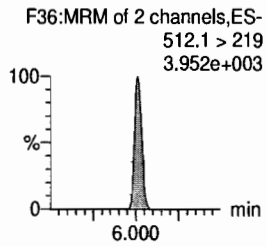




N-MeFOSA





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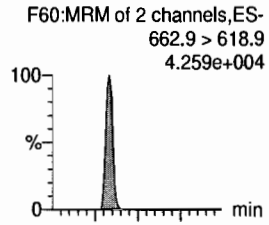
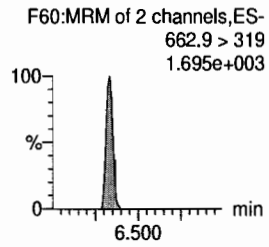
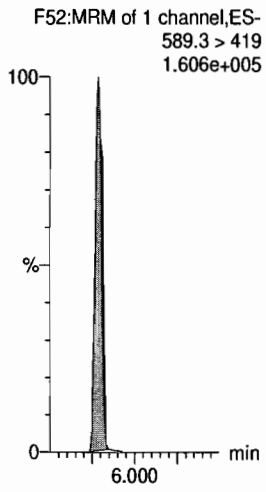
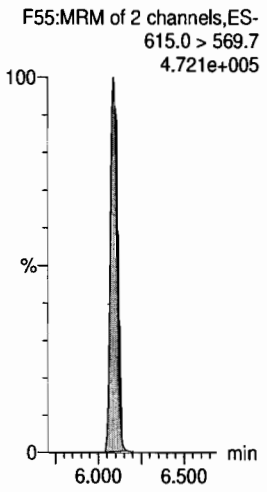




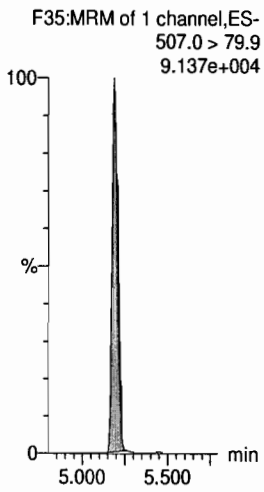
d5-N-EtFOSAA



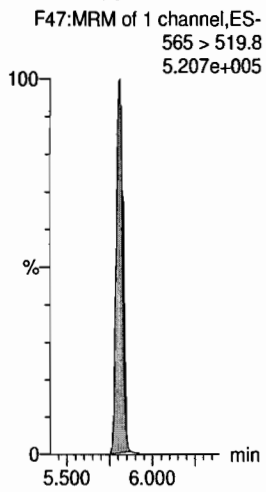
13C2-PFDoA



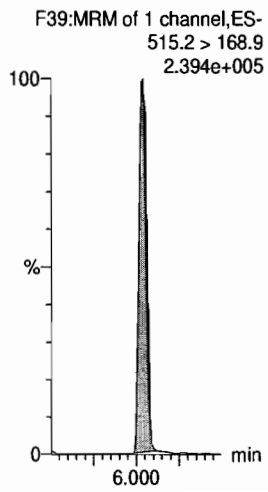
13C8-PFOS



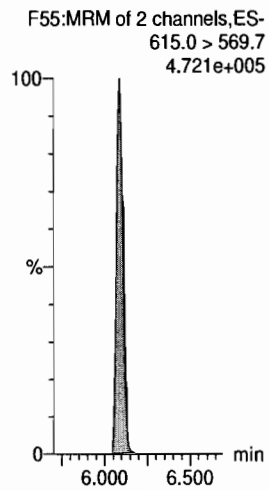
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

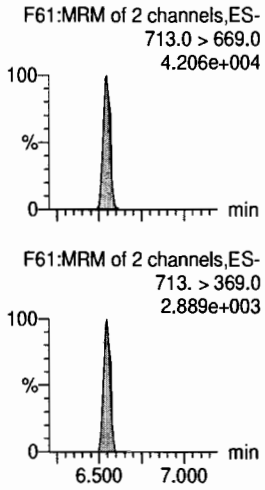


Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-2.qld

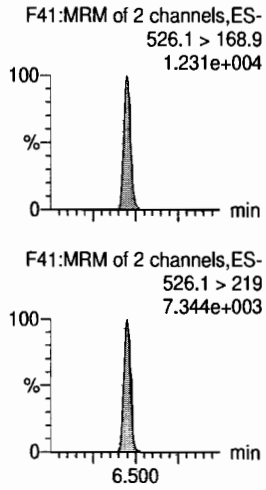
Last Altered: Tuesday, December 04, 2018 07:51:12 Pacific Standard Time
Printed: Tuesday, December 04, 2018 07:52:08 Pacific Standard Time

Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

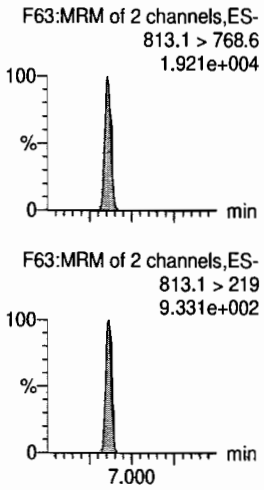
PFTeDA



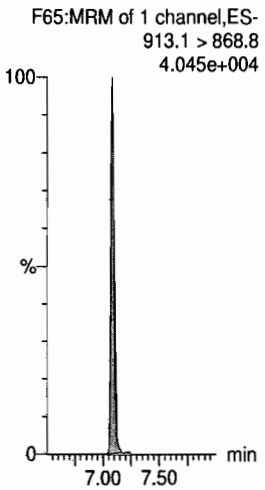
N-EtFOSA



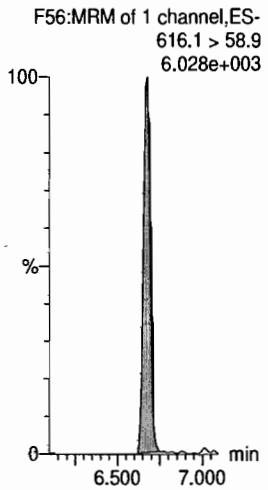
PFHxDA



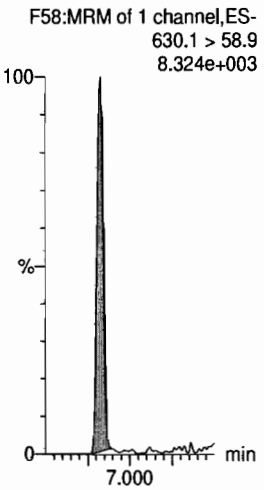
PFODA



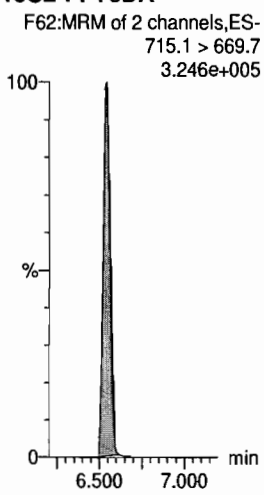
N-MeFOSE



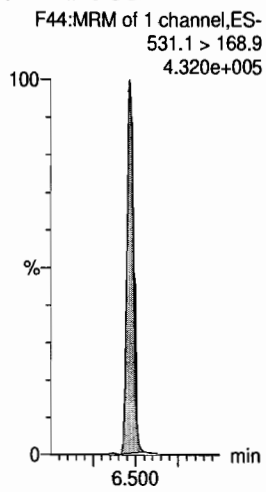
N-EtFOSE



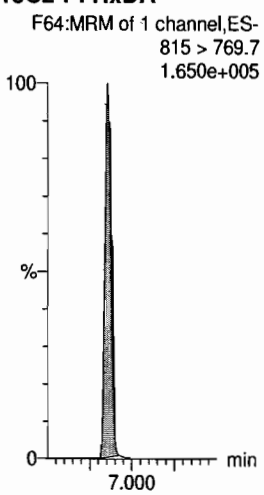
13C2-PFTeDA



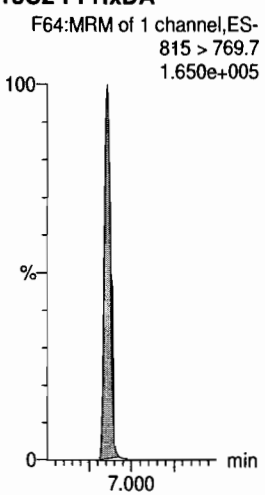
d5-N-ETFOSA



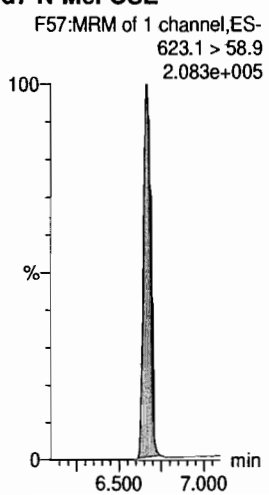
13C2-PFHxDA



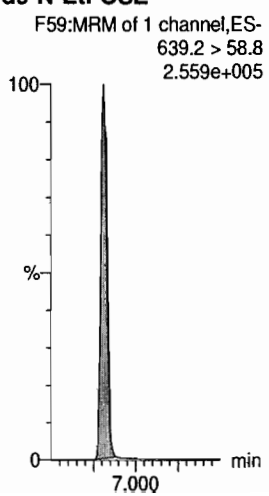
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

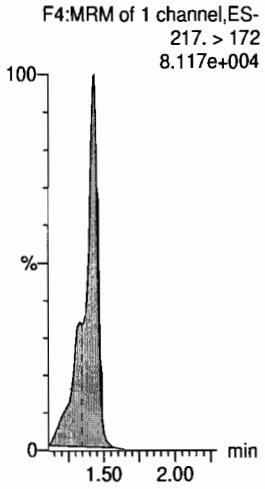


Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-2.qld

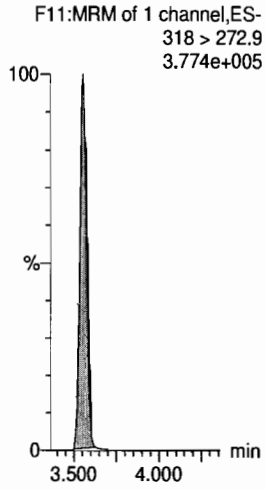
Last Altered: Tuesday, December 04, 2018 07:51:12 Pacific Standard Time
Printed: Tuesday, December 04, 2018 07:52:08 Pacific Standard Time

Name: 181203M1_2, Date: 03-Dec-2018, Time: 14:36:50, ID: ST181203M1-1 PFC CS0 18K3003, Description: PFC CS0 18K3003

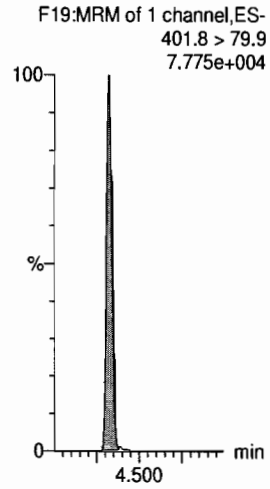
13C4-PFBA



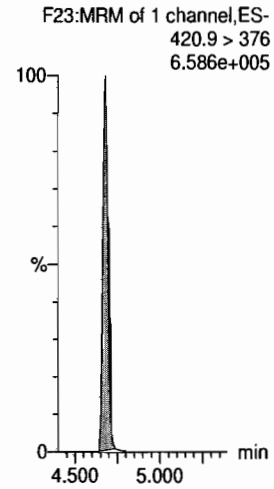
13C5-PFHxA



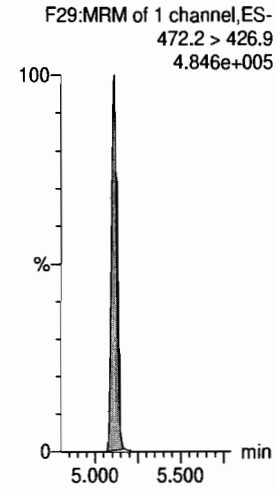
13C3-PFHxS



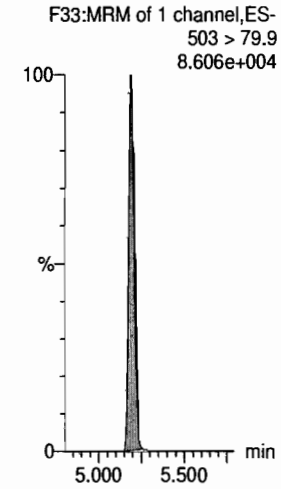
13C8-PFOA



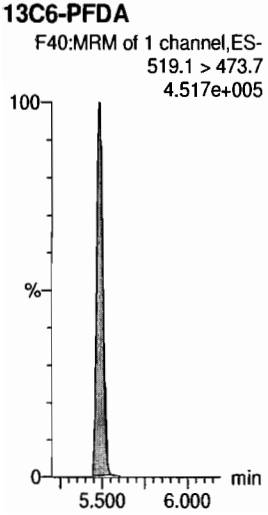
13C9-PFNA



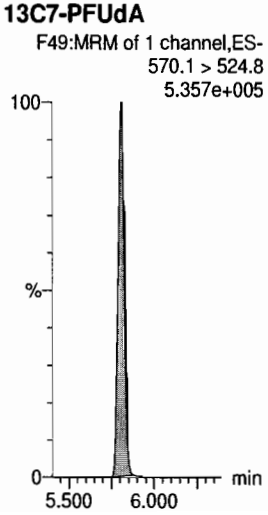
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

JDM 12/4/18

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	7477.563	8028.523	1.00	1.43	11.642	11.4	113.5	NO		
2	2	PFPeA	263.1 > 218.9	7266.049	9364.144	1.00	2.67	9.699	10.7	106.6	NO		
3	3	PFBS	299.0 > 79.7	2526.404	1471.533	1.00	3.00	21.461	10.7	106.5	NO	3.295	NO
4	4	4:2 FTS	327.2>307.2	3111.898	3722.015	1.00	3.47	10.451	12.9	129.1	NO	1.924	NO
5	5	PFHxA	313 > 269	14792.119	7005.294	1.00	3.56	10.558	10.1	100.8	NO	14.329	NO
6	6	PFPeS	349.1>80.1	1672.569	1471.533	1.00	3.77	14.208	9.6	96.4	NO	1.425	NO
7	36	13C3-PFBA	216.1 > 171.8	8028.523	9619.407	1.00	1.43	10.433	12.1	97.0	NO		
8	37	13C3-PFPeA	266. > 221.8	9364.144	18665.287	1.00	2.68	6.271	10.4	83.1	NO		
9	38	13C3-PFBS	302. > 98.8	1471.533	2724.861	1.00	3.00	6.750	10.7	85.3	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3722.015	2724.861	1.00	3.47	17.074	8.2	65.9	NO		
11	40	13C2-PFHxA	315 > 270	7005.294	18665.287	1.00	3.56	4.691	5.2	104.2	NO		
12	38	13C3-PFBS	302. > 98.8	1471.533	2724.861	1.00	3.00	6.750	10.7	85.3	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	4540.055	4235.966	1.00	4.63	13.397	14.2	142.3	YES	3.074	NO (A)
15	7	PFHpA	363.0 > 318.9	10775.200	9821.572	1.00	4.19	13.714	11.8	117.9	NO	13.986	NO
16	8	L-PFHxS	398.9 > 79.6	2420.715	1326.308	1.00	4.33	22.814	11.6	115.5	NO	2.298	NO
17	11	L-PFOA	412.8 > 368.9	19806.412	16648.301	1.00	4.68	14.871	12.2	121.6	NO	3.208	NO
18	13	PFHpS	449 > 80.0	2418.993	3391.895	1.00	4.79	8.915	10.1	101.3	NO	1.959	NO
19	14	PFNA	463.0 > 418.8	16458.914	16945.578	1.00	5.11	12.141	11.0	110.0	NO	4.572	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	4235.966	3208.098	1.00	4.63	16.505	9.0	72.4	NO		
21	41	13C4-PFHpA	367.2 > 321.8	9821.572	18665.287	1.00	4.19	6.577	9.5	75.9	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1326.308	2724.861	1.00	4.33	6.084	12.8	102.3	NO		
23	44	13C2-PFOA	414.9 > 369.7	16648.301	24330.898	1.00	4.68	8.553	9.8	78.4	NO		
24	47	13C8-PFOS	507.0 > 79.9	3391.895	3208.098	1.00	5.19	13.216	13.7	109.2	NO		
25	45	13C5-PFNA	468.2 > 422.9	16945.578	17279.703	1.00	5.11	12.258	12.2	97.5	NO		
26	-1												
27	15	PFOSA	497.9 > 77.9	2876.077	3250.857	1.00	5.15	11.059	9.7	97.3	NO	26.635	NO
28	16	L-PFOS	498.9 > 79.9	2788.231	3391.895	1.00	5.19	10.275	9.3	93.5	NO	2.053	NO
29	18	PFDA	513 > 468.8	18735.084	19004.143	1.00	5.48	12.323	11.5	114.8	NO	5.880	NO
30	19	8:2 FTS	527 > 506.9	4597.032	3532.716	1.00	5.46	16.266	12.6	125.6	NO	2.741	NO
31	20	PFNS	549.1 > 80.1	1788.063	3391.895	1.00	5.54	6.589	8.5	85.2	NO	1.795	NO
32	21	L-MeFOSAA	570 > 419	8387.563	5299.448	1.00	5.63	19.784	13.1	131.4	YES	2.432	NO (A)
33	46	13C8-PFOSA	506.1 > 77.7	3250.857	22940.582	1.00	5.15	1.771	8.8	70.3	NO		
34	47	13C8-PFOS	507.0 > 79.9	3391.895	3208.098	1.00	5.19	13.216	13.7	109.2	NO		
35	48	13C2-PFDA	515.1 > 469.9	19004.143	19285.031	1.00	5.48	12.318	11.0	87.6	NO		

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?	
36	49	13C2-8:2 FTS	529.1 > 508.7	3532.716	3208.098	1.00	5.45	13.765	12.7	101.4	NO			
37	47	13C8-PFOS	507.0 > 79.9	3391.895	3208.098	1.00	5.19	13.216	13.7	109.2	NO			
38	50	d3-N-MeFOSAA	573.3 > 419	5299.448	22940.582	1.00	5.63	2.888	8.8	70.2	NO			
39	-1													
40	23	L-EtFOSAA	584.1 > 419	7023.611	7518.429	1.00	5.79	11.677	10.8	107.7	NO	1.270	NO	
41	27	PFDoA	612.9 > 569.0	22816.193	19229.492	1.00	6.08	14.832	11.3	112.8	NO	9.321	NO	
42	26	PFDS	598.8 > 79.9	2750.703	3391.895	1.00	5.85	10.137	12.4	123.9	NO	1.734	NO	
43	25	PFUdA	563.0 > 518.9	17930.164	22227.916	1.00	5.81	10.083	9.4	93.7	NO	9.496	NO	
44	28	N-MeFOSA	512.1 > 168.9	4045.033	11135.663	1.00	6.01	54.488	51.8	103.6	NO	1.532	NO	
45	29	PFTrDA	662.9 > 618.9	21435.748	19229.492	1.00	6.32	13.934	11.5	114.8	NO	26.710	NO	
46	52	d5-N-EtFOSAA	589.3 > 419	7518.429	22940.582	1.00	5.78	4.097	11.5	92.3	NO			
47	53	13C2-PFDoA	615.0 > 569.7	19229.492	19285.031	1.00	6.08	12.464	12.6	100.4	NO			
48	47	13C8-PFOS	507.0 > 79.9	3391.895	3208.098	1.00	5.19	13.216	13.7	109.2	NO			
49	51	13C2-PFUdA	565 > 519.8	22227.916	22940.582	1.00	5.81	12.112	10.9	87.2	NO			
50	54	d3-N-MeFOSA	515.2 > 168.9	11135.663	22940.582	1.00	6.04	6.068	82.2	54.8	NO			
51	53	13C2-PFDoA	615.0 > 569.7	19229.492	19285.031	1.00	6.08	12.464	12.6	100.4	NO			
52	-1													
53	30	PFTeDA	713.0 > 669.0	20520.514	14602.360	1.00	6.54	17.566	15.5	155.5	YES	14.120	NO	(A)
54	31	N-EtFOSA	526.1 > 168.9	5635.637	18976.705	1.00	6.45	44.546	45.9	91.8	NO	1.718	NO	
55	32	PFHxDA	813.1 > 768.6	6960.091	6723.087	1.00	6.85	5.176	9.7	97.0	NO	20.076	NO	
56	33	PFODA	913.1 > 868.8	12964.791	6723.087	1.00	7.08	9.642	11.3	112.6	NO			
57	34	N-MeFOSE	616.1 > 58.9	2956.312	9818.604	1.00	6.68	45.164	49.0	97.9	NO			
58	35	N-EtFOSE	630.1 > 58.9	3634.387	10124.197	1.00	6.82	53.847	51.2	102.4	NO			
59	55	13C2-PFTeDA	715.1 > 669.7	14602.360	22940.582	1.00	6.54	7.957	10.6	85.0	NO			
60	56	d5-N-ETFOSA	531.1 > 168.9	18976.705	22940.582	1.00	6.47	10.340	106.7	71.2	NO			
61	57	13C2-PFHxDA	815 > 769.7	6723.087	22940.582	1.00	6.85	3.663	5.1	102.6	NO			
62	57	13C2-PFHxDA	815 > 769.7	6723.087	22940.582	1.00	6.85	3.663	5.1	102.6	NO			
63	58	d7-N-MeFOSE	623.1 > 58.9	9818.604	22940.582	1.00	6.66	5.350	148.7	99.1	NO			
64	59	d9-N-EtFOSE	639.2 > 58.8	10124.197	22940.582	1.00	6.81	5.517	152.7	101.8	NO			
65	-1													
66	60	13C4-PFBA	217. > 172	9619.407	9619.407	1.00	1.43	12.500	12.5	100.0	NO			
67	61	13C5-PFHxA	318 > 272.9	18665.287	18665.287	1.00	3.56	12.500	12.5	100.0	NO			
68	62	13C3-PFHxS	401.8 > 79.9	2724.861	2724.861	1.00	4.33	12.500	12.5	100.0	NO			
69	63	13C8-PFOA	420.9 > 376	24330.898	24330.898	1.00	4.68	12.500	12.5	100.0	NO			
70	64	13C9-PFNA	472.2 > 426.9	17279.703	17279.703	1.00	5.11	12.500	12.5	100.0	NO			

Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
71	65	13C4-PFOS	503 > 79.9	3208.098	3208.098	1.00	5.19	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	19285.031	19285.031	1.00	5.48	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	22940.582	22940.582	1.00	5.81	12.500	12.5	100.0	NO		

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Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 08:03:25 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:04:05 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 07:50:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Compound name: PFBA

	# Name	ID	Acq.Date	Acq.Time
1	1 181203M1_1	IPA	03-Dec-18	14:26:17
2	2 181203M1_2	ST181203M1-1 PFC CS0 18K3003	03-Dec-18	14:36:50
3	3 181203M1_3	IPA	03-Dec-18	14:47:29
4	4 181203M1_4	B8K0153-BS1 OPR 0.25	03-Dec-18	14:58:01
5	5 181203M1_5	B8K0153-MS1 Matrix Spike 0.1068	03-Dec-18	15:08:39
6	6 181203M1_6	B8K0153-MSD1 Matrix Spike Dup 0.11122	03-Dec-18	15:19:12
7	7 181203M1_7	B8K0153-BLK1 Method Blank 0.25	03-Dec-18	15:29:51
8	8 181203M1_8	1803678-01 A1-MW-01-SA2 0.11182	03-Dec-18	15:40:24
9	9 181203M1_9	1803678-02 A1-MW-42-SA2 0.11781	03-Dec-18	15:51:02
10	10 181203M1_10	1803678-03 FRB-20181116 0.1036	03-Dec-18	16:01:36
11	11 181203M1_11	1803678-04 EB-20181116 0.11772	03-Dec-18	16:12:14
12	12 181203M1_12	1803676-01 A1-MW-11-SA2 0.11626	03-Dec-18	16:22:46
13	13 181203M1_13	1803676-02 A1-MW-13-SA2 0.11042	03-Dec-18	16:33:24
14	14 181203M1_14	1803676-03 A1-MW-14-SA2 0.11629	03-Dec-18	16:43:58
15	15 181203M1_15	1803676-04 A1-MW-15-SA2 0.11086	03-Dec-18	16:54:36
16	16 181203M1_16	IPA	03-Dec-18	18:13:52
17	17 181203M1_17	IPA	03-Dec-18	18:24:27
18	18 181203M1_18	1803676-05 A1-MW-37-SA2 0.11753	03-Dec-18	18:35:06
19	19 181203M1_19	1803676-06 A1-MW-37-SA2D 0.11493	03-Dec-18	18:45:39
20	20 181203M1_20	1803676-07 FRB-20181115 0.11067	03-Dec-18	18:56:10
21	21 181203M1_21	1803676-08 A1-MW-31-SA2 0.1169	03-Dec-18	19:06:48
22	22 181203M1_22	1803689-01 Equipment Blank 1 0.25208	03-Dec-18	19:17:20
23	23 181203M1_23	ST181203M1-2 PFC CS3 18K3006	03-Dec-18	19:27:59
24	24 181203M1_24	IPA	03-Dec-18	19:38:28
25	25 181203M1_25	B8K0190-BSD1 LCSD 0.25	03-Dec-18	19:49:07
26	26 181203M1_26	1803745-03 PFC-AF-01-03-112618 0.24673	03-Dec-18	19:59:45
27	27 181203M1_27	1803746-01 PFC-AF-02-01-112618 0.23986	03-Dec-18	20:10:19
28	28 181203M1_28	IPA	03-Dec-18	20:20:57
29	29 181203M1_29	1803746-02 PFC-AF-02-02-112618 0.2365	03-Dec-18	20:31:30
30	30 181203M1_30	IPA	03-Dec-18	20:42:08
31	31 181203M1_31	1803746-03 PFC-AF-02-03-112618 0.23672	03-Dec-18	20:52:42
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Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 08:03:25 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:04:05 Pacific Standard Time

Compound name: PFBA

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35	35 181203M1_35	1803618-01@10X 1811353-01A 0.23448	03-Dec-18	21:35:10
36	36 181203M1_36	IPA	03-Dec-18	21:45:43
37	37 181203M1_37	B8K0215-BS1 OPR 0.125	03-Dec-18	21:56:21
38	38 181203M1_38	B8K0215-BSD1 LCSD 0.125	03-Dec-18	22:06:56
39	39 181203M1_39	B8K0215-BLK1 Method Blank 0.125	03-Dec-18	22:17:34
40	40 181203M1_40	1803788-01 PFC-AF-01-01-112918 0.11457	03-Dec-18	22:28:07
41	41 181203M1_41	1803788-02 PFC-AF-01-02-112918 0.11773	03-Dec-18	22:38:45
42	42 181203M1_42	1803788-03 PFC-AF-01-03-112918 0.11732	03-Dec-18	22:49:19
43	43 181203M1_43	ST181203M1-3 PFC CS3 18K3006	03-Dec-18	22:59:57
44	44 181203M1_44	IPA	03-Dec-18	23:10:29
45	45 181203M1_45	B8K0197-BS1 OPR 0.125	03-Dec-18	23:21:08
46	46 181203M1_46	B8K0197-BLK1 Method Blank 0.125	03-Dec-18	23:31:46
47	47 181203M1_47	1803754-01 CMW-18-01 0.11781	03-Dec-18	23:42:19
48	48 181203M1_48	1803754-02 CMW-101B 0.11273	03-Dec-18	23:52:57
49	49 181203M1_49	1803754-03 MW-97701 0.11474	04-Dec-18	00:03:30
50	50 181203M1_50	1803754-04 MW-97702 0.11219	04-Dec-18	00:14:08
51	51 181203M1_51	1803754-05 CSW-3 0.12087	04-Dec-18	00:24:42
52	52 181203M1_52	1803754-06 CSW-4 0.11744	04-Dec-18	00:35:20
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54	54 181203M1_54	1803754-08 CUD-2 0.1153	04-Dec-18	00:56:31
55	55 181203M1_55	1803754-09 CUD-3 0.11905	04-Dec-18	01:07:05
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58	58 181203M1_58	IPA	04-Dec-18	01:38:54
59	59 181203M1_59	1803762-01 PFC-AF-01-01-112718 0.23808	04-Dec-18	01:49:32
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61	61 181203M1_61	1803754-12 Sump 2 0.11443	04-Dec-18	02:10:44
62	62 181203M1_62	1803754-13 SW-5 0.11647	04-Dec-18	02:21:17
63	63 181203M1_63	1803754-14 Shelby St. Sump 0.11682	04-Dec-18	02:31:56
64	64 181203M1_64	1803746-01@150X PFC-AF-02-01-112618 0.23986	04-Dec-18	02:42:29
65	65 181203M1_65	IPA	04-Dec-18	02:53:07
66	66 181203M1_66	1803746-02@10X PFC-AF-02-02-112618 0.2365	04-Dec-18	03:03:39
67	67 181203M1_67	IPA	04-Dec-18	03:14:18
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Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 08:03:25 Pacific Standard Time
Printed: Tuesday, December 04, 2018 08:04:05 Pacific Standard Time

Compound name: PFBA

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Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

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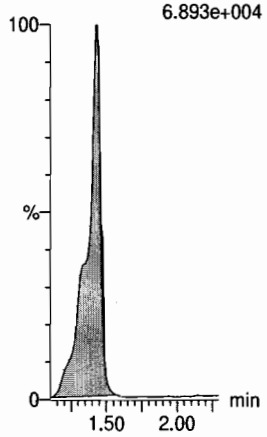

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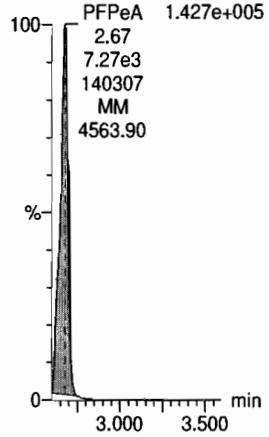

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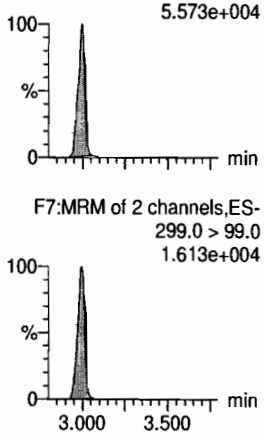

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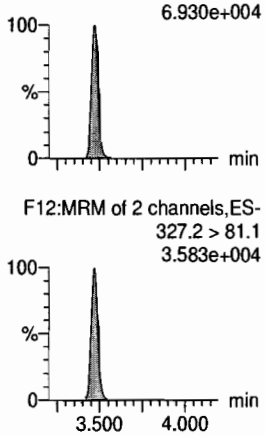

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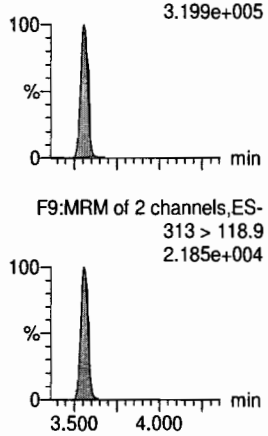

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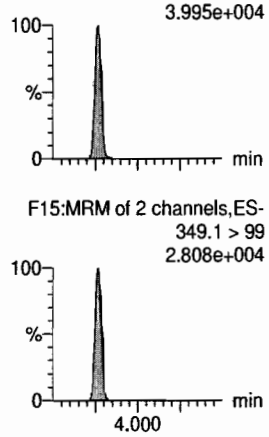

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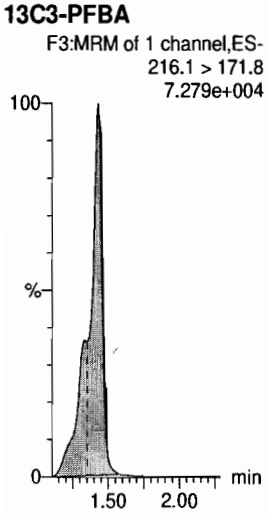

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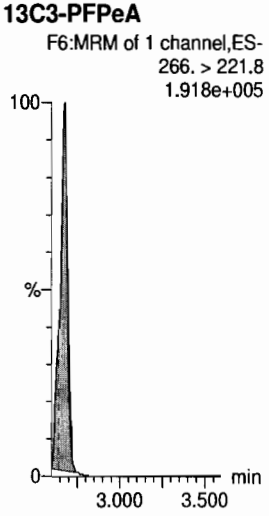

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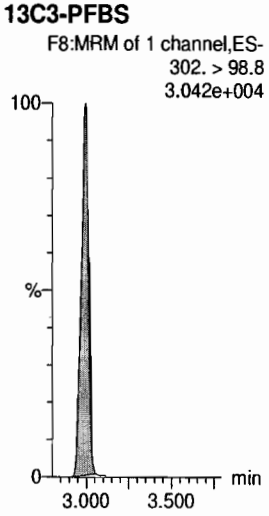

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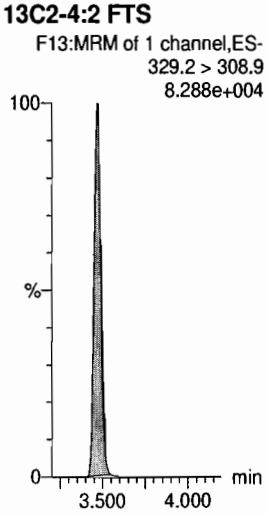

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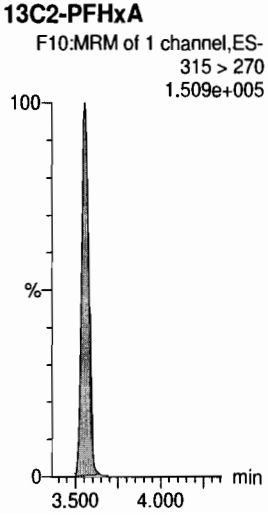

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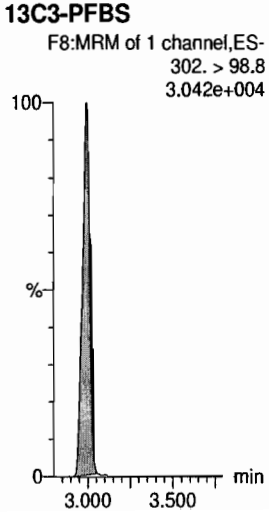

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Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

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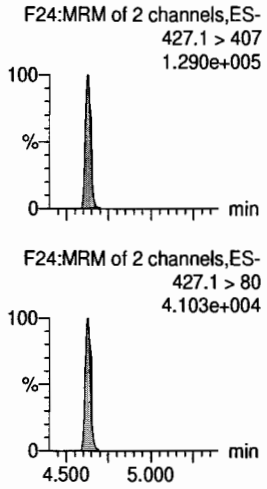

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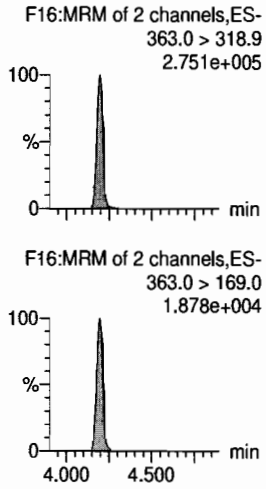

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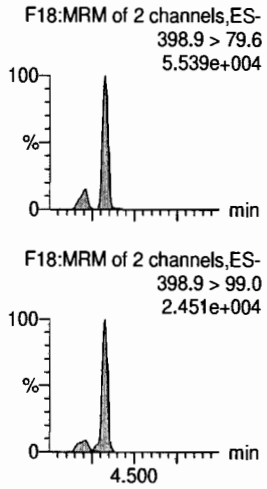

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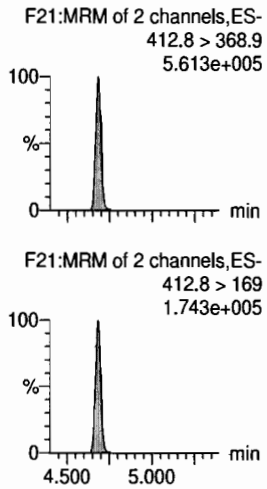

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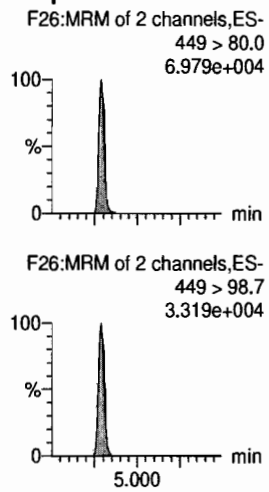

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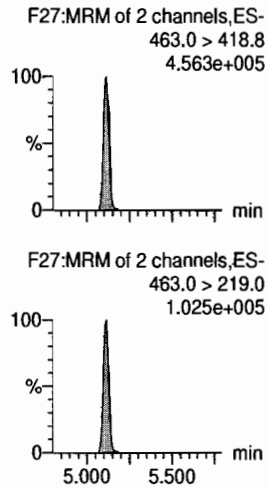

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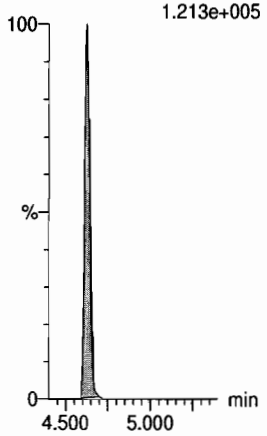

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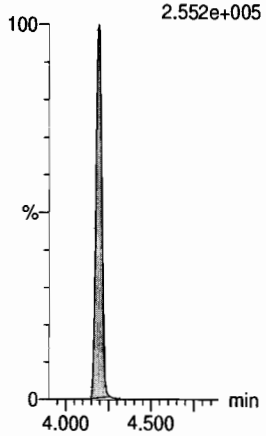

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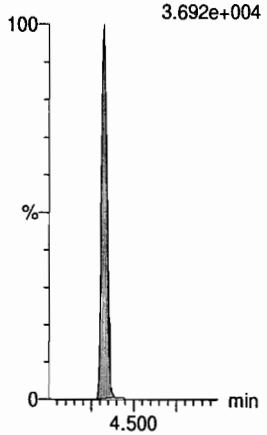

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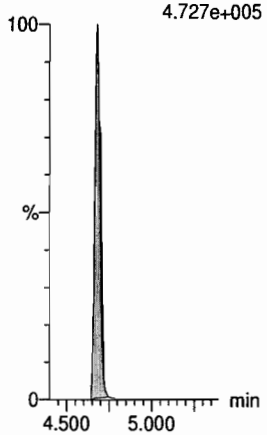

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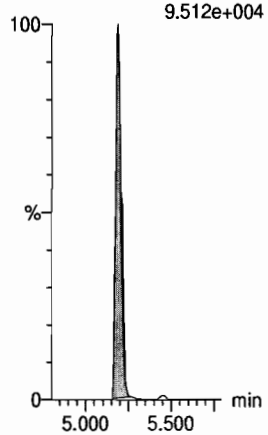

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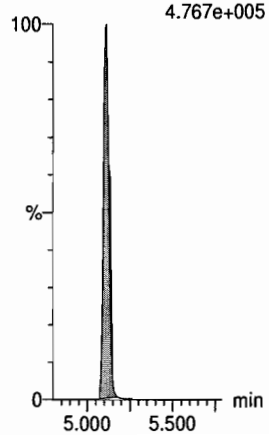

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Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

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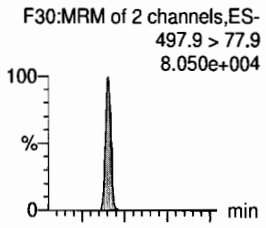

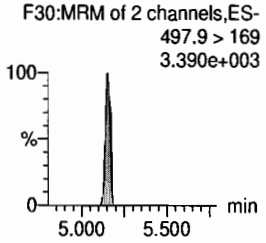

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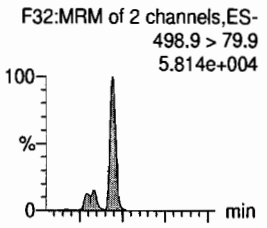

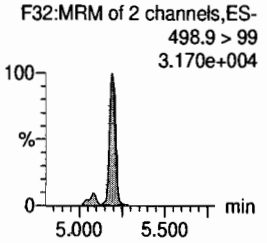

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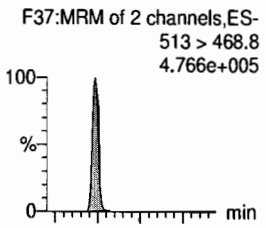

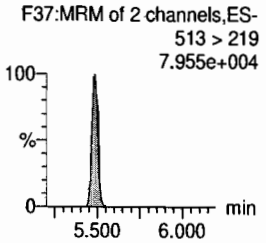

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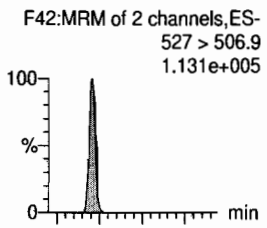

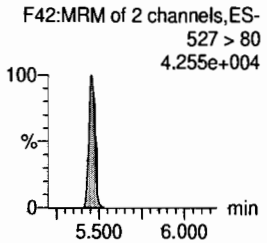

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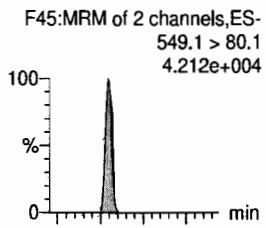
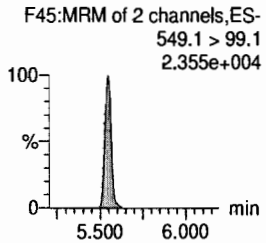
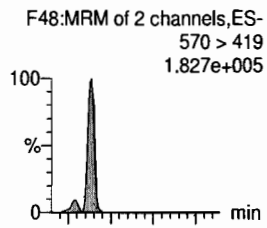
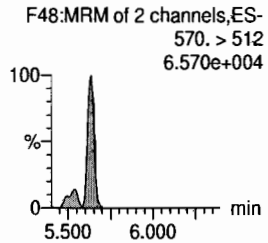


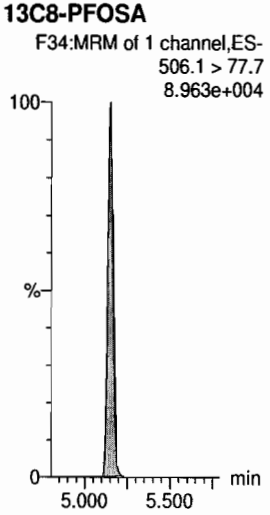


L-MeFOSAA

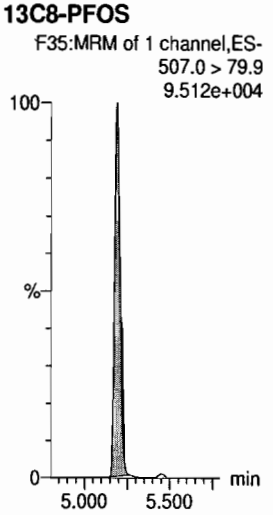




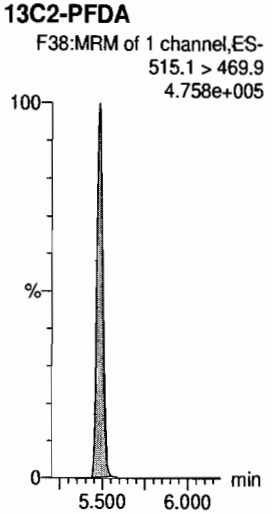
13C8-PFOSA



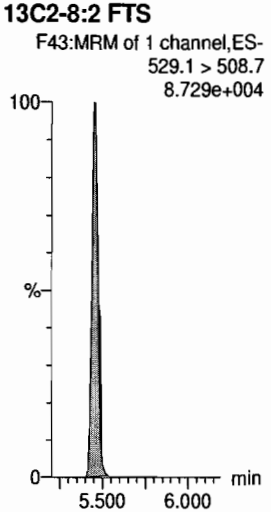
13C8-PFOS



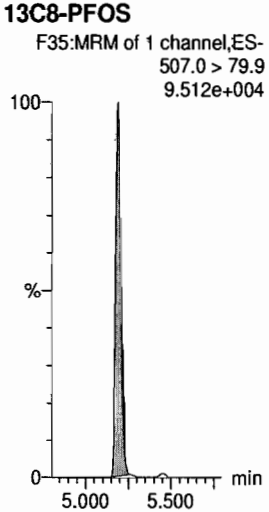
13C2-PFDA



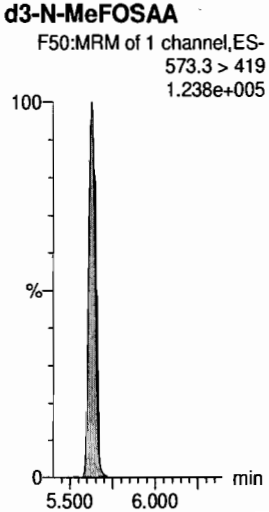
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

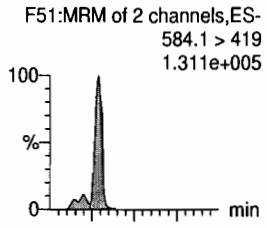


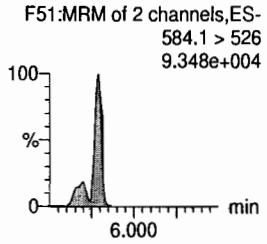
Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

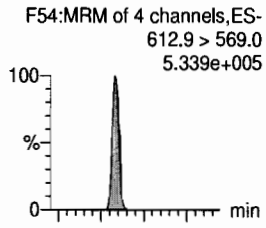
Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

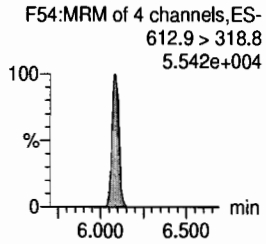
L-EtFOSAA



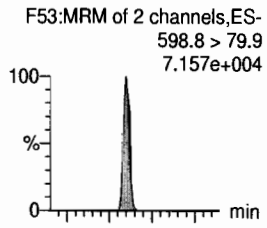


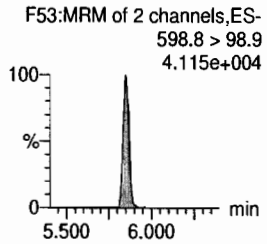
PFDoA



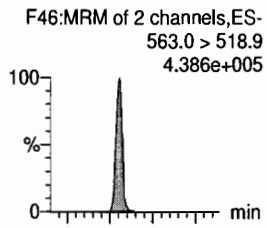


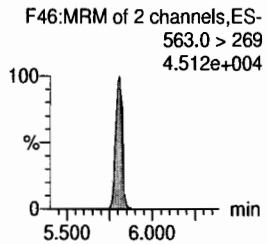
PFDS



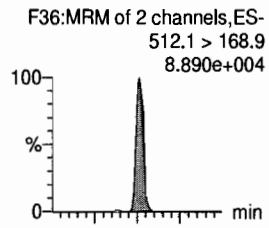


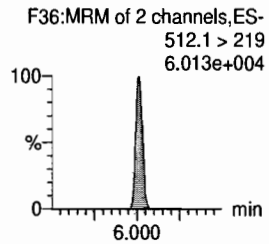
PFUdA



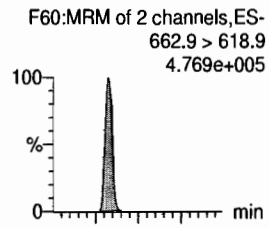


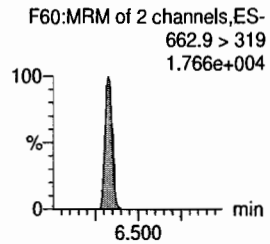
N-MeFOSA



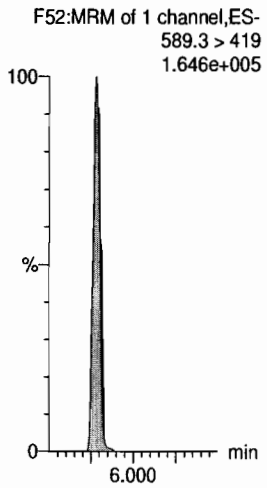


PFTrDA

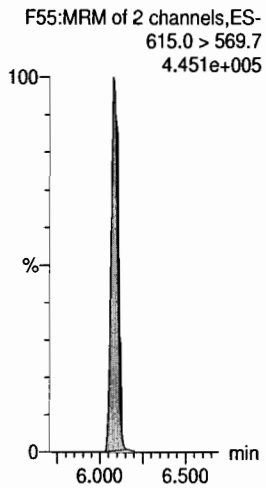




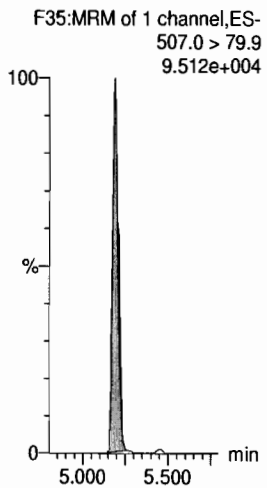
d5-N-EtFOSAA



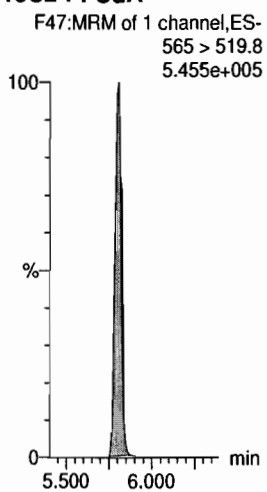
13C2-PFDoA



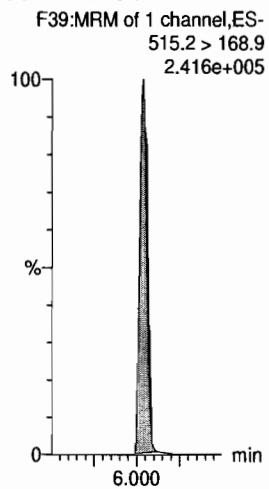
13C8-PFOS



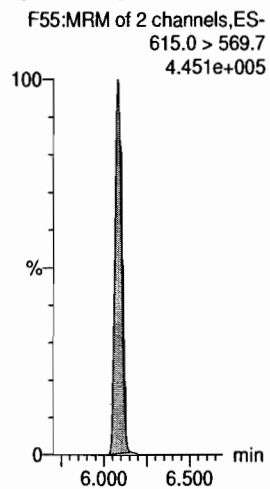
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

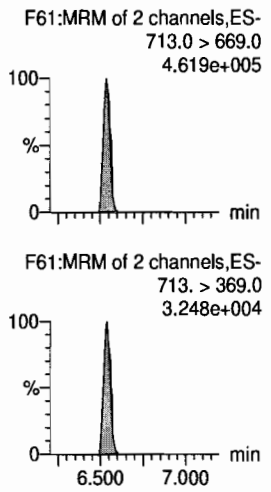


Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

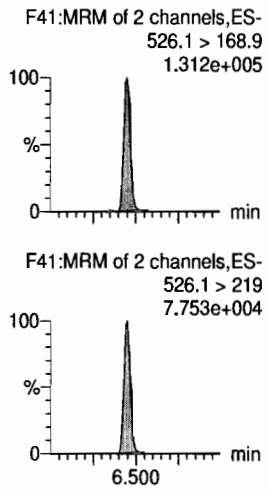
Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

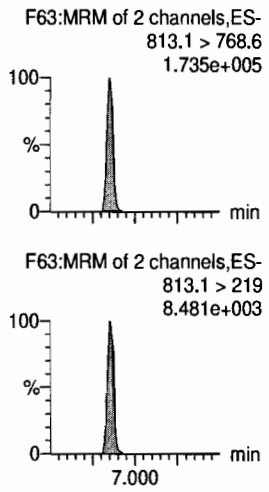
PFTeDA



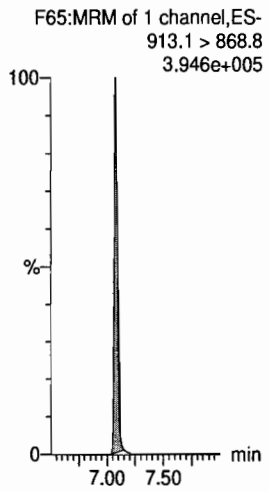
N-EtFOSA



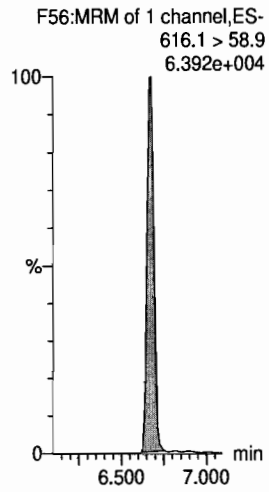
PFHxDA



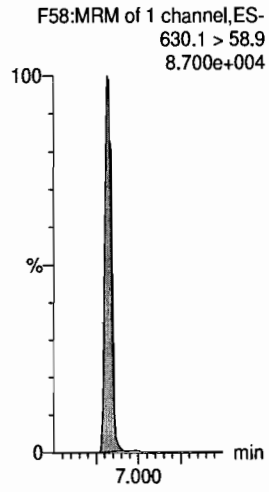
PFODA



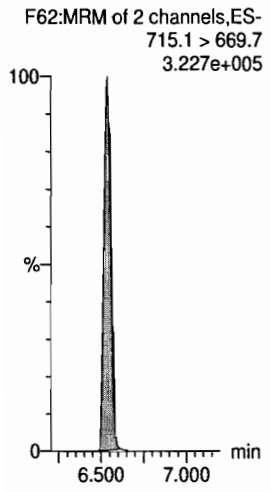
N-MeFOSE



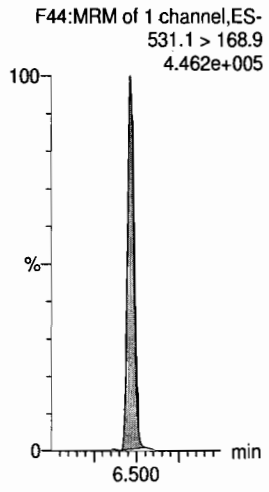
N-EtFOSE



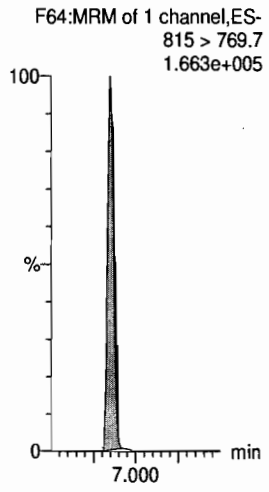
13C2-PFTeDA



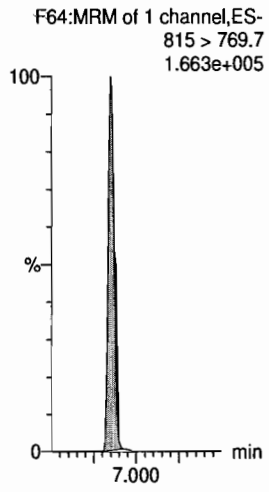
d5-N-ETFOSA



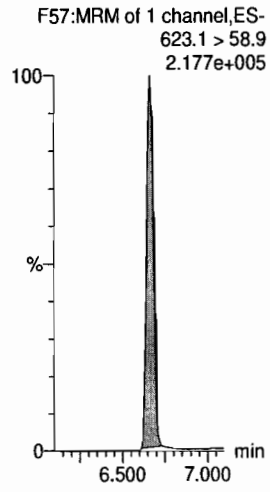
13C2-PFHxDA



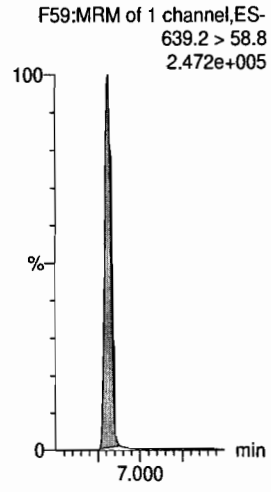
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

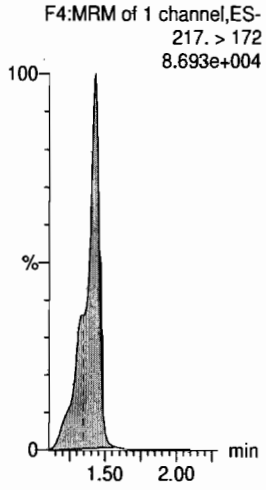


Dataset: Z:\Projects\PFAS.PRO\Results\181203M1\181203M1-23.qld

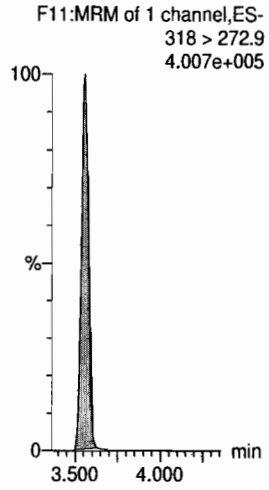
Last Altered: Tuesday, December 04, 2018 11:04:20 Pacific Standard Time
Printed: Tuesday, December 04, 2018 11:06:00 Pacific Standard Time

Name: 181203M1_23, Date: 03-Dec-2018, Time: 19:27:59, ID: ST181203M1-2 PFC CS3 18K3006, Description: PFC CS3 18K3006

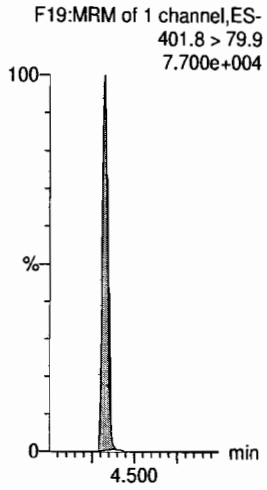
13C4-PFBA



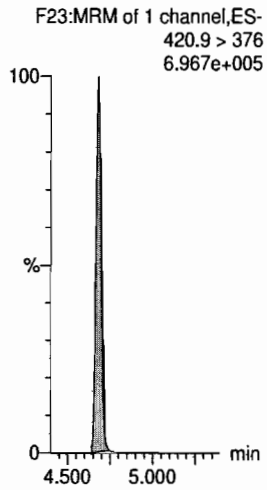
13C5-PFHxA



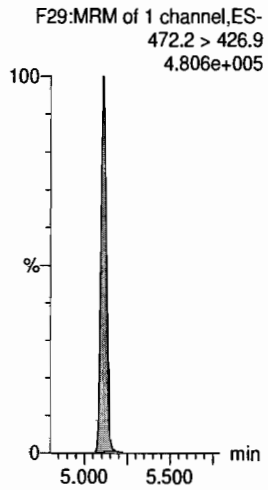
13C3-PFHxS



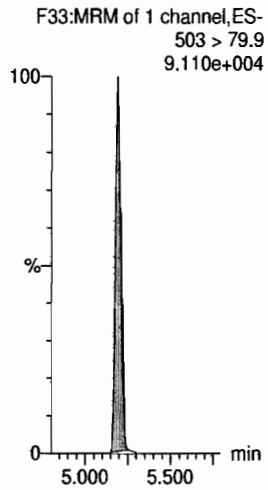
13C8-PFOA



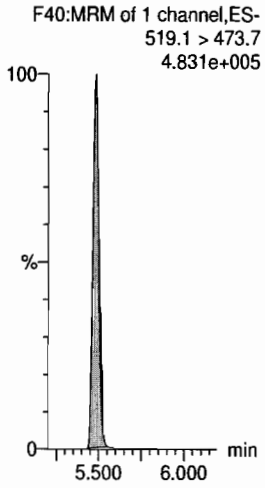
13C9-PFNA



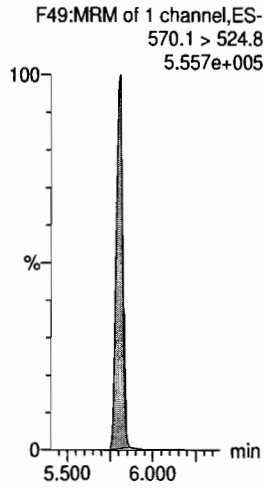
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-IIS AREAS THRU -11CCAL.qld

Last Altered: Tuesday, December 04, 2018 16:25:47 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:27:05 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_RS-12-03-18.mdb 03 Dec 2018 12:52:41
Calibration: 04 Dec 2018 16:25:47

Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181204M1-6 PFC CS3 18K3006	9.09e3	100.0	NO
2	2	13C5-PFHxA	ST181204M1-6 PFC CS3 18K3006	1.69e4	100.0	NO
3	3	13C3-PFHxS	ST181204M1-6 PFC CS3 18K3006	2.43e3	100.0	NO
4	4	13C8-PFOA	ST181204M1-6 PFC CS3 18K3006	2.14e4	100.0	NO
5	5	13C9-PFNA	ST181204M1-6 PFC CS3 18K3006	1.49e4	100.0	NO
6	6	13C4-PFOS	ST181204M1-6 PFC CS3 18K3006	2.70e3	100.0	NO
7	7	13C6-PFDA	ST181204M1-6 PFC CS3 18K3006	1.69e4	100.0	NO
8	8	13C7-PFUdA	ST181204M1-6 PFC CS3 18K3006	1.97e4	100.0	NO

Name: 181204M1_9, Date: 04-Dec-2018, Time: 12:58:46, ID: ST181204M1-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181204M1-7 PFC CS4 18K3007	8.90e3	97.9	NO
2	2	13C5-PFHxA	ST181204M1-7 PFC CS4 18K3007	1.60e4	95.2	NO
3	3	13C3-PFHxS	ST181204M1-7 PFC CS4 18K3007	2.37e3	97.7	NO
4	4	13C8-PFOA	ST181204M1-7 PFC CS4 18K3007	2.05e4	95.9	NO
5	5	13C9-PFNA	ST181204M1-7 PFC CS4 18K3007	1.44e4	96.6	NO
6	6	13C4-PFOS	ST181204M1-7 PFC CS4 18K3007	2.46e3	90.9	NO
7	7	13C6-PFDA	ST181204M1-7 PFC CS4 18K3007	1.70e4	100.4	NO
8	8	13C7-PFUdA	ST181204M1-7 PFC CS4 18K3007	1.91e4	97.2	NO

Name: 181204M1_10, Date: 04-Dec-2018, Time: 13:09:24, ID: ST181204M1-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181204M1-8 PFC CS5 18K3008	8.91e3	98.0	NO
2	2	13C5-PFHxA	ST181204M1-8 PFC CS5 18K3008	1.56e4	92.3	NO
3	3	13C3-PFHxS	ST181204M1-8 PFC CS5 18K3008	2.24e3	92.3	NO
4	4	13C8-PFOA	ST181204M1-8 PFC CS5 18K3008	2.06e4	96.2	NO
5	5	13C9-PFNA	ST181204M1-8 PFC CS5 18K3008	1.39e4	93.3	NO
6	6	13C4-PFOS	ST181204M1-8 PFC CS5 18K3008	2.55e3	94.3	NO
7	7	13C6-PFDA	ST181204M1-8 PFC CS5 18K3008	1.58e4	93.5	NO
8	8	13C7-PFUdA	ST181204M1-8 PFC CS5 18K3008	1.85e4	94.1	NO

Name: 181204M1_11, Date: 04-Dec-2018, Time: 13:20:03, ID: ST181204M1-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181204M1-9 PFC CS6 18K3009	8.96e3	98.6	NO
2	2	13C5-PFHxA	ST181204M1-9 PFC CS6 18K3009	1.43e4	84.6	NO
3	3	13C3-PFHxS	ST181204M1-9 PFC CS6 18K3009	2.14e3	88.2	NO
4	4	13C8-PFOA	ST181204M1-9 PFC CS6 18K3009	1.83e4	85.7	NO
5	5	13C9-PFNA	ST181204M1-9 PFC CS6 18K3009	1.23e4	82.4	NO
6	6	13C4-PFOS	ST181204M1-9 PFC CS6 18K3009	2.16e3	80.1	NO
7	7	13C6-PFDA	ST181204M1-9 PFC CS6 18K3009	1.42e4	84.4	NO
8	8	13C7-PFUdA	ST181204M1-9 PFC CS6 18K3009	1.66e4	84.4	NO

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-IIS AREAS THRU -11CCAL.qld

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Name: 181204M1_12, Date: 04-Dec-2018, Time: 13:30:57, ID: ST181204M1-10 PFC CS7 18K3010, Description: PFC CS7 18K3010

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181204M1-10 PFC CS7 18K3010	8.80e3	96.8	NO
2	2	13C5-PFHxA	ST181204M1-10 PFC CS7 18K3010	1.35e4	80.3	NO
3	3	13C3-PFHxS	ST181204M1-10 PFC CS7 18K3010	1.80e3	73.9	NO
4	4	13C8-PFOA	ST181204M1-10 PFC CS7 18K3010	1.68e4	78.7	NO
5	5	13C9-PFNA	ST181204M1-10 PFC CS7 18K3010	1.19e4	79.3	NO
6	6	13C4-PFOS	ST181204M1-10 PFC CS7 18K3010	2.15e3	79.5	NO
7	7	13C6-PFDA	ST181204M1-10 PFC CS7 18K3010	1.36e4	80.8	NO
8	8	13C7-PFUdA	ST181204M1-10 PFC CS7 18K3010	1.46e4	74.3	NO

Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ICV181204M2-1 PFC ICV 18K3011	9.34e3	102.7	NO
2	2	13C5-PFHxA	ICV181204M2-1 PFC ICV 18K3011	1.73e4	102.6	NO
3	3	13C3-PFHxS	ICV181204M2-1 PFC ICV 18K3011	2.48e3	101.9	NO
4	4	13C8-PFOA	ICV181204M2-1 PFC ICV 18K3011	2.21e4	103.1	NO
5	5	13C9-PFNA	ICV181204M2-1 PFC ICV 18K3011	1.51e4	101.2	NO
6	6	13C4-PFOS	ICV181204M2-1 PFC ICV 18K3011	2.73e3	101.3	NO
7	7	13C6-PFDA	ICV181204M2-1 PFC ICV 18K3011	1.72e4	101.9	NO
8	8	13C7-PFUdA	ICV181204M2-1 PFC ICV 18K3011	1.96e4	99.7	NO

Name: 181204M1_15, Date: 04-Dec-2018, Time: 14:02:42, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 181204M1_16, Date: 04-Dec-2018, Time: 14:13:22, ID: B8K0190-BSD1 LCSD 0.25, Description: LCSD

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0190-BSD1 LCSD 0.25	4.43e3	48.8	YES
2	2	13C5-PFHxA	B8K0190-BSD1 LCSD 0.25	8.88e3	52.7	NO
3	3	13C3-PFHxS	B8K0190-BSD1 LCSD 0.25	2.22e3	91.3	NO
4	4	13C8-PFOA	B8K0190-BSD1 LCSD 0.25	1.51e4	70.8	NO
5	5	13C9-PFNA	B8K0190-BSD1 LCSD 0.25	1.12e4	75.1	NO
6	6	13C4-PFOS	B8K0190-BSD1 LCSD 0.25	2.41e3	89.2	NO
7	7	13C6-PFDA	B8K0190-BSD1 LCSD 0.25	1.39e4	82.2	NO
8	8	13C7-PFUdA	B8K0190-BSD1 LCSD 0.25	1.62e4	82.4	NO

Name: 181204M1_17, Date: 04-Dec-2018, Time: 14:24:17, ID: B8K0190-BSD1 LCSD 0.25, Description: LCSD

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0190-BSD1 LCSD 0.25	4.45e3	48.9	YES
2	2	13C5-PFHxA	B8K0190-BSD1 LCSD 0.25	8.86e3	52.5	NO
3	3	13C3-PFHxS	B8K0190-BSD1 LCSD 0.25	2.29e3	94.2	NO
4	4	13C8-PFOA	B8K0190-BSD1 LCSD 0.25	1.43e4	66.7	NO
5	5	13C9-PFNA	B8K0190-BSD1 LCSD 0.25	1.11e4	74.6	NO
6	6	13C4-PFOS	B8K0190-BSD1 LCSD 0.25	2.33e3	86.4	NO
7	7	13C6-PFDA	B8K0190-BSD1 LCSD 0.25	1.35e4	79.8	NO
8	8	13C7-PFUdA	B8K0190-BSD1 LCSD 0.25	1.62e4	82.5	NO

Name: 181204M1_18, Date: 04-Dec-2018, Time: 14:34:53, ID: 1803745-03@60X PFC-AF-01-03-112618 0.24673, Description: PFC-AF-01-03-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803745-03@60X PFC-AF-01-03-1126...	1.17e2	1.3	YES
2	2	13C5-PFHxA	1803745-03@60X PFC-AF-01-03-1126...	2.10e2	1.2	YES
3	3	13C3-PFHxS	1803745-03@60X PFC-AF-01-03-1126...	2.75e1	1.1	YES
4	4	13C8-PFOA	1803745-03@60X PFC-AF-01-03-1126...	2.63e2	1.2	YES
5	5	13C9-PFNA	1803745-03@60X PFC-AF-01-03-1126...	1.52e2	1.0	YES
6	6	13C4-PFOS	1803745-03@60X PFC-AF-01-03-1126...	2.40e1	0.9	YES
7	7	13C6-PFDA	1803745-03@60X PFC-AF-01-03-1126...	2.74e2	1.6	YES
8	8	13C7-PFUdA	1803745-03@60X PFC-AF-01-03-1126...	2.81e2	1.4	YES

Name: 181204M1_19, Date: 04-Dec-2018, Time: 14:45:26, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 181204M1_20, Date: 04-Dec-2018, Time: 14:56:04, ID: 1803745-04 PFC-AF-01-04-112618 0.24205, Description: PFC-AF-01-04-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803745-04 PFC-AF-01-04-112618 0.2...	6.93e3	76.2	NO
2	2	13C5-PFHxA	1803745-04 PFC-AF-01-04-112618 0.2...	1.25e4	74.0	NO
3	3	13C3-PFHxS	1803745-04 PFC-AF-01-04-112618 0.2...	2.06e3	84.8	NO
4	4	13C8-PFOA	1803745-04 PFC-AF-01-04-112618 0.2...	1.65e4	77.3	NO
5	5	13C9-PFNA	1803745-04 PFC-AF-01-04-112618 0.2...	1.21e4	81.2	NO
6	6	13C4-PFOS	1803745-04 PFC-AF-01-04-112618 0.2...	2.03e3	75.3	NO
7	7	13C6-PFDA	1803745-04 PFC-AF-01-04-112618 0.2...	1.38e4	81.8	NO
8	8	13C7-PFUdA	1803745-04 PFC-AF-01-04-112618 0.2...	1.62e4	82.7	NO

Name: 181204M1_21, Date: 04-Dec-2018, Time: 15:06:37, ID: B8K0153-MSD1 Matrix Spike Dup 0.11122, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8K0153-MSD1 Matrix Spike Dup 0.111...	4.23e3	46.6	YES
2	2	13C5-PFHxA	B8K0153-MSD1 Matrix Spike Dup 0.111...	8.47e3	50.2	NO
3	3	13C3-PFHxS	B8K0153-MSD1 Matrix Spike Dup 0.111...	2.19e3	90.0	NO
4	4	13C8-PFOA	B8K0153-MSD1 Matrix Spike Dup 0.111...	1.24e4	58.0	NO
5	5	13C9-PFNA	B8K0153-MSD1 Matrix Spike Dup 0.111...	8.88e3	59.4	NO
6	6	13C4-PFOS	B8K0153-MSD1 Matrix Spike Dup 0.111...	2.38e3	88.3	NO
7	7	13C6-PFDA	B8K0153-MSD1 Matrix Spike Dup 0.111...	1.12e4	66.2	NO
8	8	13C7-PFUdA	B8K0153-MSD1 Matrix Spike Dup 0.111...	1.29e4	65.9	NO

Name: 181204M1_22, Date: 04-Dec-2018, Time: 15:18:12, ID: 1803678-02 A1-MW-42-SA2 0.11781, Description: A1-MW-42-SA2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803678-02 A1-MW-42-SA2 0.11781	4.20e3	46.2	YES
2	2	13C5-PFHxA	1803678-02 A1-MW-42-SA2 0.11781	6.93e3	41.1	YES
3	3	13C3-PFHxS	1803678-02 A1-MW-42-SA2 0.11781	2.32e3	95.6	NO
4	4	13C8-PFOA	1803678-02 A1-MW-42-SA2 0.11781	9.62e3	44.9	YES
5	5	13C9-PFNA	1803678-02 A1-MW-42-SA2 0.11781	7.34e3	49.1	YES
6	6	13C4-PFOS	1803678-02 A1-MW-42-SA2 0.11781	2.54e3	93.9	NO
7	7	13C6-PFDA	1803678-02 A1-MW-42-SA2 0.11781	9.44e3	55.9	NO
8	8	13C7-PFUdA	1803678-02 A1-MW-42-SA2 0.11781	1.19e4	60.4	NO

Name: 181204M1_23, Date: 04-Dec-2018, Time: 15:28:45, ID: 1803746-03 PFC-AF-02-03-112618 0.23672, Description: PFC-AF-02-03-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803746-03 PFC-AF-02-03-112618 0.2...	8.13e3	89.4	NO
2	2	13C5-PFHxA	1803746-03 PFC-AF-02-03-112618 0.2...	1.50e4	88.7	NO
3	3	13C3-PFHxS	1803746-03 PFC-AF-02-03-112618 0.2...	2.18e3	89.8	NO
4	4	13C8-PFOA	1803746-03 PFC-AF-02-03-112618 0.2...	1.89e4	88.3	NO
5	5	13C9-PFNA	1803746-03 PFC-AF-02-03-112618 0.2...	1.39e4	92.8	NO
6	6	13C4-PFOS	1803746-03 PFC-AF-02-03-112618 0.2...	1.96e3	72.5	NO
7	7	13C6-PFDA	1803746-03 PFC-AF-02-03-112618 0.2...	1.55e4	91.7	NO
8	8	13C7-PFUdA	1803746-03 PFC-AF-02-03-112618 0.2...	1.64e4	83.5	NO

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Name: 181204M1_24, Date: 04-Dec-2018, Time: 15:39:24, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181204M1_25, Date: 04-Dec-2018, Time: 15:51:04, ID: 1803745-03@100X PFC-AF-01-03-112618 0.24673, Description: PFC-AF-01-03-112618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1803745-03@100X PFC-AF-01-03-112...	7.01e1	0.8	YES
2	2	13C5-PFHxA	1803745-03@100X PFC-AF-01-03-112...	1.38e2	0.8	YES
3	3	13C3-PFHxS	1803745-03@100X PFC-AF-01-03-112...	1.60e1	0.7	YES
4	4	13C8-PFOA	1803745-03@100X PFC-AF-01-03-112...	1.81e2	0.8	YES
5	5	13C9-PFNA	1803745-03@100X PFC-AF-01-03-112...	1.22e2	0.8	YES
6	6	13C4-PFOS	1803745-03@100X PFC-AF-01-03-112...	1.63e1	0.6	YES
7	7	13C6-PFDA	1803745-03@100X PFC-AF-01-03-112...	1.35e2	0.8	YES
8	8	13C7-PFUdA	1803745-03@100X PFC-AF-01-03-112...	1.64e2	0.8	YES

Name: 181204M1_26, Date: 04-Dec-2018, Time: 16:01:40, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST181204M1-11 PFC CS3 18K3006	9.46e3	104.1	NO
2	2	13C5-PFHxA	ST181204M1-11 PFC CS3 18K3006	1.70e4	101.0	NO
3	3	13C3-PFHxS	ST181204M1-11 PFC CS3 18K3006	2.43e3	100.1	NO
4	4	13C8-PFOA	ST181204M1-11 PFC CS3 18K3006	2.16e4	100.8	NO
5	5	13C9-PFNA	ST181204M1-11 PFC CS3 18K3006	1.58e4	105.9	NO
6	6	13C4-PFOS	ST181204M1-11 PFC CS3 18K3006	2.86e3	105.9	NO
7	7	13C6-PFDA	ST181204M1-11 PFC CS3 18K3006	1.92e4	113.4	NO
8	8	13C7-PFUdA	ST181204M1-11 PFC CS3 18K3006	2.06e4	104.6	NO

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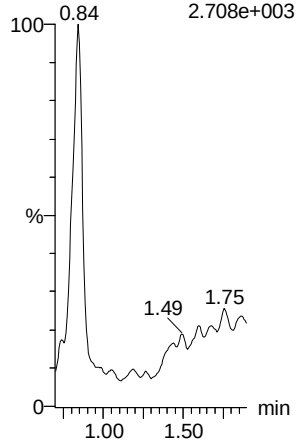
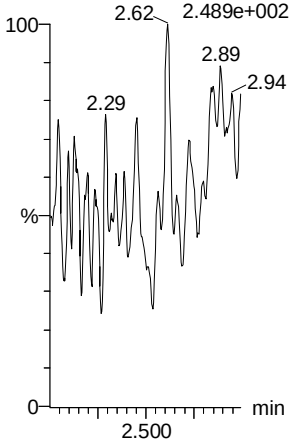
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

PFBA



PFPeA



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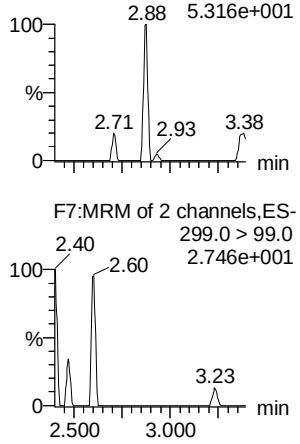

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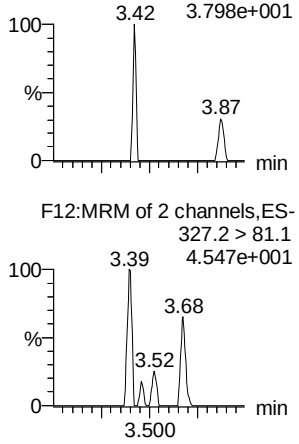

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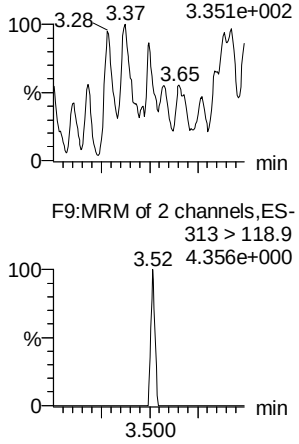

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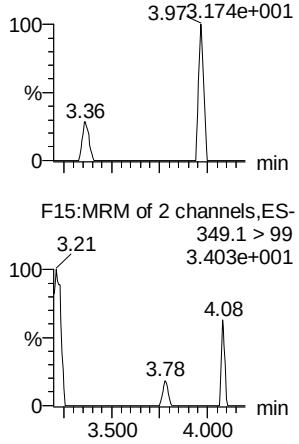

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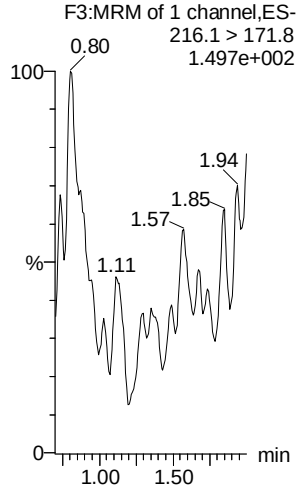

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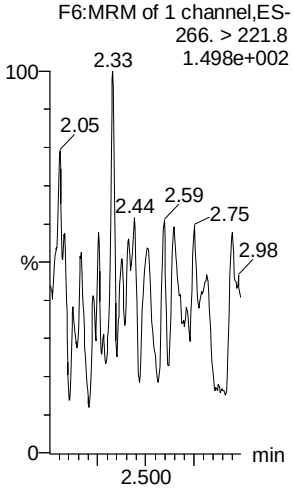

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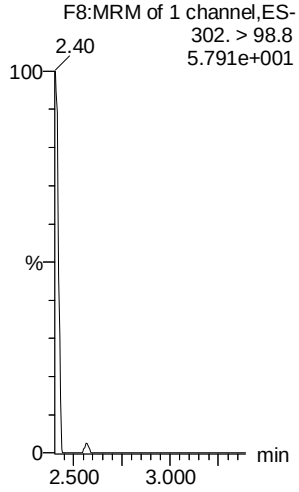

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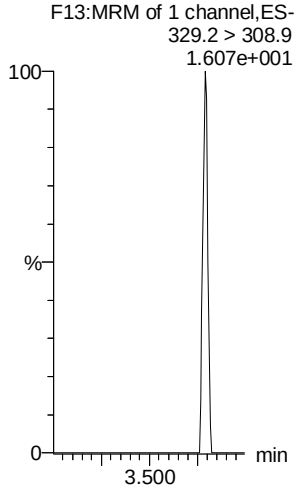

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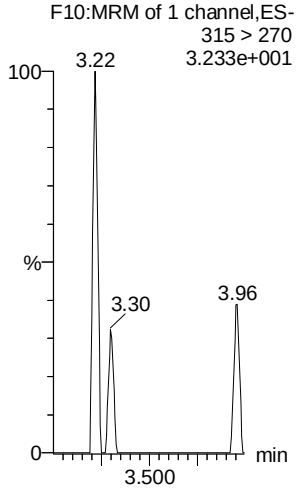

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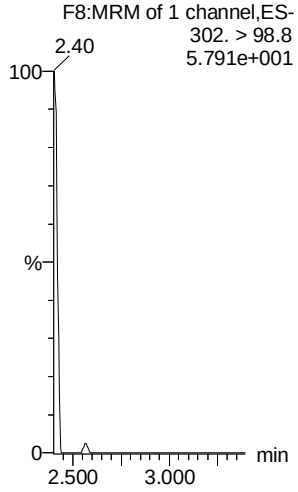

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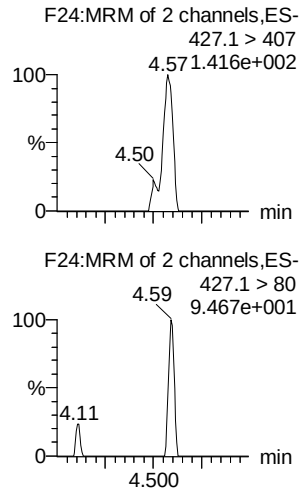

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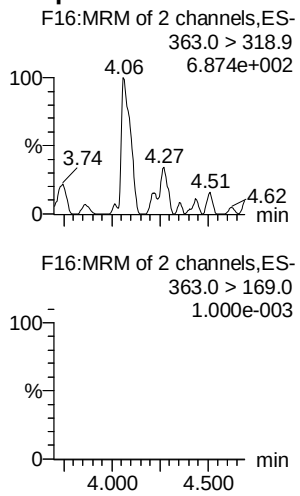

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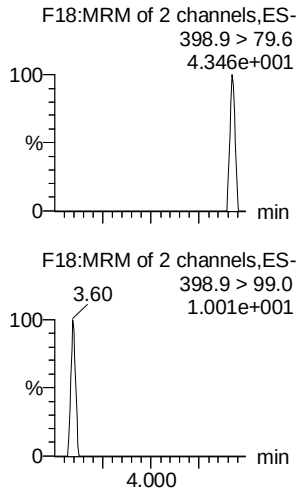

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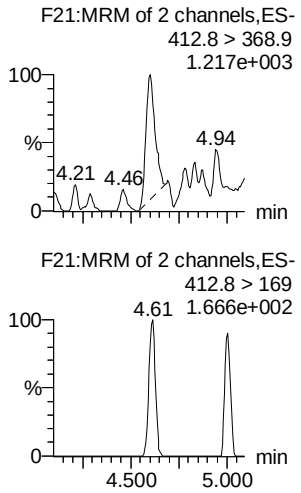

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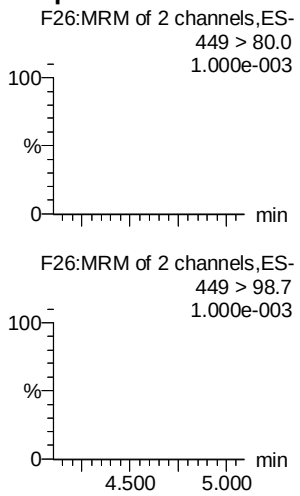

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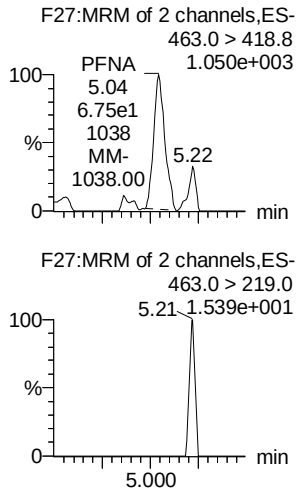

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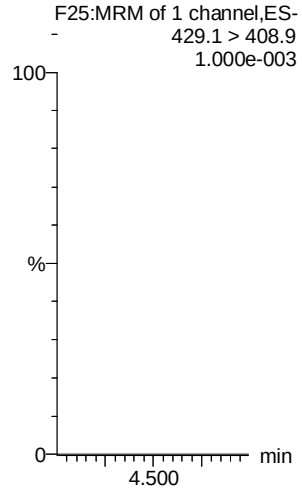

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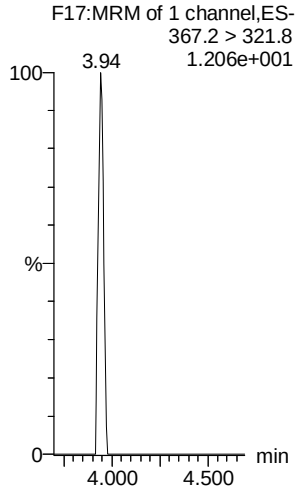

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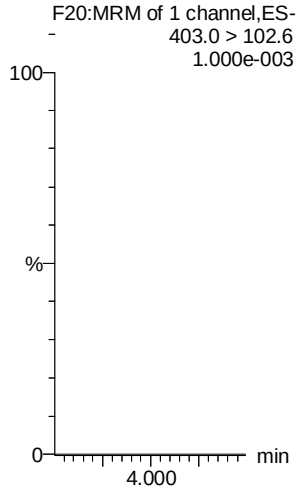

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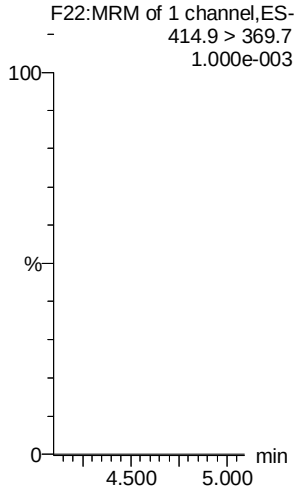

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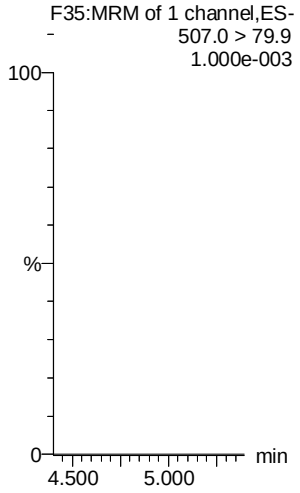

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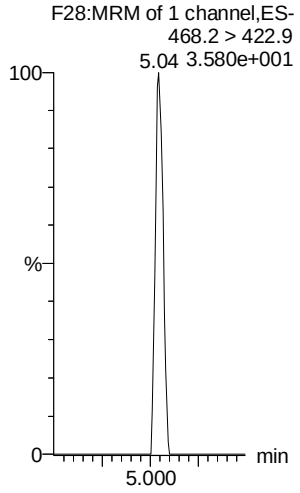

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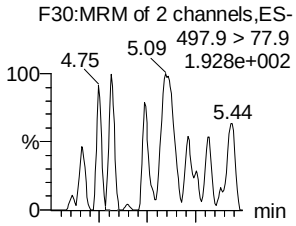

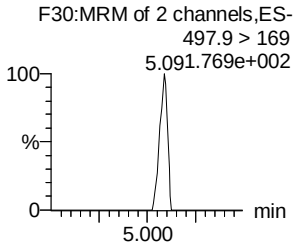

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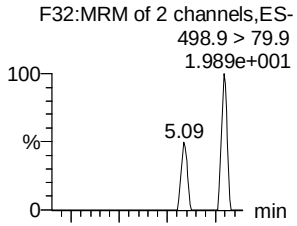

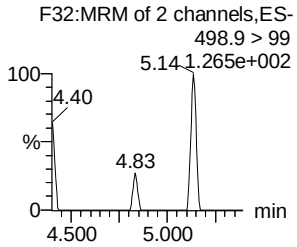

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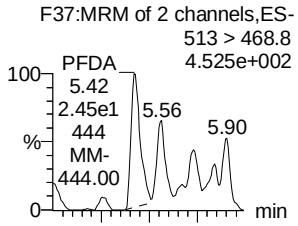

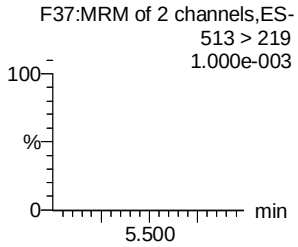

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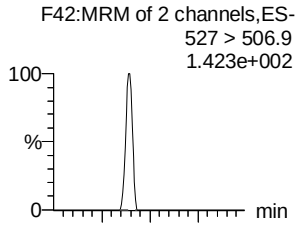

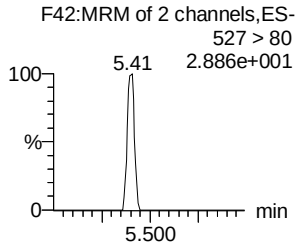

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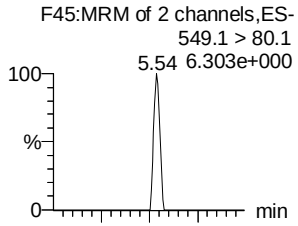

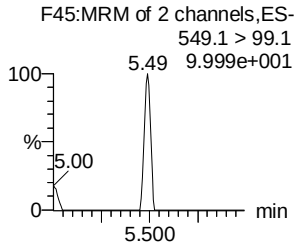

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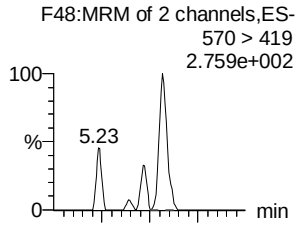

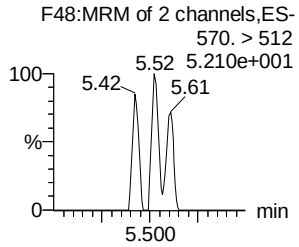

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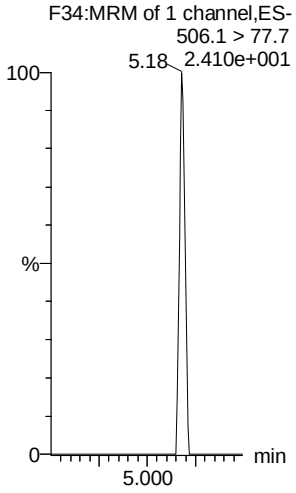

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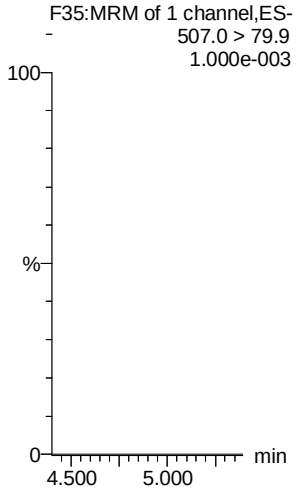

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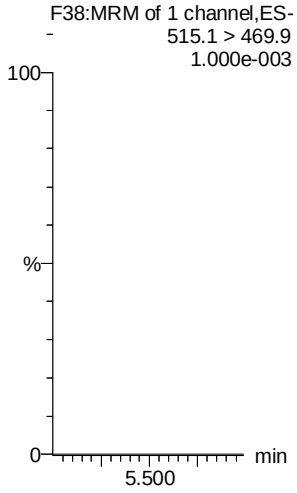

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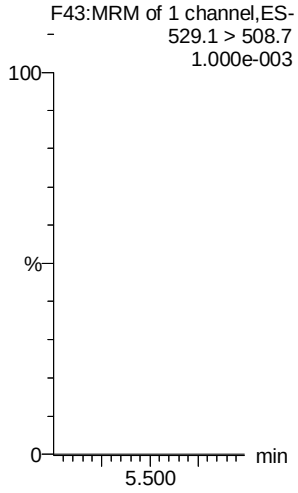

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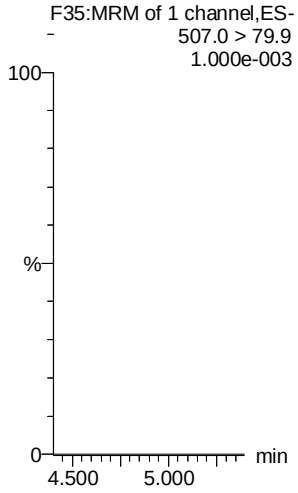

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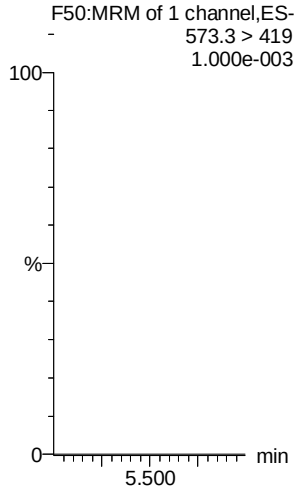

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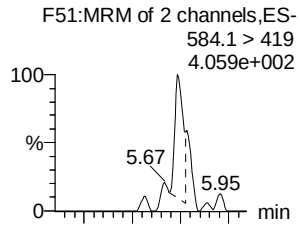

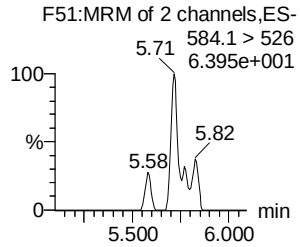

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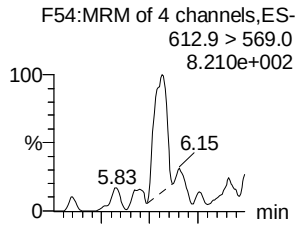

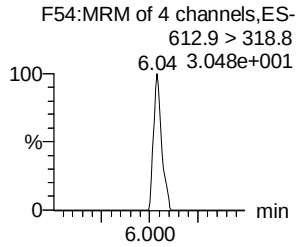

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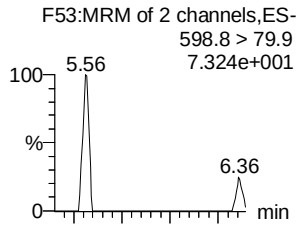

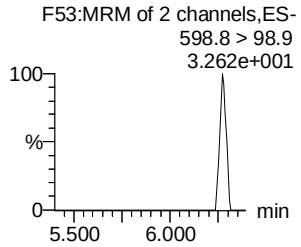

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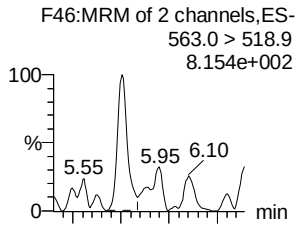

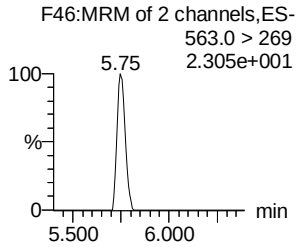

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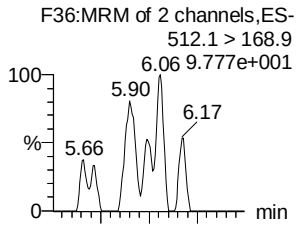

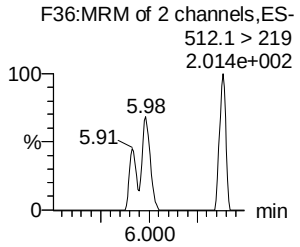

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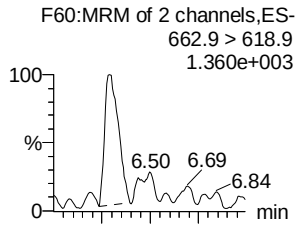

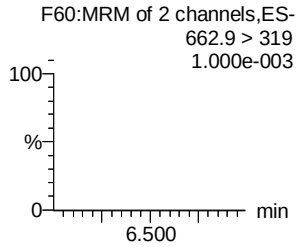

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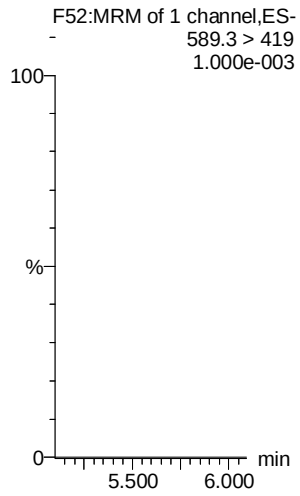

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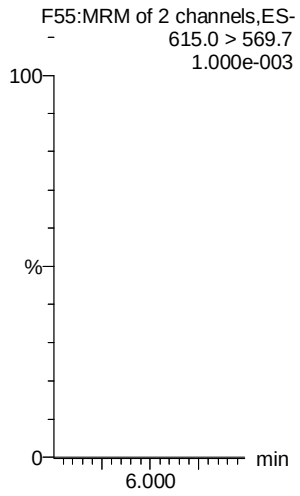

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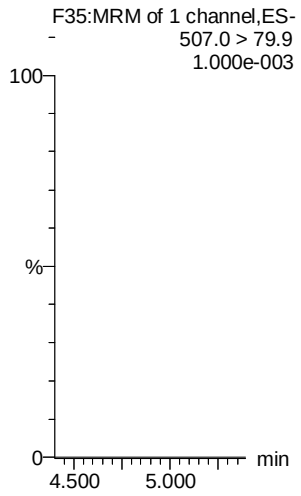

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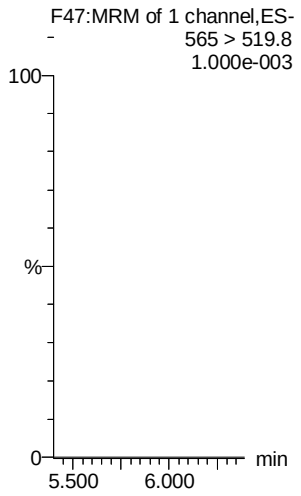

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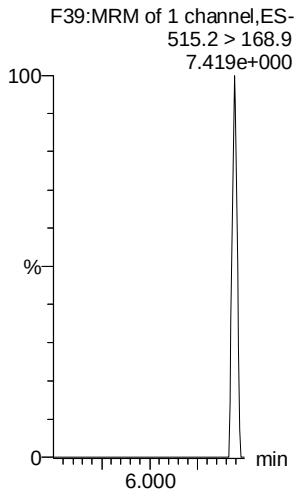

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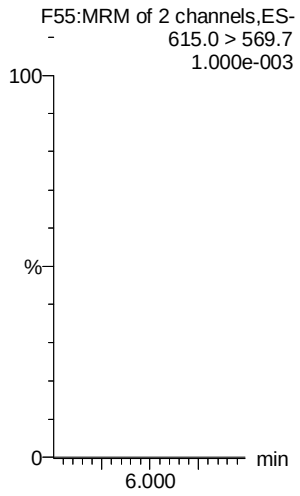

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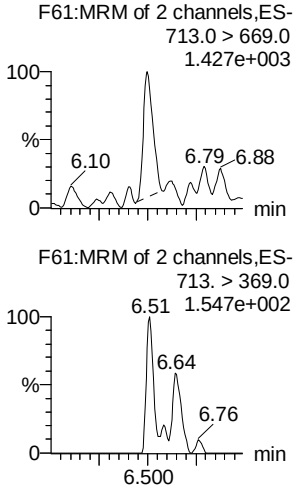
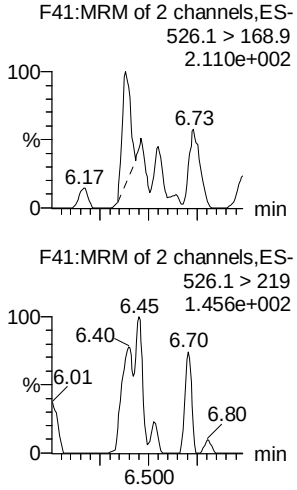
Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

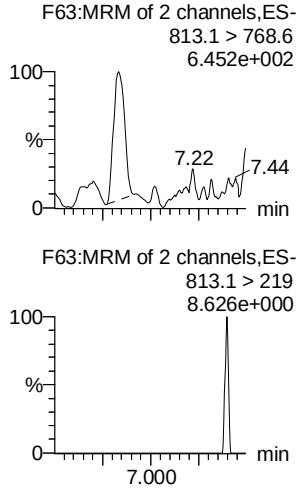
PFTeDA



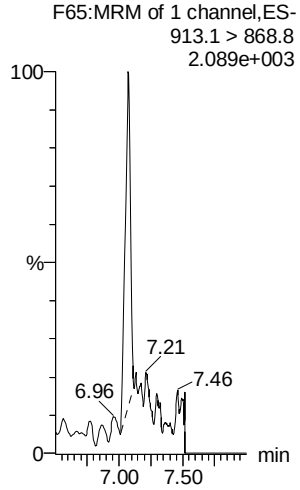
N-EtFOSA



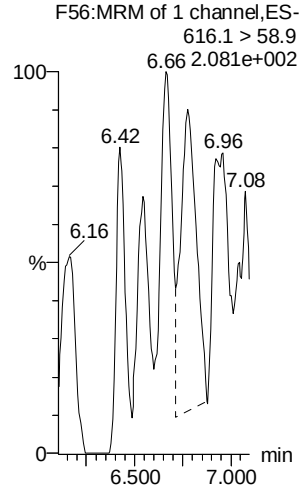
PFHxDA



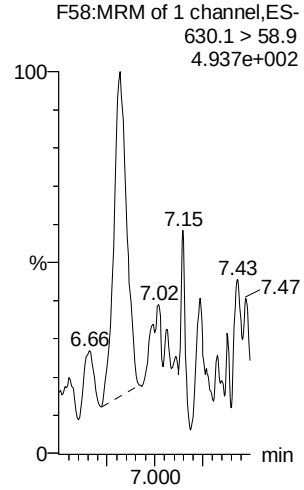
PFODA



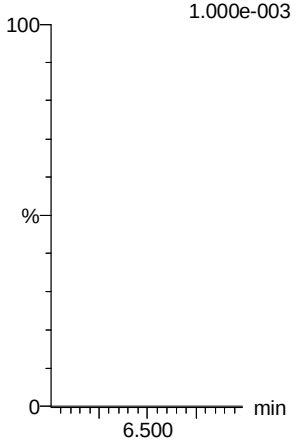
N-MeFOSE



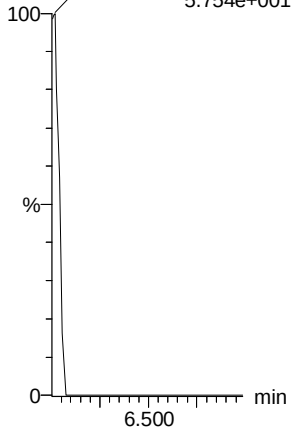
N-EtFOSE



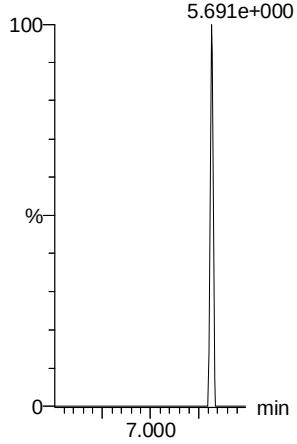
13C2-PFTeDA



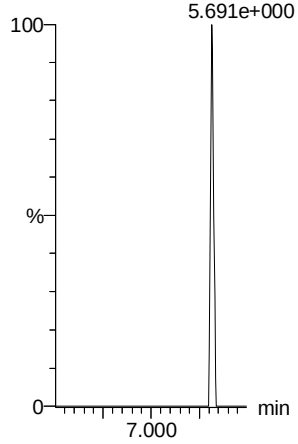
d5-N-ETFOSA



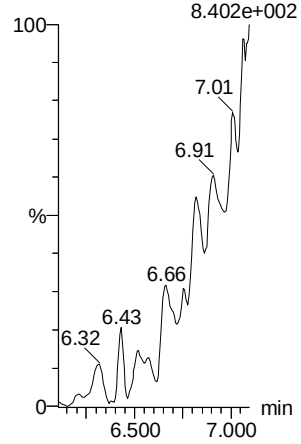
13C2-PFHxDA



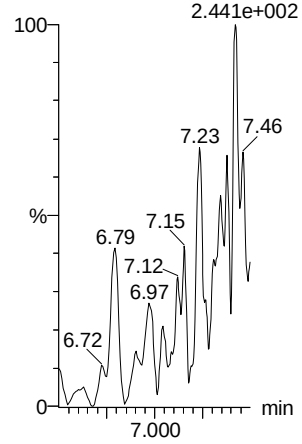
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



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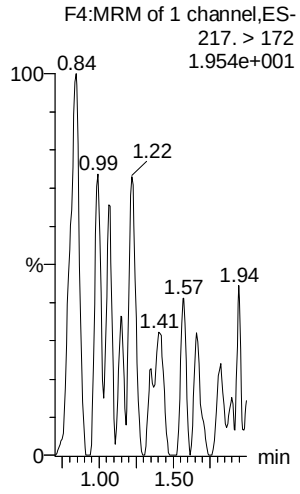
Dataset: Untitled

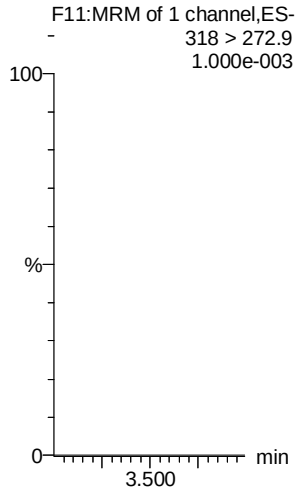
Last Altered: Tuesday, December 04, 2018 15:08:51 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:09:08 Pacific Standard Time

Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

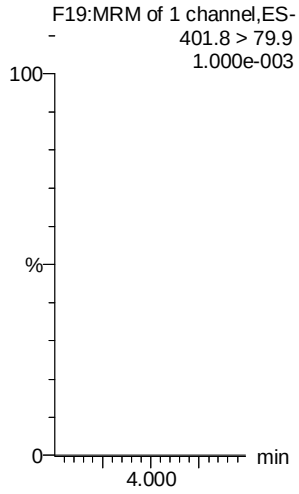
13C4-PFBA



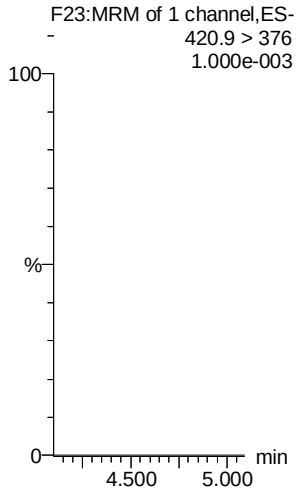
13C5-PFHxA



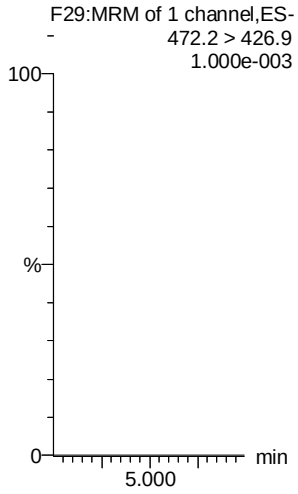
13C3-PFHxS



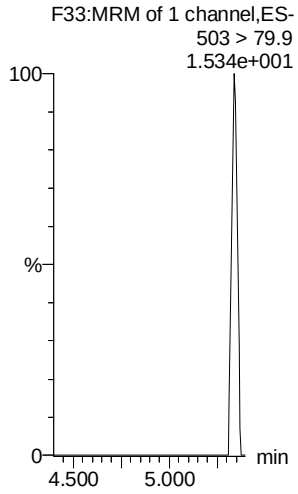
13C8-PFOA



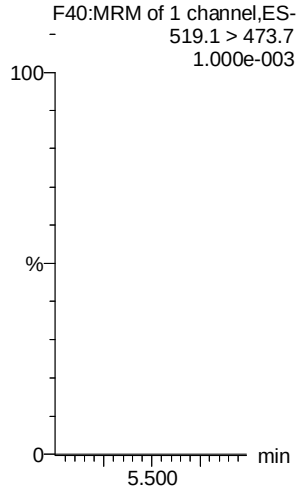
13C9-PFNA



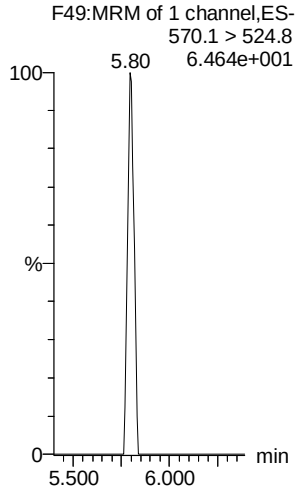
13C4-PFOS



13C6-PFDA



13C7-PFUdA



LC Calibration Standards Review Checklist Q4

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	N/A I
Calibration ID: ST181204M1-1	L (M) H	☑	☑	☑	☑	☑	☑	☐
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	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

N/A Cals 12/4/18

Full Mass Cal. Date: 12/03/18

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☑

IIS Area Saved ☑

Reviewed By: 12/4/18
Initials/Date

Comments:

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-27.qld

Last Altered: Tuesday, December 04, 2018 16:26:07 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:28:32 Pacific Standard Time

Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	7337.567	7713.563	1.00	1.37	11.891	10.5	105.1	NO		
2	2	PFPeA	263.1 > 218.9	7211.924	9139.068	1.00	2.62	9.864	10.2	102.2	NO		
3	3	PFBS	299.0 > 79.7	2176.036	1274.164	1.00	2.95	21.348	10.0	100.1	NO	3.062	NO
4	4	4:2 FTS	327.2>307.2	2981.472	3320.319	1.00	3.43	11.224	10.4	103.8	NO	2.052	NO
5	5	PFHxA	313 > 269	13271.318	6621.262	1.00	3.52	10.022	10.2	102.3	NO	15.057	NO
6	6	PFPeS	349.1>80.1	1519.172	1274.164	1.00	3.74	14.904	10.2	101.5	NO	1.386	NO
7	36	13C3-PFBA	216.1 > 171.8	7713.563	9464.468	1.00	1.37	10.188	12.6	100.7	NO		
8	37	13C3-PFPeA	266. > 221.8	9139.068	17032.986	1.00	2.63	6.707	12.4	99.2	NO		
9	38	13C3-PFBS	302. > 98.8	1274.164	2433.274	1.00	2.95	6.546	13.1	104.8	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3320.319	2433.274	1.00	3.43	17.057	12.8	102.7	NO		
11	40	13C2-PFHxA	315 > 270	6621.262	17032.986	1.00	3.52	4.859	5.0	99.9	NO		
12	38	13C3-PFBS	302. > 98.8	1274.164	2433.274	1.00	2.95	6.546	13.1	104.8	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	4023.360	3782.068	1.00	4.60	13.297	10.0	100.3	NO	3.175	NO
15	7	PFHpA	363.0 > 318.9	9967.533	8981.854	1.00	4.17	13.872	10.5	104.8	NO	13.176	NO
16	8	L-PFHxS	398.9 > 79.6	1971.376	1123.516	1.00	4.30	21.933	10.2	102.1	NO	2.047	NO
17	11	L-PFOA	412.8 > 368.9	17879.980	15555.481	1.00	4.65	14.368	9.8	98.2	NO	3.236	NO
18	13	PFHpS	449 > 80.0	2018.355	2842.343	1.00	4.76	8.876	10.0	100.4	NO	1.790	NO
19	14	PFNA	463.0 > 418.8	15061.025	15061.524	1.00	5.09	12.500	10.3	102.6	NO	4.882	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	3782.068	2861.064	1.00	4.60	16.524	11.7	93.6	NO		
21	41	13C4-PFHpA	367.2 > 321.8	8981.854	17032.986	1.00	4.17	6.592	12.8	102.6	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1123.516	2433.274	1.00	4.30	5.772	12.6	100.9	NO		
23	44	13C2-PFOA	414.9 > 369.7	15555.481	21568.793	1.00	4.65	9.015	13.0	104.3	NO		
24	47	13C8-PFOS	507.0 > 79.9	2842.343	2861.064	1.00	5.17	12.418	11.8	94.1	NO		
25	45	13C5-PFNA	468.2 > 422.9	15061.524	15822.147	1.00	5.09	11.899	11.8	94.4	NO		
26	-1												
27	15	PFOSA	497.9 > 77.9	3422.951	3810.604	1.00	5.13	11.228	10.5	104.6	NO	28.580	NO
28	16	L-PFOS	498.9 > 79.9	2485.320	2842.343	1.00	5.17	10.930	10.4	103.8	NO	2.015	NO
29	18	PFDA	513 > 468.8	16602.053	17280.791	1.00	5.47	12.009	9.7	97.2	NO	6.361	NO
30	19	8:2 FTS	527 > 506.9	3820.308	2970.835	1.00	5.43	16.074	10.5	105.4	NO	2.558	NO
31	20	PFNS	549.1 > 80.1	1552.452	2842.343	1.00	5.53	6.827	9.8	98.4	NO	1.686	NO
32	21	L-MeFOSAA	570 > 419	7501.762	4393.008	1.00	5.62	21.346	10.0	100.4	NO	2.414	NO
33	46	13C8-PFOSA	506.1 > 77.7	3810.604	20563.453	1.00	5.12	2.316	11.7	93.7	NO		
34	47	13C8-PFOS	507.0 > 79.9	2842.343	2861.064	1.00	5.17	12.418	11.8	94.1	NO		
35	48	13C2-PFDA	515.1 > 469.9	17280.791	19153.084	1.00	5.47	11.278	12.0	96.4	NO		

CAH 12/4/18

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-27.qld

Last Altered: Tuesday, December 04, 2018 16:26:07 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:28:32 Pacific Standard Time

Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
36	49	13C2-8:2 FTS	529.1 > 508.7	2970.835	2861.064	1.00	5.43	12.980	11.3	90.6	NO		
37	47	13C8-PFOS	507.0 > 79.9	2842.343	2861.064	1.00	5.17	12.418	11.8	94.1	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	4393.008	20563.453	1.00	5.61	2.670	12.3	98.5	NO		
39	-1												
40	23	L-EtFOSAA	584.1 > 419	6236.087	6272.877	1.00	5.78	12.427	9.9	98.5	NO	1.282	NO
41	27	PFDoA	612.9 > 569.0	19884.963	18132.354	1.00	6.07	13.708	10.4	104.0	NO	8.615	NO
42	26	PFDS	598.8 > 79.9	2446.987	2842.343	1.00	5.84	10.761	10.1	100.7	NO	1.738	NO
43	25	PFUdA	563.0 > 518.9	16176.609	19550.738	1.00	5.79	10.343	10.2	102.0	NO	9.692	NO
44	28	N-MeFOSA	512.1 > 168.9	4386.853	11712.600	1.00	5.99	56.181	52.8	105.5	NO	1.514	NO
45	29	PFTrDA	662.9 > 618.9	19948.418	18132.354	1.00	6.32	13.752	10.2	102.3	NO	24.623	NO
46	52	d5-N-EtFOSAA	589.3 > 419	6272.877	20563.453	1.00	5.77	3.813	12.5	100.2	NO		
47	53	13C2-PFDoA	615.0 > 569.7	18132.354	19153.084	1.00	6.07	11.834	11.5	91.6	NO		
48	47	13C8-PFOS	507.0 > 79.9	2842.343	2861.064	1.00	5.17	12.418	11.8	94.1	NO		
49	51	13C2-PFUdA	565 > 519.8	19550.738	20563.453	1.00	5.79	11.884	12.1	97.0	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	11712.600	20563.453	1.00	6.02	7.120	133.8	89.2	NO		
51	53	13C2-PFDoA	615.0 > 569.7	18132.354	19153.084	1.00	6.07	11.834	11.5	91.6	NO		
52	-1												
53	30	PFTeDA	713.0 > 669.0	17795.145	13914.277	1.00	6.53	15.986	9.9	99.4	NO	13.644	NO
54	31	N-EtFOSA	526.1 > 168.9	5231.214	18076.152	1.00	6.44	43.410	50.1	100.1	NO	1.631	NO
55	32	PFHxDA	813.1 > 768.6	7164.063	6617.644	1.00	6.85	5.413	10.5	105.0	NO	20.586	NO
56	33	PFODA	913.1 > 868.8	12020.690	6617.644	1.00	7.08	9.082	10.4	104.3	NO		
57	34	N-MeFOSE	616.1 > 58.9	2997.766	9413.214	1.00	6.68	47.770	51.9	103.8	NO		
58	35	N-EtFOSE	630.1 > 58.9	3461.243	9595.547	1.00	6.83	54.107	49.9	99.9	NO		
59	55	13C2-PFTeDA	715.1 > 669.7	13914.277	20563.453	1.00	6.53	8.458	12.5	100.1	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	18076.152	20563.453	1.00	6.46	10.988	143.7	95.8	NO		
61	57	13C2-PFHxDA	815 > 769.7	6617.644	20563.453	1.00	6.84	4.023	4.8	96.6	NO		
62	57	13C2-PFHxDA	815 > 769.7	6617.644	20563.453	1.00	6.84	4.023	4.8	96.6	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	9413.214	20563.453	1.00	6.67	5.722	130.8	87.2	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	9595.547	20563.453	1.00	6.82	5.833	134.3	89.5	NO		
65	-1												
66	60	13C4-PFBA	217. > 172	9464.468	9464.468	1.00	1.37	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	17032.986	17032.986	1.00	3.52	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.8 > 79.9	2433.274	2433.274	1.00	4.30	12.500	12.5	100.0	NO		
69	63	13C8-PFOA	420.9 > 376	21568.793	21568.793	1.00	4.65	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	15822.147	15822.147	1.00	5.08	12.500	12.5	100.0	NO		

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-27.qld

Last Altered: Tuesday, December 04, 2018 16:26:07 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:28:32 Pacific Standard Time

Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
71	65	13C4-PFOS	503 > 79.9	2861.064	2861.064	1.00	5.17	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	19153.084	19153.084	1.00	5.47	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	20563.453	20563.453	1.00	5.79	12.500	12.5	100.0	NO		

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Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 16:33:52 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:33:55 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120318.mdb 04 Dec 2018 11:04:18
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	181204M1_1	IPA	04-Dec-18	11:34:05
2	2	181204M1_2	IPA	04-Dec-18	11:44:40
3	3	181204M1_3	ST181204M1-1 PFC CS-2 18K3001	04-Dec-18	11:55:12
4	4	181204M1_4	ST181204M1-2 PFC CS-1 18K3002	04-Dec-18	12:05:51
5	5	181204M1_5	ST181204M1-3 PFC CS0 18K3003	04-Dec-18	12:16:24
6	6	181204M1_6	ST181204M1-4 PFC CS1 18K3004	04-Dec-18	12:27:03
7	7	181204M1_7	ST181204M1-5 PFC CS2 18K3005	04-Dec-18	12:37:35
8	8	181204M1_8	ST181204M1-6 PFC CS3 18K3006	04-Dec-18	12:48:14
9	9	181204M1_9	ST181204M1-7 PFC CS4 18K3007	04-Dec-18	12:58:46
10	10	181204M1_10	ST181204M1-8 PFC CS5 18K3008	04-Dec-18	13:09:24
11	11	181204M1_11	ST181204M1-9 PFC CS6 18K3009	04-Dec-18	13:20:03
12	12	181204M1_12	ST181204M1-10 PFC CS7 18K3010	04-Dec-18	13:30:57
13	13	181204M1_13	IPA 1 MBF 12/04/18	04-Dec-18	13:41:31
14	14	181204M1_14	ICV181204M1-1 PFC ICV 18K3011	04-Dec-18	13:52:09
15	15	181204M1_15	IPA	04-Dec-18	14:02:42
16	16	181204M1_16	B8K0190-BSD1 LCSD 0.25	04-Dec-18	14:13:22
17	17	181204M1_17	B8K0190-BSD1 LCSD 0.25	04-Dec-18	14:24:17
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19	19	181204M1_19	IPA	04-Dec-18	14:45:26
20	20	181204M1_20	1803745-04 PFC-AF-01-04-112618 0.24205	04-Dec-18	14:56:04
21	21	181204M1_21	B8K0153-MSD1 Matrix Spike Dup 0.11122	04-Dec-18	15:06:37
22	22	181204M1_22	1803678-02 A1-MW-42-SA2 0.11781	04-Dec-18	15:18:12
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26	26	181204M1_26	IPA	04-Dec-18	16:01:40
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Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-27.qld

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Printed: Tuesday, December 04, 2018 16:28:32 Pacific Standard Time

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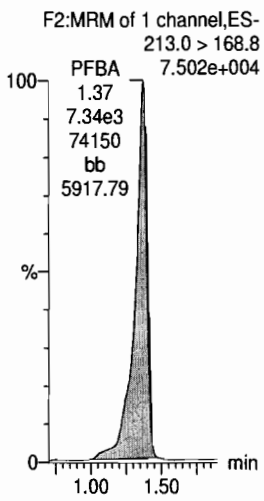

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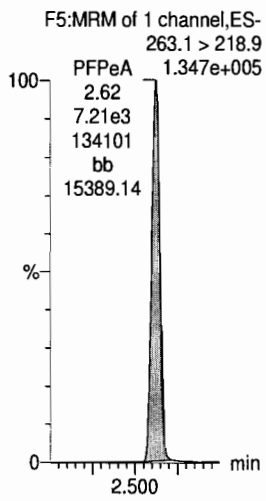

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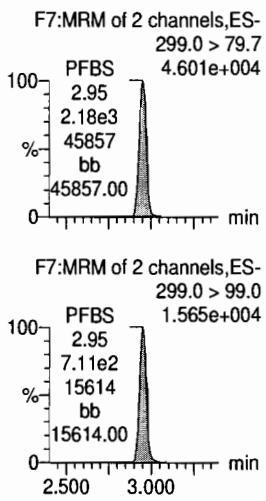

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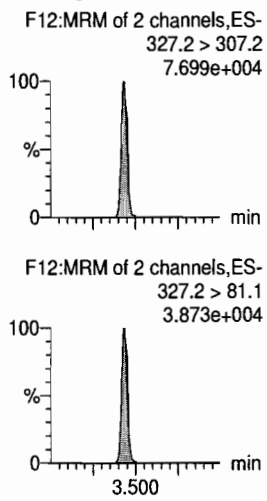

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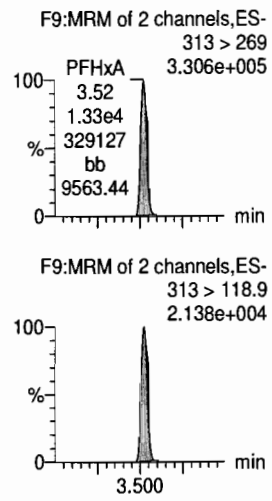

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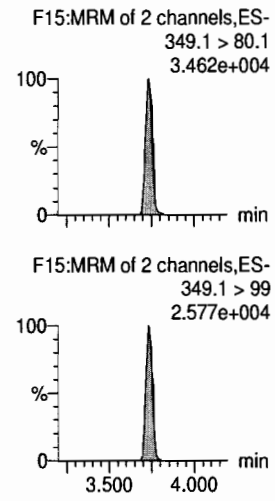

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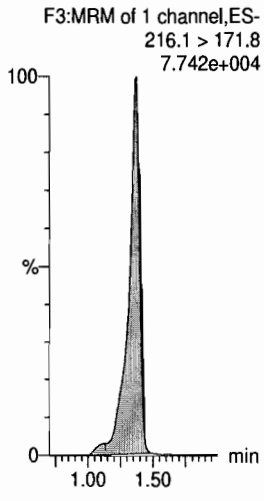

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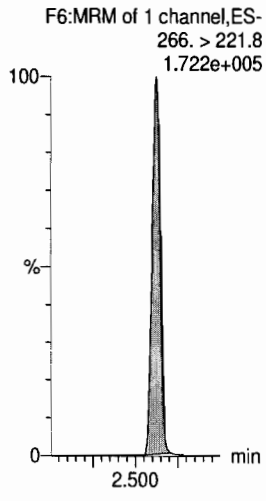

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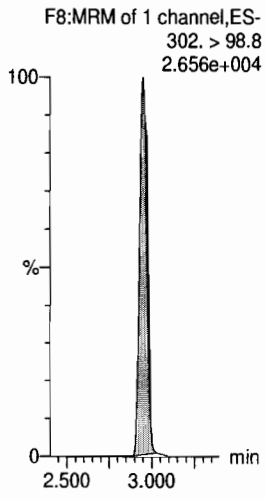

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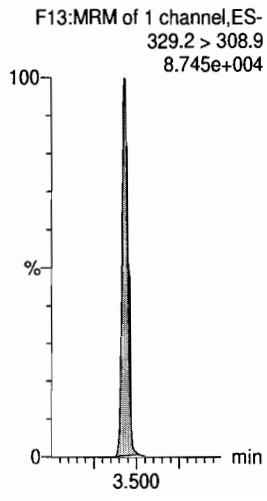

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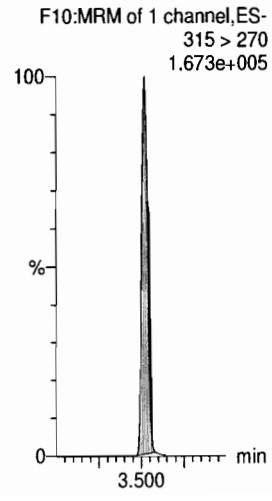

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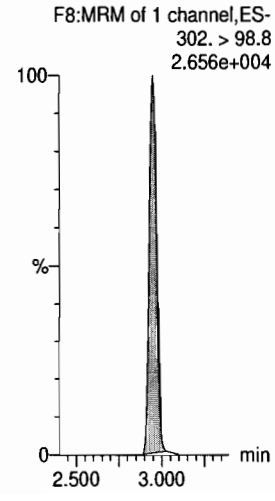

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Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

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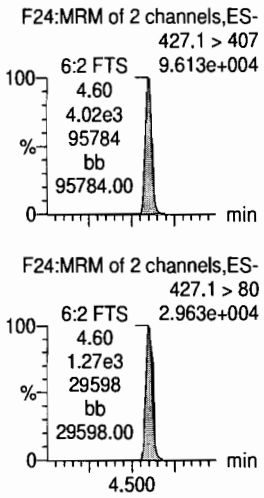

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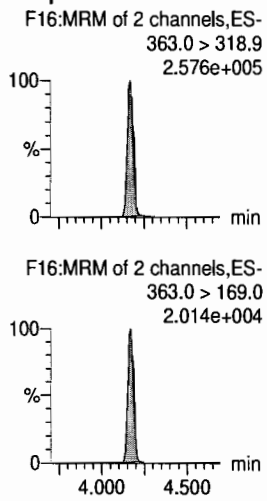

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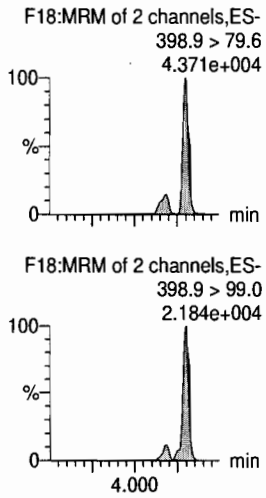

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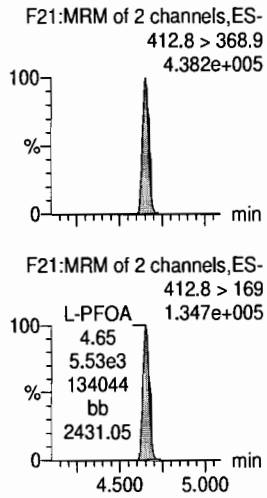

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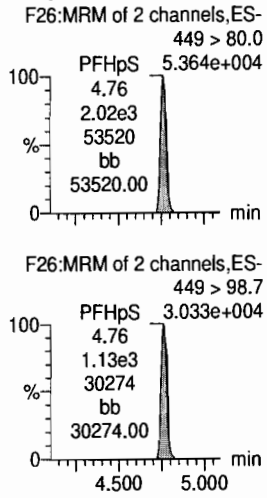

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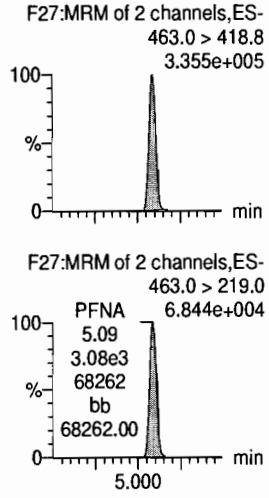

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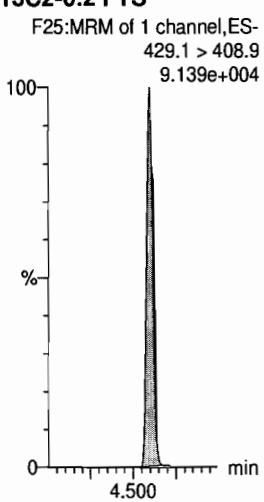

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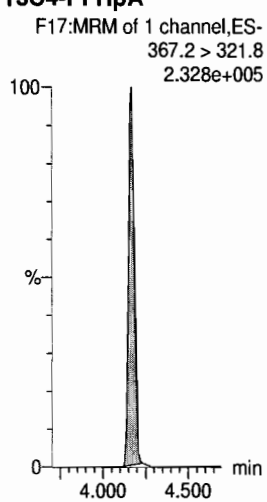

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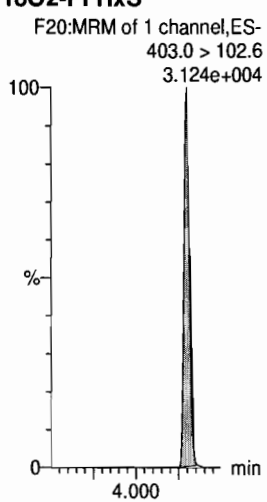

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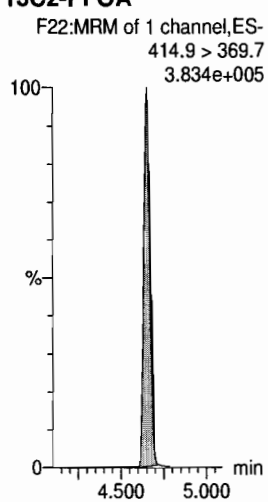

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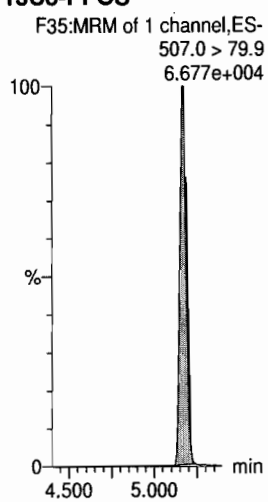

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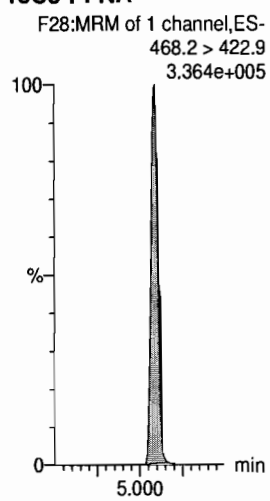

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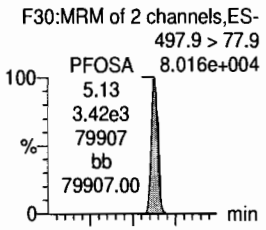
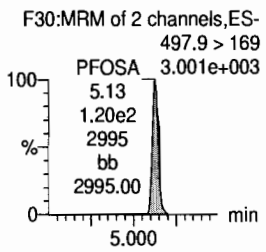
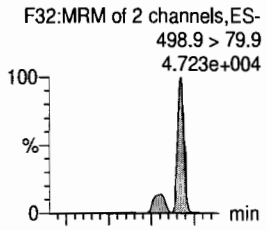
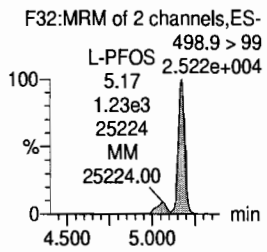




L-PFOS





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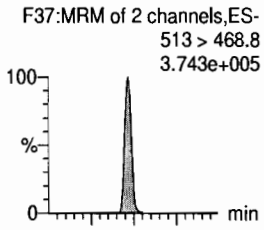

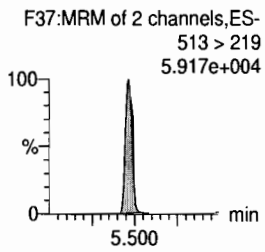

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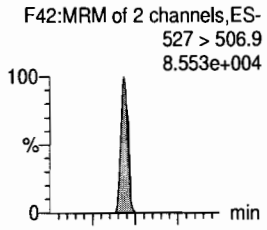

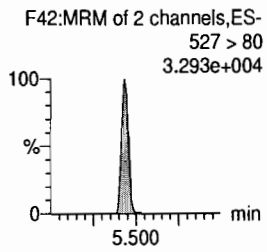

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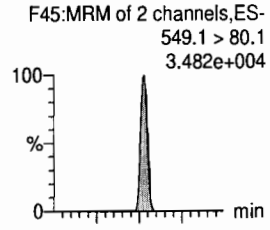

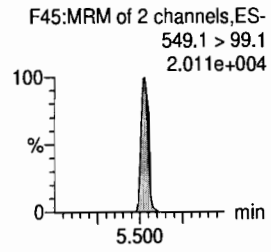

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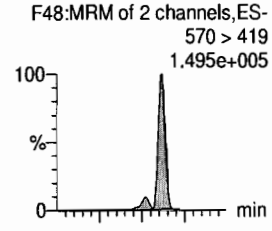

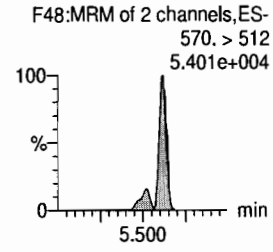

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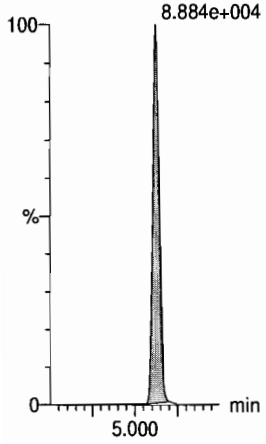

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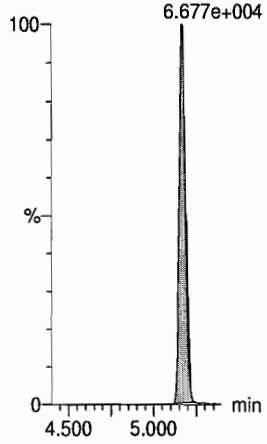

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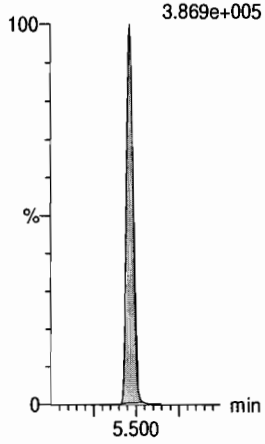

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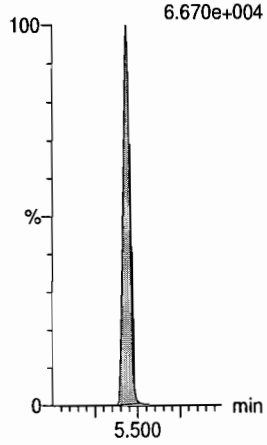

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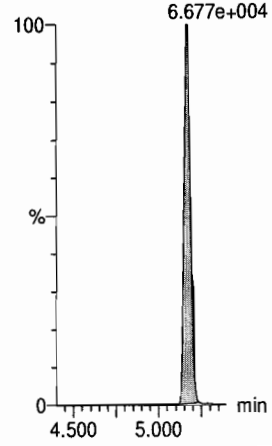

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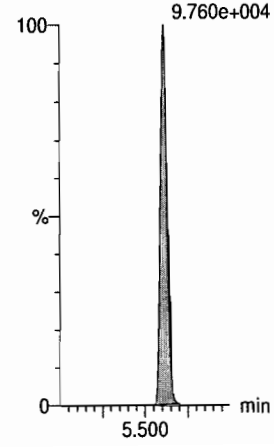

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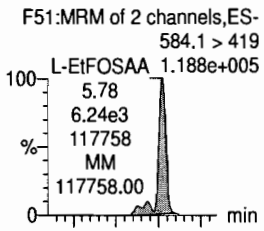
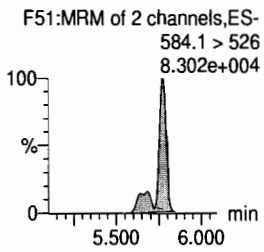
Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

L-EtFOSAA





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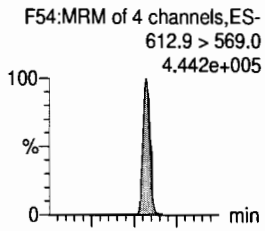
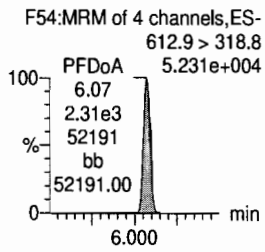
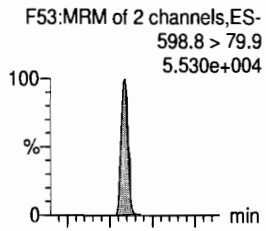
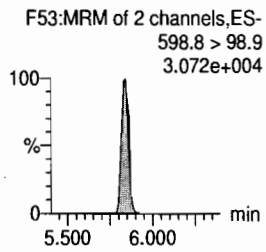


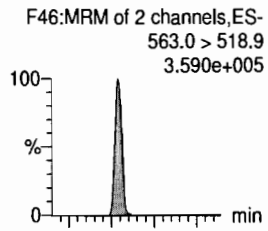


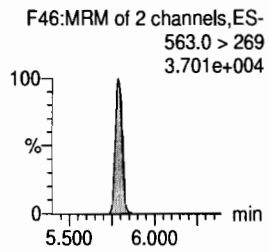
PFDS



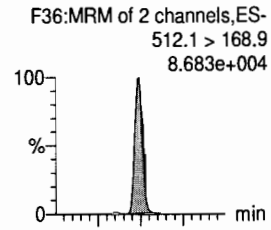


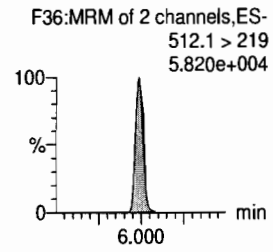
PFUdA



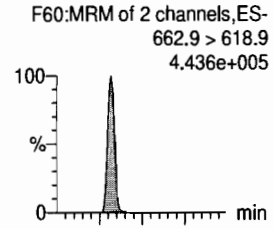


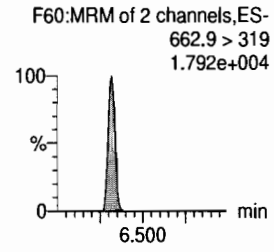
N-MeFOSA



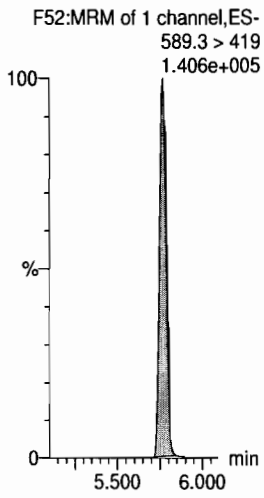


PFTrDA

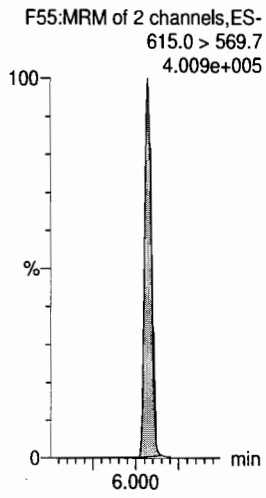




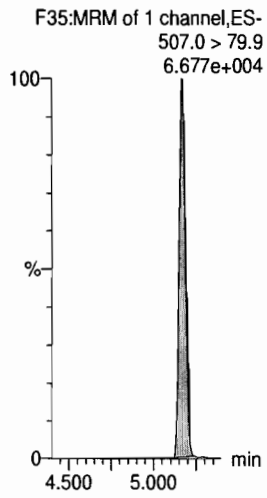
d5-N-EtFOSAA



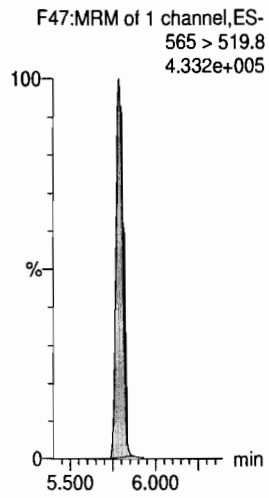
13C2-PFDoA



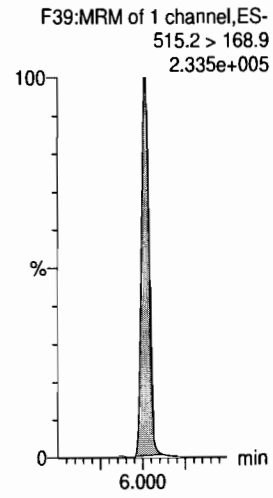
13C8-PFOS



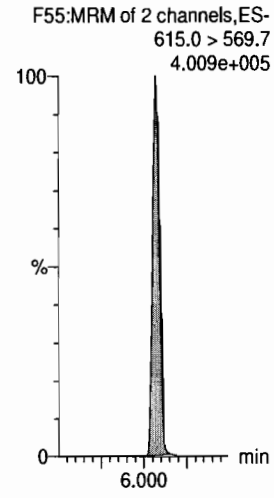
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA



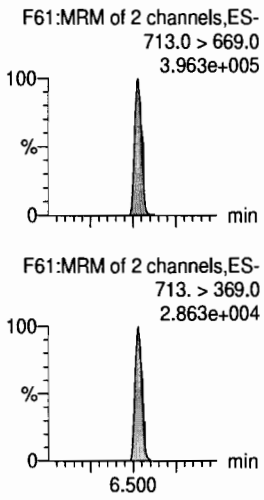
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-27.qld

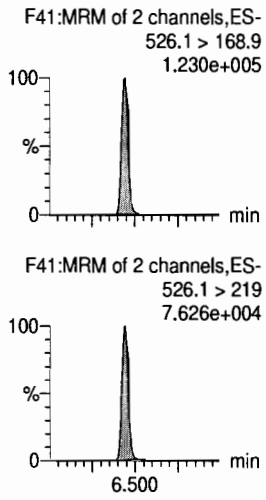
Last Altered: Tuesday, December 04, 2018 16:26:07 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:28:32 Pacific Standard Time

Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

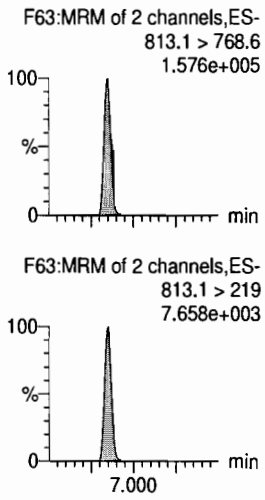
PFTeDA



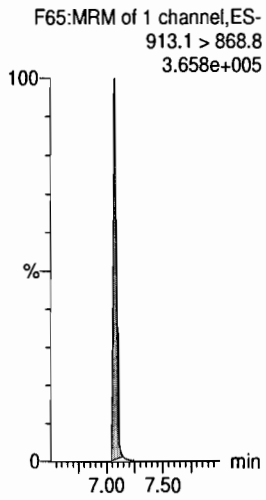
N-EtFOSA



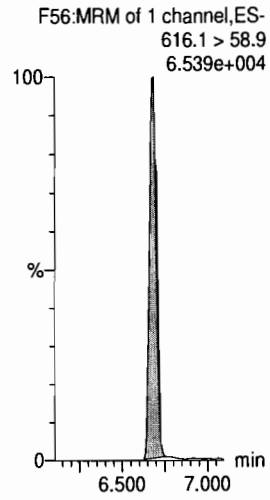
PFHxDA



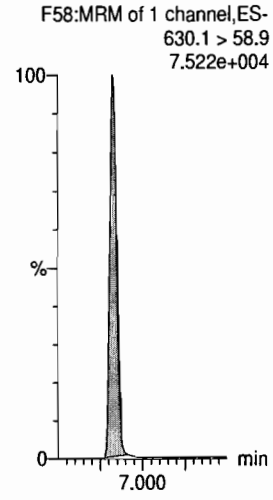
PFODA



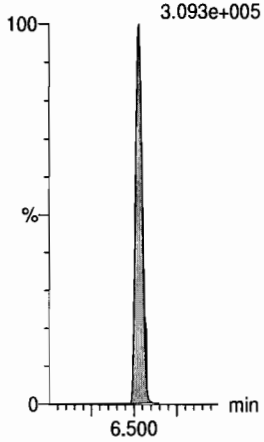
N-MeFOSE



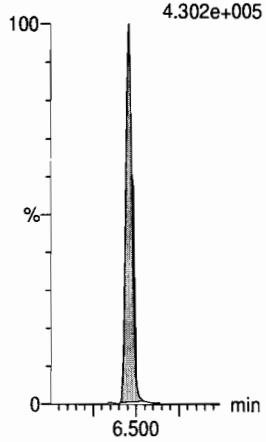
N-EtFOSE



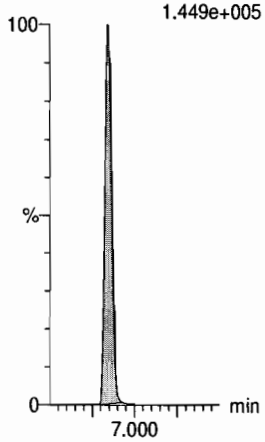
13C2-PFTeDA



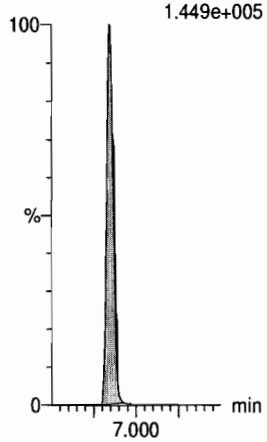
d5-N-ETFOSA



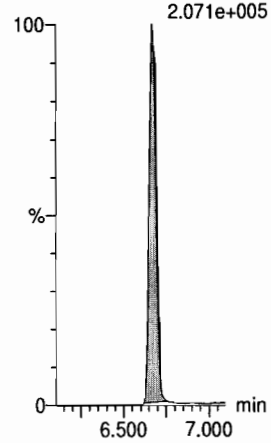
13C2-PFHxDA



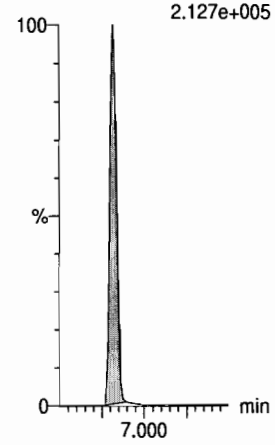
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

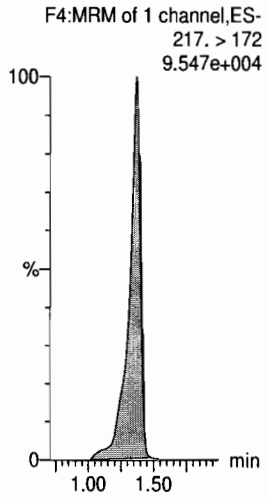


Dataset: Z:\Projects\PFAS.PRO\Results\181204M1\181204M1-27.qld

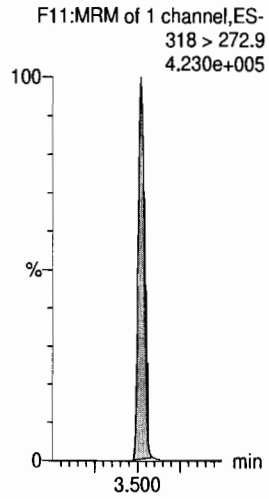
Last Altered: Tuesday, December 04, 2018 16:26:07 Pacific Standard Time
Printed: Tuesday, December 04, 2018 16:28:32 Pacific Standard Time

Name: 181204M1_27, Date: 04-Dec-2018, Time: 16:12:13, ID: ST181204M1-11 PFC CS3 18K3006, Description: PFC CS3 18K3006

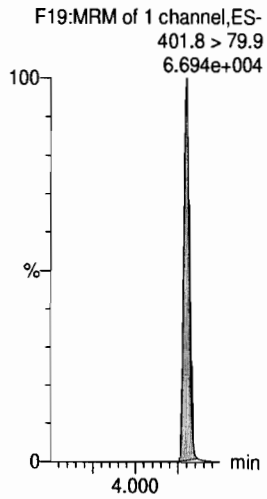
13C4-PFBA



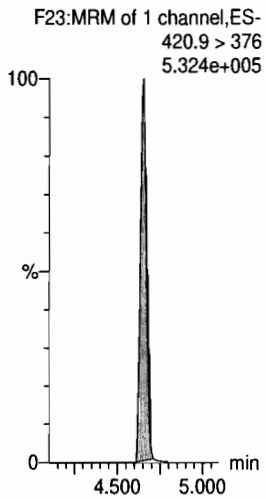
13C5-PFHxA



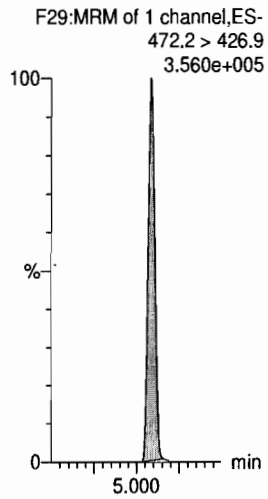
13C3-PFHxS



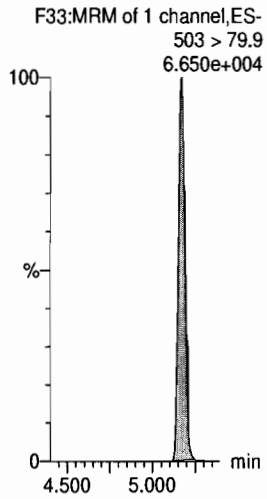
13C8-PFOA



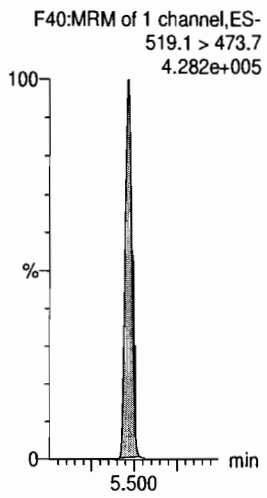
13C9-PFNA



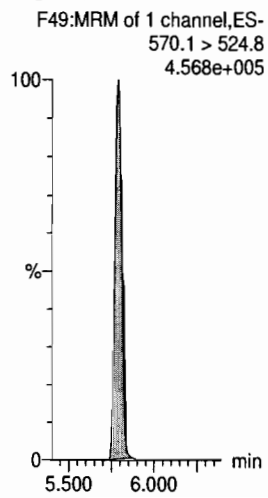
13C4-PFOS



13C6-PFDA



13C7-PFUdA



INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV) AND INSTRUMENT BLANK (IB)

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:34:59 Pacific Standard Time

Low PTS
PFDS 0.5

High PTs
4:2 → 100
6:2
8:2

Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Compound name: PFBA
Correlation coefficient: r = 0.999881, r^2 = 0.999762
Calibration curve: 1.02847 * x + -0.0331845
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

AM 12/3/18

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	181202M2_2	Standard	0.250	1.48	134.913	7372.417	0.229	0.3	1.9	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	1.48	277.801	7717.044	0.450	0.5	-6.0	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	1.48	612.269	7778.471	0.984	1.0	-1.1	NO	1.000	NO	MM
4	4	181202M2_5	Standard	2.000	1.48	1305.605	8110.343	2.012	2.0	-0.6	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	1.47	3121.150	7882.678	4.949	4.8	-3.1	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	1.48	6878.893	8113.042	10.599	10.3	3.4	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	1.48	34354.758	8040.462	53.409	52.0	3.9	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	1.48	69451.688	8202.403	105.840	102.9	2.9	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	1.47	156900.391	7673.549	255.586	248.5	-0.6	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	1.47	308846.188	7562.084	510.518	496.4	-0.7	NO	1.000	NO	MM

Compound name: PFPeA
Coefficient of Determination: R^2 = 0.999945
Calibration curve: -6.16115e-005 * x^2 + 0.911659 * x + -0.0105295
Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	2.72	239.591	12984.617	0.231	0.3	5.8	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	2.73	469.504	13346.579	0.440	0.5	-1.2	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	2.73	936.071	13256.772	0.883	1.0	-2.0	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	2.73	1947.755	13901.806	1.751	1.9	-3.4	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	2.73	4751.345	13420.939	4.425	4.9	-2.7	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	2.73	10304.199	13882.929	9.278	10.2	2.0	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	2.73	49968.262	13496.188	46.280	51.0	1.9	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	2.73	99809.484	13748.945	90.743	100.2	0.2	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	2.73	218234.500	12276.298	222.211	247.9	-0.8	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	2.73	415402.375	11768.877	441.209	500.9	0.2	NO	1.000	NO	bb

✓ CoD 12/3/18

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:34:59 Pacific Standard Time

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999925
Calibration curve: -0.000222114 * x^2 + 2.02594 * x + -0.0995002
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	3.04	92.827	2440.729	0.475	0.3	13.5	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	3.05	180.214	2510.799	0.897	0.5	-1.6	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	3.05	371.377	2463.662	1.884	1.0	-2.1	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	3.05	781.729	2532.149	3.859	2.0	-2.3	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	3.05	1876.691	2521.420	9.304	4.6	-7.1	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	3.05	4084.011	2565.786	19.896	9.9	-1.2	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	3.05	19467.154	2428.037	100.221	49.8	-0.4	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	3.05	38211.891	2348.185	203.412	101.6	1.6	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	3.05	79529.492	2027.545	490.307	248.9	-0.5	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	3.05	143781.125	1876.313	957.870	500.3	0.1	NO	1.000	NO	bb

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999815
Calibration curve: -0.00237929 * x^2 + 0.842016 * x + -0.0207497
Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	3.51	109.529	7882.280	0.174	0.2	-7.6	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	3.52	265.894	7786.481	0.427	0.5	6.5	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	3.52	535.057	7630.461	0.877	1.1	6.9	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	3.52	1051.846	8139.889	1.615	2.0	-2.3	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	3.52	2507.162	7869.327	3.982	4.8	-3.6	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	3.52	5258.487	8095.176	8.120	9.9	-0.5	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	3.52	24169.199	8293.981	36.426	50.5	1.0	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	3.52	43472.684	9018.855	60.252	99.6	-0.4	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	3.52	81386.930	10024.722	101.483			NO	1.000	NO	bbXI
10	10	181202M2_11	Standard	500.000	3.52	137855.984	12827.324	134.338			NO	1.000	NO	bbXI

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Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999961
Calibration curve: -0.000229785 * x^2 + 1.04977 * x + -0.00145899
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181202M2_2	Standard	0.250	3.61	442.024	7855.090	0.281	0.3	7.8	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	3.61	845.924	8046.591	0.526	0.5	0.4	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	3.61	1682.095	8042.113	1.046	1.0	-0.2	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	3.61	3333.822	8137.367	2.048	2.0	-2.3	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	3.61	8047.896	8193.701	4.911	4.7	-6.3	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	3.61	17726.943	8472.754	10.461	10.0	-0.1	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	3.61	83481.531	8020.125	52.045	50.1	0.3	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	3.61	165394.203	8088.322	102.243	99.6	-0.4	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	3.61	353894.375	7098.521	249.273	251.3	0.5	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	3.61	645112.438	6908.174	466.920	499.4	-0.1	NO	1.000	NO	bb

Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999956
Calibration curve: -0.000349257 * x^2 + 1.48431 * x + -0.0700599
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	3.81	67.457	2440.729	0.345	0.3	12.0	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	3.81	127.449	2510.799	0.635	0.5	-5.1	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	3.81	270.296	2463.662	1.371	1.0	-2.9	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	3.81	591.304	2532.149	2.919	2.0	0.7	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	3.82	1396.097	2521.420	6.921	4.7	-5.7	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	3.82	3031.126	2565.786	14.767	10.0	0.2	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	3.81	14253.051	2428.037	73.377	50.1	0.1	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	3.82	27454.484	2348.185	146.147	100.9	0.9	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	3.82	56405.953	2027.545	347.748	248.9	-0.4	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	3.82	98352.211	1876.313	655.223	500.4	0.1	NO	1.000	NO	bb

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Compound name: PFHpA
Correlation coefficient: r = 0.999759, r^2 = 0.999518
Calibration curve: 1.16268 * x + 0.00338901
Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, 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	181202M2_2	Standard	0.250	4.23	352.740	15520.071	0.284	0.2	-3.4	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	4.24	701.889	16419.287	0.534	0.5	-8.7	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	4.24	1501.204	15646.633	1.199	1.0	2.9	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	4.23	3035.103	16240.967	2.336	2.0	0.3	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	4.24	7238.921	15769.080	5.738	4.9	-1.4	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	4.24	15894.581	16393.000	12.120	10.4	4.2	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	4.24	74308.148	15392.018	60.346	51.9	3.8	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	4.24	147457.203	15534.257	118.655	102.1	2.1	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	4.24	315836.250	13297.971	296.884	255.3	2.1	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	4.24	545762.688	11965.380	570.148	490.4	-1.9	NO	1.000	NO	bb

Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999870
Calibration curve: -0.000154579 * x^2 + 1.97668 * x + -0.00449101
Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181202M2_2	Standard	0.250	4.37	79.327	1732.264	0.572	0.3	16.7	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	4.37	151.142	1891.561	0.999	0.5	1.5	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	4.37	262.111	1870.489	1.752	0.9	-11.2	NO	1.000	NO	MM
4	4	181202M2_5	Standard	2.000	4.37	544.216	1844.360	3.688	1.9	-6.6	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	4.37	1432.781	1912.521	9.364	4.7	-5.2	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	4.37	3075.603	1921.575	20.007	10.1	1.3	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	4.37	14800.541	1820.151	101.644	51.6	3.3	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	4.37	27882.133	1781.693	195.615	99.7	-0.3	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	4.37	61512.297	1599.192	480.808	248.1	-0.8	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	4.37	109165.695	1434.401	951.318	500.9	0.2	NO	1.000	NO	MM

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Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999697
Calibration curve: -0.00272892 * x^2 + 0.980454 * x + -0.00268433
Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181202M2_2	Standard	0.250	4.67	163.560	7096.761	0.288	0.3	18.7	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	4.67	263.076	7354.782	0.447	0.5	-8.1	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	4.67	501.679	6954.629	0.902	0.9	-7.5	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	4.67	1161.083	7557.635	1.920	2.0	-1.4	NO	1.000	NO	bd
5	5	181202M2_6	Standard	5.000	4.67	2739.949	7351.898	4.659	4.8	-3.6	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	4.67	5745.025	7547.463	9.515	10.0	-0.2	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	4.67	26027.670	7612.719	42.737	50.8	1.5	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	4.67	47348.418	8395.673	70.495	99.4	-0.6	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	4.67	95698.789	10084.581	118.620			NO	1.000	NO	bbXI
10	10	181202M2_11	Standard	500.000	4.67	153331.891	12500.775	153.322			NO	1.000	NO	bbXI

Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999937
Calibration curve: -0.000202874 * x^2 + 1.22088 * x + 0.0495571
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	4.73	624.060	21531.906	0.362	0.3	2.5	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	4.73	1183.986	22078.006	0.670	0.5	1.7	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	4.73	2345.585	22869.809	1.282	1.0	1.0	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	4.72	4419.828	22788.545	2.424	1.9	-2.7	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	4.73	10718.562	22636.125	5.919	4.8	-3.8	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	4.73	22599.578	23212.086	12.170	9.9	-0.6	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	4.73	110083.523	22155.025	62.110	51.3	2.5	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	4.73	207862.688	21661.113	119.952	99.9	-0.1	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	4.73	456984.938	19646.082	290.761	248.4	-0.7	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	4.73	811261.750	18090.129	560.569	500.8	0.2	NO	1.000	NO	bb

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Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999876
Calibration curve: -2.31836e-006 * x^2 + 0.886394 * x + -0.0630138
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	4.83	30.641	3848.352	0.100	0.2	-26.7	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	4.83	158.264	4058.103	0.487	0.6	24.2	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	4.83	246.174	3957.430	0.778	0.9	-5.2	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	4.83	592.132	4122.399	1.795	2.1	4.8	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	4.84	1385.965	3850.568	4.499	5.1	2.9	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	4.83	2909.841	4052.094	8.976	10.2	2.0	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	4.84	14353.539	4143.248	43.304	48.9	-2.1	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	4.83	27870.904	3963.002	87.910	99.3	-0.7	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	4.84	59138.934	3309.822	223.346	252.2	0.9	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	4.84	103228.875	2920.727	441.794	499.1	-0.2	NO	1.000	NO	MM

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999876
Calibration curve: -0.000138455 * x^2 + 1.1098 * x + -0.0515303
Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.16	464.966	24777.965	0.235	0.3	3.1	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	5.16	1028.071	24973.412	0.515	0.5	2.0	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	5.16	2087.109	26408.809	0.988	0.9	-6.3	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	5.16	4605.668	25880.568	2.224	2.1	2.6	NO	1.000	NO	bd
5	5	181202M2_6	Standard	5.000	5.16	10490.705	24584.580	5.334	4.9	-2.9	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	5.16	22218.369	25443.154	10.916	9.9	-1.1	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	5.16	110190.852	24294.938	56.694	51.5	2.9	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	5.16	213279.766	24169.063	110.306	100.7	0.7	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	5.16	459635.125	21666.674	265.174	246.6	-1.4	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	5.16	790862.750	18948.793	521.711	501.5	0.3	NO	1.000	NO	bb

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Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999647
Calibration curve: -0.000143866 * x^2 + 1.1409 * x + -0.0296806
Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.19	113.305	4397.858	0.322	0.3	23.3	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	5.20	184.815	4324.078	0.534	0.5	-1.1	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	5.20	339.186	4570.558	0.928	0.8	-16.1	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	5.19	784.108	4762.950	2.058	1.8	-8.5	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	5.20	2061.741	4488.806	5.741	5.1	1.2	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	5.20	4164.114	4699.447	11.076	9.7	-2.5	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	5.20	20300.318	4335.578	58.528	51.7	3.3	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	5.19	40275.316	4374.077	115.097	102.2	2.2	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	5.20	87737.117	4062.946	269.931	244.1	-2.3	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	5.20	159040.094	3702.655	536.912	502.5	0.5	NO	1.000	NO	bb

Compound name: L-PFOS
Correlation coefficient: r = 0.999643, r^2 = 0.999286
Calibration curve: 1.10611 * x + -0.0627829
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, 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	181202M2_2	Standard	0.250	5.24	54.325	3848.352	0.176	0.2	-13.5	NO	0.999	NO	MM
2	2	181202M2_3	Standard	0.500	5.24	153.804	4058.103	0.474	0.5	-3.0	NO	0.999	NO	MM
3	3	181202M2_4	Standard	1.000	5.24	326.463	3957.430	1.031	1.0	-1.1	NO	0.999	NO	MM
4	4	181202M2_5	Standard	2.000	5.24	729.285	4122.399	2.211	2.1	2.8	NO	0.999	NO	MM
5	5	181202M2_6	Standard	5.000	5.24	1705.774	3850.568	5.537	5.1	1.3	NO	0.999	NO	MM
6	6	181202M2_7	Standard	10.000	5.24	3557.934	4052.094	10.976	10.0	-0.2	NO	0.999	NO	MM
7	7	181202M2_8	Standard	50.000	5.24	17478.543	4143.248	52.732	47.7	-4.5	NO	0.999	NO	MM
8	8	181202M2_9	Standard	100.000	5.24	32802.598	3963.002	103.465	93.6	-6.4	NO	0.999	NO	MM
9	9	181202M2_10	Standard	250.000	5.24	73542.945	3309.822	277.745	251.2	0.5	NO	0.999	NO	MM
10	10	181202M2_11	Standard	500.000	5.24	131144.078	2920.727	561.265	507.5	1.5	NO	0.999	NO	MM

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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999864
Calibration curve: -0.000210024 * x^2 + 1.07747 * x + -0.0171268
Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.54	476.896	24467.730	0.244	0.2	-3.2	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	5.54	1112.093	24309.102	0.572	0.5	9.3	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	5.54	1945.086	24717.902	0.984	0.9	-7.1	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	5.54	4308.328	24989.855	2.155	2.0	0.8	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	5.54	10124.850	23998.639	5.274	4.9	-1.7	NO	1.000	NO	bb
6	6	181202M2_7	Standard	10.000	5.54	21993.205	24552.750	11.197	10.4	4.3	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	5.54	100961.906	24327.094	51.877	48.6	-2.8	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	5.54	189927.125	22632.824	104.896	99.3	-0.7	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	5.54	427641.781	20613.098	259.326	253.2	1.3	NO	1.000	NO	bb
10	10	181202M2_11	Standard	500.000	5.54	743248.250	19158.104	484.944	498.5	-0.3	NO	1.000	NO	bb

Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999875
Calibration curve: -0.00465207 * x^2 + 1.3615 * x + -0.0995875
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.51	91.714	4317.192	0.266	0.3	7.4	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	5.51	174.261	4216.907	0.517	0.5	-9.4	NO	1.000	NO	bb
3	3	181202M2_4	Standard	1.000	5.51	425.100	4281.343	1.241	1.0	-1.2	NO	1.000	NO	bb
4	4	181202M2_5	Standard	2.000	5.50	890.316	4195.490	2.653	2.0	1.8	NO	1.000	NO	bb
5	5	181202M2_6	Standard	5.000	5.51	2200.972	4163.019	6.609	5.0	0.3	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	5.51	4771.327	4494.608	13.270	10.2	1.7	NO	1.000	NO	bb
7	7	181202M2_8	Standard	50.000	5.51	21008.926	4695.126	55.933	49.5	-0.9	NO	1.000	NO	bb
8	8	181202M2_9	Standard	100.000	5.50	37810.566	5268.254	89.713	100.4	0.4	NO	1.000	NO	bb
9	9	181202M2_10	Standard	250.000	5.51	78947.742	6419.179	153.734			NO	1.000	NO	bbXI
10	10	181202M2_11	Standard	500.000	5.51	126751.523	7875.880	201.170			NO	1.000	NO	bbXI

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Compound name: PFNS
Coefficient of Determination: R^2 = 0.999902
Calibration curve: -2.99188e-005 * x^2 + 0.768689 * x + 0.0389701
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.60	80.589	3848.352	0.262	0.3	15.9	NO	1.000	NO	bb
2	2	181202M2_3	Standard	0.500	5.60	143.434	4058.103	0.442	0.5	4.8	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	5.60	224.090	3957.430	0.708	0.9	-13.0	NO	1.000	NO	MM
4	4	181202M2_5	Standard	2.000	5.60	494.860	4122.399	1.501	1.9	-4.9	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	5.60	1158.318	3850.568	3.760	4.8	-3.2	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	5.60	2549.596	4052.094	7.865	10.2	1.9	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	5.60	12411.925	4143.248	37.446	48.8	-2.5	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	5.59	24374.139	3963.002	76.880	100.4	0.4	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	5.60	50795.039	3309.822	191.834	252.0	0.8	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	5.60	87901.438	2920.727	376.197	499.0	-0.2	NO	1.000	NO	MM

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999677
Calibration curve: -0.000422706 * x^2 + 1.51286 * x + -0.0237577
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181202M2_2	Standard	0.250	5.68	195.147	6993.818	0.349	0.2	-1.5	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	5.69	452.242	7633.335	0.741	0.5	1.1	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	5.68	883.719	7294.871	1.514	1.0	1.7	NO	1.000	NO	MM
4	4	181202M2_5	Standard	2.000	5.68	1878.539	7797.862	3.011	2.0	0.4	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	5.68	3940.500	7624.316	6.460	4.3	-14.2	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	5.69	9250.802	7415.011	15.595	10.4	3.5	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	5.68	45700.629	7329.583	77.939	52.3	4.6	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	5.68	85030.906	7337.996	144.847	98.5	-1.5	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	5.68	176891.984	6314.114	350.192	248.8	-0.5	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	5.68	304241.375	5836.267	651.618	500.8	0.2	NO	1.000	NO	MM

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Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.995820
Calibration curve: -0.000217066 * x^2 + 1.09478 * x + -0.0924104
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.84	121.103	7616.977	0.199	0.3	6.4	NO	0.996	NO	MM
2	2	181202M2_3	Standard	0.500	5.84	308.076	8626.343	0.446	0.5	-1.6	NO	0.996	NO	MM
3	3	181202M2_4	Standard	1.000	5.84	647.943	8022.006	1.010	1.0	0.7	NO	0.996	NO	MM
4	4	181202M2_5	Standard	2.000	5.84	1422.383	8299.833	2.142	2.0	2.1	NO	0.996	NO	MM
5	5	181202M2_6	Standard	5.000	5.84	3294.604	8433.072	4.883	4.5	-9.0	NO	0.996	NO	MM
6	6	181202M2_7	Standard	10.000	5.84	7358.653	8903.206	10.331	9.5	-4.6	NO	0.996	NO	MM
7	7	181202M2_8	Standard	50.000	5.84	34889.617	8164.931	53.414	49.4	-1.3	NO	0.996	NO	MM
8	8	181202M2_9	Standard	100.000	5.83	67239.109	6902.745	121.762	113.9	13.9	NO	0.996	NO	MM
9	9	181202M2_10	Standard	250.000	5.84	131691.859	6863.628	239.836	229.6	-8.2	NO	0.996	NO	MM
10	10	181202M2_11	Standard	500.000	5.84	230774.703	5765.883	500.302	508.3	1.7	NO	0.996	NO	MM

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Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999432
Calibration curve: -0.000244716 * x^2 + 1.07792 * x + 0.000271046
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.86	596.648	26235.537	0.284	0.3	5.4	NO	0.999	NO	bb
2	2	181202M2_3	Standard	0.500	5.85	1103.887	26476.957	0.521	0.5	-3.3	NO	0.999	NO	MM
3	3	181202M2_4	Standard	1.000	5.86	2192.150	25791.709	1.062	1.0	-1.4	NO	0.999	NO	bb
4	4	181202M2_5	Standard	2.000	5.85	4368.989	25476.654	2.144	2.0	-0.5	NO	0.999	NO	bb
5	5	181202M2_6	Standard	5.000	5.85	10175.933	24894.002	5.110	4.7	-5.1	NO	0.999	NO	bb
6	6	181202M2_7	Standard	10.000	5.86	22308.275	25793.707	10.811	10.1	0.5	NO	0.999	NO	bb
7	7	181202M2_8	Standard	50.000	5.86	107501.234	24187.443	55.556	52.2	4.3	NO	0.999	NO	bb
8	8	181202M2_9	Standard	100.000	5.85	206746.500	23864.383	108.292	102.9	2.9	NO	0.999	NO	MM
9	9	181202M2_10	Standard	250.000	5.86	417923.656	21247.000	245.872	241.3	-3.5	NO	0.999	NO	bb
10	10	181202M2_11	Standard	500.000	5.86	708042.438	18395.674	481.120	504.0	0.8	NO	0.999	NO	bb

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999683
Calibration curve: 7.56593e-005 * x^2 + 0.811719 * x + 0.0648879
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	5.91	22.895	3848.352	0.074	0.0	-95.3	YES	1.000	NO	bbX
2	2	181202M2_3	Standard	0.500	5.90	133.028	4058.103	0.410	0.4	-15.0	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	5.90	265.385	3957.430	0.838	1.0	-4.7	NO	1.000	NO	MM
4	4	181202M2_5	Standard	2.000	5.90	547.126	4122.399	1.659	2.0	-1.8	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	5.90	1374.966	3850.568	4.464	5.4	8.3	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	5.90	3055.824	4052.094	9.427	11.5	15.2	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	5.90	13406.321	4143.248	40.446	49.5	-1.0	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	5.90	25873.787	3963.002	81.610	99.5	-0.5	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	5.90	54601.043	3309.822	206.208	248.2	-0.7	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	5.91	99464.773	2920.727	425.685	501.0	0.2	NO	1.000	NO	MM

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Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999795
Calibration curve: -0.000443961 * x^2 + 1.32023 * x + -0.000921135
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	6.13	567.557	20802.365	0.341	0.3	3.6	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	6.13	1145.301	21481.756	0.666	0.5	1.1	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	6.13	2227.856	21130.402	1.318	1.0	-0.1	NO	1.000	NO	MM
4	4	181202M2_5	Standard	2.000	6.13	4570.521	22323.697	2.559	1.9	-3.0	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	6.13	10652.516	20750.785	6.417	4.9	-2.6	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	6.13	23303.625	21839.953	13.338	10.1	1.4	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	6.13	113419.266	21577.500	65.705	50.6	1.3	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	6.13	203830.203	20567.094	123.881	97.0	-3.0	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	6.13	455812.531	18565.805	306.890	254.2	1.7	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	6.13	750169.125	17127.432	547.491	498.1	-0.4	NO	1.000	NO	MM

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.998909
Calibration curve: -7.79408e-005 * x^2 + 1.05657 * x + -0.0424732
Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181202M2_2	Standard	1.250	6.03	142.449	18144.518	1.178	1.2	-7.6	NO	0.999	NO	bb
2	2	181202M2_3	Standard	2.500	6.03	322.419	18786.895	2.574	2.5	-0.9	NO	0.999	NO	bb
3	3	181202M2_4	Standard	5.000	6.03	660.706	19011.893	5.213	5.0	-0.5	NO	0.999	NO	bb
4	4	181202M2_5	Standard	10.000	6.03	1414.699	19580.543	10.838	10.3	3.1	NO	0.999	NO	bb
5	5	181202M2_6	Standard	25.000	6.03	3263.745	19617.758	24.955	23.7	-5.2	NO	0.999	NO	MM
6	6	181202M2_7	Standard	50.000	6.03	7168.061	19978.711	53.818	51.2	2.3	NO	0.999	NO	MM
7	7	181202M2_8	Standard	250.000	6.03	35243.977	19302.840	273.877	264.4	5.8	NO	0.999	NO	MM
8	8	181202M2_9	Standard	500.000	6.03	68360.344	19476.980	526.470	518.1	3.6	NO	0.999	NO	MM
9	9	181202M2_10	Standard	1250.000	6.03	144932.484	19001.152	1144.134	1186.8	-5.1	NO	0.999	NO	MM
10	10	181202M2_11	Standard	2500.000	6.03	262093.094	18062.113	2176.598	2533.7	1.3	NO	0.999	NO	MM

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Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999656
Calibration curve: -0.000291719 * x^2 + 1.21601 * x + 0.00941256
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	6.37	512.233	20802.365	0.308	0.2	-1.8	NO	1.000	NO	MM
2	2	181202M2_3	Standard	0.500	6.38	1023.942	21481.756	0.596	0.5	-3.5	NO	1.000	NO	MM
3	3	181202M2_4	Standard	1.000	6.38	2138.060	21130.402	1.265	1.0	3.3	NO	1.000	NO	MM
4	4	181202M2_5	Standard	2.000	6.38	4198.660	22323.697	2.351	1.9	-3.7	NO	1.000	NO	MM
5	5	181202M2_6	Standard	5.000	6.38	10261.721	20750.785	6.182	5.1	1.6	NO	1.000	NO	MM
6	6	181202M2_7	Standard	10.000	6.38	21745.299	21839.953	12.446	10.3	2.5	NO	1.000	NO	MM
7	7	181202M2_8	Standard	50.000	6.38	104147.984	21577.500	60.334	50.2	0.4	NO	1.000	NO	MM
8	8	181202M2_9	Standard	100.000	6.38	201551.844	20567.094	122.497	103.3	3.3	NO	1.000	NO	MM
9	9	181202M2_10	Standard	250.000	6.37	413785.844	18565.805	278.594	243.3	-2.7	NO	1.000	NO	MM
10	10	181202M2_11	Standard	500.000	6.38	737003.313	17127.432	537.882	503.0	0.6	NO	1.000	NO	MM

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999493
Calibration curve: -0.000343362 * x^2 + 1.13504 * x + 0.00135132
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	6.59	374.614	17269.939	0.271	0.2	-4.9	NO	0.999	NO	bb
2	2	181202M2_3	Standard	0.500	6.59	795.705	16950.785	0.587	0.5	3.2	NO	0.999	NO	bb
3	3	181202M2_4	Standard	1.000	6.59	1443.209	16748.422	1.077	0.9	-5.2	NO	0.999	NO	bb
4	4	181202M2_5	Standard	2.000	6.59	3178.300	17107.322	2.322	2.0	2.3	NO	0.999	NO	bb
5	5	181202M2_6	Standard	5.000	6.59	7282.958	16784.055	5.424	4.8	-4.3	NO	0.999	NO	bb
6	6	181202M2_7	Standard	10.000	6.59	16042.385	16552.861	12.115	10.7	7.1	NO	0.999	NO	bb
7	7	181202M2_8	Standard	50.000	6.59	75015.461	16613.039	56.443	50.5	1.0	NO	0.999	NO	bb
8	8	181202M2_9	Standard	100.000	6.59	144170.828	15860.967	113.621	103.3	3.3	NO	0.999	NO	bb
9	9	181202M2_10	Standard	250.000	6.58	303503.594	14903.161	254.563	242.0	-3.2	NO	0.999	NO	bb
10	10	181202M2_11	Standard	500.000	6.59	533941.000	13767.813	484.773	503.9	0.8	NO	0.999	NO	bb

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Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999912
Calibration curve: -4.97469e-005 * x^2 + 0.973269 * x + -0.0114563
Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	1.250	6.46	214.610	24911.125	1.292	1.3	7.2	NO	1.000	NO	bb
2	2	181202M2_3	Standard	2.500	6.46	403.697	25905.633	2.338	2.4	-3.4	NO	1.000	NO	bb
3	3	181202M2_4	Standard	5.000	6.46	854.446	26066.096	4.917	5.1	1.3	NO	1.000	NO	bb
4	4	181202M2_5	Standard	10.000	6.46	1711.752	26996.768	9.511	9.8	-2.1	NO	1.000	NO	bb
5	5	181202M2_6	Standard	25.000	6.46	3978.940	26445.541	22.569	23.2	-7.1	NO	1.000	NO	bb
6	6	181202M2_7	Standard	50.000	6.46	8912.416	26195.615	51.034	52.6	5.2	NO	1.000	NO	bb
7	7	181202M2_8	Standard	250.000	6.46	41638.492	26339.674	237.124	246.8	-1.3	NO	1.000	NO	bb
8	8	181202M2_9	Standard	500.000	6.46	79929.930	25286.291	474.150	500.0	-0.0	NO	1.000	NO	bb
9	9	181202M2_10	Standard	1250.000	6.46	172285.000	22605.516	1143.205	1255.1	0.4	NO	1.000	NO	bb
10	10	181202M2_11	Standard	2500.000	6.47	303937.313	21501.488	2120.346	2497.4	-0.1	NO	1.000	NO	bb

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.998811
Calibration curve: -0.000210664 * x^2 + 0.529999 * x + 0.0560111
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	0.250	6.89	224.867	6306.773	0.178	0.2	-7.7	NO	0.999	NO	bb
2	2	181202M2_3	Standard	0.500	6.89	396.255	6244.700	0.317	0.5	-1.4	NO	0.999	NO	bb
3	3	181202M2_4	Standard	1.000	6.89	751.150	6307.689	0.595	1.0	1.8	NO	0.999	NO	bb
4	4	181202M2_5	Standard	2.000	6.89	1497.283	6361.806	1.177	2.1	5.8	NO	0.999	NO	bb
5	5	181202M2_6	Standard	5.000	6.89	3143.157	6326.135	2.484	4.6	-8.2	NO	0.999	NO	bb
6	6	181202M2_7	Standard	10.000	6.89	7028.938	6280.527	5.596	10.5	5.0	NO	0.999	NO	bb
7	7	181202M2_8	Standard	50.000	6.89	33421.703	6171.491	27.077	52.1	4.1	NO	0.999	NO	bb
8	8	181202M2_9	Standard	100.000	6.89	65299.973	6143.526	53.145	104.5	4.5	NO	0.999	NO	bb
9	9	181202M2_10	Standard	250.000	6.89	134449.172	5907.690	113.792	236.9	-5.2	NO	0.999	NO	bb
10	10	181202M2_11	Standard	500.000	6.90	243506.438	5672.422	214.641	507.1	1.4	NO	0.999	NO	bb

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Compound name: PFODA
Coefficient of Determination: R^2 = 0.998954
Calibration curve: -0.000288047 * x^2 + 0.858197 * x + 0.0110406
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181202M2_2	Standard	0.250	7.12	285.334	6306.773	0.226	0.3	0.3	NO	0.999	NO	bb
2	2	181202M2_3	Standard	0.500	7.12	523.242	6244.700	0.419	0.5	-4.9	NO	0.999	NO	bb
3	3	181202M2_4	Standard	1.000	7.12	1137.734	6307.689	0.902	1.0	3.8	NO	0.999	NO	bb
4	4	181202M2_5	Standard	2.000	7.12	2230.814	6361.806	1.753	2.0	1.6	NO	0.999	NO	bb
5	5	181202M2_6	Standard	5.000	7.12	5189.763	6326.135	4.102	4.8	-4.5	NO	0.999	NO	bb
6	6	181202M2_7	Standard	10.000	7.12	11181.271	6280.527	8.902	10.4	4.0	NO	0.999	NO	bb
7	7	181202M2_8	Standard	50.000	7.12	54498.063	6171.491	44.153	52.4	4.7	NO	0.999	NO	bb
8	8	181202M2_9	Standard	100.000	7.12	105825.469	6143.526	86.128	104.0	4.0	NO	0.999	NO	bb
9	9	181202M2_10	Standard	250.000	7.12	221658.438	5907.690	187.602	237.5	-5.0	NO	0.999	NO	bb
10	10	181202M2_11	Standard	500.000	7.12	409253.719	5672.422	360.740	506.4	1.3	NO	0.999	NO	bb

Compound name: N-MeFOSE
Coefficient of Determination: R^2 = 0.999899
Calibration curve: -2.49953e-005 * x^2 + 0.933355 * x + -0.466455
Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	1.250	6.68	45.843	8924.660	0.770	1.3	6.0	NO	1.000	NO	bb
2	2	181202M2_3	Standard	2.500	6.68	117.142	9346.182	1.880	2.5	0.6	NO	1.000	NO	bb
3	3	181202M2_4	Standard	5.000	6.68	257.799	9089.852	4.254	5.1	1.2	NO	1.000	NO	bb
4	4	181202M2_5	Standard	10.000	6.68	549.323	9784.962	8.421	9.5	-4.8	NO	1.000	NO	bb
5	5	181202M2_6	Standard	25.000	6.68	1393.514	9258.698	22.576	24.7	-1.2	NO	1.000	NO	bb
6	6	181202M2_7	Standard	50.000	6.68	2876.454	9389.959	45.950	49.8	-0.4	NO	1.000	NO	bb
7	7	181202M2_8	Standard	250.000	6.68	14698.902	9656.651	228.323	246.8	-1.3	NO	1.000	NO	MM
8	8	181202M2_9	Standard	500.000	6.68	28662.500	9467.294	454.129	493.6	-1.3	NO	1.000	NO	bb
9	9	181202M2_10	Standard	1250.000	6.68	67421.727	8844.866	1143.404	1268.6	1.5	NO	1.000	NO	bb
10	10	181202M2_11	Standard	2500.000	6.68	133156.828	9204.148	2170.057	2491.8	-0.3	NO	1.000	NO	bb

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Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.999728
Calibration curve: -8.31447e-006 * x^2 + 1.05163 * x + 0.0451426
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181202M2_2	Standard	1.250	6.83	85.578	9267.479	1.385	1.3	1.9	NO	1.000	NO	bb
2	2	181202M2_3	Standard	2.500	6.82	153.289	9417.438	2.442	2.3	-8.8	NO	1.000	NO	bb
3	3	181202M2_4	Standard	5.000	6.82	329.378	9367.441	5.274	5.0	-0.5	NO	1.000	NO	bb
4	4	181202M2_5	Standard	10.000	6.82	714.828	9831.002	10.907	10.3	3.3	NO	1.000	NO	MM
5	5	181202M2_6	Standard	25.000	6.82	1549.766	9178.014	25.328	24.0	-3.8	NO	1.000	NO	bb
6	6	181202M2_7	Standard	50.000	6.82	3544.875	9518.834	55.861	53.1	6.2	NO	1.000	NO	bb
7	7	181202M2_8	Standard	250.000	6.82	16633.693	9371.340	266.243	253.6	1.5	NO	1.000	NO	bb
8	8	181202M2_9	Standard	500.000	6.82	33654.199	9438.916	534.821	510.6	2.1	NO	1.000	NO	bb
9	9	181202M2_10	Standard	1250.000	6.82	77595.289	9147.148	1272.451	1221.7	-2.3	NO	1.000	NO	bb
10	10	181202M2_11	Standard	2500.000	6.83	153648.516	8901.749	2589.073	2511.8	0.5	NO	1.000	NO	bb

Compound name: 13C3-PFBA
Response Factor: 0.860773
RRF SD: 0.0131021, Relative SD: 1.52213
Response type: Internal Std (Ref 60), 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	181202M2_2	Standard	12.500	1.47	7372.417	8755.424	10.525	12.2	-2.2	NO		NO	MM
2	2	181202M2_3	Standard	12.500	1.47	7717.044	8985.498	10.735	12.5	-0.2	NO		NO	MM
3	3	181202M2_4	Standard	12.500	1.47	7778.471	9024.967	10.774	12.5	0.1	NO		NO	MM
4	4	181202M2_5	Standard	12.500	1.47	8110.343	9577.717	10.585	12.3	-1.6	NO		NO	MM
5	5	181202M2_6	Standard	12.500	1.47	7882.678	9216.354	10.691	12.4	-0.6	NO		NO	MM
6	6	181202M2_7	Standard	12.500	1.47	8113.042	9417.552	10.769	12.5	0.1	NO		NO	MM
7	7	181202M2_8	Standard	12.500	1.47	8040.462	9412.593	10.678	12.4	-0.8	NO		NO	MM
8	8	181202M2_9	Standard	12.500	1.47	8202.403	9230.500	11.108	12.9	3.2	NO		NO	MM
9	9	181202M2_10	Standard	12.500	1.47	7673.549	8827.580	10.866	12.6	1.0	NO		NO	MM
10	10	181202M2_11	Standard	12.500	1.47	7562.084	8699.136	10.866	12.6	1.0	NO		NO	MM

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Compound name: 13C3-PFPeA
Response Factor: 0.603715
RRF SD: 0.0227005, Relative SD: 3.76013
Response type: Internal Std (Ref 61), 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 181202M2_2	Standard	12.500	2.72	12984.617	21884.557	7.417	12.3	-1.7	NO		NO	MM
2	2 181202M2_3	Standard	12.500	2.73	13346.579	22519.205	7.408	12.3	-1.8	NO		NO	bb
3	3 181202M2_4	Standard	12.500	2.73	13256.772	22580.148	7.339	12.2	-2.8	NO		NO	bb
4	4 181202M2_5	Standard	12.500	2.73	13901.806	23437.223	7.414	12.3	-1.7	NO		NO	bb
5	5 181202M2_6	Standard	12.500	2.73	13420.939	23364.684	7.180	11.9	-4.9	NO		NO	bb
6	6 181202M2_7	Standard	12.500	2.73	13882.929	23122.318	7.505	12.4	-0.5	NO		NO	bb
7	7 181202M2_8	Standard	12.500	2.73	13496.188	22645.541	7.450	12.3	-1.3	NO		NO	bb
8	8 181202M2_9	Standard	12.500	2.73	13748.945	22215.309	7.736	12.8	2.5	NO		NO	bb
9	9 181202M2_10	Standard	12.500	2.73	12276.298	19415.918	7.904	13.1	4.7	NO		NO	bb
10	10 181202M2_11	Standard	12.500	2.73	11768.877	18135.842	8.112	13.4	7.5	NO		NO	bb

Compound name: 13C3-PFBS
Response Factor: 0.632921
RRF SD: 0.0159996, Relative SD: 2.5279
Response type: Internal Std (Ref 62), 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 181202M2_2	Standard	12.500	3.04	2440.729	3754.038	8.127	12.8	2.7	NO		NO	bb
2	2 181202M2_3	Standard	12.500	3.05	2510.799	3915.824	8.015	12.7	1.3	NO		NO	bb
3	3 181202M2_4	Standard	12.500	3.04	2463.662	4004.437	7.690	12.2	-2.8	NO		NO	bb
4	4 181202M2_5	Standard	12.500	3.04	2532.149	3967.956	7.977	12.6	0.8	NO		NO	bb
5	5 181202M2_6	Standard	12.500	3.05	2521.420	4000.192	7.879	12.4	-0.4	NO		NO	bb
6	6 181202M2_7	Standard	12.500	3.05	2565.786	3978.497	8.061	12.7	1.9	NO		NO	bb
7	7 181202M2_8	Standard	12.500	3.05	2428.037	3909.020	7.764	12.3	-1.9	NO		NO	bb
8	8 181202M2_9	Standard	12.500	3.05	2348.185	3727.478	7.875	12.4	-0.5	NO		NO	bb
9	9 181202M2_10	Standard	12.500	3.05	2027.545	3357.620	7.548	11.9	-4.6	NO		NO	bb
10	10 181202M2_11	Standard	12.500	3.05	1876.313	2867.818	8.178	12.9	3.4	NO		NO	bb

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Compound name: 13C2-4:2 FTS
Response Factor: 2.07354
RRF SD: 0.156529, Relative SD: 7.54885
Response type: Internal Std (Ref 62), 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	181202M2_2	Standard	12.500	3.51	7882.280	3754.038	26.246	12.7	1.3	NO		NO	bb
2	2	181202M2_3	Standard	12.500	3.52	7786.481	3915.824	24.856	12.0	-4.1	NO		NO	bb
3	3	181202M2_4	Standard	12.500	3.52	7630.461	4004.437	23.819	11.5	-8.1	NO		NO	bb
4	4	181202M2_5	Standard	12.500	3.52	8139.889	3967.956	25.643	12.4	-1.1	NO		NO	bb
5	5	181202M2_6	Standard	12.500	3.52	7869.327	4000.192	24.590	11.9	-5.1	NO		NO	bb
6	6	181202M2_7	Standard	12.500	3.52	8095.176	3978.497	25.434	12.3	-1.9	NO		NO	bb
7	7	181202M2_8	Standard	12.500	3.52	8293.981	3909.020	26.522	12.8	2.3	NO		NO	bb
8	8	181202M2_9	Standard	12.500	3.52	9018.855	3727.478	30.244	14.6	16.7	NO		NO	bb
9	9	181202M2_10	Standard	12.500	3.52	10024.722	3357.620	37.321	18.0	44.0	NO		NO	bbX
10	10	181202M2_11	Standard	12.500	3.52	12827.324	2867.818	55.911	27.0	115.7	NO		NO	bbX

Compound name: 13C2-PFHxA
Response Factor: 0.900373
RRF SD: 0.0240715, Relative SD: 2.6735
Response type: Internal Std (Ref 61), 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	181202M2_2	Standard	5.000	3.61	7855.090	21884.557	4.487	5.0	-0.3	NO		NO	bb
2	2	181202M2_3	Standard	5.000	3.61	8046.591	22519.205	4.467	5.0	-0.8	NO		NO	bb
3	3	181202M2_4	Standard	5.000	3.61	8042.113	22580.148	4.452	4.9	-1.1	NO		NO	bb
4	4	181202M2_5	Standard	5.000	3.61	8137.367	23437.223	4.340	4.8	-3.6	NO		NO	bb
5	5	181202M2_6	Standard	5.000	3.61	8193.701	23364.684	4.384	4.9	-2.6	NO		NO	bb
6	6	181202M2_7	Standard	5.000	3.61	8472.754	23122.318	4.580	5.1	1.7	NO		NO	bb
7	7	181202M2_8	Standard	5.000	3.61	8020.125	22645.541	4.427	4.9	-1.7	NO		NO	bb
8	8	181202M2_9	Standard	5.000	3.61	8088.322	22215.309	4.551	5.1	1.1	NO		NO	bb
9	9	181202M2_10	Standard	5.000	3.61	7098.521	19415.918	4.570	5.1	1.5	NO		NO	bb
10	10	181202M2_11	Standard	5.000	3.61	6908.174	18135.842	4.761	5.3	5.8	NO		NO	bb

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Compound name: 13C4-PFHpA
Response Factor: 0.693169
RRF SD: 0.0198189, Relative SD: 2.85917
Response type: Internal Std (Ref 61), 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 181202M2_2	Standard	12.500	4.23	15520.071	21884.557	8.865	12.8	2.3	NO		NO	MM
2	2 181202M2_3	Standard	12.500	4.24	16419.287	22519.205	9.114	13.1	5.2	NO		NO	bb
3	3 181202M2_4	Standard	12.500	4.24	15646.633	22580.148	8.662	12.5	-0.0	NO		NO	bb
4	4 181202M2_5	Standard	12.500	4.23	16240.967	23437.223	8.662	12.5	-0.0	NO		NO	bb
5	5 181202M2_6	Standard	12.500	4.24	15769.080	23364.684	8.436	12.2	-2.6	NO		NO	bb
6	6 181202M2_7	Standard	12.500	4.24	16393.000	23122.318	8.862	12.8	2.3	NO		NO	bb
7	7 181202M2_8	Standard	12.500	4.24	15392.018	22645.541	8.496	12.3	-1.9	NO		NO	bb
8	8 181202M2_9	Standard	12.500	4.24	15534.257	22215.309	8.741	12.6	0.9	NO		NO	bb
9	9 181202M2_10	Standard	12.500	4.24	13297.971	19415.918	8.561	12.4	-1.2	NO		NO	bb
10	10 181202M2_11	Standard	12.500	4.24	11965.380	18135.842	8.247	11.9	-4.8	NO		NO	bb

Compound name: 18O2-PFHxS
Response Factor: 0.475759
RRF SD: 0.0116172, Relative SD: 2.44183
Response type: Internal Std (Ref 62), 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 181202M2_2	Standard	12.500	4.37	1732.264	3754.038	5.768	12.1	-3.0	NO		NO	MM
2	2 181202M2_3	Standard	12.500	4.37	1891.561	3915.824	6.038	12.7	1.5	NO		NO	MM
3	3 181202M2_4	Standard	12.500	4.37	1870.489	4004.437	5.839	12.3	-1.8	NO		NO	MM
4	4 181202M2_5	Standard	12.500	4.37	1844.360	3967.956	5.810	12.2	-2.3	NO		NO	MM
5	5 181202M2_6	Standard	12.500	4.37	1912.521	4000.192	5.976	12.6	0.5	NO		NO	MM
6	6 181202M2_7	Standard	12.500	4.37	1921.575	3978.497	6.037	12.7	1.5	NO		NO	MM
7	7 181202M2_8	Standard	12.500	4.37	1820.151	3909.020	5.820	12.2	-2.1	NO		NO	MM
8	8 181202M2_9	Standard	12.500	4.37	1781.693	3727.478	5.975	12.6	0.5	NO		NO	MM
9	9 181202M2_10	Standard	12.500	4.37	1599.192	3357.620	5.954	12.5	0.1	NO		NO	MM
10	10 181202M2_11	Standard	12.500	4.37	1434.401	2867.818	6.252	13.1	5.1	NO		NO	MM

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Compound name: 13C2-6:2 FTS
Response Factor: 1.82458
RRF SD: 0.102913, Relative SD: 5.64038
Response type: Internal Std (Ref 65), 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	181202M2_2	Standard	12.500	4.67	7096.761	4124.125	21.510	11.8	-5.7	NO		NO	bb
2	2	181202M2_3	Standard	12.500	4.67	7354.782	4043.074	22.739	12.5	-0.3	NO		NO	bb
3	3	181202M2_4	Standard	12.500	4.67	6954.629	3968.353	21.907	12.0	-3.9	NO		NO	bb
4	4	181202M2_5	Standard	12.500	4.67	7557.635	4217.781	22.398	12.3	-1.8	NO		NO	bb
5	5	181202M2_6	Standard	12.500	4.67	7351.898	4195.018	21.907	12.0	-3.9	NO		NO	bb
6	6	181202M2_7	Standard	12.500	4.67	7547.463	4019.653	23.471	12.9	2.9	NO		NO	bb
7	7	181202M2_8	Standard	12.500	4.67	7612.719	4145.392	22.955	12.6	0.6	NO		NO	bb
8	8	181202M2_9	Standard	12.500	4.67	8395.673	4103.915	25.572	14.0	12.1	NO		NO	bb
9	9	181202M2_10	Standard	12.500	4.67	10084.581	3697.286	34.095	18.7	49.5	NO		NO	bbX
10	10	181202M2_11	Standard	12.500	4.67	12500.775	2980.433	52.429	28.7	129.9	NO		NO	bbX

Compound name: 13C2-PFOA
Response Factor: 0.872857
RRF SD: 0.0293638, Relative SD: 3.3641
Response type: Internal Std (Ref 63), 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	181202M2_2	Standard	12.500	4.72	21531.906	25427.918	10.585	12.1	-3.0	NO		NO	bb
2	2	181202M2_3	Standard	12.500	4.73	22078.006	26231.518	10.521	12.1	-3.6	NO		NO	bb
3	3	181202M2_4	Standard	12.500	4.73	22869.809	26898.668	10.628	12.2	-2.6	NO		NO	bb
4	4	181202M2_5	Standard	12.500	4.72	22788.545	27182.742	10.479	12.0	-4.0	NO		NO	bb
5	5	181202M2_6	Standard	12.500	4.73	22636.125	25823.834	10.957	12.6	0.4	NO		NO	bb
6	6	181202M2_7	Standard	12.500	4.73	23212.086	26537.365	10.934	12.5	0.2	NO		NO	bb
7	7	181202M2_8	Standard	12.500	4.73	22155.025	25198.629	10.990	12.6	0.7	NO		NO	bb
8	8	181202M2_9	Standard	12.500	4.73	21661.113	24351.957	11.119	12.7	1.9	NO		NO	bb
9	9	181202M2_10	Standard	12.500	4.73	19646.082	21780.797	11.275	12.9	3.3	NO		NO	bb
10	10	181202M2_11	Standard	12.500	4.73	18090.129	19460.047	11.620	13.3	6.5	NO		NO	bb

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Compound name: 13C5-PFNA
Response Factor: 1.00625
RRF SD: 0.0258214, Relative SD: 2.56611
Response type: Internal Std (Ref 64), 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	181202M2_2	Standard	12.500	5.16	24777.965	24645.154	12.567	12.5	-0.1	NO		NO	MM
2	2	181202M2_3	Standard	12.500	5.16	24973.412	24770.145	12.603	12.5	0.2	NO		NO	bb
3	3	181202M2_4	Standard	12.500	5.16	26408.809	25069.092	13.168	13.1	4.7	NO		NO	bb
4	4	181202M2_5	Standard	12.500	5.16	25880.568	26512.268	12.202	12.1	-3.0	NO		NO	MM
5	5	181202M2_6	Standard	12.500	5.16	24584.580	25536.010	12.034	12.0	-4.3	NO		NO	bb
6	6	181202M2_7	Standard	12.500	5.16	25443.154	25328.764	12.556	12.5	-0.2	NO		NO	bb
7	7	181202M2_8	Standard	12.500	5.16	24294.938	24528.369	12.381	12.3	-1.6	NO		NO	bb
8	8	181202M2_9	Standard	12.500	5.16	24169.063	23726.076	12.733	12.7	1.2	NO		NO	bb
9	9	181202M2_10	Standard	12.500	5.16	21666.674	21062.650	12.858	12.8	2.2	NO		NO	bb
10	10	181202M2_11	Standard	12.500	5.16	18948.793	18684.068	12.677	12.6	0.8	NO		NO	bb

Compound name: 13C8-PFOSA
Response Factor: 0.201574
RRF SD: 0.0168727, Relative SD: 8.37044
Response type: Internal Std (Ref 67), 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	181202M2_2	Standard	12.500	5.20	4397.858	23137.404	2.376	11.8	-5.7	NO		NO	bb
2	2	181202M2_3	Standard	12.500	5.20	4324.078	24411.752	2.214	11.0	-12.1	NO		NO	bb
3	3	181202M2_4	Standard	12.500	5.20	4570.558	23006.633	2.483	12.3	-1.4	NO		NO	bb
4	4	181202M2_5	Standard	12.500	5.20	4762.950	24286.953	2.451	12.2	-2.7	NO		NO	bb
5	5	181202M2_6	Standard	12.500	5.20	4488.806	23607.182	2.377	11.8	-5.7	NO		NO	bb
6	6	181202M2_7	Standard	12.500	5.20	4699.447	23511.537	2.498	12.4	-0.8	NO		NO	bb
7	7	181202M2_8	Standard	12.500	5.20	4335.578	22404.008	2.419	12.0	-4.0	NO		NO	bb
8	8	181202M2_9	Standard	12.500	5.20	4374.077	20433.953	2.676	13.3	6.2	NO		NO	bb
9	9	181202M2_10	Standard	12.500	5.20	4062.946	18144.816	2.799	13.9	11.1	NO		NO	bb
10	10	181202M2_11	Standard	12.500	5.20	3702.655	15942.904	2.903	14.4	15.2	NO		NO	bb

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Compound name: 13C8-PFOS
Response Factor: 0.967776
RRF SD: 0.0394269, Relative SD: 4.07397
Response type: Internal Std (Ref 65), 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	181202M2_2	Standard	12.500	5.24	3848.352	4124.125	11.664	12.1	-3.6	NO		NO	MM
2	2	181202M2_3	Standard	12.500	5.24	4058.103	4043.074	12.546	13.0	3.7	NO		NO	MM
3	3	181202M2_4	Standard	12.500	5.24	3957.430	3968.353	12.466	12.9	3.0	NO		NO	MM
4	4	181202M2_5	Standard	12.500	5.24	4122.399	4217.781	12.217	12.6	1.0	NO		NO	MM
5	5	181202M2_6	Standard	12.500	5.24	3850.568	4195.018	11.474	11.9	-5.2	NO		NO	MM
6	6	181202M2_7	Standard	12.500	5.24	4052.094	4019.653	12.601	13.0	4.2	NO		NO	MM
7	7	181202M2_8	Standard	12.500	5.24	4143.248	4145.392	12.494	12.9	3.3	NO		NO	MM
8	8	181202M2_9	Standard	12.500	5.24	3963.002	4103.915	12.071	12.5	-0.2	NO		NO	MM
9	9	181202M2_10	Standard	12.500	5.24	3309.822	3697.286	11.190	11.6	-7.5	NO		NO	MM
10	10	181202M2_11	Standard	12.500	5.24	2920.727	2980.433	12.250	12.7	1.3	NO		NO	MM

Compound name: 13C2-PFDA
Response Factor: 1.12491
RRF SD: 0.0372448, Relative SD: 3.31091
Response type: Internal Std (Ref 66), 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	181202M2_2	Standard	12.500	5.54	24467.730	21716.037	14.084	12.5	0.2	NO		NO	bb
2	2	181202M2_3	Standard	12.500	5.54	24309.102	21340.531	14.239	12.7	1.3	NO		NO	bb
3	3	181202M2_4	Standard	12.500	5.54	24717.902	21966.305	14.066	12.5	0.0	NO		NO	MM
4	4	181202M2_5	Standard	12.500	5.54	24989.855	23800.488	13.125	11.7	-6.7	NO		NO	bb
5	5	181202M2_6	Standard	12.500	5.54	23998.639	21413.693	14.009	12.5	-0.4	NO		NO	bb
6	6	181202M2_7	Standard	12.500	5.54	24552.750	22298.768	13.764	12.2	-2.1	NO		NO	bb
7	7	181202M2_8	Standard	12.500	5.54	24327.094	21747.414	13.983	12.4	-0.6	NO		NO	bb
8	8	181202M2_9	Standard	12.500	5.53	22632.824	20217.711	13.993	12.4	-0.5	NO		NO	bb
9	9	181202M2_10	Standard	12.500	5.54	20613.098	17926.432	14.373	12.8	2.2	NO		NO	bb
10	10	181202M2_11	Standard	12.500	5.54	19158.104	15987.726	14.979	13.3	6.5	NO		NO	bb

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Compound name: 13C2-8:2 FTS
Response Factor: 1.08628
RRF SD: 0.0947418, Relative SD: 8.72166
Response type: Internal Std (Ref 65), 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 181202M2_2	Standard	12.500	5.51	4317.192	4124.125	13.085	12.0	-3.6	NO		NO	bb
2	2 181202M2_3	Standard	12.500	5.51	4216.907	4043.074	13.037	12.0	-4.0	NO		NO	bb
3	3 181202M2_4	Standard	12.500	5.51	4281.343	3968.353	13.486	12.4	-0.7	NO		NO	bb
4	4 181202M2_5	Standard	12.500	5.50	4195.490	4217.781	12.434	11.4	-8.4	NO		NO	bb
5	5 181202M2_6	Standard	12.500	5.51	4163.019	4195.018	12.405	11.4	-8.6	NO		NO	bb
6	6 181202M2_7	Standard	12.500	5.51	4494.608	4019.653	13.977	12.9	2.9	NO		NO	bb
7	7 181202M2_8	Standard	12.500	5.51	4695.126	4145.392	14.158	13.0	4.3	NO		NO	bb
8	8 181202M2_9	Standard	12.500	5.50	5268.254	4103.915	16.046	14.8	18.2	NO		NO	bb
9	9 181202M2_10	Standard	12.500	5.51	6419.179	3697.286	21.702	20.0	59.8	NO		NO	bbX
10	10 181202M2_11	Standard	12.500	5.51	7875.880	2980.433	33.032	30.4	143.3	NO		NO	bbX

Compound name: d3-N-MeFOSAA
Response Factor: 0.329178
RRF SD: 0.0212176, Relative SD: 6.44565
Response type: Internal Std (Ref 67), 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 181202M2_2	Standard	12.500	5.67	6993.818	23137.404	3.778	11.5	-8.2	NO		NO	MM
2	2 181202M2_3	Standard	12.500	5.68	7633.335	24411.752	3.909	11.9	-5.0	NO		NO	MM
3	3 181202M2_4	Standard	12.500	5.68	7294.871	23006.633	3.963	12.0	-3.7	NO		NO	MM
4	4 181202M2_5	Standard	12.500	5.67	7797.862	24286.953	4.013	12.2	-2.5	NO		NO	MM
5	5 181202M2_6	Standard	12.500	5.68	7624.316	23607.182	4.037	12.3	-1.9	NO		NO	MM
6	6 181202M2_7	Standard	12.500	5.68	7415.011	23511.537	3.942	12.0	-4.2	NO		NO	MM
7	7 181202M2_8	Standard	12.500	5.68	7329.583	22404.008	4.089	12.4	-0.6	NO		NO	MM
8	8 181202M2_9	Standard	12.500	5.67	7337.996	20433.953	4.489	13.6	9.1	NO		NO	MM
9	9 181202M2_10	Standard	12.500	5.68	6314.114	18144.816	4.350	13.2	5.7	NO		NO	MM
10	10 181202M2_11	Standard	12.500	5.68	5836.267	15942.904	4.576	13.9	11.2	NO		NO	MM

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Compound name: 13C2-PFUdA
Response Factor: 1.11124
RRF SD: 0.0449768, Relative SD: 4.04743
Response type: Internal Std (Ref 67), 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	181202M2_2	Standard	12.500	5.85	26235.537	23137.404	14.174	12.8	2.0	NO		NO	bb
2	2	181202M2_3	Standard	12.500	5.86	26476.957	24411.752	13.557	12.2	-2.4	NO		NO	bb
3	3	181202M2_4	Standard	12.500	5.86	25791.709	23006.633	14.013	12.6	0.9	NO		NO	bb
4	4	181202M2_5	Standard	12.500	5.85	25476.654	24286.953	13.112	11.8	-5.6	NO		NO	bb
5	5	181202M2_6	Standard	12.500	5.85	24894.002	23607.182	13.181	11.9	-5.1	NO		NO	bb
6	6	181202M2_7	Standard	12.500	5.86	25793.707	23511.537	13.713	12.3	-1.3	NO		NO	bb
7	7	181202M2_8	Standard	12.500	5.86	24187.443	22404.008	13.495	12.1	-2.8	NO		NO	bb
8	8	181202M2_9	Standard	12.500	5.85	23864.383	20433.953	14.598	13.1	5.1	NO		NO	bb
9	9	181202M2_10	Standard	12.500	5.85	21247.000	18144.816	14.637	13.2	5.4	NO		NO	bb
10	10	181202M2_11	Standard	12.500	5.86	18395.674	15942.904	14.423	13.0	3.8	NO		NO	bb

Compound name: d5-N-EtFOSAA
Response Factor: 0.355107
RRF SD: 0.0163961, Relative SD: 4.61724
Response type: Internal Std (Ref 67), 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	181202M2_2	Standard	12.500	5.83	7616.977	23137.404	4.115	11.6	-7.3	NO		NO	MM
2	2	181202M2_3	Standard	12.500	5.83	8626.343	24411.752	4.417	12.4	-0.5	NO		NO	MM
3	3	181202M2_4	Standard	12.500	5.83	8022.006	23006.633	4.359	12.3	-1.8	NO		NO	MM
4	4	181202M2_5	Standard	12.500	5.83	8299.833	24286.953	4.272	12.0	-3.8	NO		NO	MM
5	5	181202M2_6	Standard	12.500	5.83	8433.072	23607.182	4.465	12.6	0.6	NO		NO	MM
6	6	181202M2_7	Standard	12.500	5.83	8903.206	23511.537	4.733	13.3	6.6	NO		NO	MM
7	7	181202M2_8	Standard	12.500	5.83	8164.931	22404.008	4.556	12.8	2.6	NO		NO	MM
8	8	181202M2_9	Standard	12.500	5.83	6902.745	20433.953	4.223	11.9	-4.9	NO		NO	MM
9	9	181202M2_10	Standard	12.500	5.83	6863.628	18144.816	4.728	13.3	6.5	NO		NO	MM
10	10	181202M2_11	Standard	12.500	5.83	5765.883	15942.904	4.521	12.7	1.8	NO		NO	MM

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Compound name: 13C2-PFDoA
Response Factor: 0.992933
RRF SD: 0.0404254, Relative SD: 4.07131
Response type: Internal Std (Ref 66), 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	181202M2_2	Standard	12.500	6.14	20802.365	21716.037	11.974	12.1	-3.5	NO		NO	MM
2	2	181202M2_3	Standard	12.500	6.14	21481.756	21340.531	12.583	12.7	1.4	NO		NO	MM
3	3	181202M2_4	Standard	12.500	6.13	21130.402	21966.305	12.024	12.1	-3.1	NO		NO	MM
4	4	181202M2_5	Standard	12.500	6.13	22323.697	23800.488	11.724	11.8	-5.5	NO		NO	MM
5	5	181202M2_6	Standard	12.500	6.14	20750.785	21413.693	12.113	12.2	-2.4	NO		NO	MM
6	6	181202M2_7	Standard	12.500	6.13	21839.953	22298.768	12.243	12.3	-1.4	NO		NO	MM
7	7	181202M2_8	Standard	12.500	6.14	21577.500	21747.414	12.402	12.5	-0.1	NO		NO	MM
8	8	181202M2_9	Standard	12.500	6.13	20567.094	20217.711	12.716	12.8	2.5	NO		NO	MM
9	9	181202M2_10	Standard	12.500	6.14	18565.805	17926.432	12.946	13.0	4.3	NO		NO	MM
10	10	181202M2_11	Standard	12.500	6.13	17127.432	15987.726	13.391	13.5	7.9	NO		NO	MM

Compound name: d3-N-MeFOSA
Response Factor: 0.0738499
RRF SD: 0.0100246, Relative SD: 13.5743
Response type: Internal Std (Ref 67), 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	181202M2_2	Standard	150.000	6.06	18144.518	23137.404	9.803	132.7	-11.5	NO		NO	bb
2	2	181202M2_3	Standard	150.000	6.06	18786.895	24411.752	9.620	130.3	-13.2	NO		NO	MM
3	3	181202M2_4	Standard	150.000	6.06	19011.893	23006.633	10.330	139.9	-6.8	NO		NO	MM
4	4	181202M2_5	Standard	150.000	6.05	19580.543	24286.953	10.078	136.5	-9.0	NO		NO	MM
5	5	181202M2_6	Standard	150.000	6.06	19617.758	23607.182	10.388	140.7	-6.2	NO		NO	MM
6	6	181202M2_7	Standard	150.000	6.06	19978.711	23511.537	10.622	143.8	-4.1	NO		NO	MM
7	7	181202M2_8	Standard	150.000	6.06	19302.840	22404.008	10.770	145.8	-2.8	NO		NO	MM
8	8	181202M2_9	Standard	150.000	6.05	19476.980	20433.953	11.915	161.3	7.6	NO		NO	MM
9	9	181202M2_10	Standard	150.000	6.06	19001.152	18144.816	13.090	177.3	18.2	NO		NO	MM
10	10	181202M2_11	Standard	150.000	6.06	18062.113	15942.904	14.162	191.8	27.8	NO		NO	MM

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Compound name: 13C2-PFTeDA
Response Factor: 0.749079
RRF SD: 0.0558252, Relative SD: 7.45251
Response type: Internal Std (Ref 67), 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	181202M2_2	Standard	12.500	6.59	17269.939	23137.404	9.330	12.5	-0.4	NO		NO	bb
2	2	181202M2_3	Standard	12.500	6.59	16950.785	24411.752	8.680	11.6	-7.3	NO		NO	bb
3	3	181202M2_4	Standard	12.500	6.59	16748.422	23006.633	9.100	12.1	-2.8	NO		NO	bb
4	4	181202M2_5	Standard	12.500	6.59	17107.322	24286.953	8.805	11.8	-6.0	NO		NO	bb
5	5	181202M2_6	Standard	12.500	6.59	16784.055	23607.182	8.887	11.9	-5.1	NO		NO	bb
6	6	181202M2_7	Standard	12.500	6.59	16552.861	23511.537	8.800	11.7	-6.0	NO		NO	bb
7	7	181202M2_8	Standard	12.500	6.59	16613.039	22404.008	9.269	12.4	-1.0	NO		NO	bb
8	8	181202M2_9	Standard	12.500	6.59	15860.967	20433.953	9.703	13.0	3.6	NO		NO	bb
9	9	181202M2_10	Standard	12.500	6.58	14903.161	18144.816	10.267	13.7	9.6	NO		NO	bb
10	10	181202M2_11	Standard	12.500	6.59	13767.813	15942.904	10.795	14.4	15.3	NO		NO	bb

Compound name: d5-N-ETFOSA
Response Factor: 0.0968703
RRF SD: 0.00748514, Relative SD: 7.72697
Response type: Internal Std (Ref 67), 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	181202M2_2	Standard	150.000	6.48	24911.125	23137.404	13.458	138.9	-7.4	NO		NO	bb
2	2	181202M2_3	Standard	150.000	6.48	25905.633	24411.752	13.265	136.9	-8.7	NO		NO	bb
3	3	181202M2_4	Standard	150.000	6.48	26066.096	23006.633	14.162	146.2	-2.5	NO		NO	bb
4	4	181202M2_5	Standard	150.000	6.48	26996.768	24286.953	13.895	143.4	-4.4	NO		NO	bb
5	5	181202M2_6	Standard	150.000	6.48	26445.541	23607.182	14.003	144.6	-3.6	NO		NO	bb
6	6	181202M2_7	Standard	150.000	6.48	26195.615	23511.537	13.927	143.8	-4.2	NO		NO	bb
7	7	181202M2_8	Standard	150.000	6.48	26339.674	22404.008	14.696	151.7	1.1	NO		NO	bb
8	8	181202M2_9	Standard	150.000	6.48	25286.291	20433.953	15.468	159.7	6.5	NO		NO	bb
9	9	181202M2_10	Standard	150.000	6.48	22605.516	18144.816	15.573	160.8	7.2	NO		NO	bb
10	10	181202M2_11	Standard	150.000	6.48	21501.488	15942.904	16.858	174.0	16.0	NO		NO	bb

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Compound name: 13C2-PFHxDA
Response Factor: 0.714274
RRF SD: 0.080169, Relative SD: 11.2238
Response type: Internal Std (Ref 67), 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 181202M2_2	Standard	5.000	6.89	6306.773	23137.404	3.407	4.8	-4.6	NO		NO	bb
2	2 181202M2_3	Standard	5.000	6.89	6244.700	24411.752	3.198	4.5	-10.5	NO		NO	bb
3	3 181202M2_4	Standard	5.000	6.89	6307.689	23006.633	3.427	4.8	-4.0	NO		NO	bb
4	4 181202M2_5	Standard	5.000	6.89	6361.806	24286.953	3.274	4.6	-8.3	NO		NO	bb
5	5 181202M2_6	Standard	5.000	6.89	6326.135	23607.182	3.350	4.7	-6.2	NO		NO	bb
6	6 181202M2_7	Standard	5.000	6.89	6280.527	23511.537	3.339	4.7	-6.5	NO		NO	bb
7	7 181202M2_8	Standard	5.000	6.89	6171.491	22404.008	3.443	4.8	-3.6	NO		NO	bb
8	8 181202M2_9	Standard	5.000	6.89	6143.526	20433.953	3.758	5.3	5.2	NO		NO	bb
9	9 181202M2_10	Standard	5.000	6.89	5907.690	18144.816	4.070	5.7	14.0	NO		NO	bb
10	10 181202M2_11	Standard	5.000	6.89	5672.422	15942.904	4.447	6.2	24.5	NO		NO	MM

Compound name: d7-N-MeFOSE
Response Factor: 0.0359771
RRF SD: 0.0051661, Relative SD: 14.3594
Response type: Internal Std (Ref 67), 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 181202M2_2	Standard	150.000	6.67	8924.660	23137.404	4.822	134.0	-10.7	NO		NO	bb
2	2 181202M2_3	Standard	150.000	6.67	9346.182	24411.752	4.786	133.0	-11.3	NO		NO	bb
3	3 181202M2_4	Standard	150.000	6.67	9089.852	23006.633	4.939	137.3	-8.5	NO		NO	bb
4	4 181202M2_5	Standard	150.000	6.67	9784.962	24286.953	5.036	140.0	-6.7	NO		NO	bb
5	5 181202M2_6	Standard	150.000	6.67	9258.698	23607.182	4.902	136.3	-9.2	NO		NO	bb
6	6 181202M2_7	Standard	150.000	6.67	9389.959	23511.537	4.992	138.8	-7.5	NO		NO	bb
7	7 181202M2_8	Standard	150.000	6.67	9656.651	22404.008	5.388	149.8	-0.2	NO		NO	MM
8	8 181202M2_9	Standard	150.000	6.67	9467.294	20433.953	5.791	161.0	7.3	NO		NO	bb
9	9 181202M2_10	Standard	150.000	6.67	8844.866	18144.816	6.093	169.4	12.9	NO		NO	bb
10	10 181202M2_11	Standard	150.000	6.67	9204.148	15942.904	7.216	200.6	33.7	NO		NO	bb

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Compound name: d9-N-EtFOSE
Response Factor: 0.0361215
RRF SD: 0.00475614, Relative SD: 13.167
Response type: Internal Std (Ref 67), 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	181202M2_2	Standard	150.000	6.82	9267.479	23137.404	5.007	138.6	-7.6	NO		NO	bb
2	2	181202M2_3	Standard	150.000	6.82	9417.438	24411.752	4.822	133.5	-11.0	NO		NO	bb
3	3	181202M2_4	Standard	150.000	6.82	9367.441	23006.633	5.090	140.9	-6.1	NO		NO	MM
4	4	181202M2_5	Standard	150.000	6.82	9831.002	24286.953	5.060	140.1	-6.6	NO		NO	MM
5	5	181202M2_6	Standard	150.000	6.82	9178.014	23607.182	4.860	134.5	-10.3	NO		NO	bb
6	6	181202M2_7	Standard	150.000	6.82	9518.834	23511.537	5.061	140.1	-6.6	NO		NO	bb
7	7	181202M2_8	Standard	150.000	6.82	9371.340	22404.008	5.229	144.8	-3.5	NO		NO	bb
8	8	181202M2_9	Standard	150.000	6.82	9438.916	20433.953	5.774	159.9	6.6	NO		NO	bb
9	9	181202M2_10	Standard	150.000	6.81	9147.148	18144.816	6.301	174.5	16.3	NO		NO	bb
10	10	181202M2_11	Standard	150.000	6.82	8901.749	15942.904	6.979	193.2	28.8	NO		NO	bb

Compound name: 13C4-PFBA
Response Factor: 1
RRF SD: 5.23364e-017, Relative SD: 5.23364e-015
Response type: Internal Std (Ref 60), 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	181202M2_2	Standard	12.500	1.47	8755.424	8755.424	12.500	12.5	0.0	NO		NO	MM
2	2	181202M2_3	Standard	12.500	1.47	8985.498	8985.498	12.500	12.5	0.0	NO		NO	MM
3	3	181202M2_4	Standard	12.500	1.47	9024.967	9024.967	12.500	12.5	0.0	NO		NO	MM
4	4	181202M2_5	Standard	12.500	1.47	9577.717	9577.717	12.500	12.5	0.0	NO		NO	MM
5	5	181202M2_6	Standard	12.500	1.47	9216.354	9216.354	12.500	12.5	0.0	NO		NO	MM
6	6	181202M2_7	Standard	12.500	1.47	9417.552	9417.552	12.500	12.5	0.0	NO		NO	MM
7	7	181202M2_8	Standard	12.500	1.47	9412.593	9412.593	12.500	12.5	0.0	NO		NO	MM
8	8	181202M2_9	Standard	12.500	1.47	9230.500	9230.500	12.500	12.5	0.0	NO		NO	MM
9	9	181202M2_10	Standard	12.500	1.47	8827.580	8827.580	12.500	12.5	0.0	NO		NO	MM
10	10	181202M2_11	Standard	12.500	1.47	8699.136	8699.136	12.500	12.5	0.0	NO		NO	MM

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Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 61), 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	181202M2_2	Standard	12.500	3.60	21884.557	21884.557	12.500	12.5	0.0	NO		NO	bb
2	2	181202M2_3	Standard	12.500	3.61	22519.205	22519.205	12.500	12.5	0.0	NO		NO	bb
3	3	181202M2_4	Standard	12.500	3.61	22580.148	22580.148	12.500	12.5	0.0	NO		NO	bb
4	4	181202M2_5	Standard	12.500	3.61	23437.223	23437.223	12.500	12.5	0.0	NO		NO	bb
5	5	181202M2_6	Standard	12.500	3.61	23364.684	23364.684	12.500	12.5	0.0	NO		NO	bb
6	6	181202M2_7	Standard	12.500	3.61	23122.318	23122.318	12.500	12.5	0.0	NO		NO	bb
7	7	181202M2_8	Standard	12.500	3.61	22645.541	22645.541	12.500	12.5	0.0	NO		NO	bb
8	8	181202M2_9	Standard	12.500	3.61	22215.309	22215.309	12.500	12.5	0.0	NO		NO	bb
9	9	181202M2_10	Standard	12.500	3.61	19415.918	19415.918	12.500	12.5	0.0	NO		NO	bb
10	10	181202M2_11	Standard	12.500	3.61	18135.842	18135.842	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 5.23364e-017, Relative SD: 5.23364e-015
Response type: Internal Std (Ref 62), 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	181202M2_2	Standard	12.500	4.37	3754.038	3754.038	12.500	12.5	0.0	NO		NO	bb
2	2	181202M2_3	Standard	12.500	4.37	3915.824	3915.824	12.500	12.5	0.0	NO		NO	MM
3	3	181202M2_4	Standard	12.500	4.37	4004.437	4004.437	12.500	12.5	0.0	NO		NO	bb
4	4	181202M2_5	Standard	12.500	4.37	3967.956	3967.956	12.500	12.5	0.0	NO		NO	MM
5	5	181202M2_6	Standard	12.500	4.37	4000.192	4000.192	12.500	12.5	0.0	NO		NO	MM
6	6	181202M2_7	Standard	12.500	4.37	3978.497	3978.497	12.500	12.5	0.0	NO		NO	MM
7	7	181202M2_8	Standard	12.500	4.37	3909.020	3909.020	12.500	12.5	0.0	NO		NO	MM
8	8	181202M2_9	Standard	12.500	4.37	3727.478	3727.478	12.500	12.5	0.0	NO		NO	MM
9	9	181202M2_10	Standard	12.500	4.37	3357.620	3357.620	12.500	12.5	0.0	NO		NO	MM
10	10	181202M2_11	Standard	12.500	4.37	2867.818	2867.818	12.500	12.5	0.0	NO		NO	MM

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Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 8.27511e-017, Relative SD: 8.27511e-015
Response type: Internal Std (Ref 63), 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 181202M2_2	Standard	12.500	4.72	25427.918	25427.918	12.500	12.5	0.0	NO		NO	bb
2	2 181202M2_3	Standard	12.500	4.73	26231.518	26231.518	12.500	12.5	0.0	NO		NO	bb
3	3 181202M2_4	Standard	12.500	4.73	26898.668	26898.668	12.500	12.5	0.0	NO		NO	bb
4	4 181202M2_5	Standard	12.500	4.72	27182.742	27182.742	12.500	12.5	0.0	NO		NO	bb
5	5 181202M2_6	Standard	12.500	4.73	25823.834	25823.834	12.500	12.5	0.0	NO		NO	bb
6	6 181202M2_7	Standard	12.500	4.73	26537.365	26537.365	12.500	12.5	0.0	NO		NO	bb
7	7 181202M2_8	Standard	12.500	4.73	25198.629	25198.629	12.500	12.5	0.0	NO		NO	bb
8	8 181202M2_9	Standard	12.500	4.72	24351.957	24351.957	12.500	12.5	0.0	NO		NO	bb
9	9 181202M2_10	Standard	12.500	4.73	21780.797	21780.797	12.500	12.5	0.0	NO		NO	bb
10	10 181202M2_11	Standard	12.500	4.73	19460.047	19460.047	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 64), 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 181202M2_2	Standard	12.500	5.16	24645.154	24645.154	12.500	12.5	0.0	NO		NO	bb
2	2 181202M2_3	Standard	12.500	5.16	24770.145	24770.145	12.500	12.5	0.0	NO		NO	bb
3	3 181202M2_4	Standard	12.500	5.16	25069.092	25069.092	12.500	12.5	0.0	NO		NO	bb
4	4 181202M2_5	Standard	12.500	5.16	26512.268	26512.268	12.500	12.5	0.0	NO		NO	bb
5	5 181202M2_6	Standard	12.500	5.16	25536.010	25536.010	12.500	12.5	0.0	NO		NO	bb
6	6 181202M2_7	Standard	12.500	5.16	25328.764	25328.764	12.500	12.5	0.0	NO		NO	bb
7	7 181202M2_8	Standard	12.500	5.16	24528.369	24528.369	12.500	12.5	0.0	NO		NO	bb
8	8 181202M2_9	Standard	12.500	5.16	23726.076	23726.076	12.500	12.5	0.0	NO		NO	bb
9	9 181202M2_10	Standard	12.500	5.16	21062.650	21062.650	12.500	12.5	0.0	NO		NO	bb
10	10 181202M2_11	Standard	12.500	5.16	18684.068	18684.068	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 1.04673e-016, Relative SD: 1.04673e-014
Response type: Internal Std (Ref 65), 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 181202M2_2	Standard	12.500	5.24	4124.125	4124.125	12.500	12.5	0.0	NO		NO	MM
2	2 181202M2_3	Standard	12.500	5.24	4043.074	4043.074	12.500	12.5	0.0	NO		NO	MM
3	3 181202M2_4	Standard	12.500	5.24	3968.353	3968.353	12.500	12.5	0.0	NO		NO	MM
4	4 181202M2_5	Standard	12.500	5.24	4217.781	4217.781	12.500	12.5	0.0	NO		NO	MM
5	5 181202M2_6	Standard	12.500	5.24	4195.018	4195.018	12.500	12.5	0.0	NO		NO	MM
6	6 181202M2_7	Standard	12.500	5.24	4019.653	4019.653	12.500	12.5	0.0	NO		NO	MM
7	7 181202M2_8	Standard	12.500	5.24	4145.392	4145.392	12.500	12.5	0.0	NO		NO	MM
8	8 181202M2_9	Standard	12.500	5.24	4103.915	4103.915	12.500	12.5	0.0	NO		NO	MM
9	9 181202M2_10	Standard	12.500	5.24	3697.286	3697.286	12.500	12.5	0.0	NO		NO	MM
10	10 181202M2_11	Standard	12.500	5.24	2980.433	2980.433	12.500	12.5	0.0	NO		NO	MM

Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 66), 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 181202M2_2	Standard	12.500	5.54	21716.037	21716.037	12.500	12.5	0.0	NO		NO	bb
2	2 181202M2_3	Standard	12.500	5.54	21340.531	21340.531	12.500	12.5	0.0	NO		NO	bb
3	3 181202M2_4	Standard	12.500	5.54	21966.305	21966.305	12.500	12.5	0.0	NO		NO	bb
4	4 181202M2_5	Standard	12.500	5.53	23800.488	23800.488	12.500	12.5	0.0	NO		NO	bb
5	5 181202M2_6	Standard	12.500	5.54	21413.693	21413.693	12.500	12.5	0.0	NO		NO	bb
6	6 181202M2_7	Standard	12.500	5.54	22298.768	22298.768	12.500	12.5	0.0	NO		NO	bb
7	7 181202M2_8	Standard	12.500	5.54	21747.414	21747.414	12.500	12.5	0.0	NO		NO	bb
8	8 181202M2_9	Standard	12.500	5.53	20217.711	20217.711	12.500	12.5	0.0	NO		NO	bb
9	9 181202M2_10	Standard	12.500	5.54	17926.432	17926.432	12.500	12.5	0.0	NO		NO	bb
10	10 181202M2_11	Standard	12.500	5.54	15987.726	15987.726	12.500	12.5	0.0	NO		NO	bb

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:35:13 Pacific Standard Time

Compound name: 13C7-PFUdA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 67), 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 181202M2_2	Standard	12.500	5.85	23137.404	23137.404	12.500	12.5	0.0	NO		NO	bb
2	2 181202M2_3	Standard	12.500	5.86	24411.752	24411.752	12.500	12.5	0.0	NO		NO	bb
3	3 181202M2_4	Standard	12.500	5.86	23006.633	23006.633	12.500	12.5	0.0	NO		NO	bb
4	4 181202M2_5	Standard	12.500	5.85	24286.953	24286.953	12.500	12.5	0.0	NO		NO	bb
5	5 181202M2_6	Standard	12.500	5.85	23607.182	23607.182	12.500	12.5	0.0	NO		NO	bb
6	6 181202M2_7	Standard	12.500	5.86	23511.537	23511.537	12.500	12.5	0.0	NO		NO	bb
7	7 181202M2_8	Standard	12.500	5.85	22404.008	22404.008	12.500	12.5	0.0	NO		NO	bb
8	8 181202M2_9	Standard	12.500	5.85	20433.953	20433.953	12.500	12.5	0.0	NO		NO	bb
9	9 181202M2_10	Standard	12.500	5.85	18144.816	18144.816	12.500	12.5	0.0	NO		NO	bb
10	10 181202M2_11	Standard	12.500	5.86	15942.904	15942.904	12.500	12.5	0.0	NO		NO	bb

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, December 03, 2018 10:44:14 Pacific Standard Time
Printed: Monday, December 03, 2018 10:44:20 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	181202M2_1	IPA	02-Dec-18	18:24:21
2	2	181202M2_2	ST181202M2-1 PFC CS-2 18K3001	02-Dec-18	18:34:57
3	3	181202M2_3	ST181202M2-2 PFC CS-1 18K3002	02-Dec-18	18:45:35
4	4	181202M2_4	ST181202M2-3 PFC CS0 18K3003	02-Dec-18	18:56:07
5	5	181202M2_5	ST181202M2-4 PFC CS1 18K3004	02-Dec-18	19:06:45
6	6	181202M2_6	ST181202M2-5 PFC CS2 18K3005	02-Dec-18	19:17:17
7	7	181202M2_7	ST181202M2-6 PFC CS3 18K3006	02-Dec-18	19:27:56
8	8	181202M2_8	ST181202M2-7 PFC CS4 18K3007	02-Dec-18	19:38:29
9	9	181202M2_9	ST181202M2-8 PFC CS5 18K3008	02-Dec-18	19:49:07
10	10	181202M2_10	ST181202M2-9 PFC CS6 18K3009	02-Dec-18	19:59:40
11	11	181202M2_11	ST181202M2-10 PFC CS6 18K3009	02-Dec-18	20:10:18
12	12	181202M2_12	IPA	02-Dec-18	20:20:57
13	13	181202M2_13	ICV181202M2-1 PFC ICV 18K3011	02-Dec-18	20:31:29
14	14	181202M2_14	IPA	02-Dec-18	20:42:08

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:34:59 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBA	36	0.9998	NO	
2	2	PFPeA	37	0.9999	NO	
3	3	PFBS	38	0.9999	NO	
4	4	4:2 FTS	39	0.9998	NO	
5	5	PFHxA	40	1.0000	NO	
6	6	PFPeS	38	1.0000	NO	
7	7	PFHpA	41	0.9995	NO	
8	8	L-PFHxS	42	0.9999	NO	
9	10	6:2 FTS	43	0.9997	NO	
10	11	L-PFOA	44	0.9999	NO	
11	13	PFHpS	47	0.9999	NO	
12	14	PFNA	45	0.9999	NO	
13	15	PFOSA	46	0.9996	NO	
14	16	L-PFOS	47	0.9993	NO	
15	18	PFDA	48	0.9999	NO	
16	19	8:2 FTS	49	0.9999	NO	
17	20	PFNS	47	0.9999	NO	
18	21	L-MeFOSAA	50	0.9997	NO	
19	23	L-EtFOSAA	52	0.9958	NO	

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:35:13 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

	#	Name	IS#	CoD	CoD Flag	%RSD
1	25	PFUdA	51	0.9994	NO	
2	26	PFDS	47	0.9997	NO	
3	27	PFDoA	53	0.9998	NO	
4	28	N-MeFOSA	54	0.9989	NO	
5	29	PFTrDA	53	0.9997	NO	
6	30	PFTeDA	55	0.9995	NO	
7	31	N-EtFOSA	56	0.9999	NO	
8	32	PFHxDA	57	0.9988	NO	
9	33	PFODA	57	0.9990	NO	
10	34	N-MeFOSE	58	0.9999	NO	
11	35	N-EtFOSE	59	0.9997	NO	
12	36	13C3-PFBA	60		NO	1.522
13	37	13C3-PFPeA	61		NO	3.760
14	38	13C3-PFBS	62		NO	2.528
15	39	13C2-4:2 FTS	62		NO	7.549
16	40	13C2-PFHxA	61		NO	2.673
17	41	13C4-PFHpA	61		NO	2.859
18	42	18O2-PFHxS	62		NO	2.442
19	43	13C2-6:2 FTS	65		NO	5.640
20	44	13C2-PFOA	63		NO	3.364
21	45	13C5-PFNA	64		NO	2.566
22	46	13C8-PFOSA	67		NO	8.370
23	47	13C8-PFOS	65		NO	4.074
24	48	13C2-PFDA	66		NO	3.311
25	49	13C2-8:2 FTS	65		NO	8.722
26	50	d3-N-MeFOSAA	67		NO	6.446
27	51	13C2-PFUdA	67		NO	4.047
28	52	d5-N-EtFOSAA	67		NO	4.617
29	53	13C2-PFDoA	66		NO	4.071
30	54	d3-N-MeFOSA	67		NO	13.574
31	55	13C2-PFTeDA	67		NO	7.453
32	56	d5-N-ETFOSA	67		NO	7.727

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:35:13 Pacific Standard Time

Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

	#	Name	IS#	CoD	CoD Flag	%RSD
33	57	13C2-PFHxDA	67		NO	11.224
34	58	d7-N-MeFOSE	67		NO	14.359
35	59	d9-N-EtFOSE	67		NO	13.167
36	60	13C4-PFBA	60		NO	0.000
37	61	13C5-PFHxA	61		NO	0.000
38	62	13C3-PFHxS	62		NO	0.000
39	63	13C8-PFOA	63		NO	0.000
40	64	13C9-PFNA	64		NO	0.000
41	65	13C4-PFOS	65		NO	0.000
42	66	13C6-PFDA	66		NO	0.000
43	67	13C7-PFUdA	67		NO	0.000

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:33:55 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

	Name	Ion Ratio	Ratio out?
1	PFBA		
2	PFPeA		
3	PFBS	2.553	NO
4	4:2 FTS	1.732	NO
5	PFHxA	15.761	NO
6	PFPeS	1.535	NO
7	PFHpA	52.646	NO
8	L-PFHxS	1.723	NO
9	6:2 FTS	2.895	NO
10	L-PFOA	3.277	NO
11	PFHpS	1.648	NO
12	PFNA	7.039	NO
13	PFOSA	39.000	NO
14	L-PFOS	1.863	NO
15	PFDA	8.175	NO
16	8:2 FTS	2.252	NO
17	PFNS	1.614	NO
18	L-MeFOSAA	2.443	NO
19	L-EtFOSAA	1.294	NO

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:34:11 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

	Name	Ion Ratio	Ratio out?
1	PFUdA	18.285	NO
2	PFDS	1.799	NO
3	PFDoA	9.726	NO
4	N-MeFOSA	1.522	NO
5	PFTrDA	43.805	NO
6	PFTeDA	11.853	NO
7	N-EtFOSA	1.474	NO
8	PFHxDA	36.004	NO
9	PFODA		
10	N-MeFOSE		
11	N-EtFOSE		

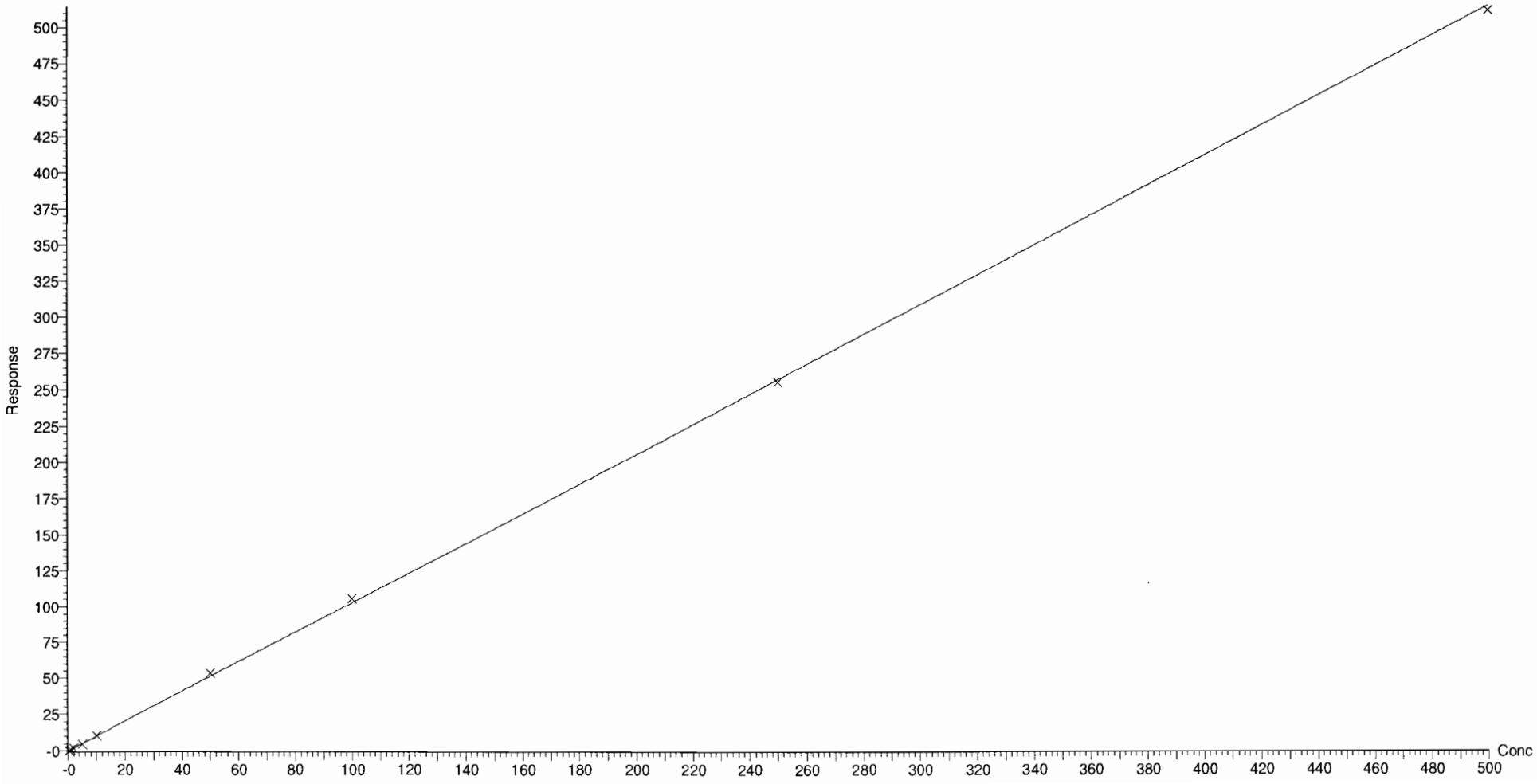
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

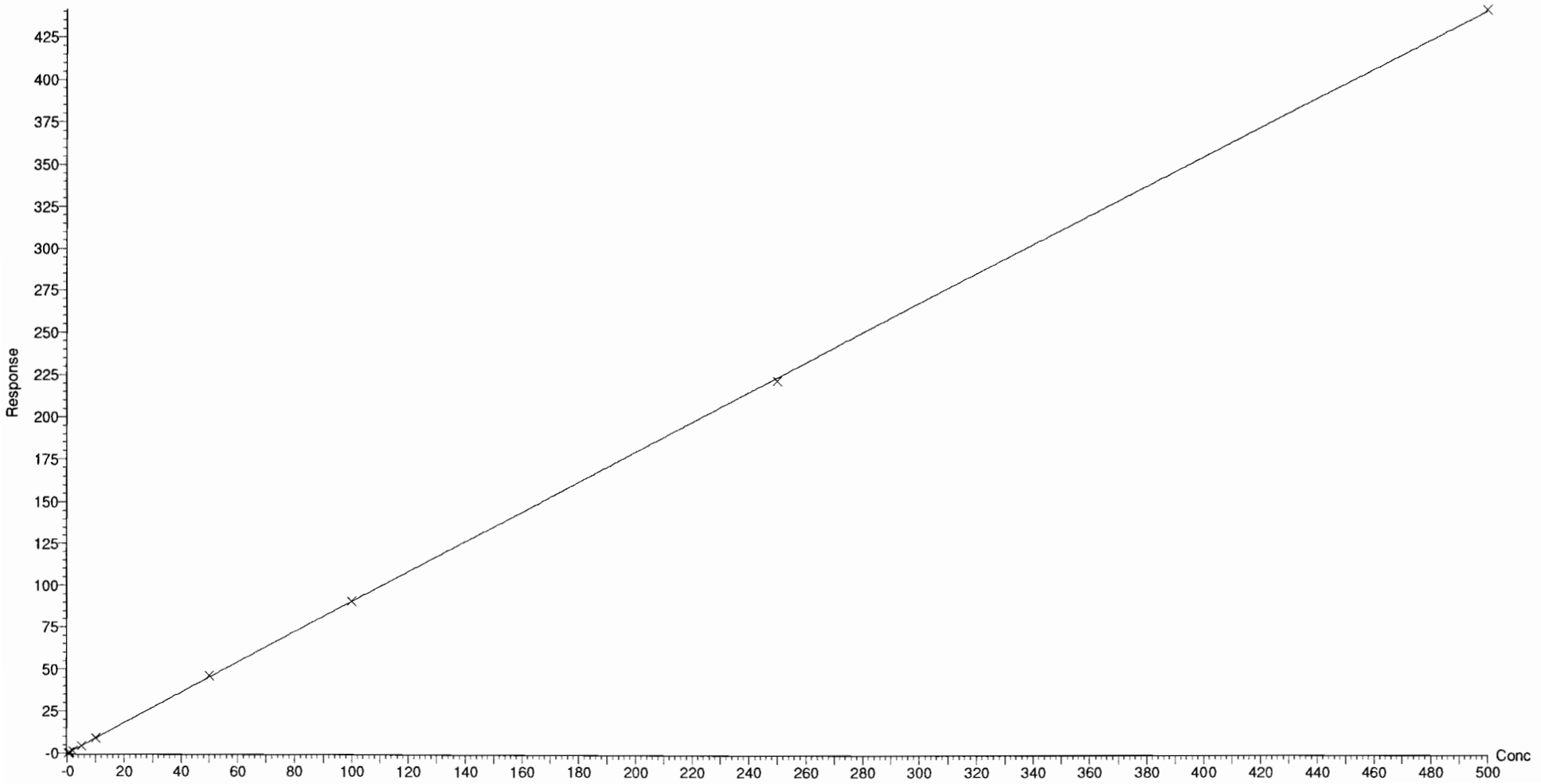
Compound name: PFBA
Correlation coefficient: r = 0.999881, r^2 = 0.999762
Calibration curve: 1.02847 * x + -0.0331845
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

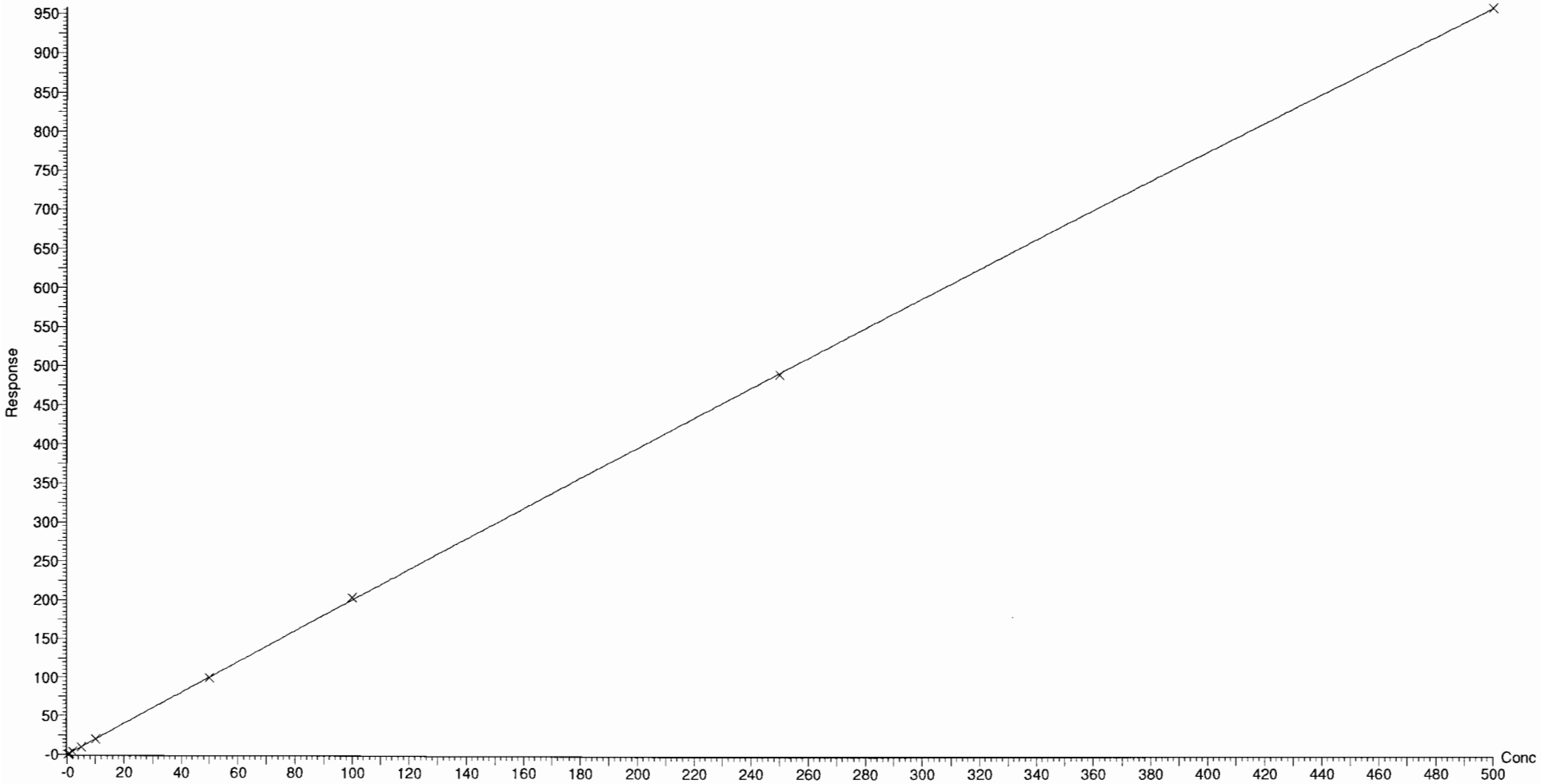
Compound name: PFPeA
Coefficient of Determination: R^2 = 0.999945
Calibration curve: -6.16115e-005 * x^2 + 0.911659 * x + -0.0105295
Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999925
Calibration curve: -0.000222114 * x^2 + 2.02594 * x + -0.0995002
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

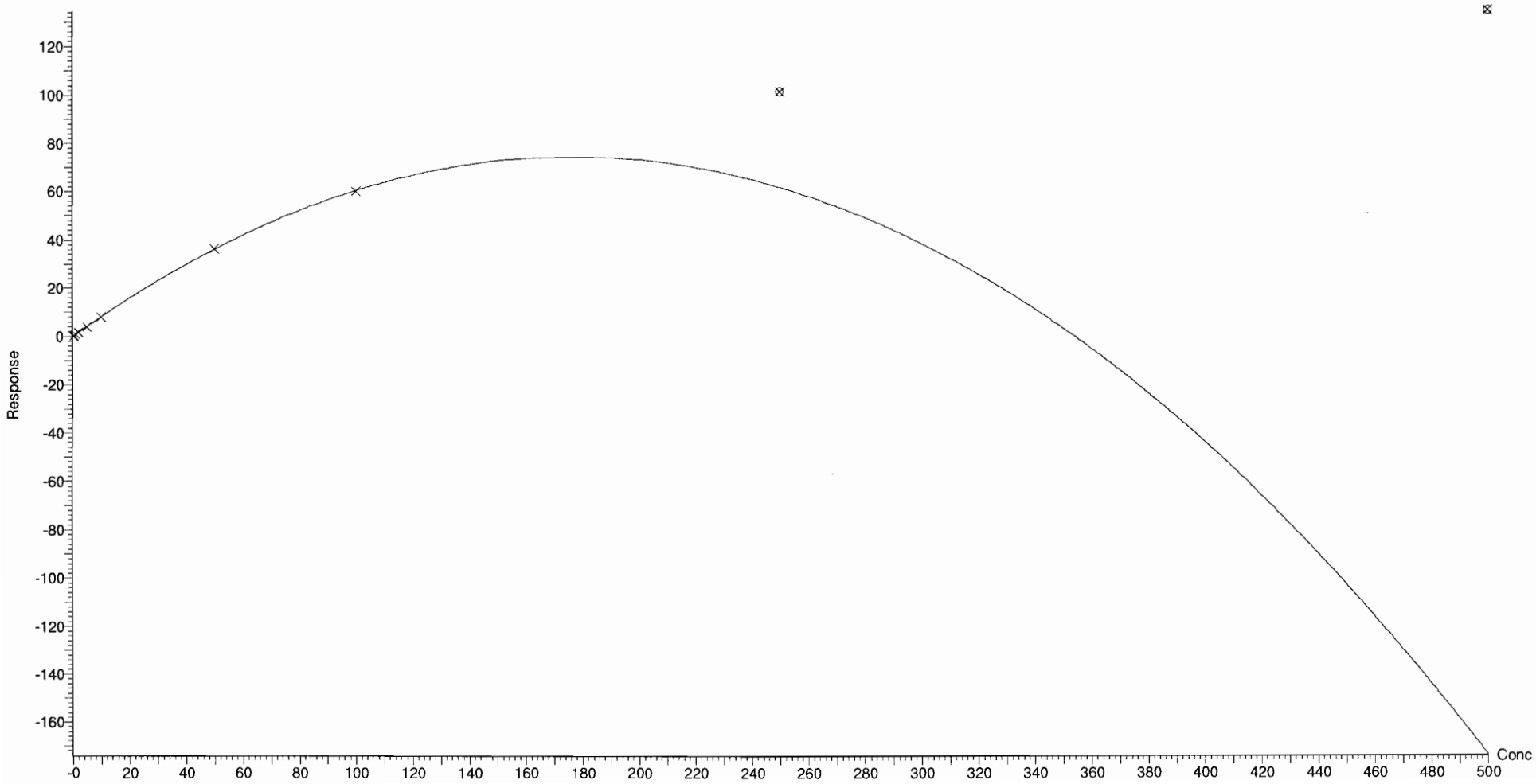


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

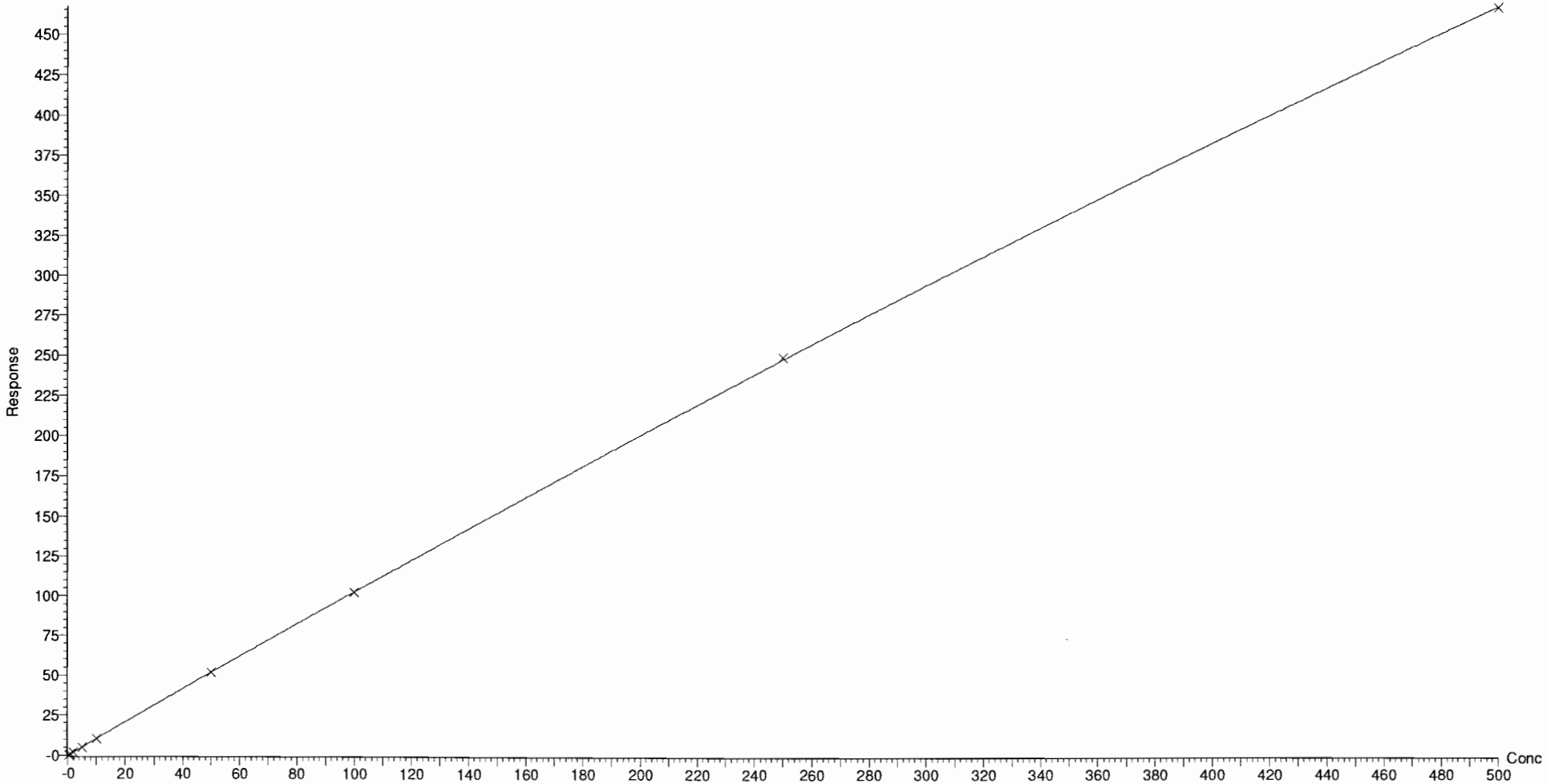
Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999815
Calibration curve: -0.00237929 * x^2 + 0.842016 * x + -0.0207497
Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

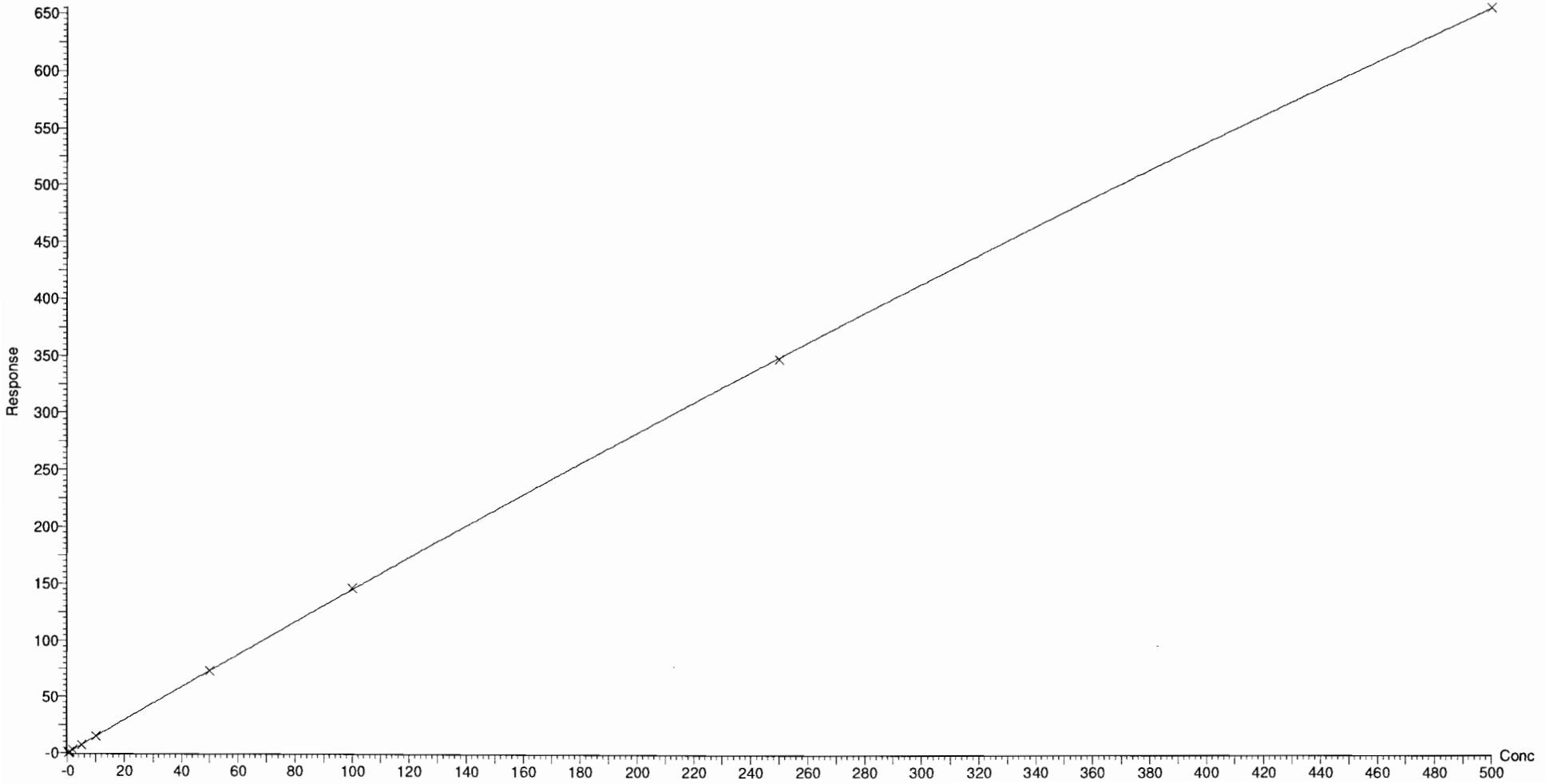
Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999961
Calibration curve: -0.000229785 * x^2 + 1.04977 * x + -0.00145899
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

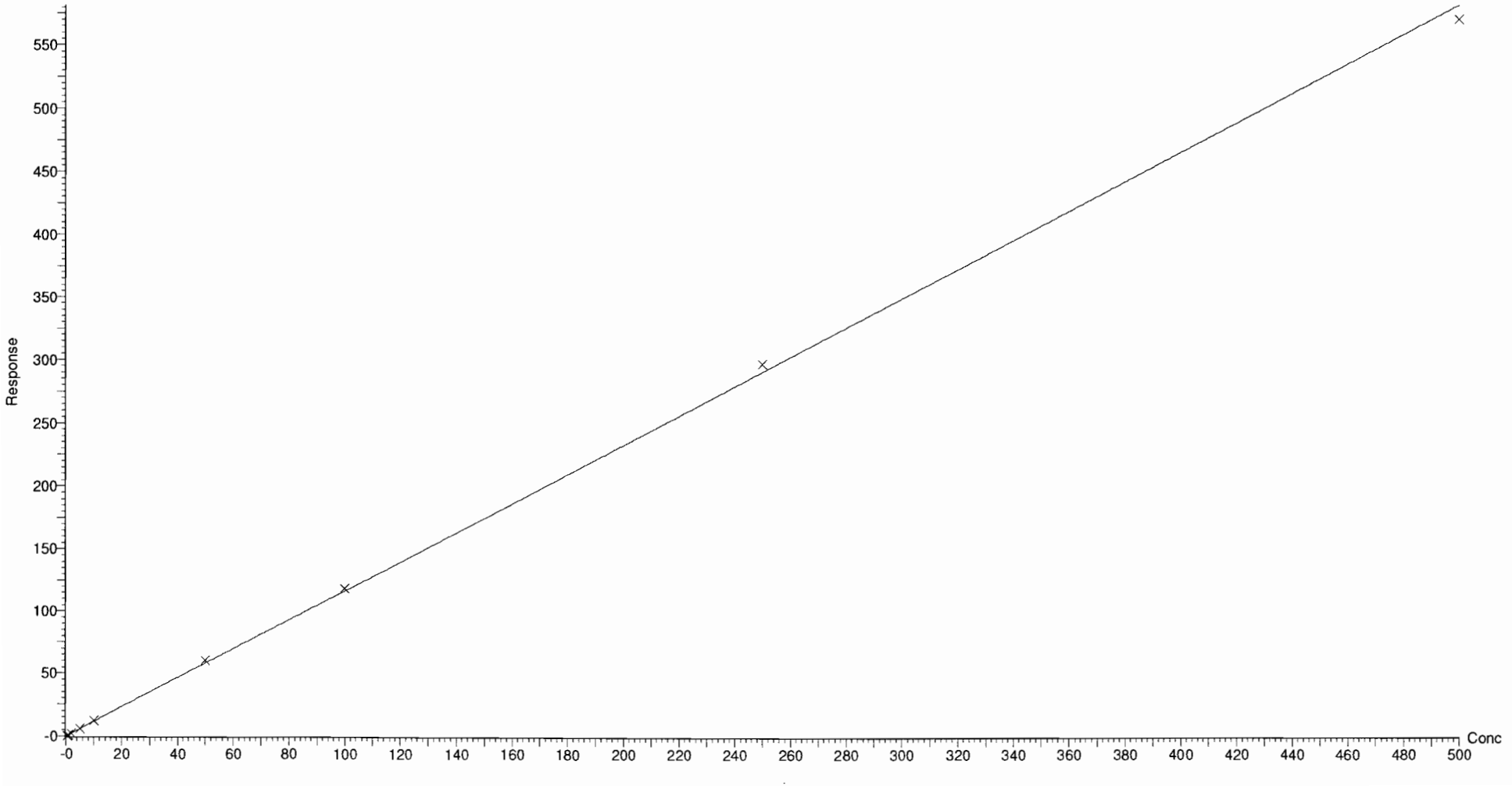
Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999956
Calibration curve: -0.000349257 * x^2 + 1.48431 * x + -0.0700599
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

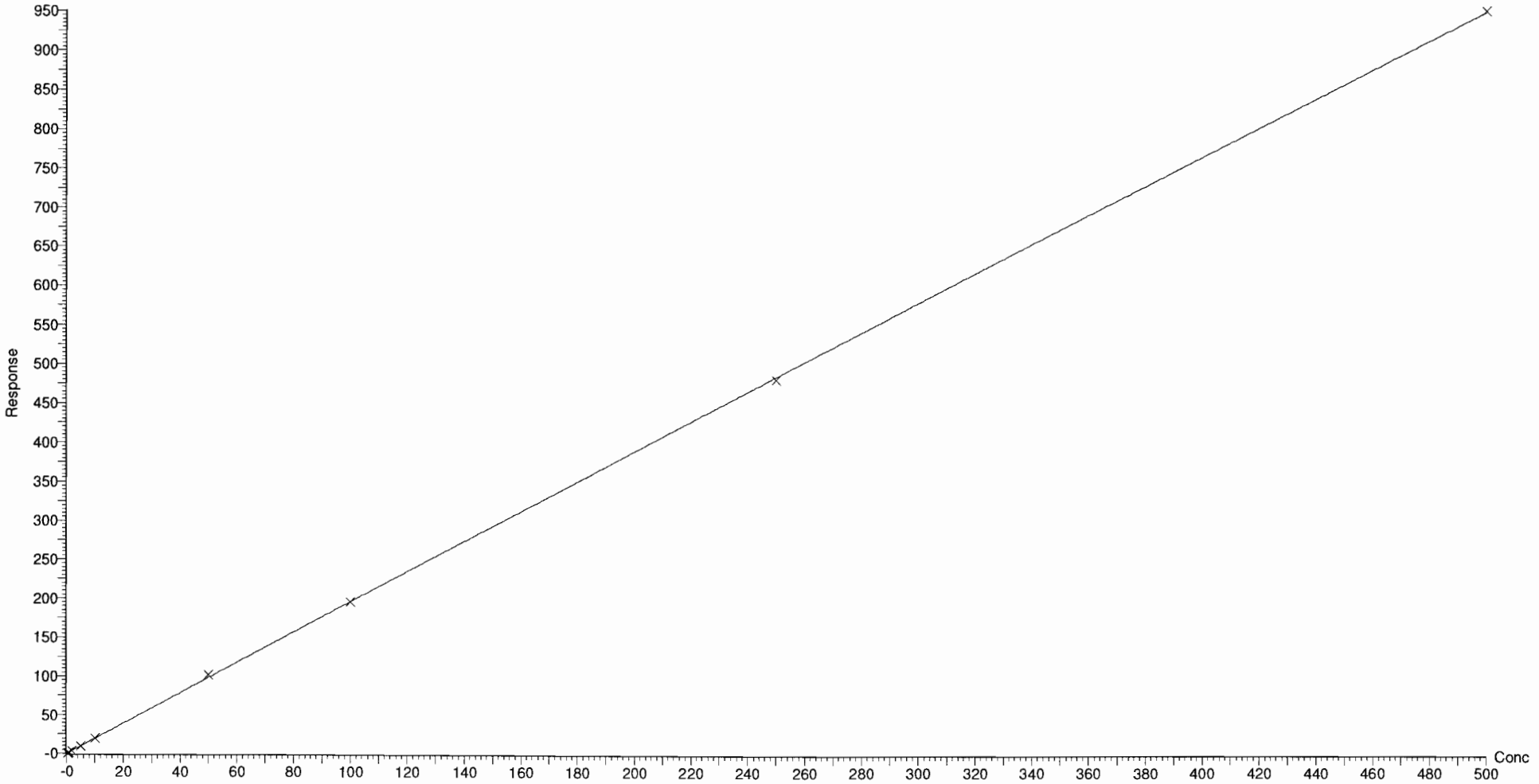
Compound name: PFHpA
Correlation coefficient: r = 0.999759, r^2 = 0.999518
Calibration curve: 1.16268 * x + 0.00338901
Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

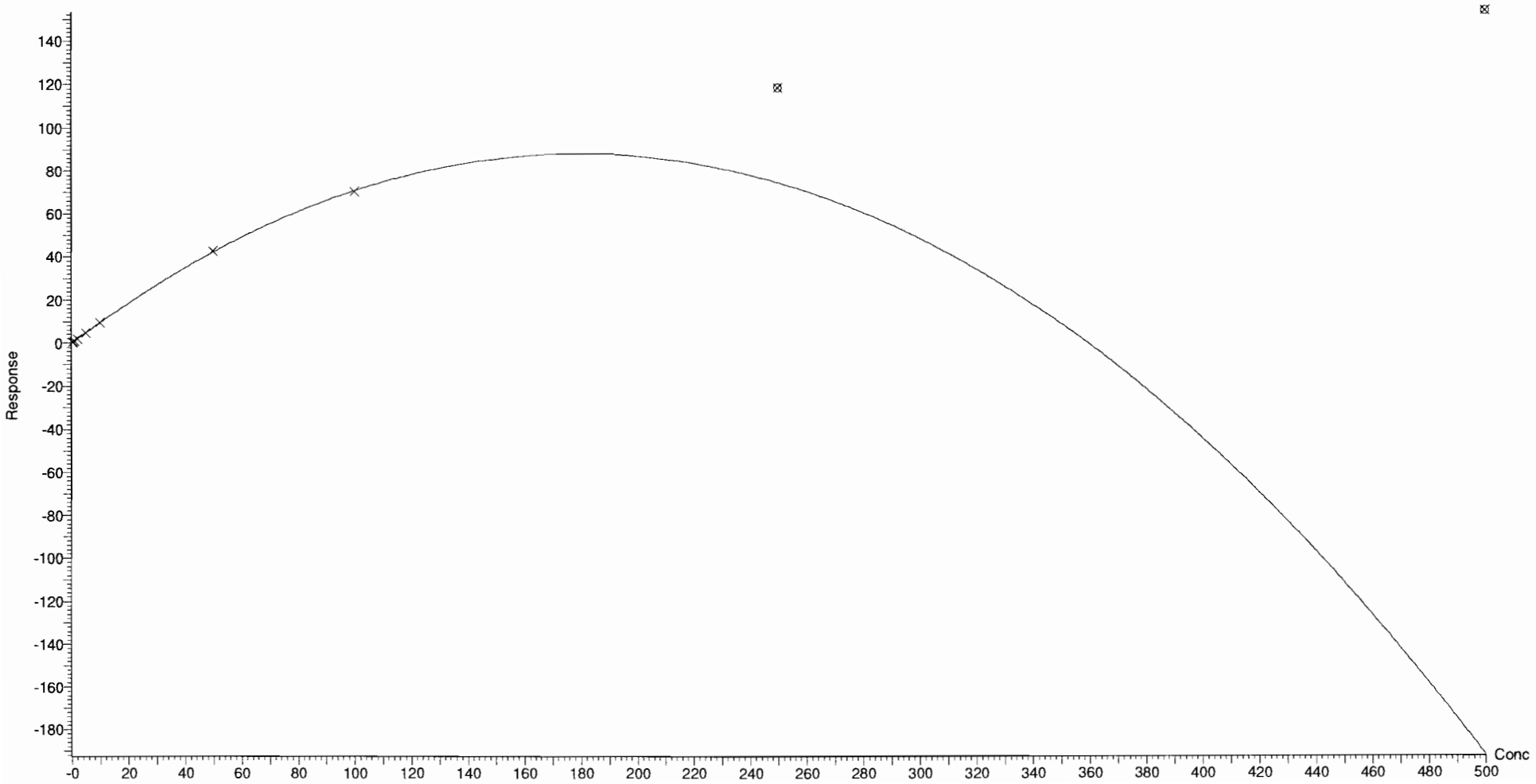
Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999870
Calibration curve: -0.000154579 * x^2 + 1.97668 * x + -0.00449101
Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

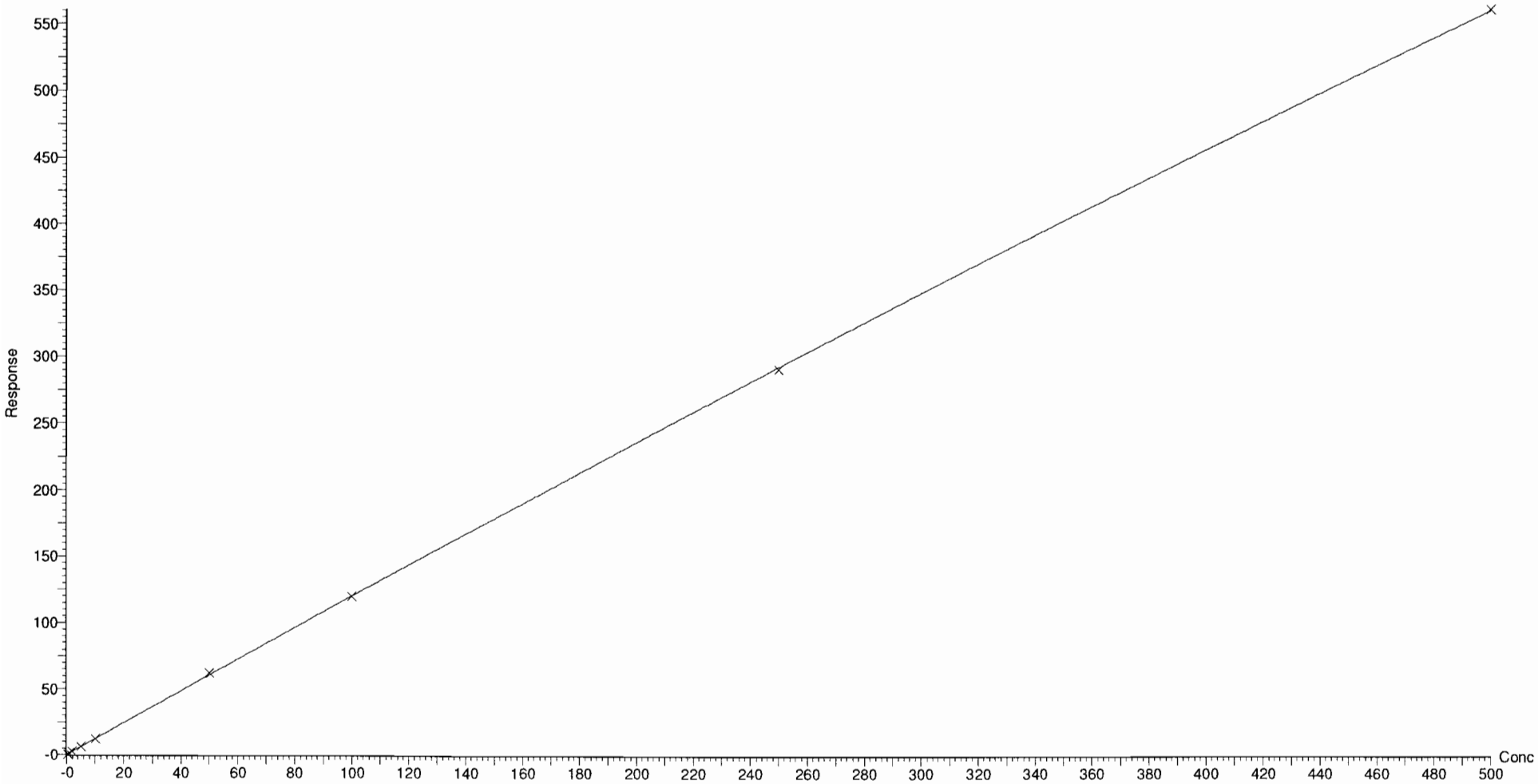
Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999697
Calibration curve: -0.00272892 * x^2 + 0.980454 * x + -0.00268433
Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

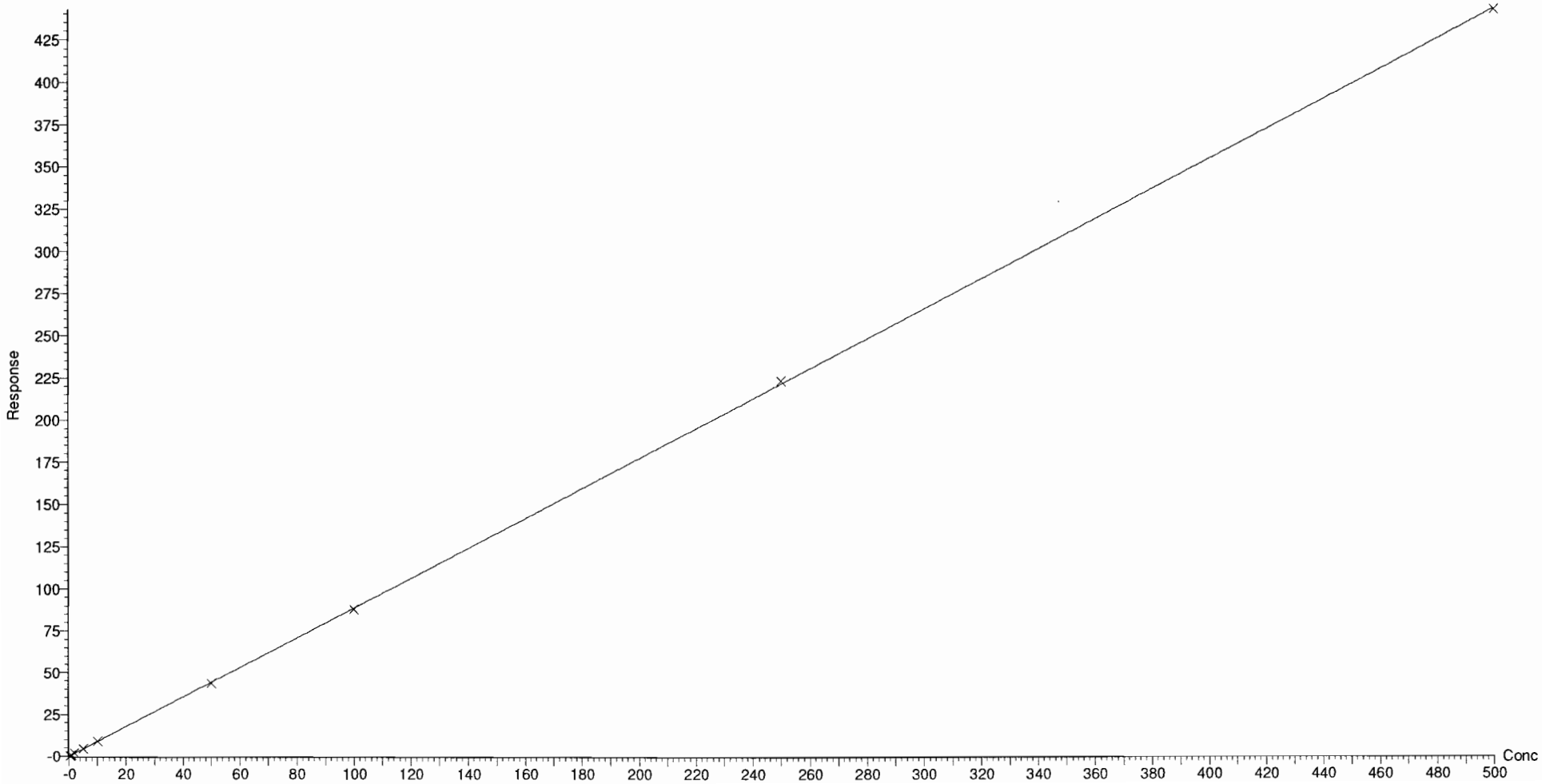
Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999937
Calibration curve: -0.000202874 * x^2 + 1.22088 * x + 0.0495571
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

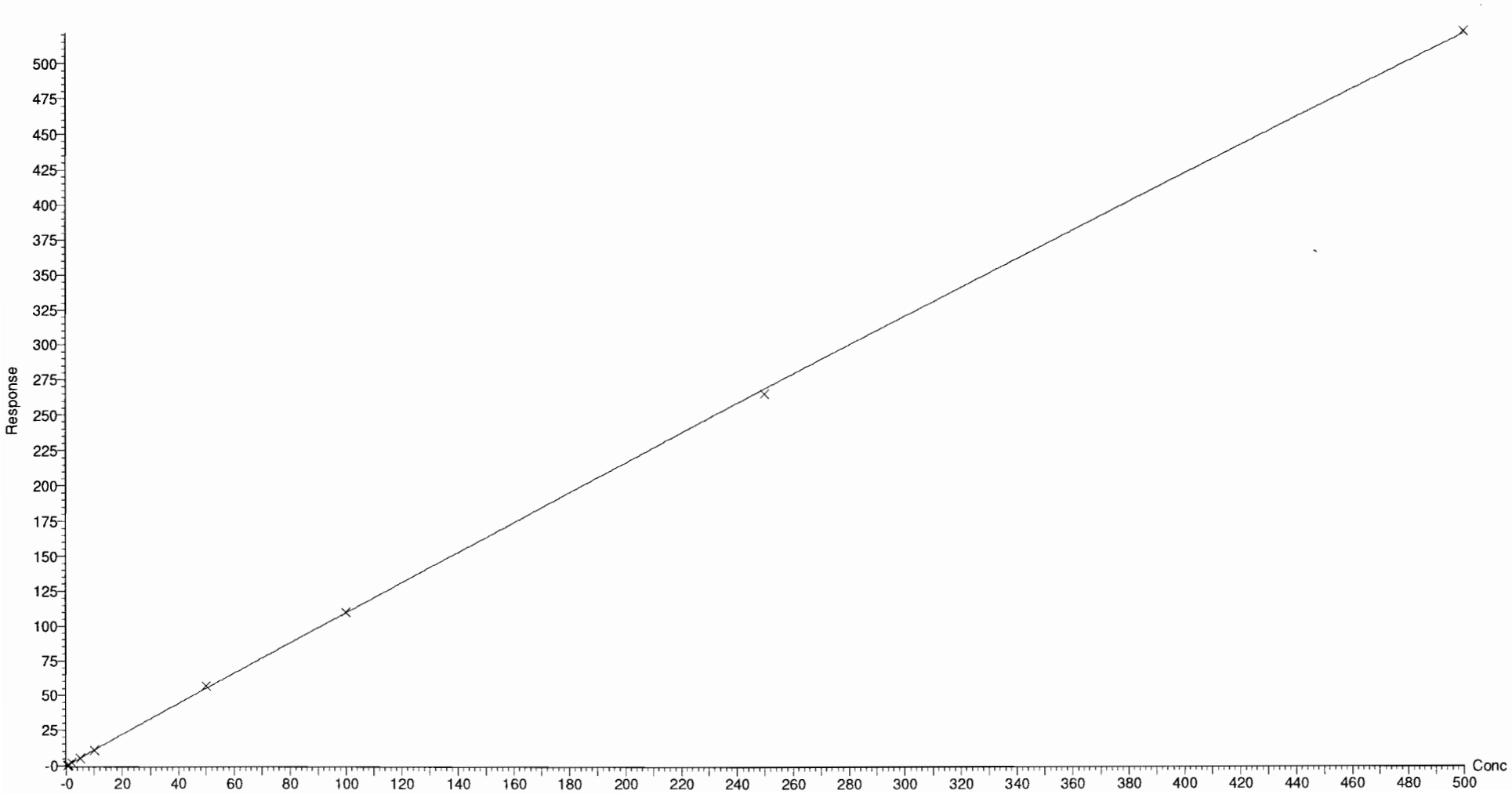
Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999876
Calibration curve: -2.31836e-006 * x^2 + 0.886394 * x + -0.0630138
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

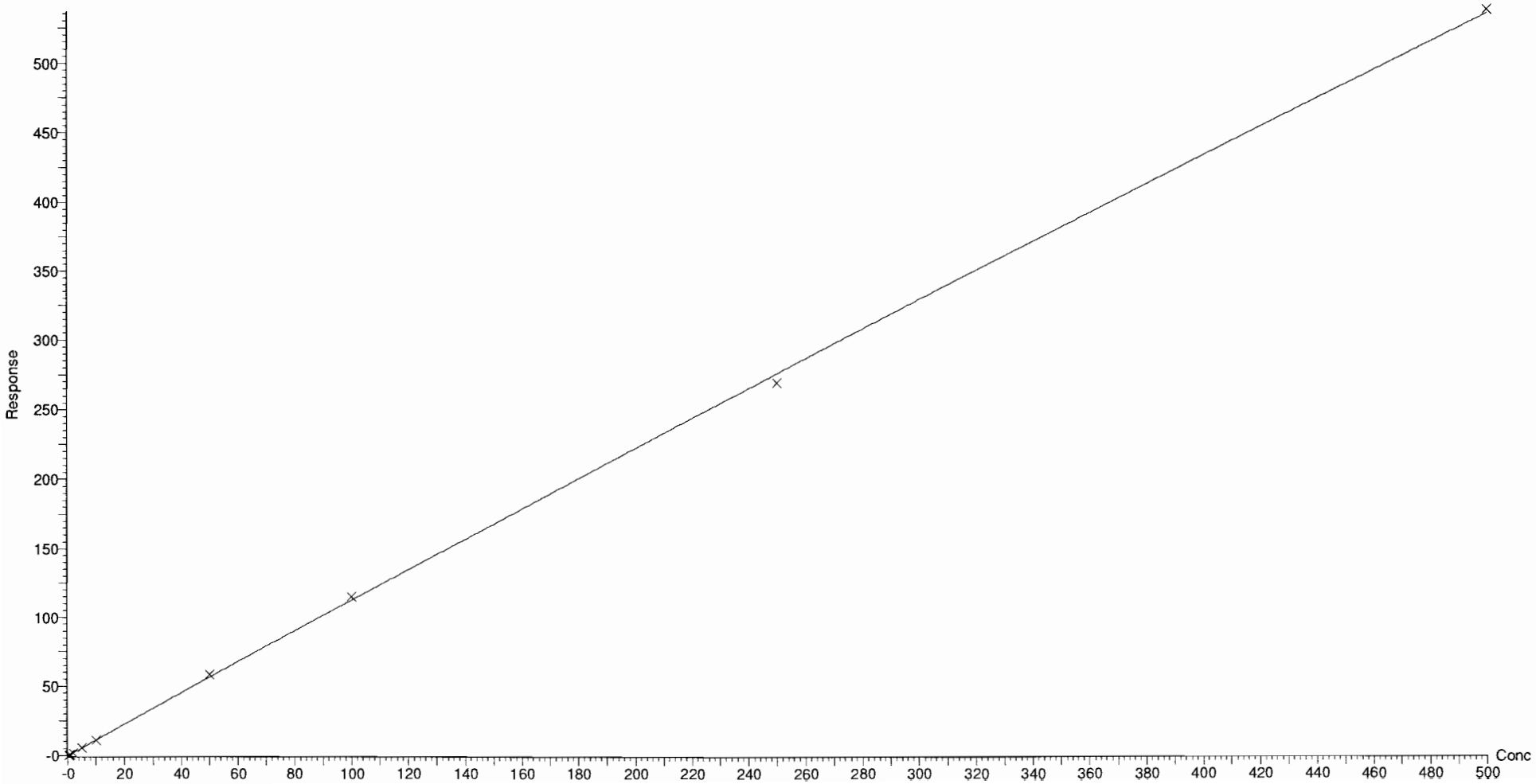
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999876
Calibration curve: -0.000138455 * x^2 + 1.1098 * x + -0.0515303
Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

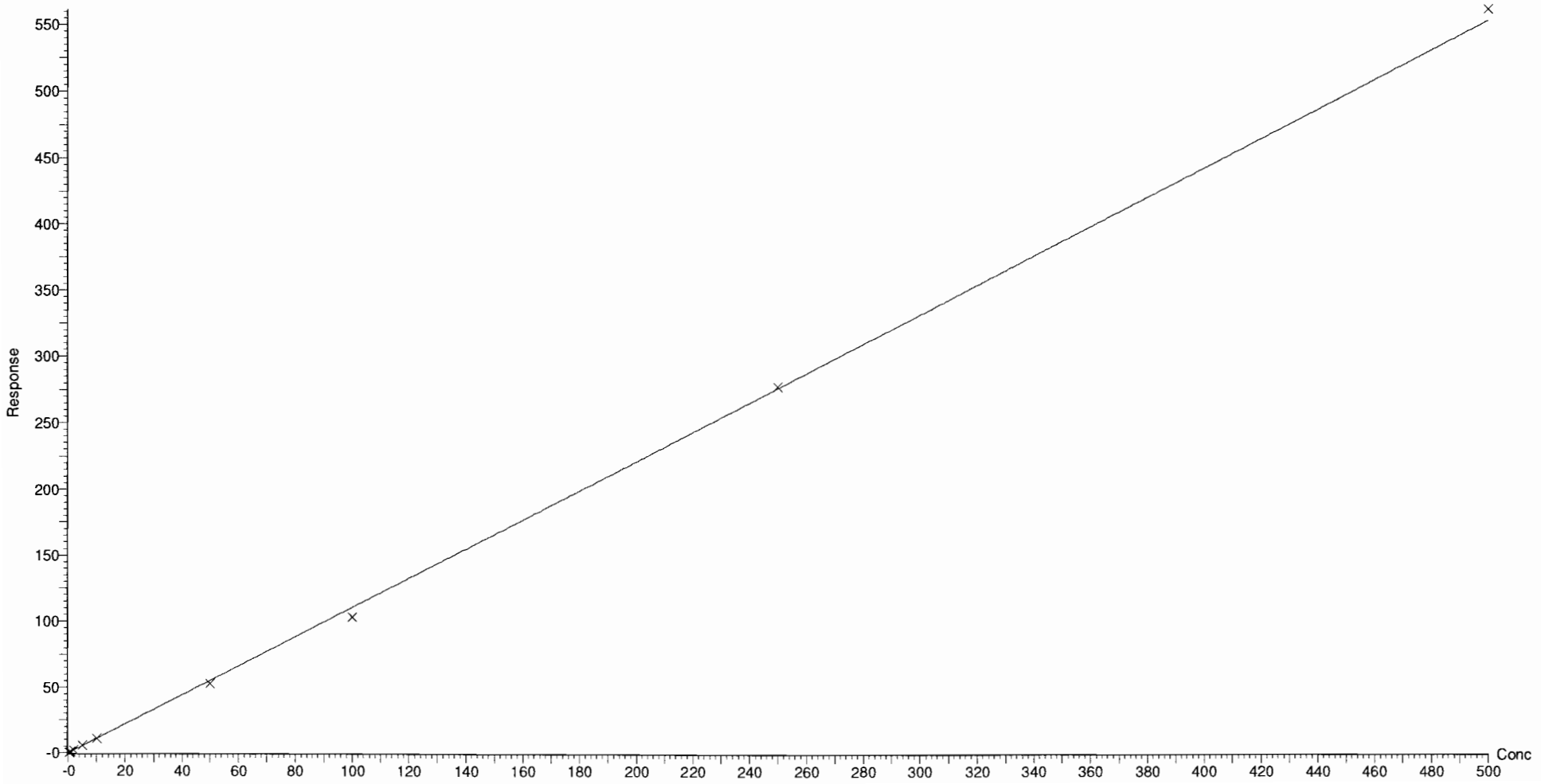
Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999647
Calibration curve: -0.000143866 * x^2 + 1.1409 * x + -0.0296806
Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

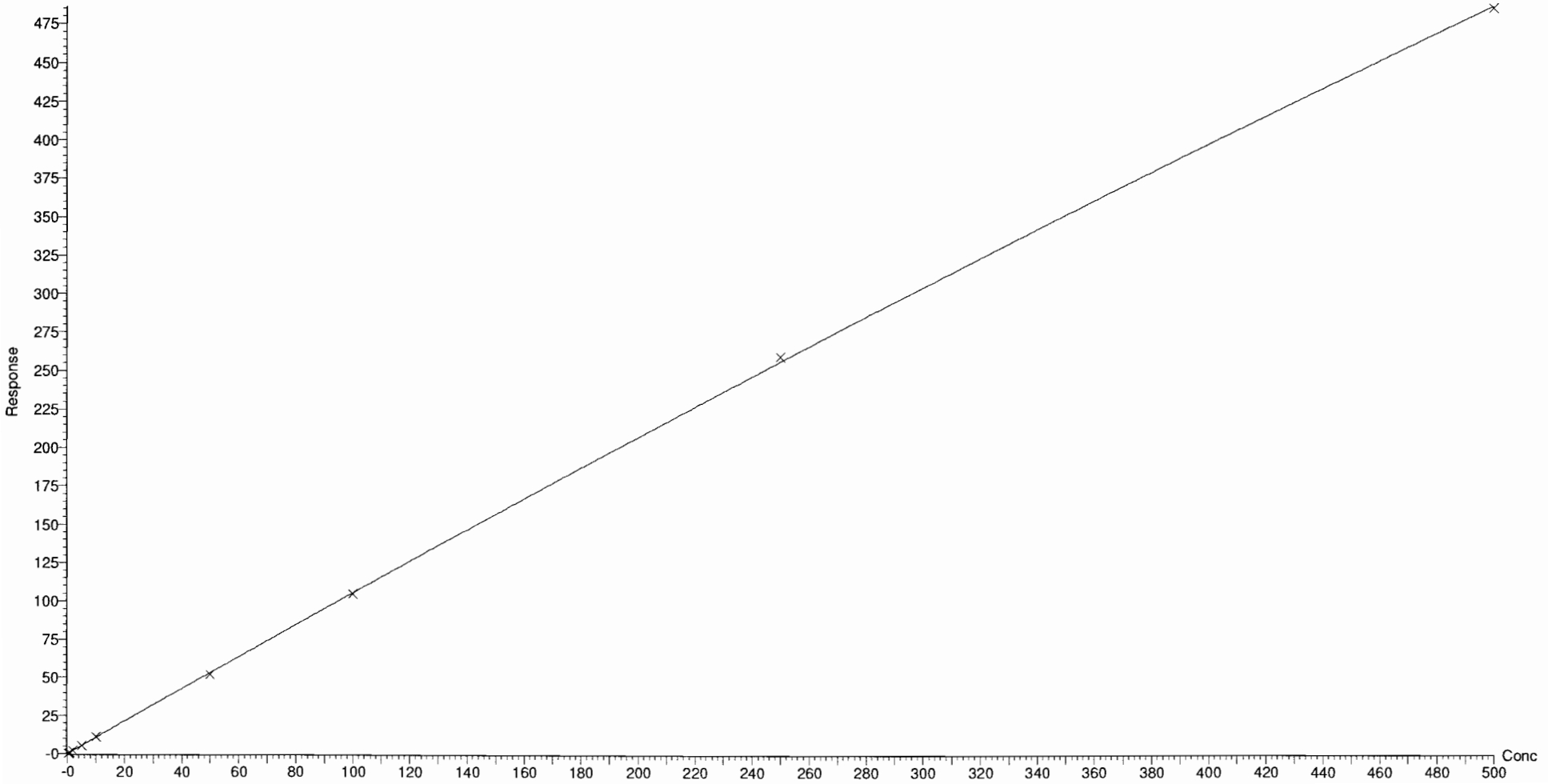
Compound name: L-PFOS
Correlation coefficient: r = 0.999643, r^2 = 0.999286
Calibration curve: 1.10611 * x + -0.0627829
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

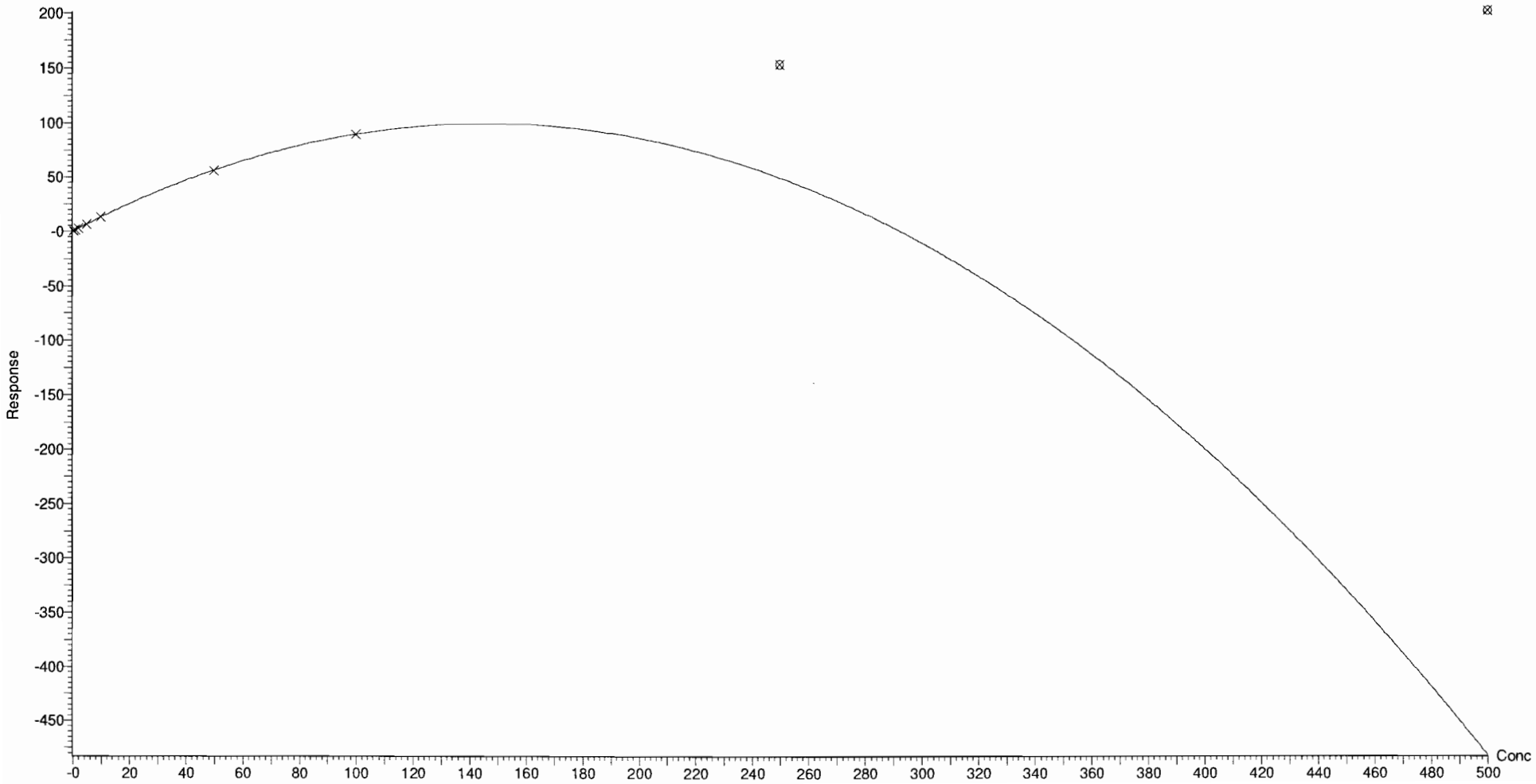
Compound name: PFDA
Coefficient of Determination: R^2 = 0.999864
Calibration curve: -0.000210024 * x^2 + 1.07747 * x + -0.0171268
Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

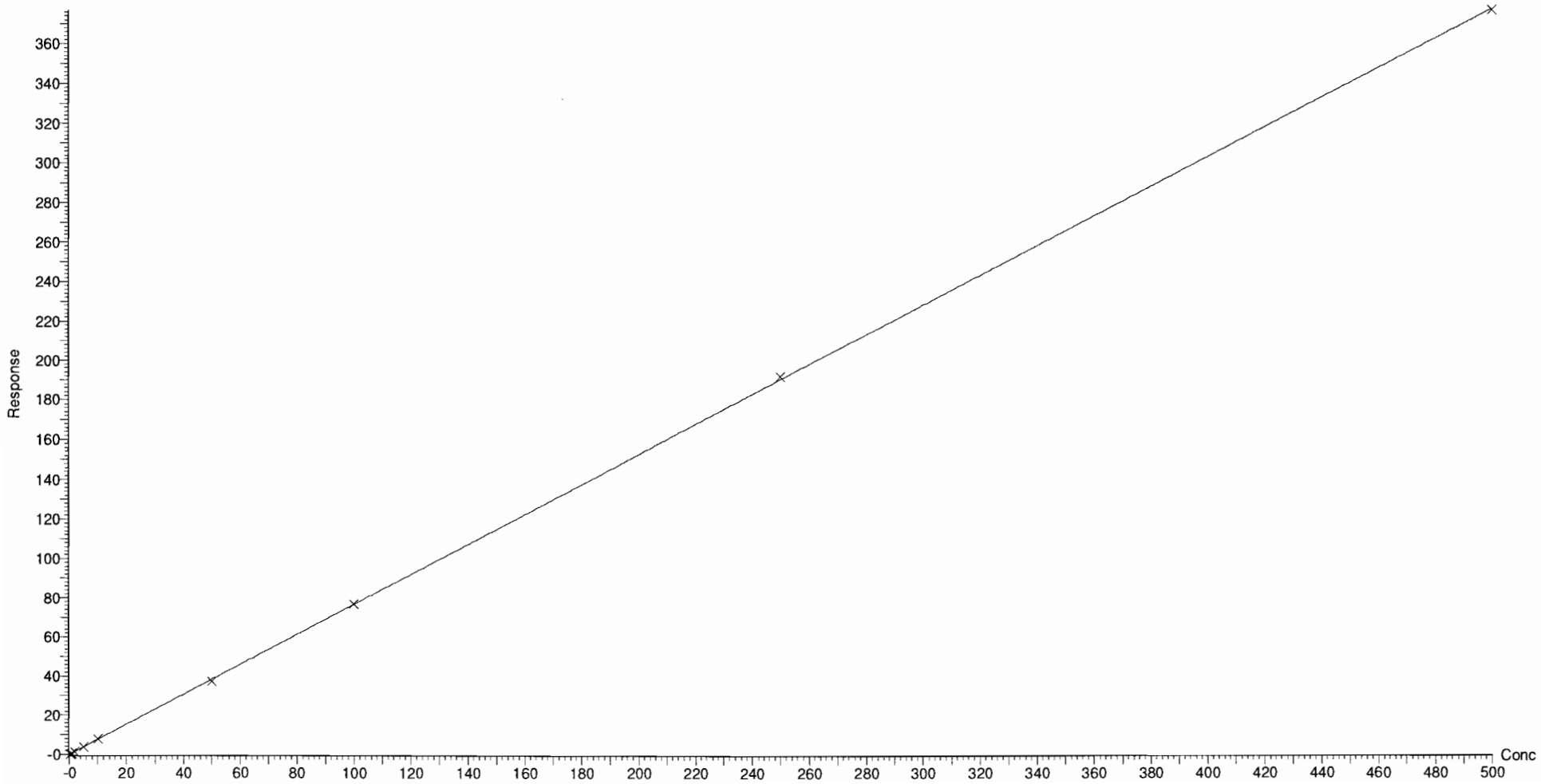
Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999875
Calibration curve: -0.00465207 * x^2 + 1.3615 * x + -0.0995875
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

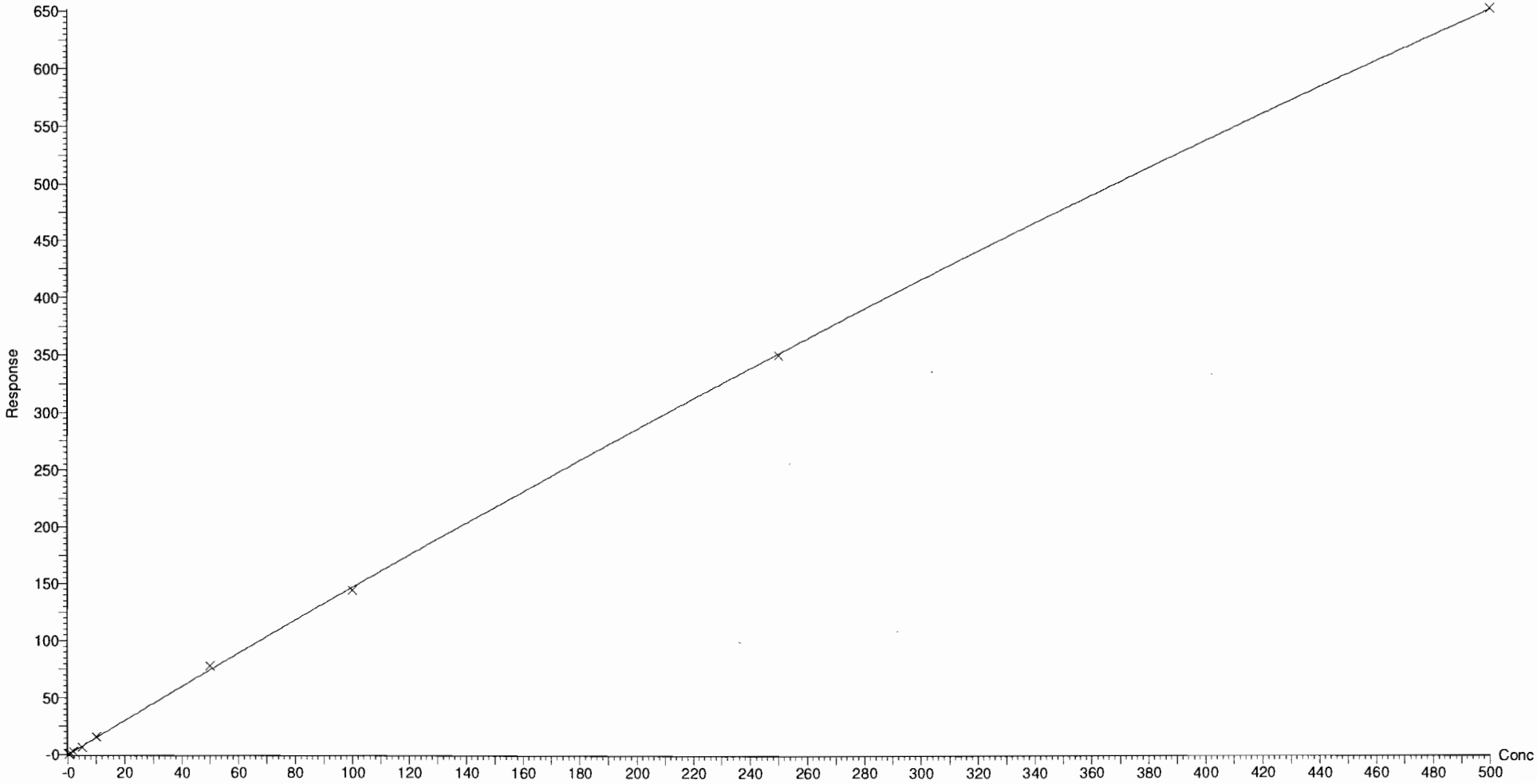
Compound name: PFNS
Coefficient of Determination: R^2 = 0.999902
Calibration curve: -2.99188e-005 * x^2 + 0.768689 * x + 0.0389701
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999677
Calibration curve: -0.000422706 * x^2 + 1.51286 * x + -0.0237577
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

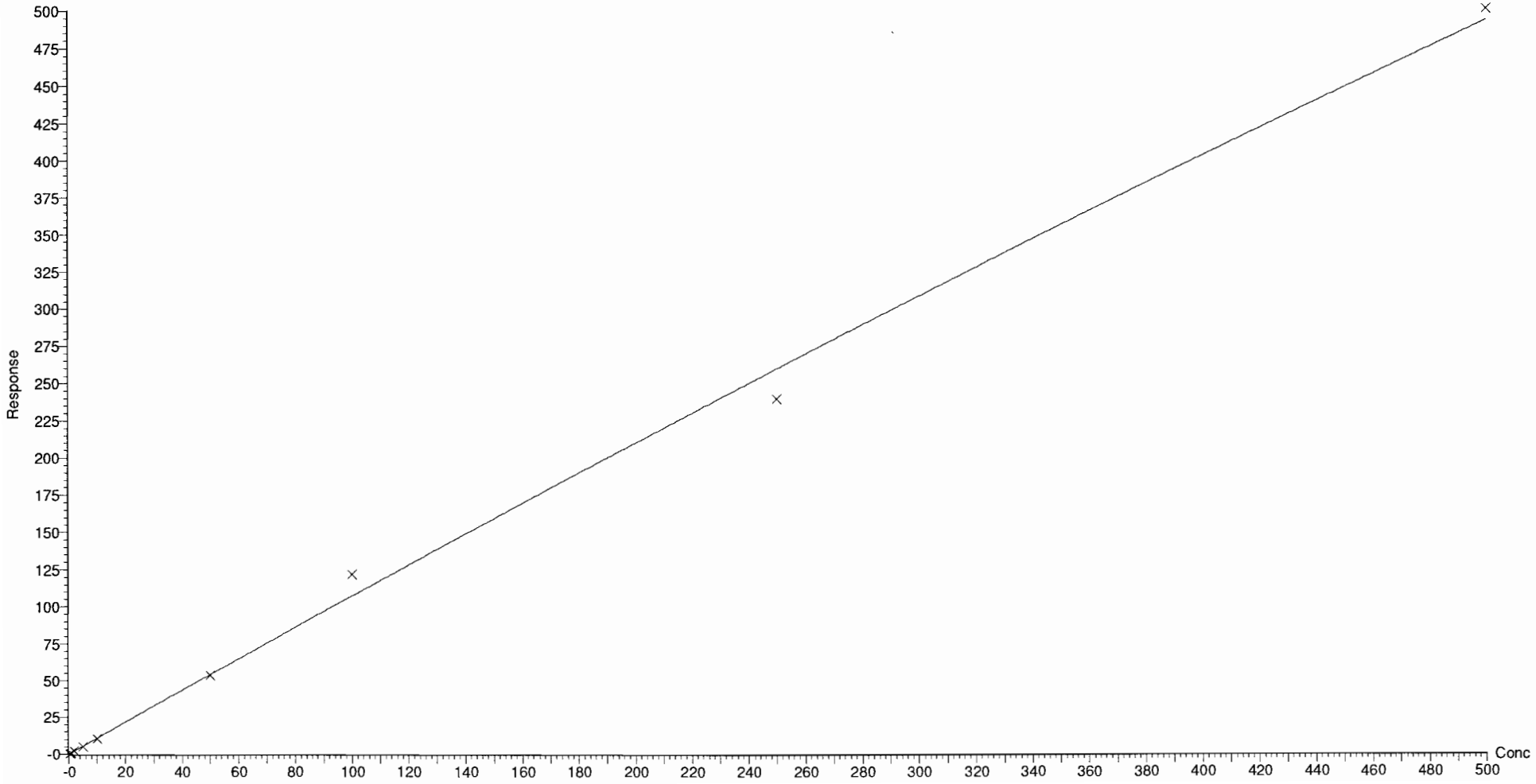


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:06 Pacific Standard Time

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.995820
Calibration curve: -0.000217066 * x^2 + 1.09478 * x + -0.0924104
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



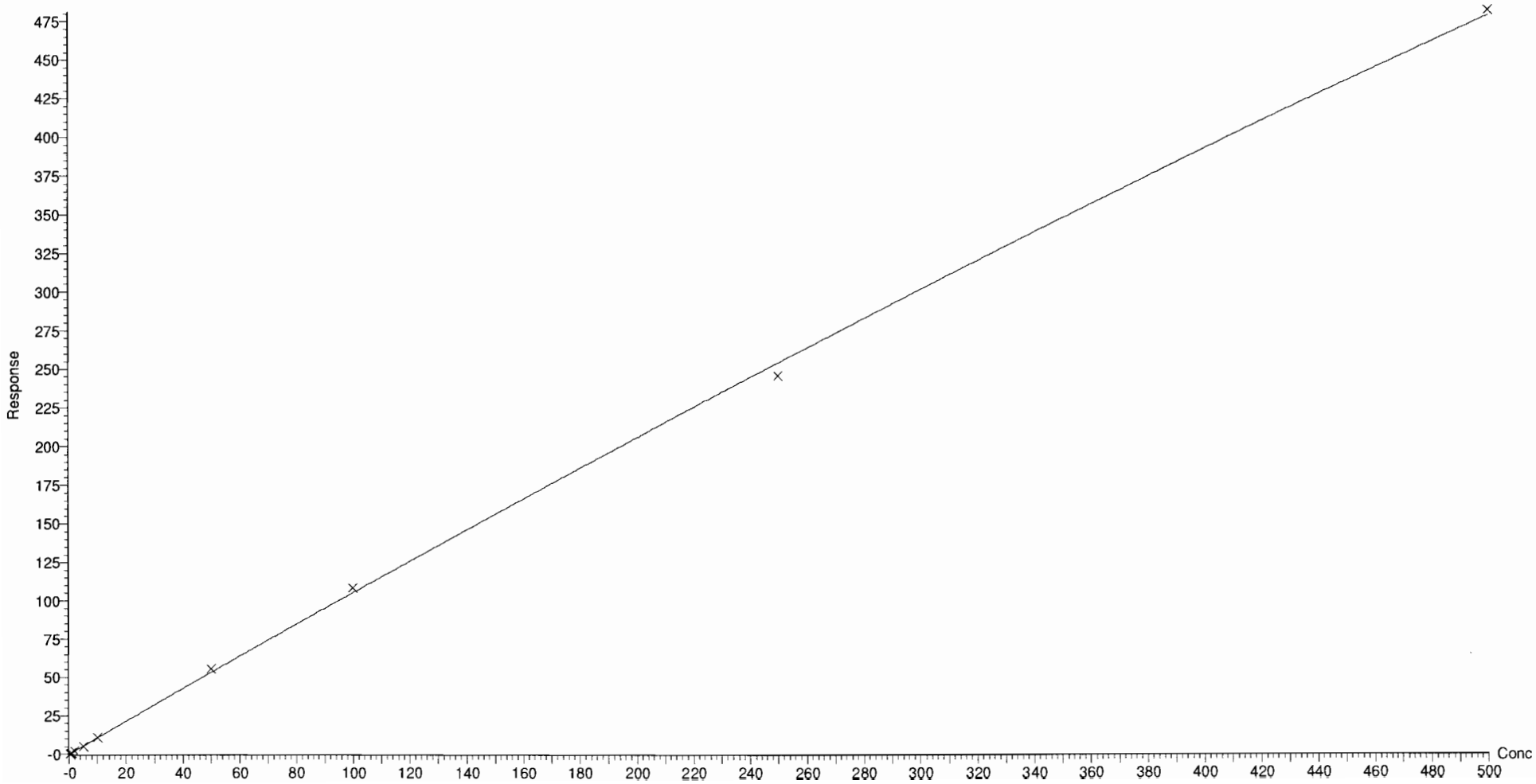
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999432
Calibration curve: -0.000244716 * x^2 + 1.07792 * x + 0.000271046
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

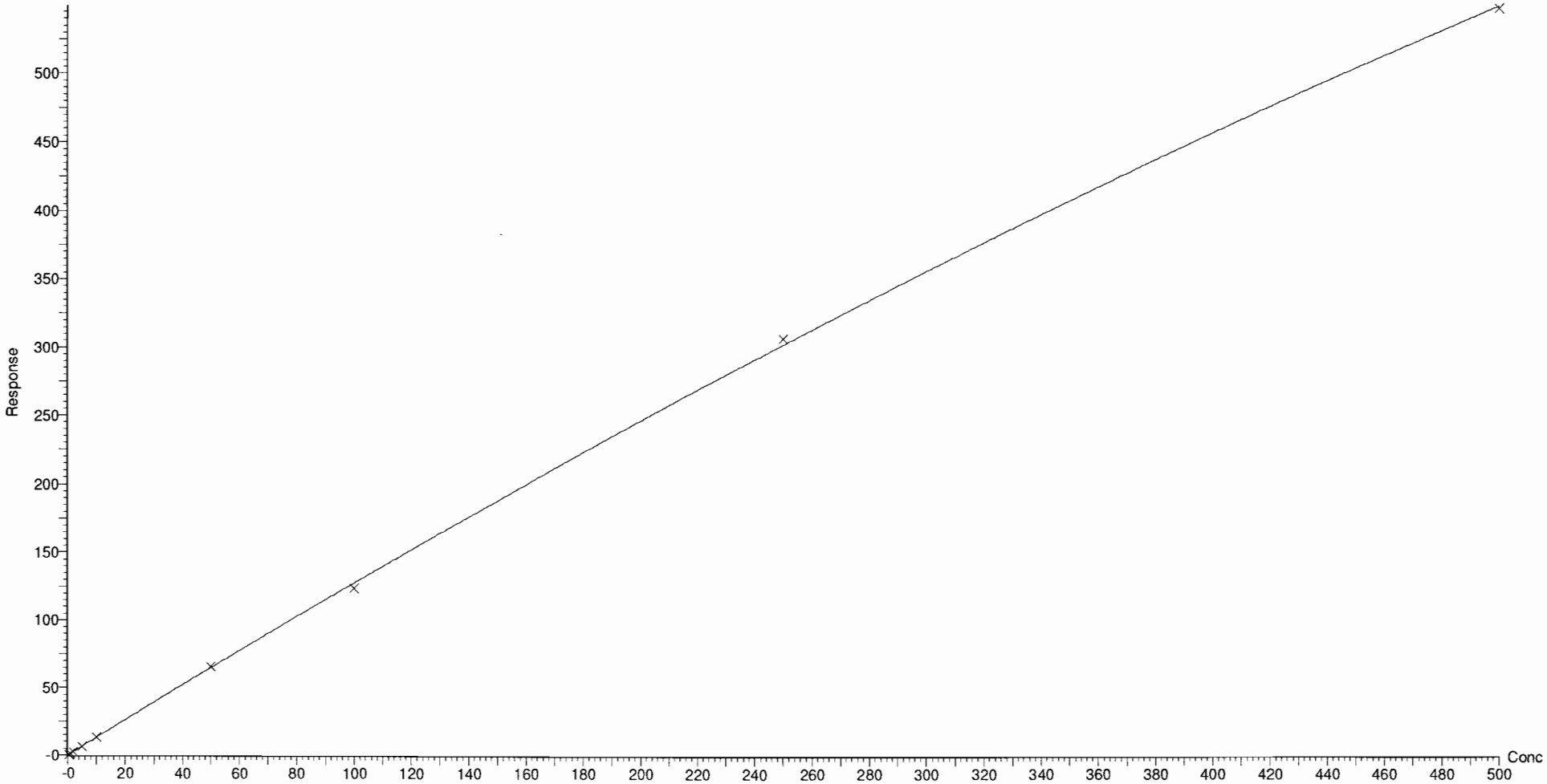
Compound name: PFDS
Coefficient of Determination: R^2 = 0.999683
Calibration curve: 7.56593e-005 * x^2 + 0.811719 * x + 0.0648879
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

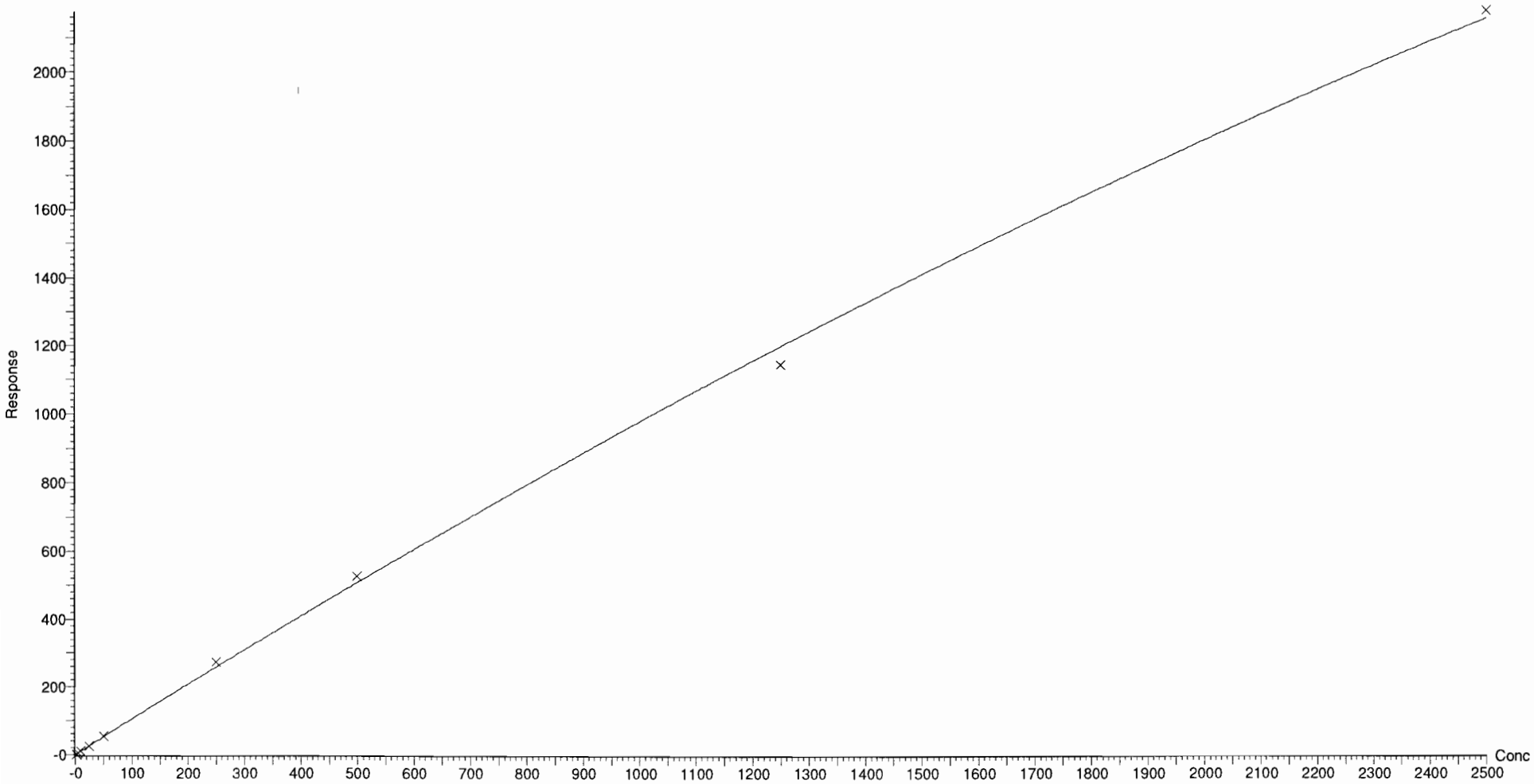
Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999795
Calibration curve: -0.000443961 * x^2 + 1.32023 * x + -0.000921135
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

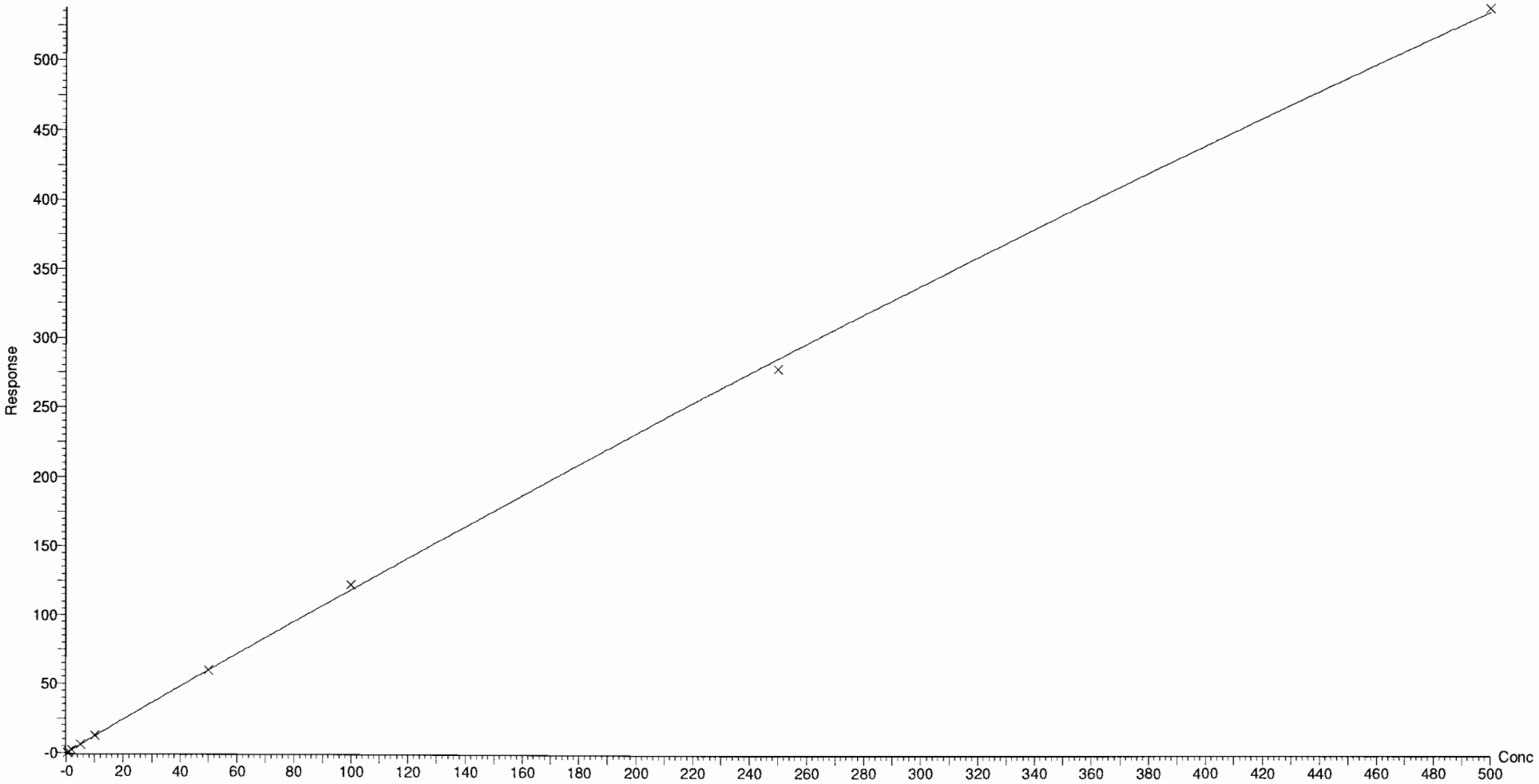
Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.998909
Calibration curve: -7.79408e-005 * x^2 + 1.05657 * x + -0.0424732
Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

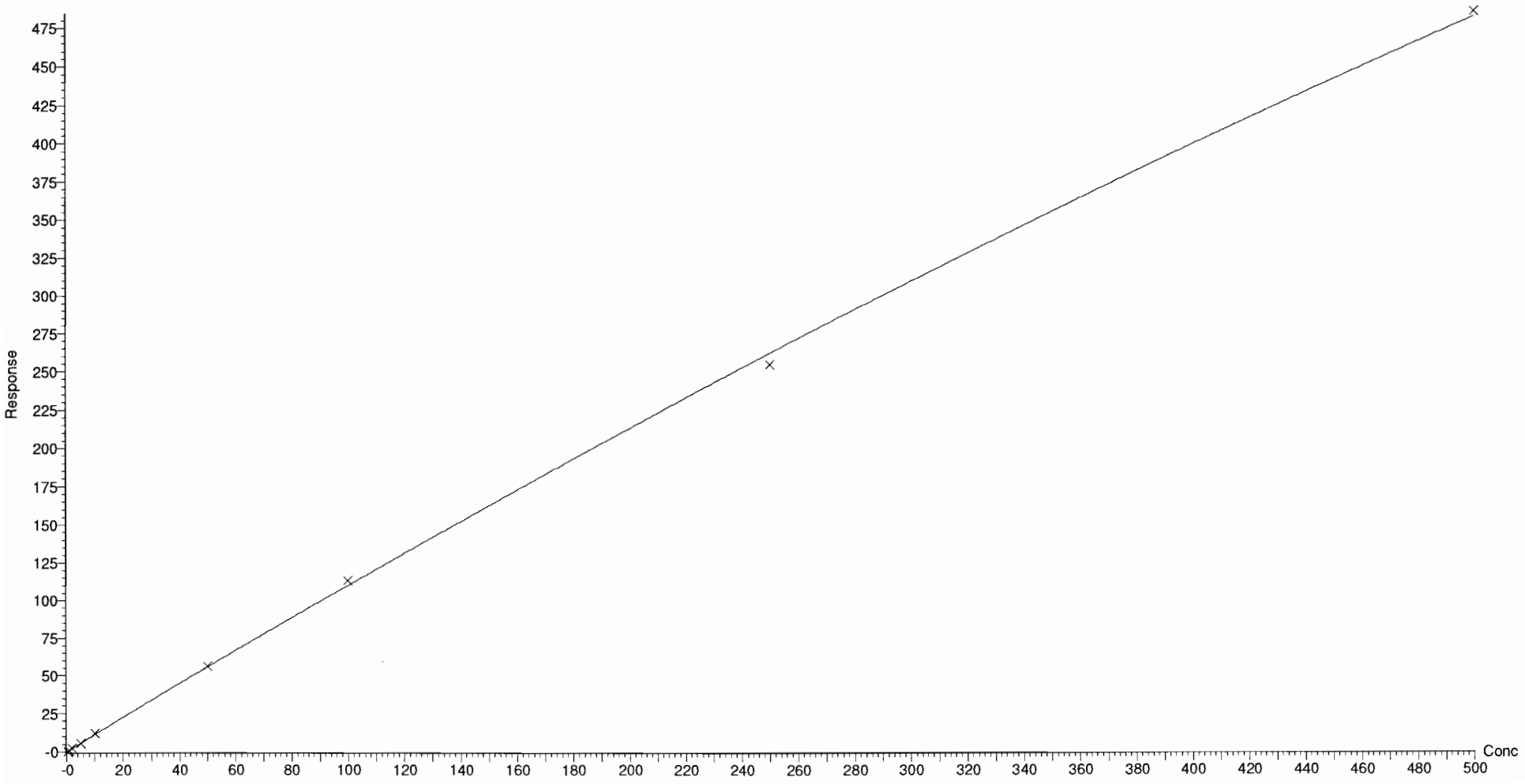
Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999656
Calibration curve: -0.000291719 * x^2 + 1.21601 * x + 0.00941256
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999493
Calibration curve: -0.000343362 * x^2 + 1.13504 * x + 0.00135132
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

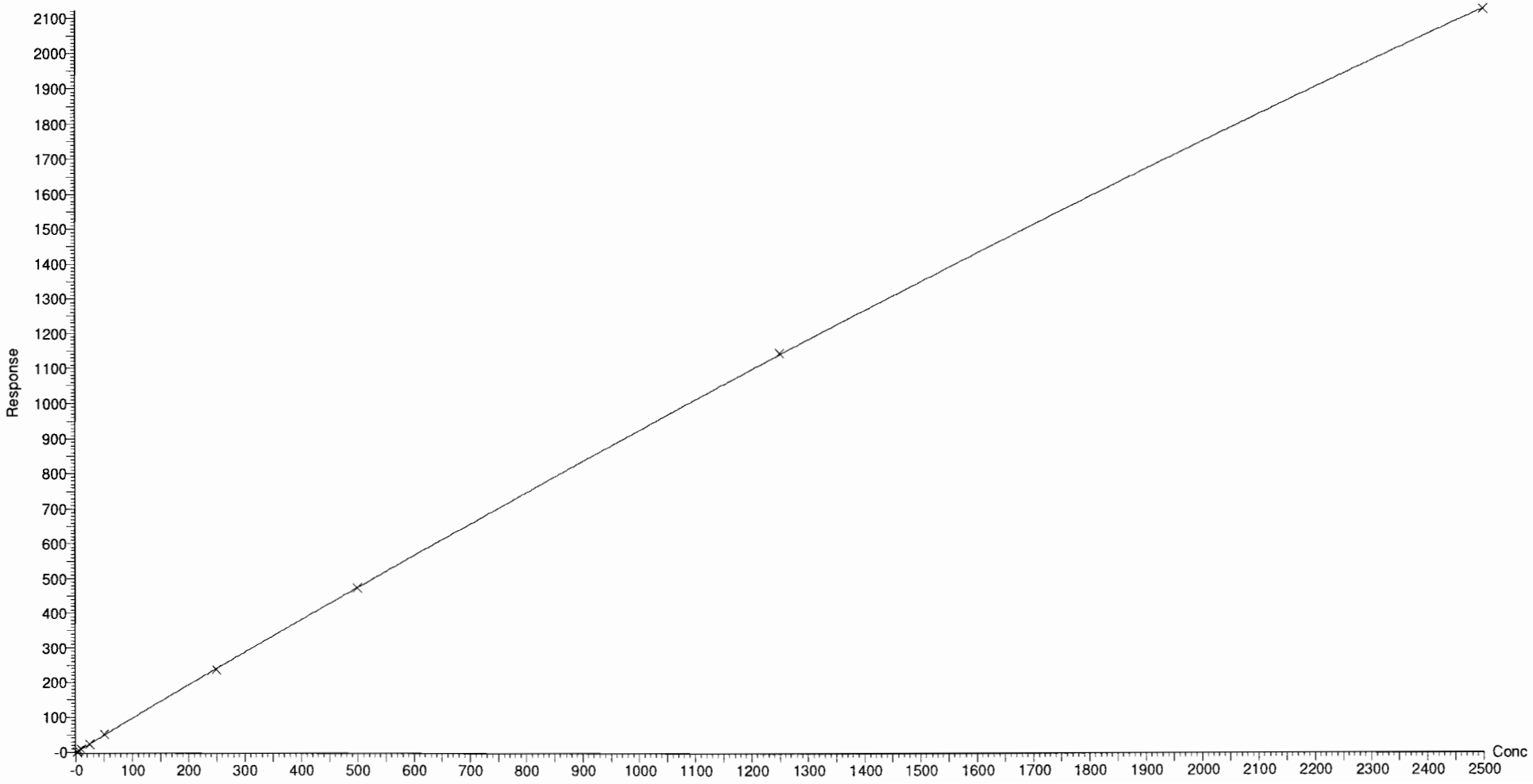


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999912
Calibration curve: -4.97469e-005 * x^2 + 0.973269 * x + -0.0114563
Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

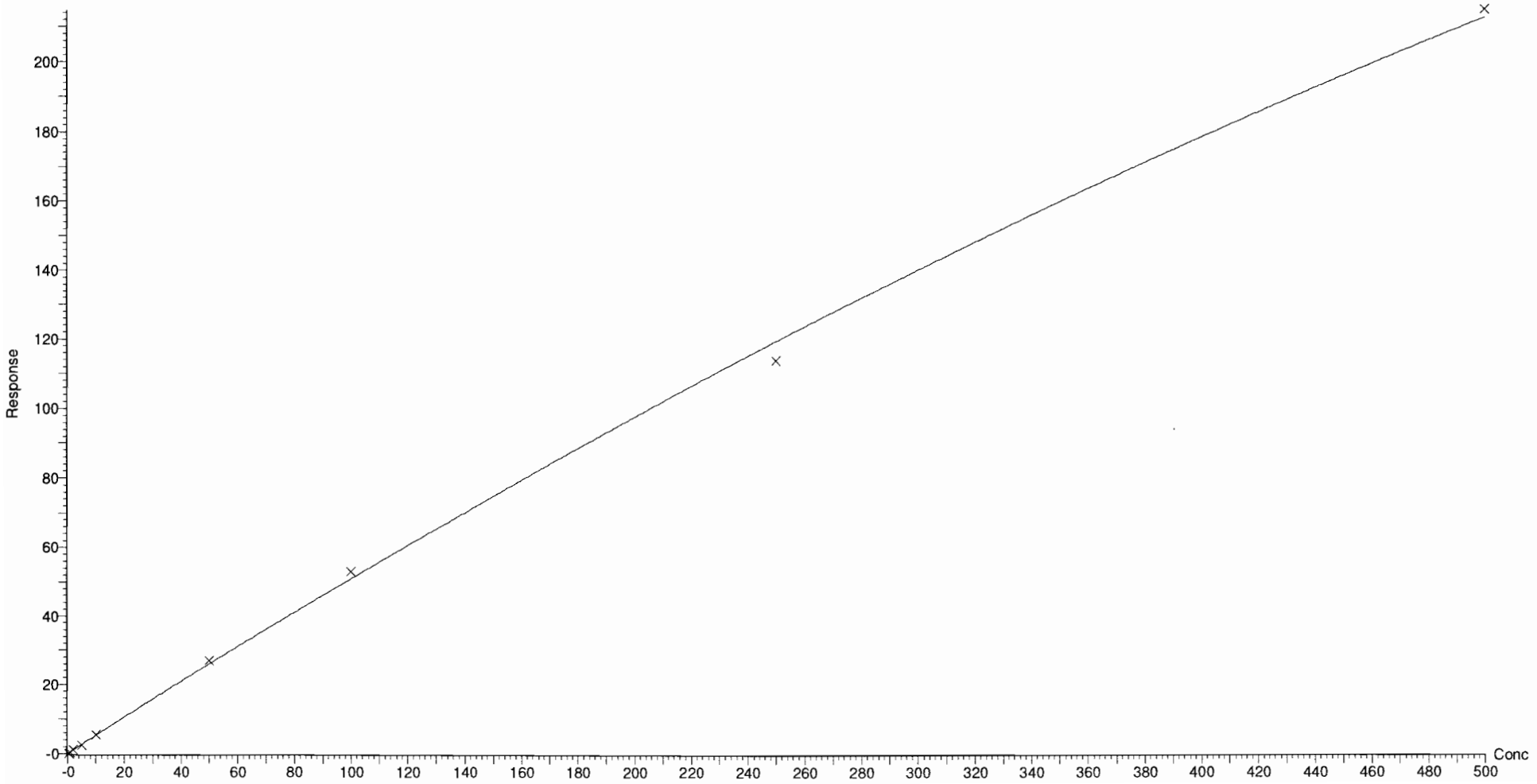


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

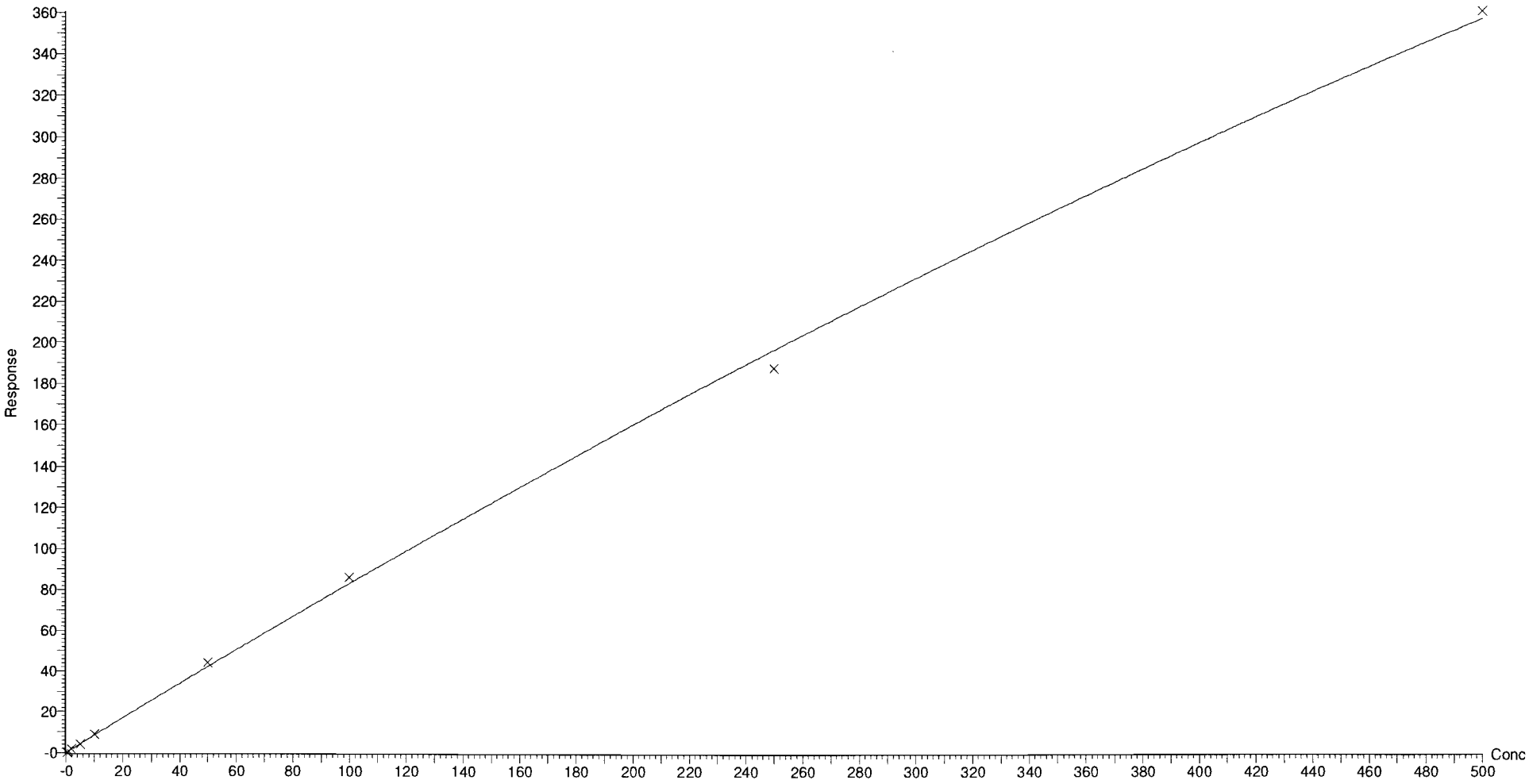
Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.998811
Calibration curve: -0.000210664 * x^2 + 0.529999 * x + 0.0560111
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

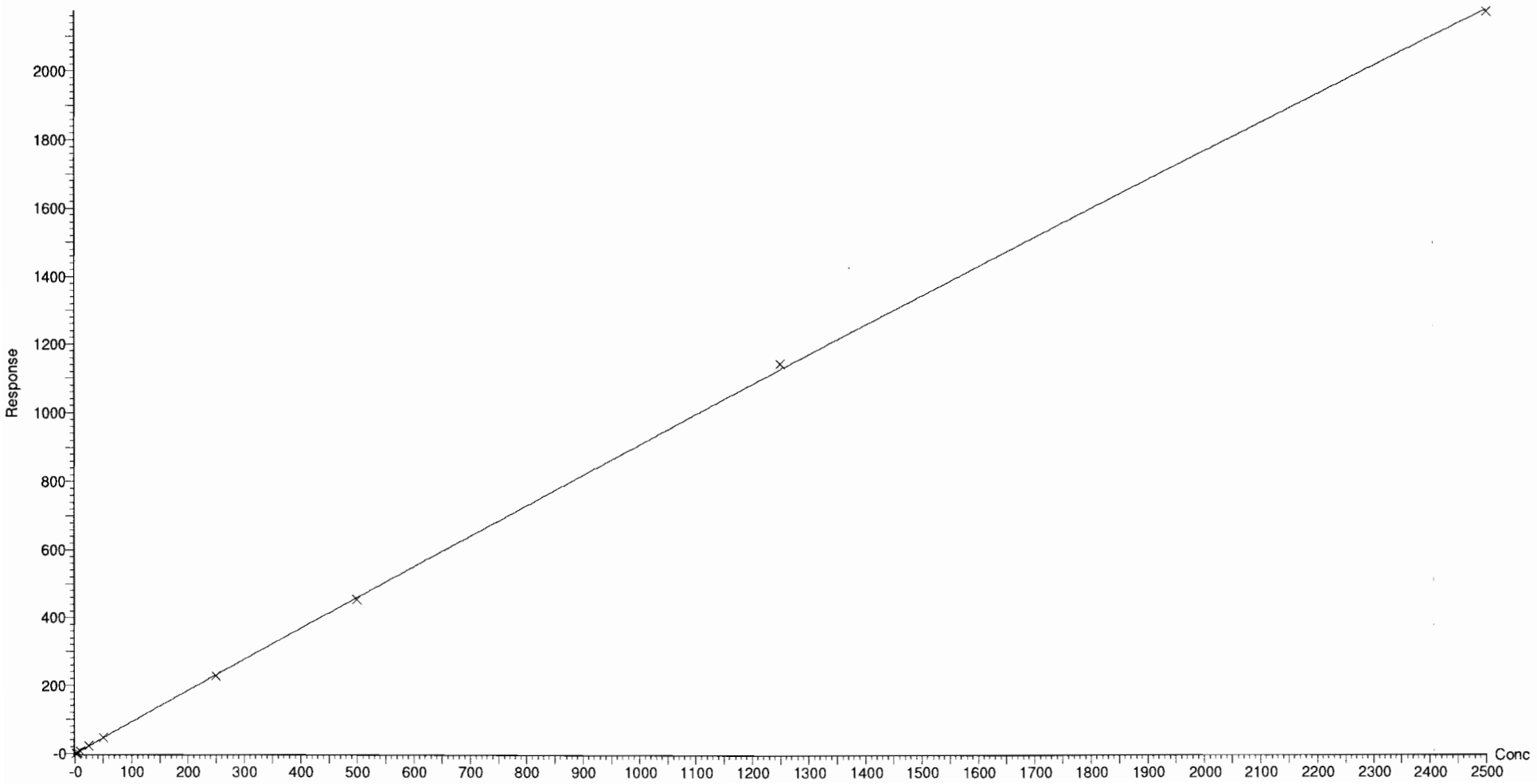
Compound name: PFODA
Coefficient of Determination: R^2 = 0.998954
Calibration curve: -0.000288047 * x^2 + 0.858197 * x + 0.0110406
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

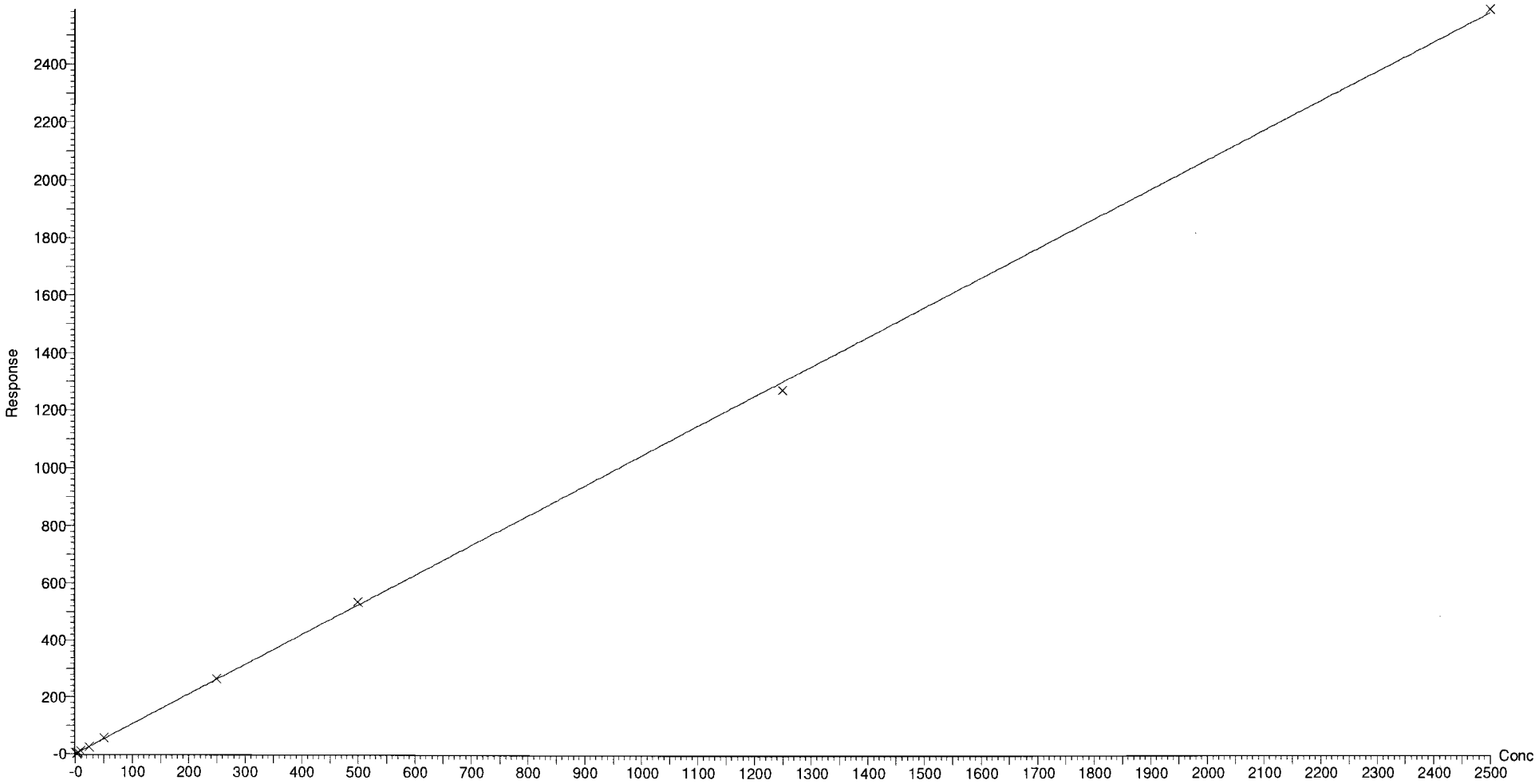
Compound name: N-MeFOSE
Coefficient of Determination: R^2 = 0.999899
Calibration curve: -2.49953e-005 * x^2 + 0.933355 * x + -0.466455
Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 11:43:24 Pacific Standard Time

Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.999728
Calibration curve: -8.31447e-006 * x^2 + 1.05163 * x + 0.0451426
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



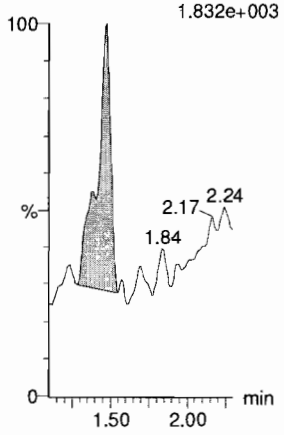
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

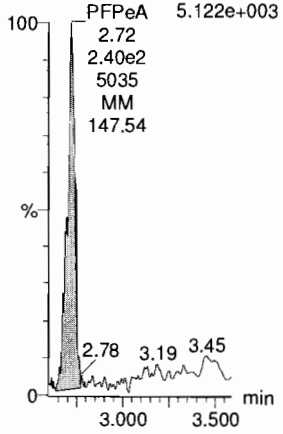
Method: F:\Projects\PFAS.PRO\Results\181202M2\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

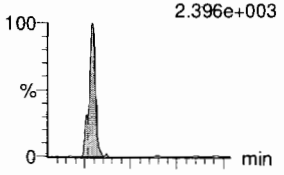
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
1.832e+003



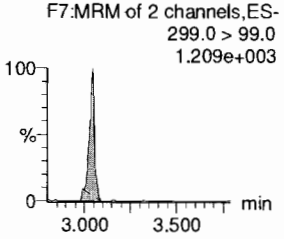
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
5.122e+003
PFPeA
2.72
2.40e2
5035
MM
147.54



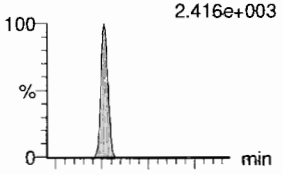
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
2.396e+003



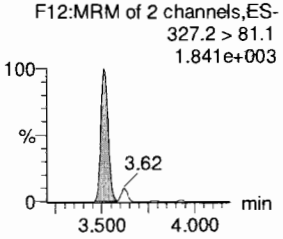
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.209e+003



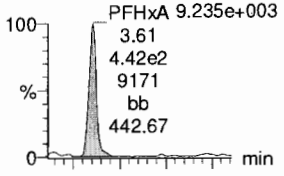
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
2.416e+003



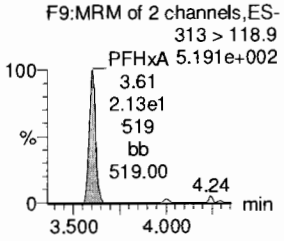
F12:MRM of 2 channels,ES-
327.2 > 81.1
1.841e+003



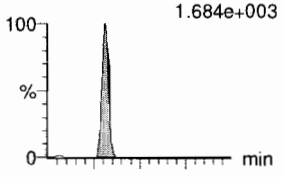
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
PFHxA 9.235e+003
3.61
4.42e2
9171
bb
442.67



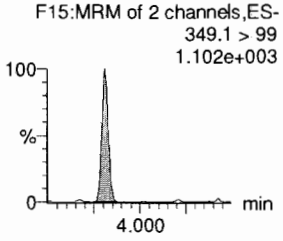
F9:MRM of 2 channels,ES-
313 > 118.9
PFHxA 5.191e+002
3.61
2.13e1
519
bb
519.00
4.24



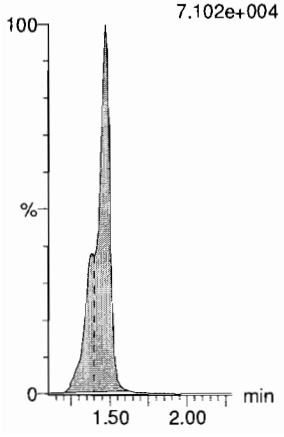
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
1.684e+003



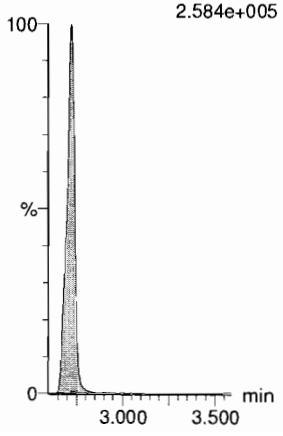
F15:MRM of 2 channels,ES-
349.1 > 99
1.102e+003



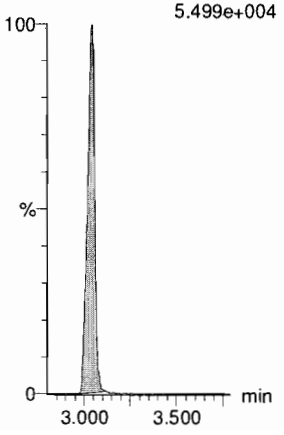
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
7.102e+004



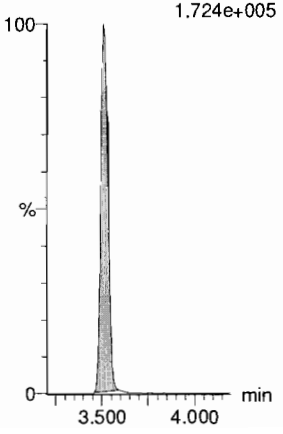
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.584e+005



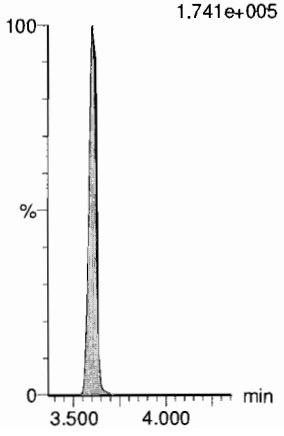
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
5.499e+004



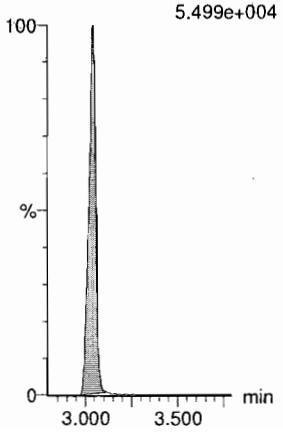
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.724e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
1.741e+005



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
5.499e+004

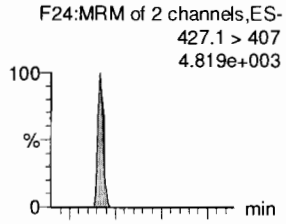


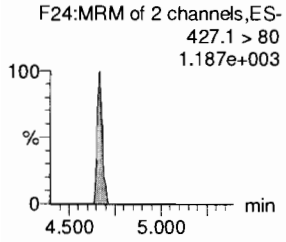
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

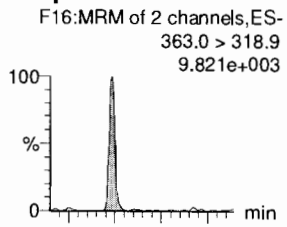
Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

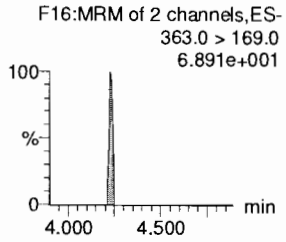
6:2 FTS



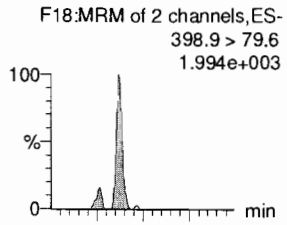


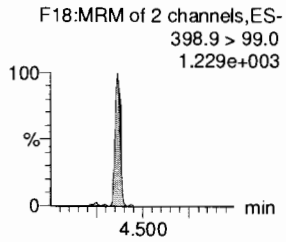
PFHpA



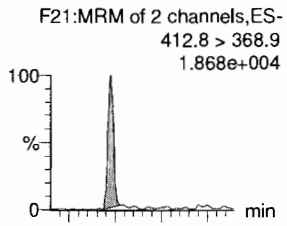


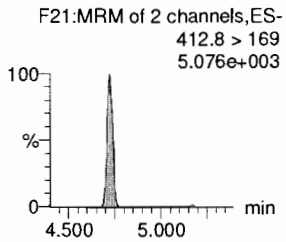
L-PFHxS



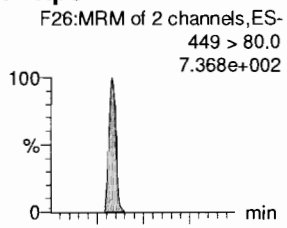


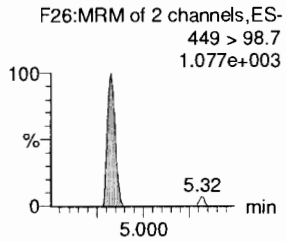
L-PFOA



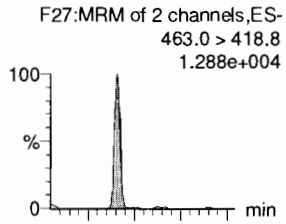


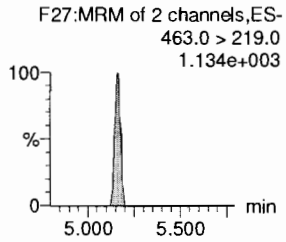
PFHpS



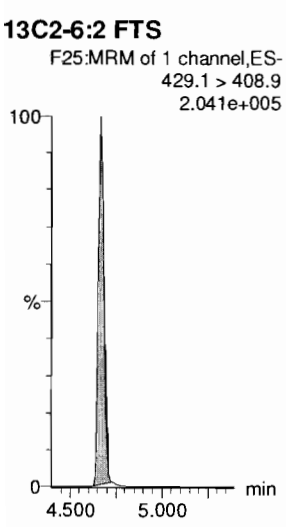


PFNA

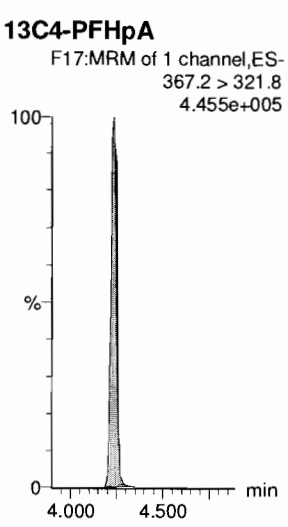




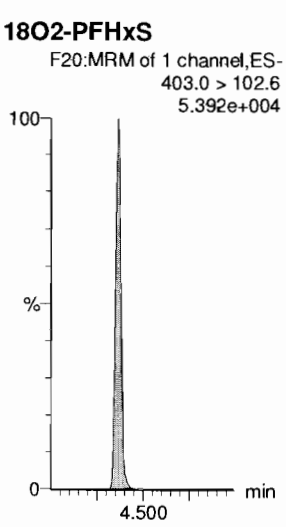
13C2-6:2 FTS



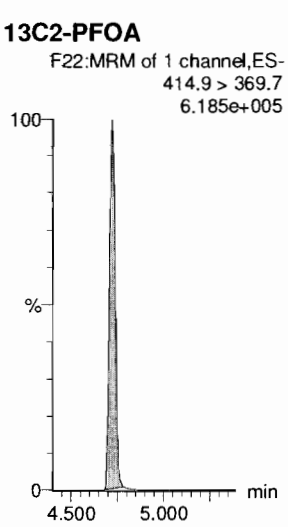
13C4-PFHpA



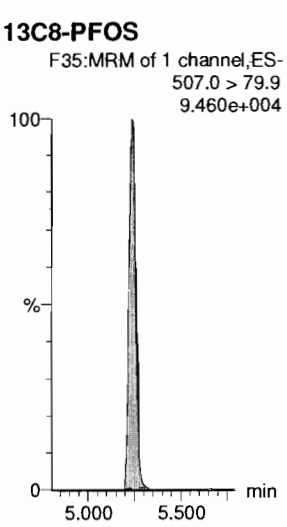
18O2-PFHxS



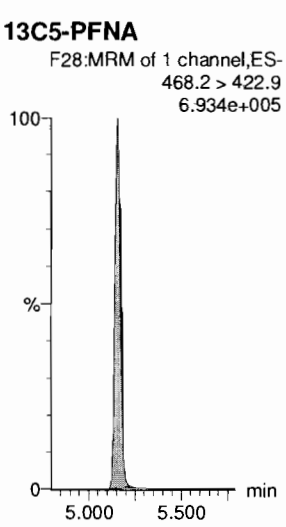
13C2-PFOA



13C8-PFOS



13C5-PFNA

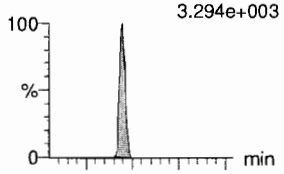


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

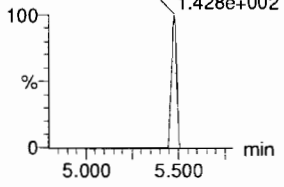
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

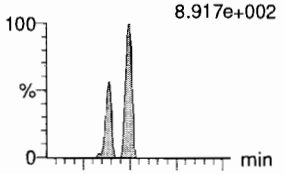
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
3.294e+003



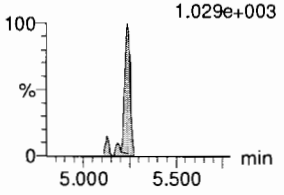
F30:MRM of 2 channels,ES-
497.9 > 169
5.48 1.428e+002



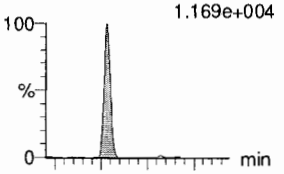
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
8.917e+002



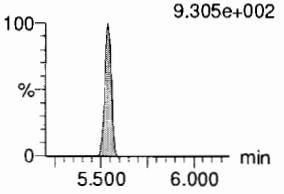
F32:MRM of 2 channels,ES-
498.9 > 99
1.029e+003



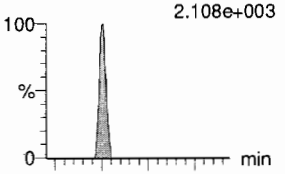
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
1.169e+004



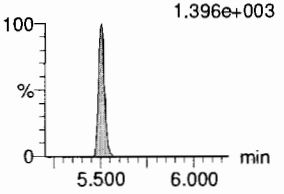
F37:MRM of 2 channels,ES-
513 > 219
9.305e+002



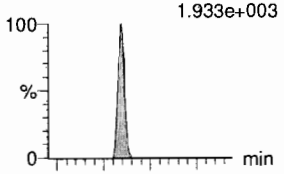
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
2.108e+003



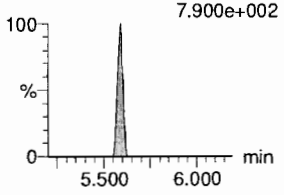
F42:MRM of 2 channels,ES-
527 > 80
1.396e+003



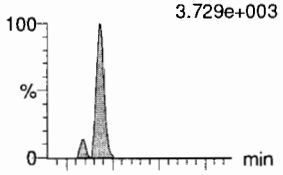
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
1.933e+003



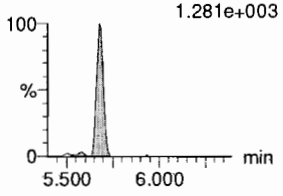
F45:MRM of 2 channels,ES-
549.1 > 99.1
7.900e+002



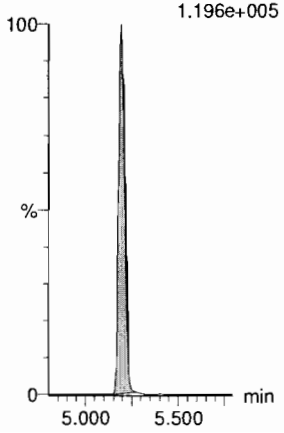
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
3.729e+003



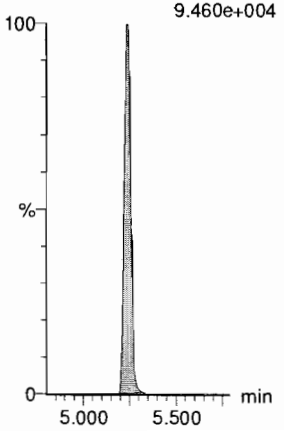
F48:MRM of 2 channels,ES-
570. > 512
1.281e+003



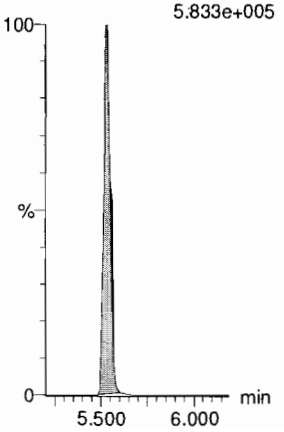
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.196e+005



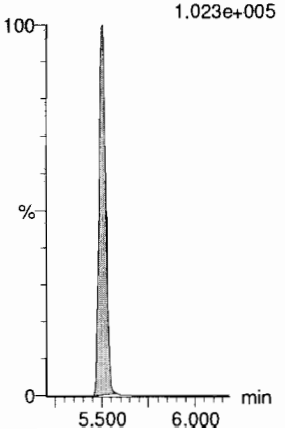
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.460e+004



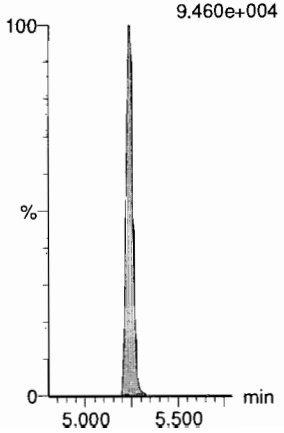
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.833e+005



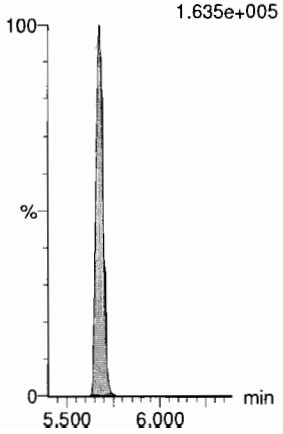
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
1.023e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.460e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.635e+005

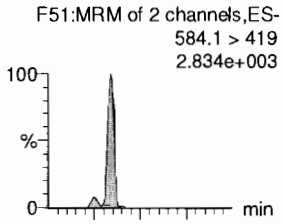


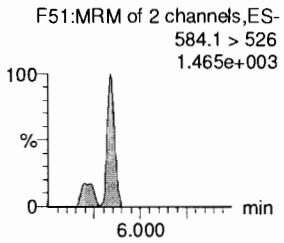
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

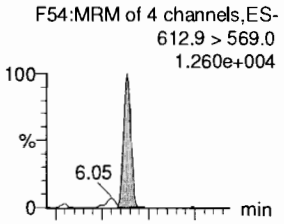
Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

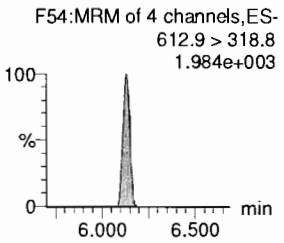
L-EtFOSAA



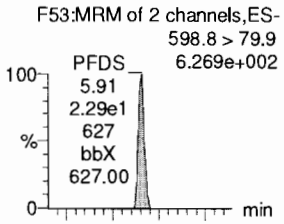


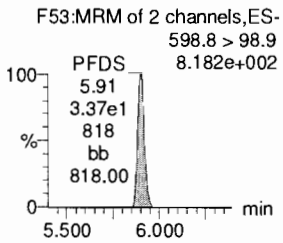
PFDoA



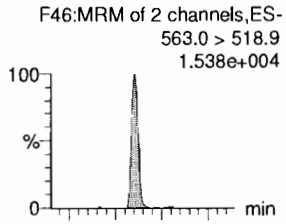


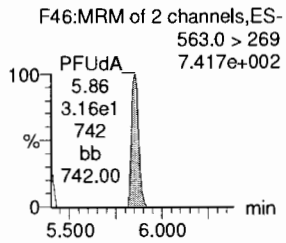
PFDS



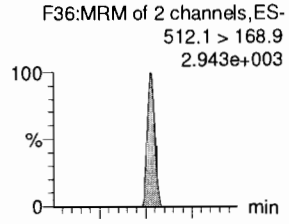


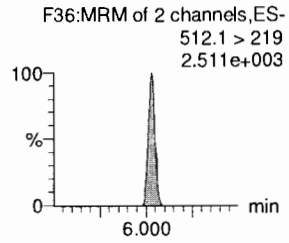
PFUdA



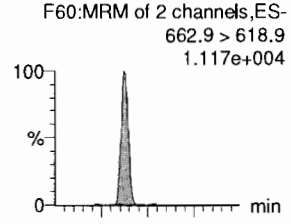


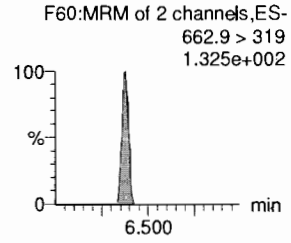
N-MeFOSA



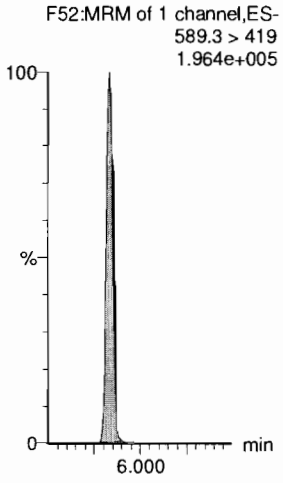


PFTrDA

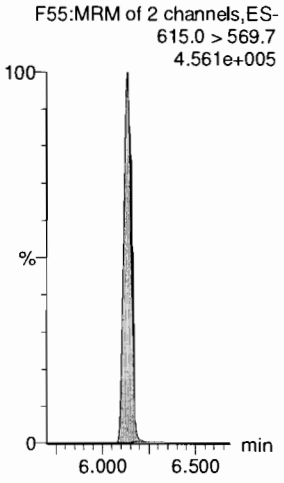




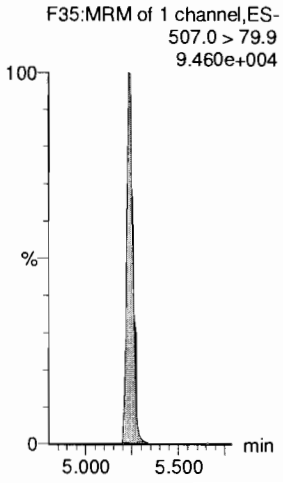
d5-N-EtFOSAA



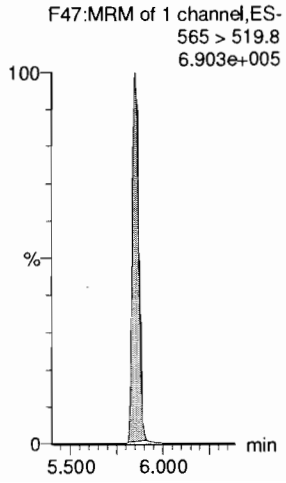
13C2-PFDoA



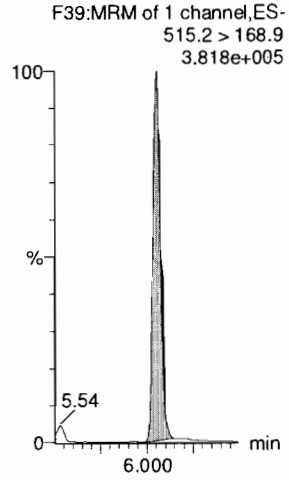
13C8-PFOS



13C2-PFUdA



d3-N-MeFOSA



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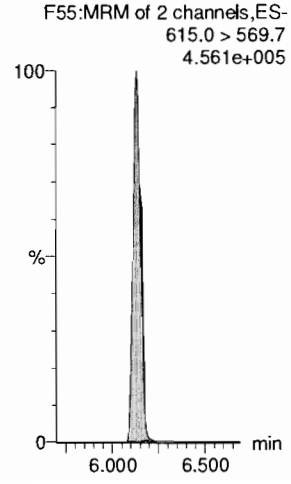

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

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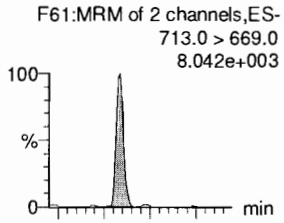

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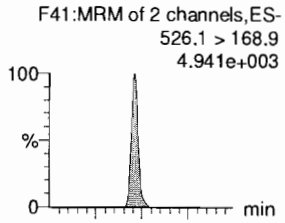
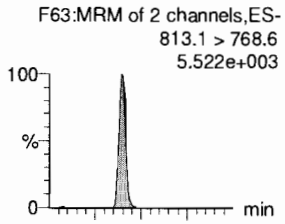
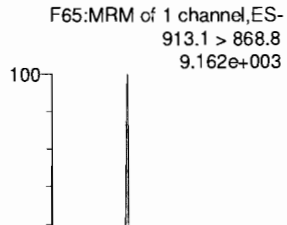


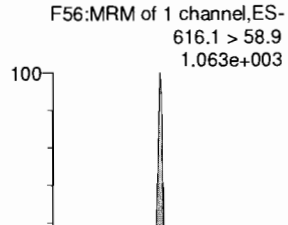
PFHxDA



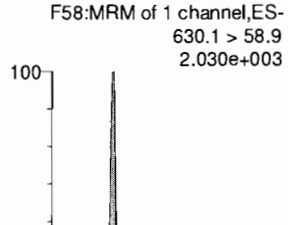
PFODA



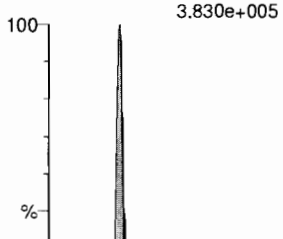
N-MeFOSE



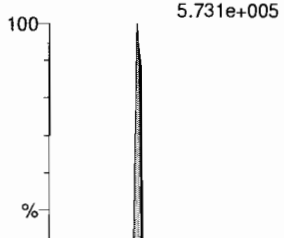
N-EtFOSE



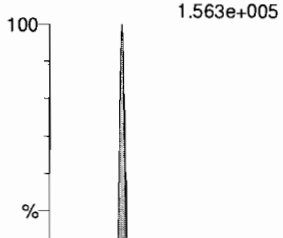
13C2-PFTeDA



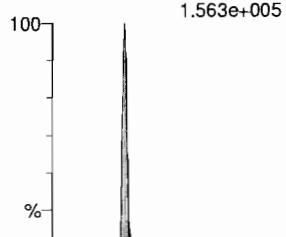
d5-N-ETFOSA



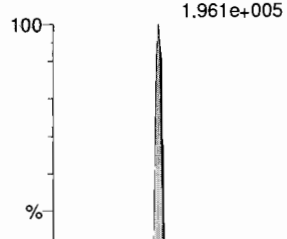
13C2-PFHxDA



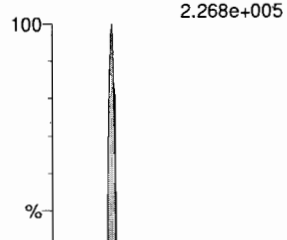
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

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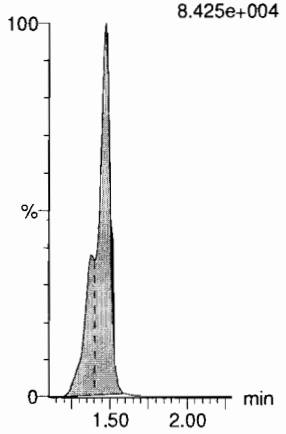
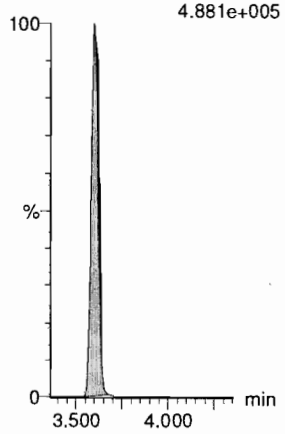
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_2, Date: 02-Dec-2018, Time: 18:34:57, ID: ST181202M2-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

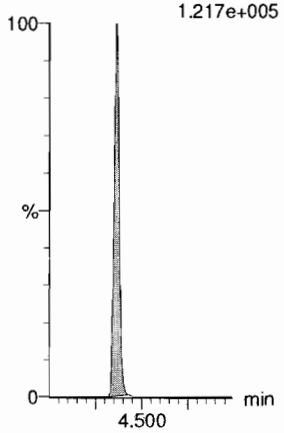
13C4-PFBA



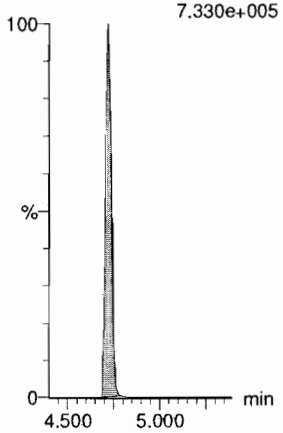
13C5-PFHxA



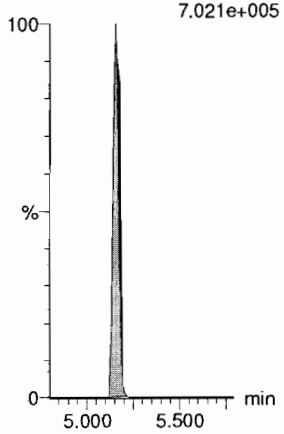
13C3-PFHxS



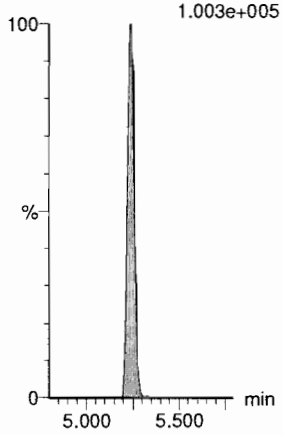
13C8-PFOA



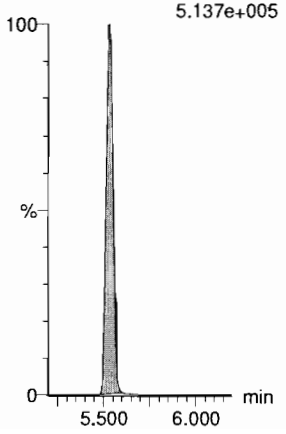
13C9-PFNA



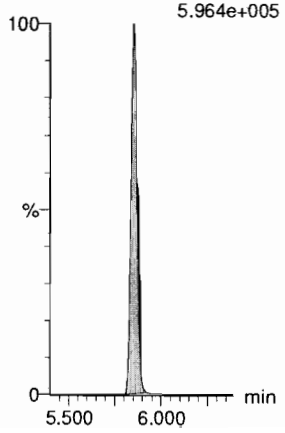
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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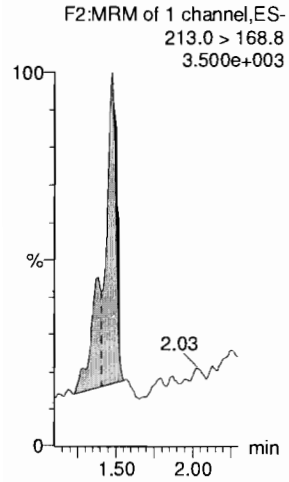
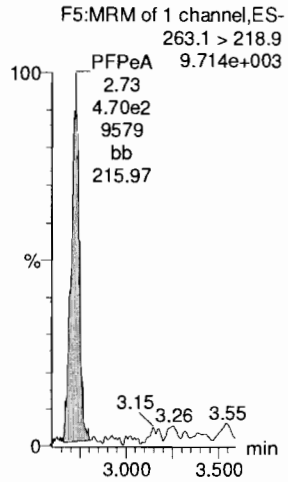
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_3, Date: 02-Dec-2018, Time: 18:45:35, ID: ST181202M2-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

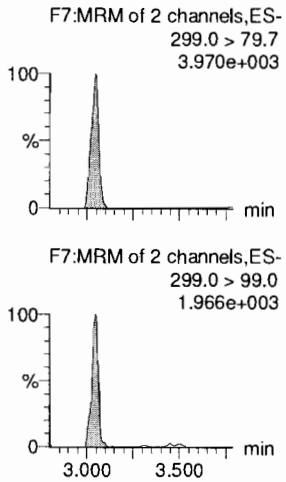
PFBA



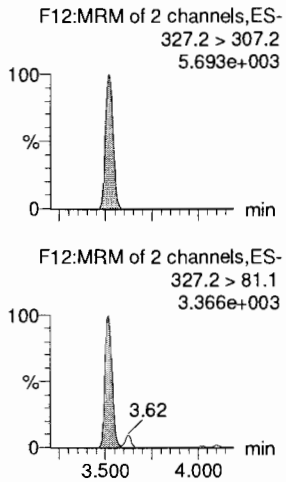
PFPeA



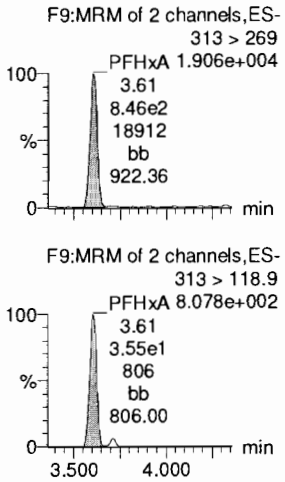
PFBS



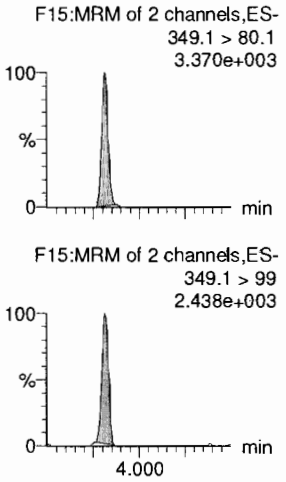
4:2 FTS



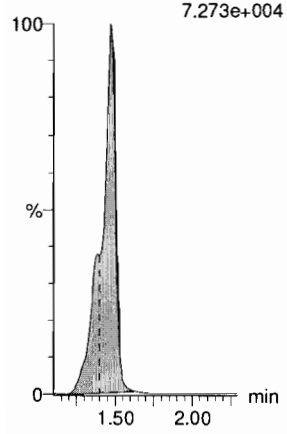
PFHxA



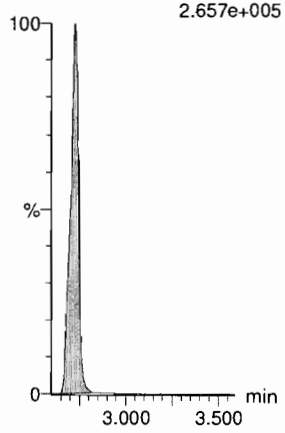
PFPeS



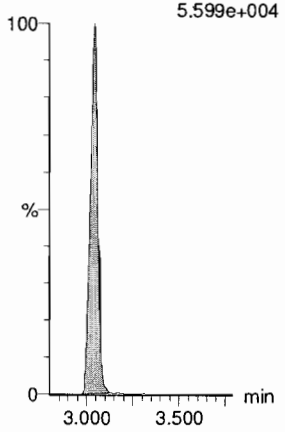
13C3-PFBA



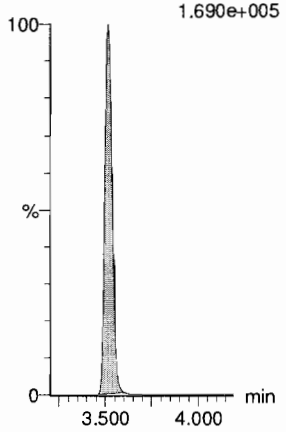
13C3-PFPeA



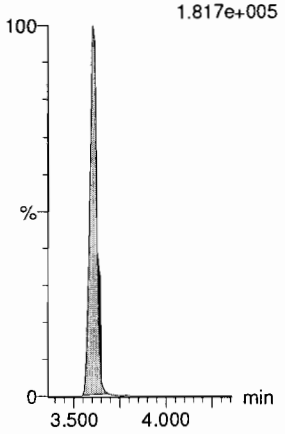
13C3-PFBS



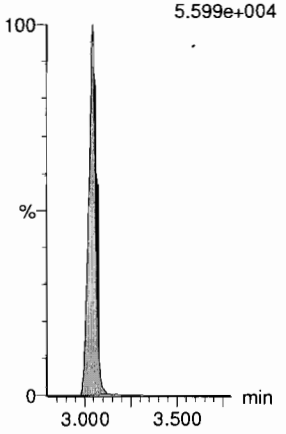
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

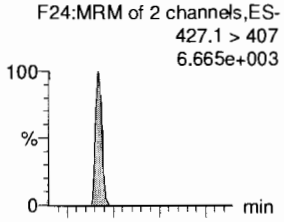


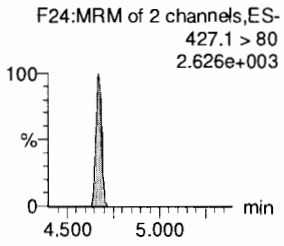
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

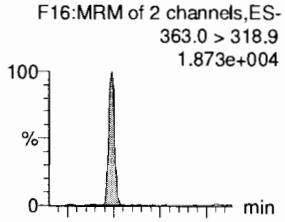
Name: 181202M2_3, Date: 02-Dec-2018, Time: 18:45:35, ID: ST181202M2-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

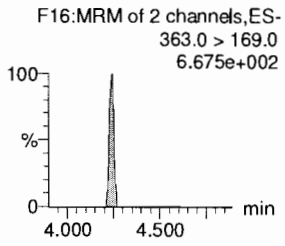
6:2 FTS



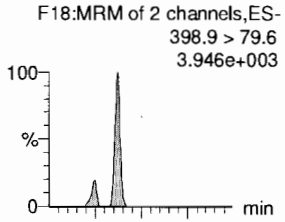


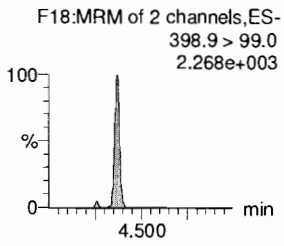
PFHpA



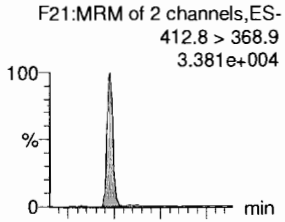


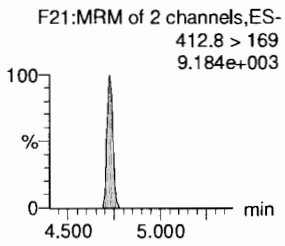
L-PFHxS



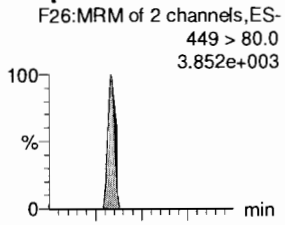


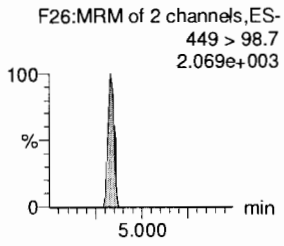
L-PFOA



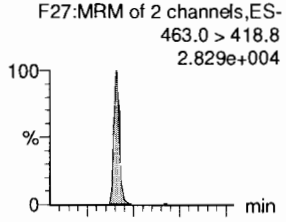


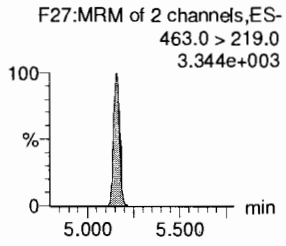
PFHpS



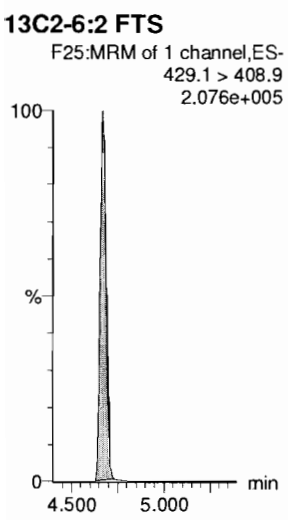


PFNA

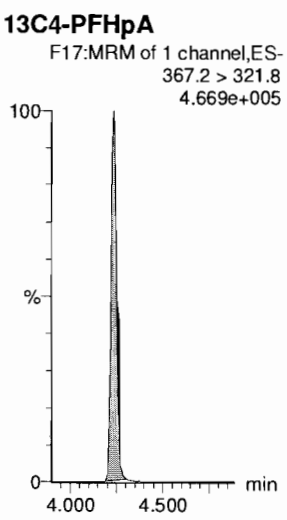




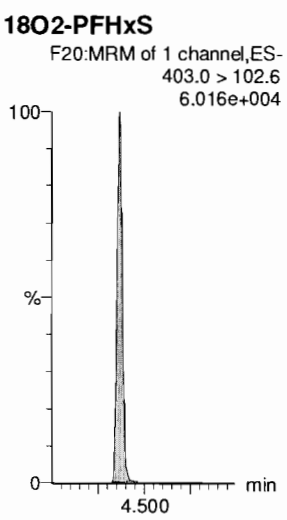
13C2-6:2 FTS



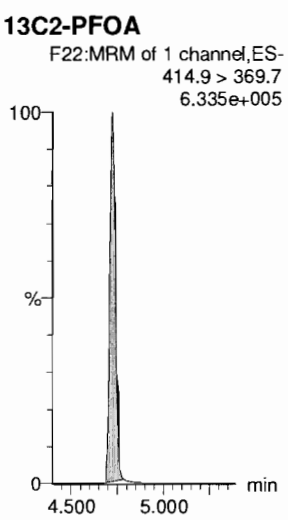
13C4-PFHpA



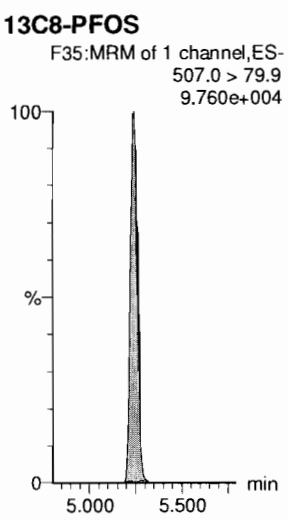
18O2-PFHxS



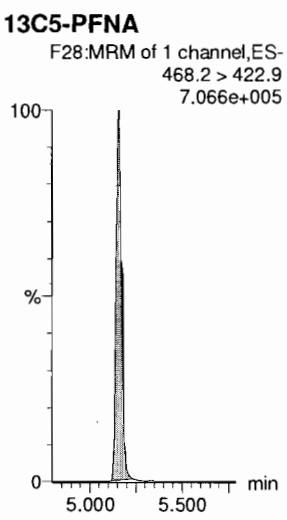
13C2-PFOA



13C8-PFOS



13C5-PFNA

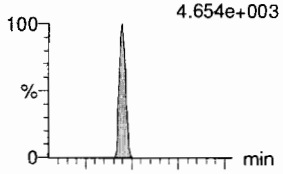


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

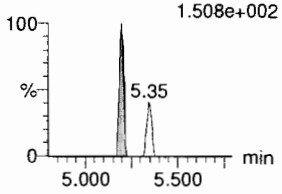
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_3, Date: 02-Dec-2018, Time: 18:45:35, ID: ST181202M2-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

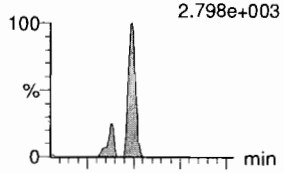
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
4.654e+003



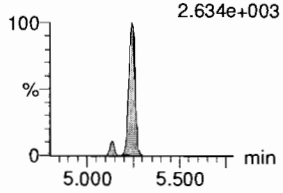
F30:MRM of 2 channels,ES-
497.9 > 169
1.508e+002



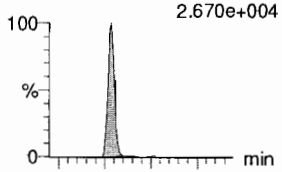
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
2.798e+003



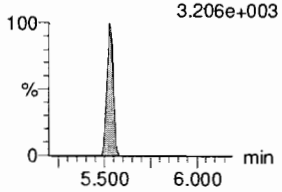
F32:MRM of 2 channels,ES-
498.9 > 99
2.634e+003



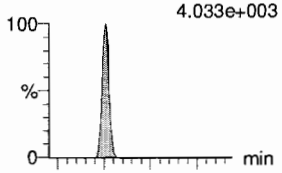
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
2.670e+004



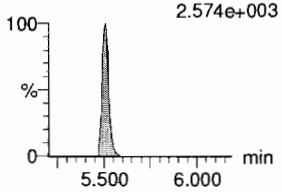
F37:MRM of 2 channels,ES-
513 > 219
3.206e+003



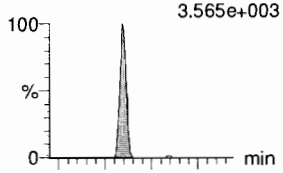
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
4.033e+003



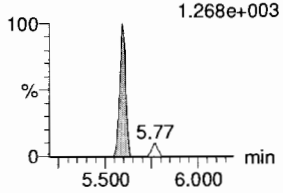
F42:MRM of 2 channels,ES-
527 > 80
2.574e+003



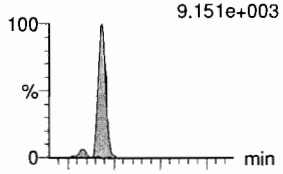
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
3.565e+003



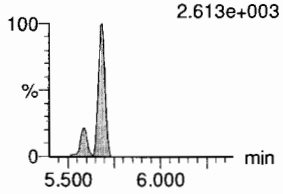
F45:MRM of 2 channels,ES-
549.1 > 99.1
1.268e+003



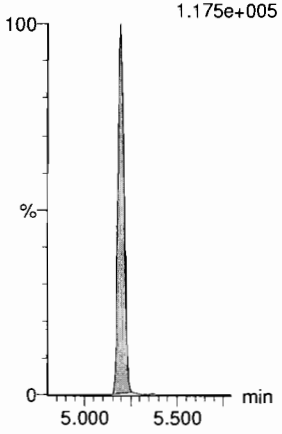
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
9.151e+003



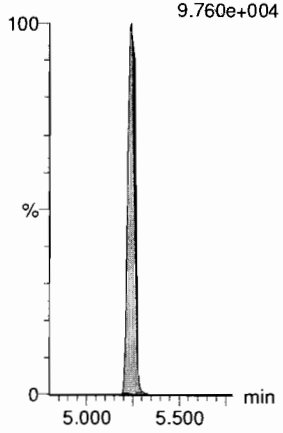
F48:MRM of 2 channels,ES-
570. > 512
2.613e+003



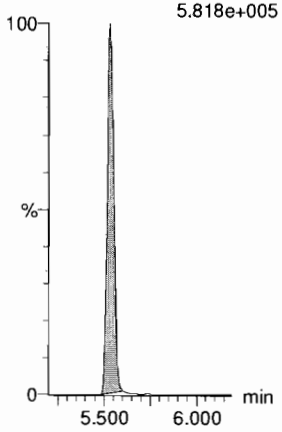
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.175e+005



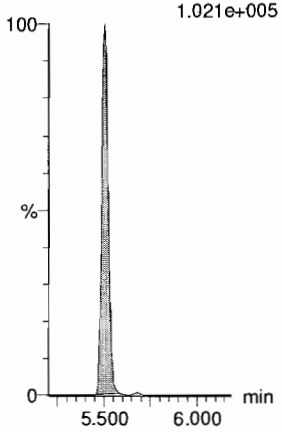
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.760e+004



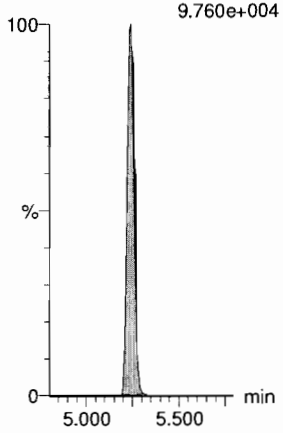
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.818e+005



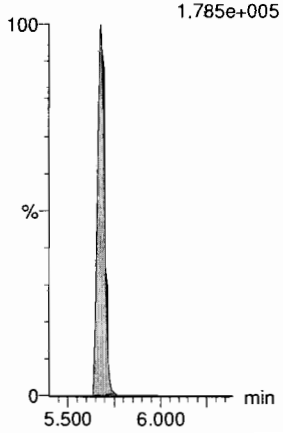
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
1.021e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.760e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.785e+005

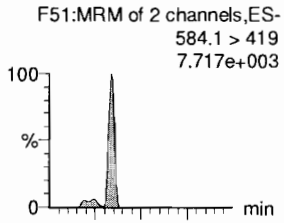


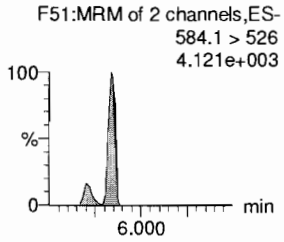
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

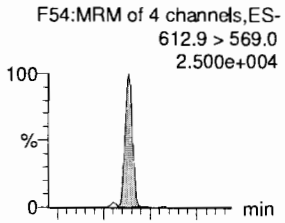
Name: 181202M2_3, Date: 02-Dec-2018, Time: 18:45:35, ID: ST181202M2-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

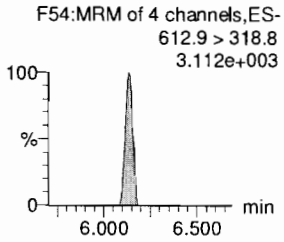
L-EtFOSAA



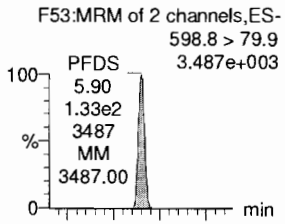


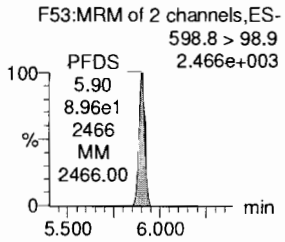
PFDoA



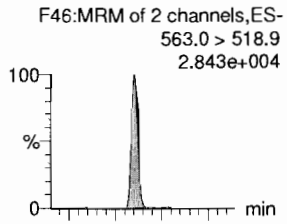


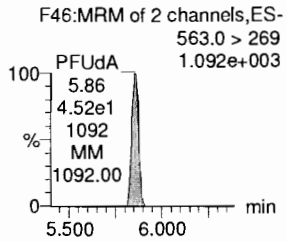
PFDS



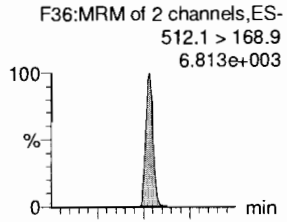


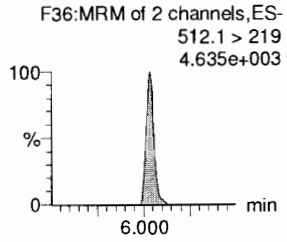
PFUdA



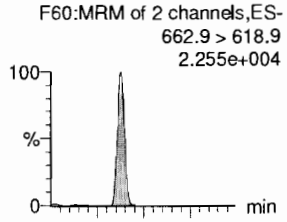


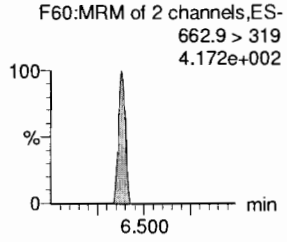
N-MeFOSA



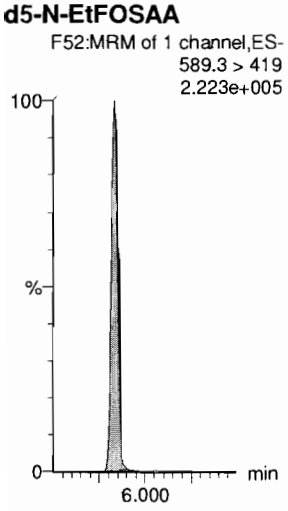


PFTrDA

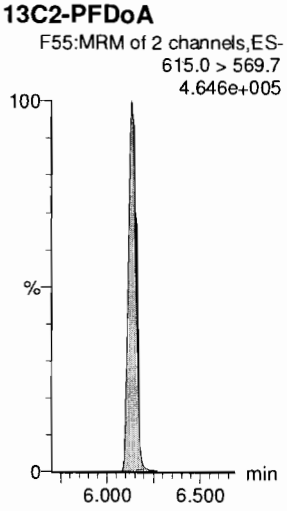




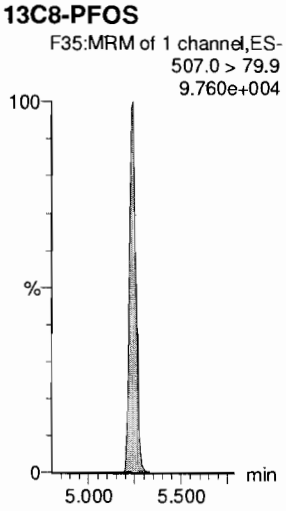
d5-N-EtFOSAA



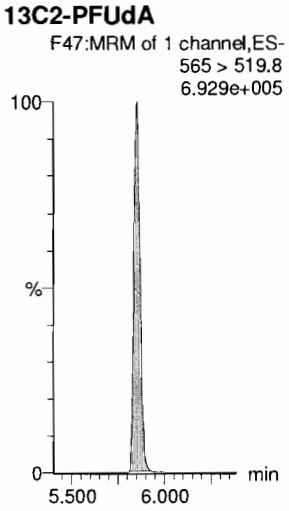
13C2-PFDoA



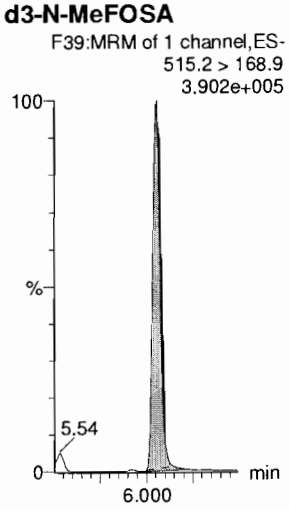
13C8-PFOS



13C2-PFUdA



d3-N-MeFOSA



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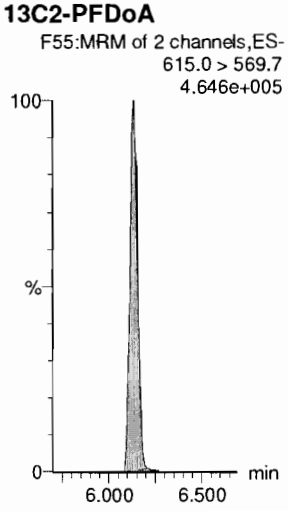

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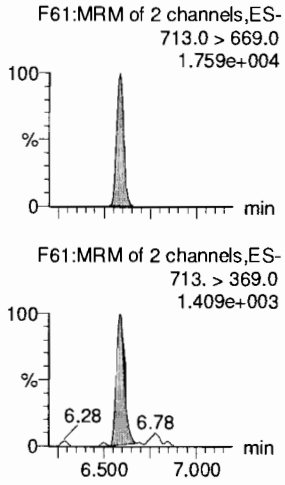
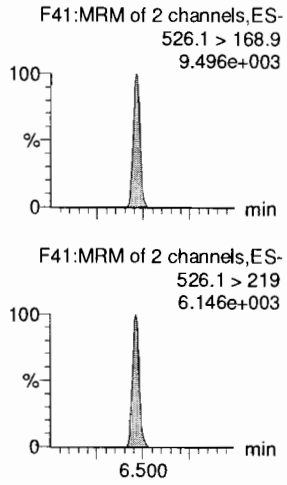
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_3, Date: 02-Dec-2018, Time: 18:45:35, ID: ST181202M2-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

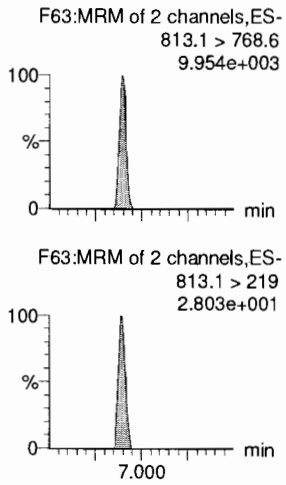
PFTeDA



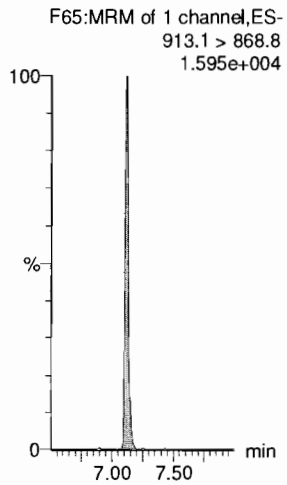
N-EtFOSA



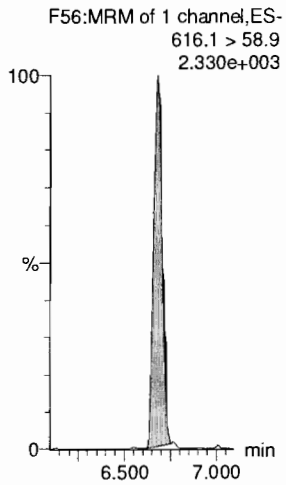
PFHxDA



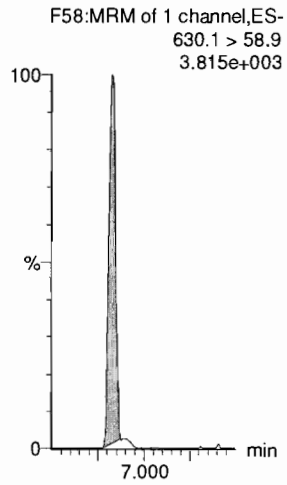
PFODA



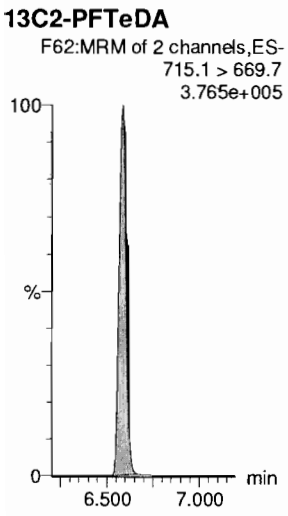
N-MeFOSE



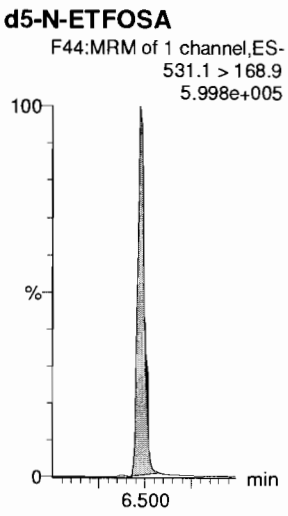
N-EtFOSE



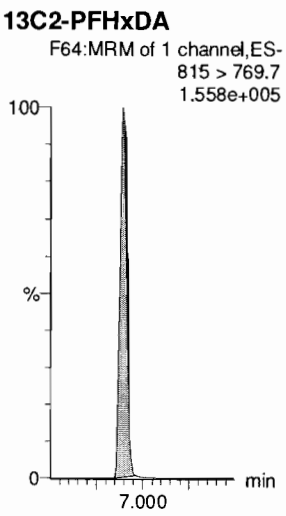
13C2-PFTeDA



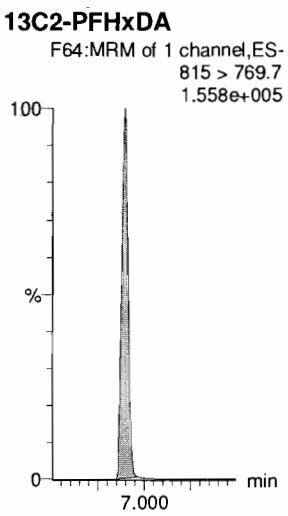
d5-N-ETFOSA



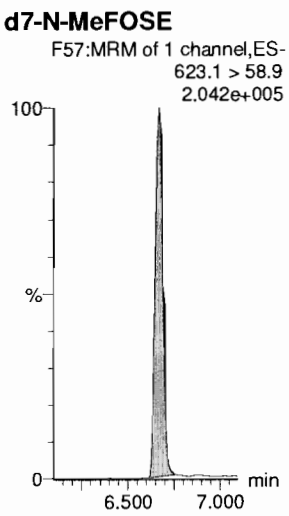
13C2-PFHxDA



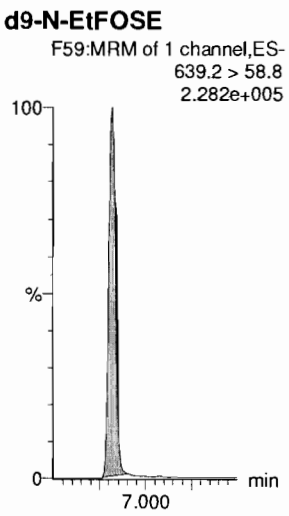
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

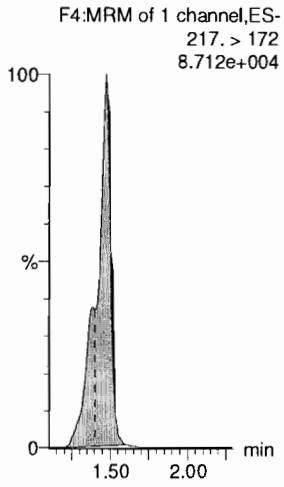


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

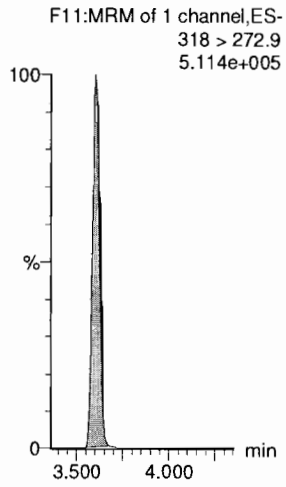
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_3, Date: 02-Dec-2018, Time: 18:45:35, ID: ST181202M2-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

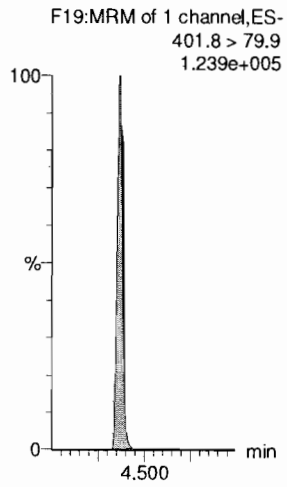
13C4-PFBA



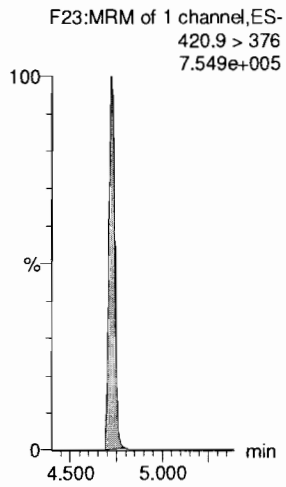
13C5-PFHxA



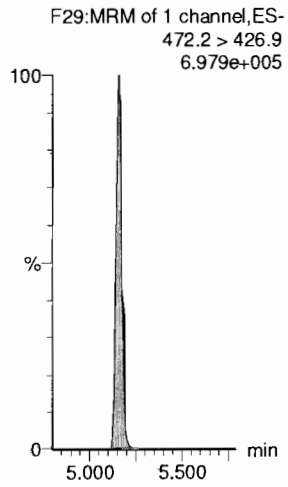
13C3-PFHxS



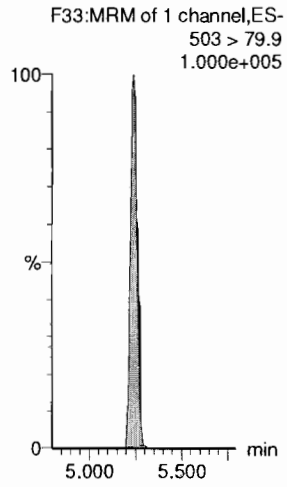
13C8-PFOA



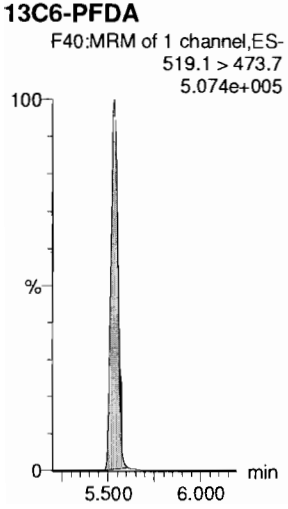
13C9-PFNA



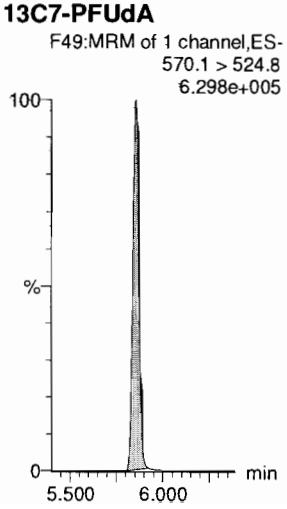
13C4-PFOS



13C6-PFDA



13C7-PFUdA

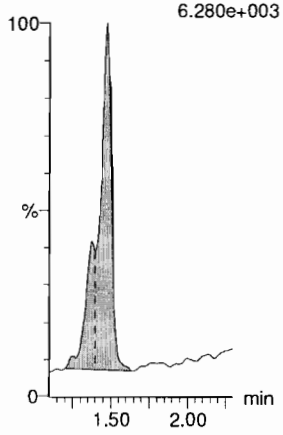


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

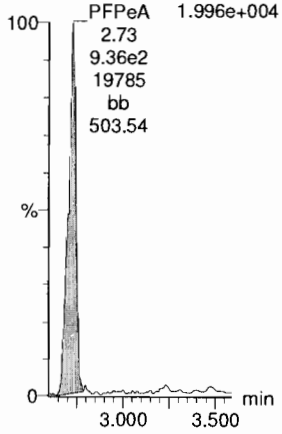
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_4, Date: 02-Dec-2018, Time: 18:56:07, ID: ST181202M2-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

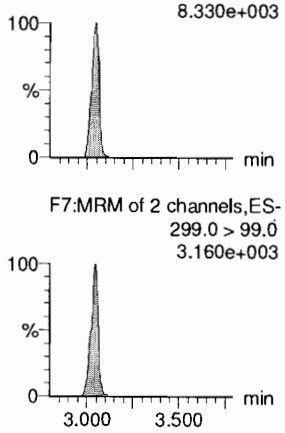
PFBA



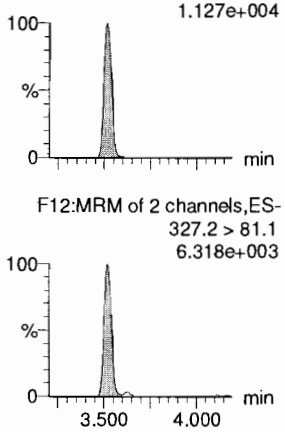
PFPeA



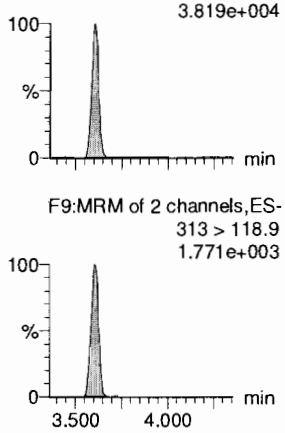
PFBS



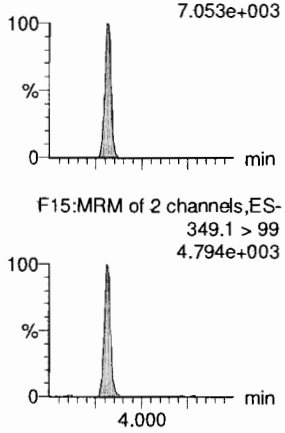
4:2 FTS



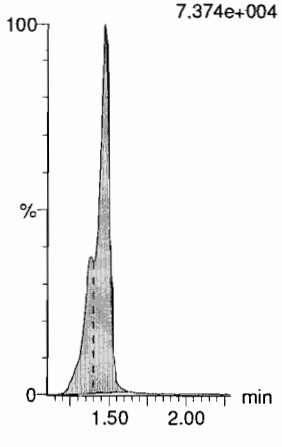
PFHxA



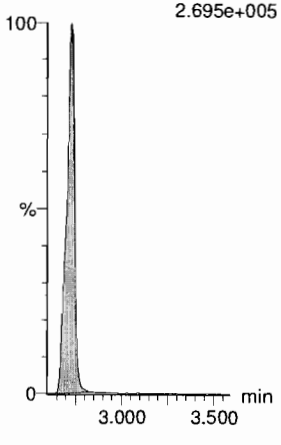
PFPeS



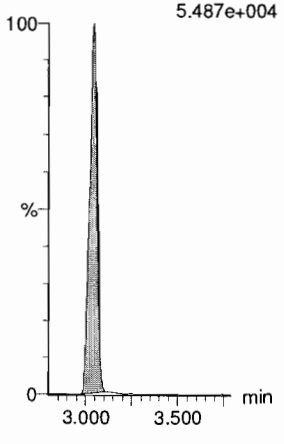
13C3-PFBA



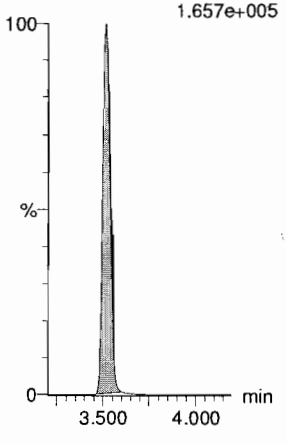
13C3-PFPeA



13C3-PFBS



13C2-4:2 FTS



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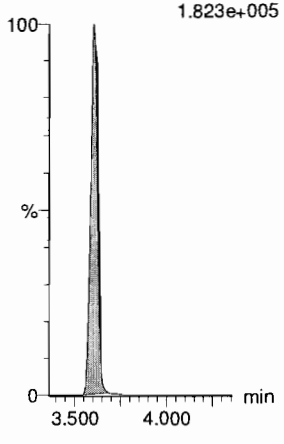
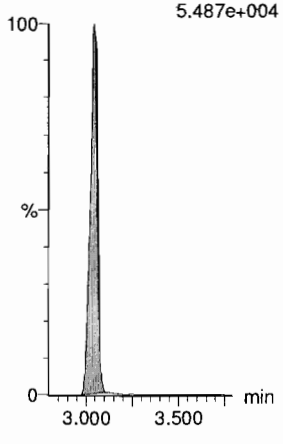


13C3-PFBS

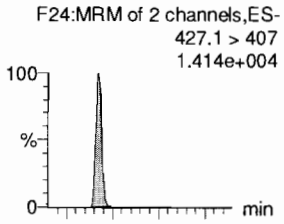


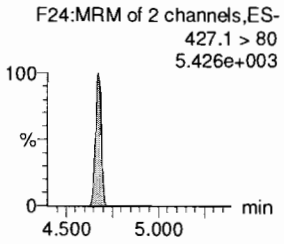
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

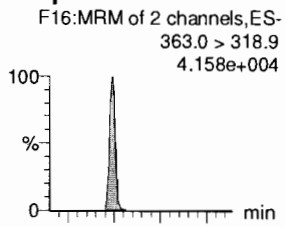
Name: 181202M2_4, Date: 02-Dec-2018, Time: 18:56:07, ID: ST181202M2-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

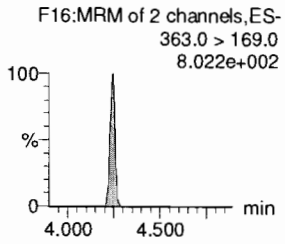
6:2 FTS



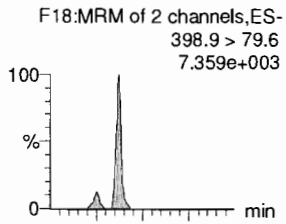


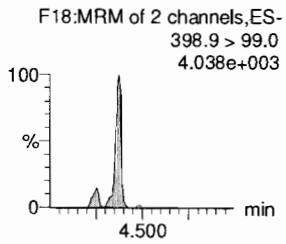
PFHpA



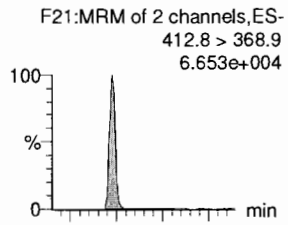


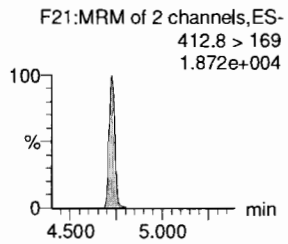
L-PFHxS



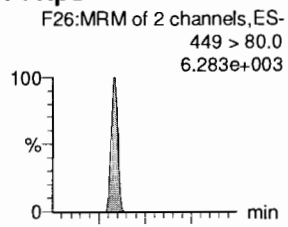


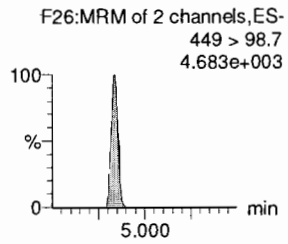
L-PFOA



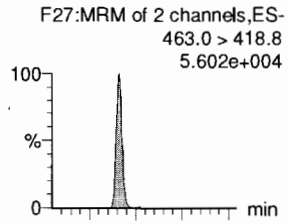


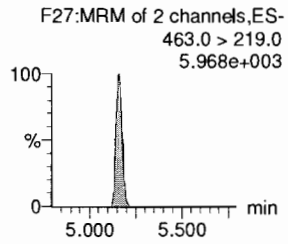
PFHpS



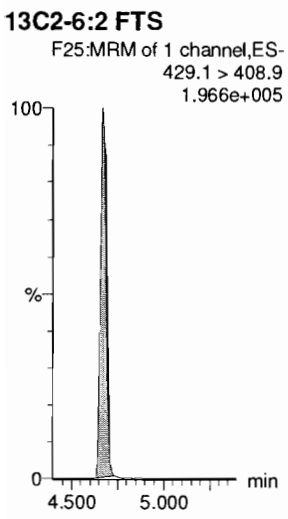


PFNA

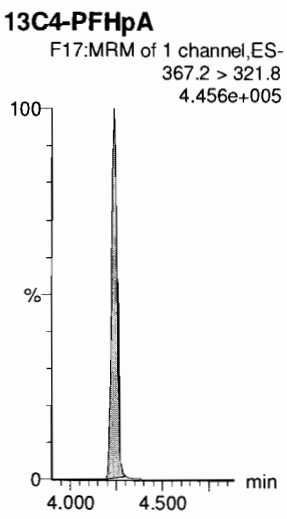




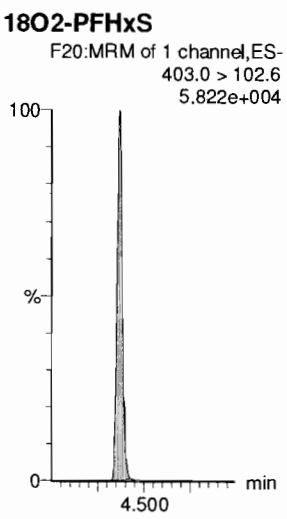
13C2-6:2 FTS



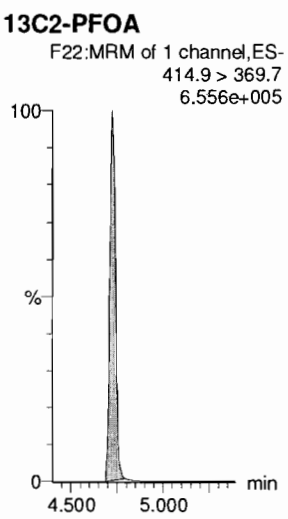
13C4-PFHpA



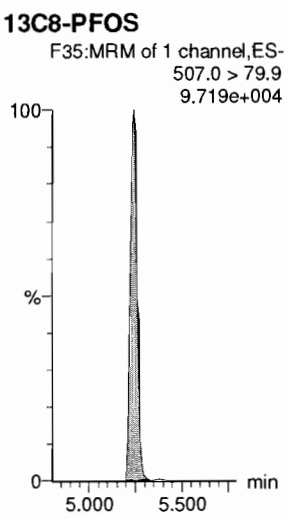
18O2-PFHxS



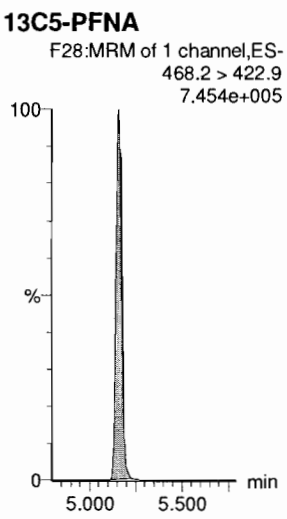
13C2-PFOA



13C8-PFOS



13C5-PFNA

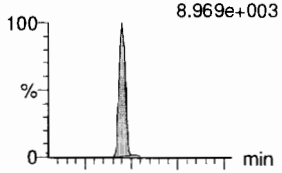


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

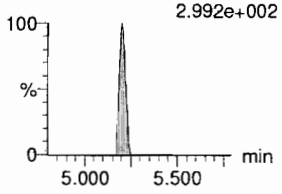
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_4, Date: 02-Dec-2018, Time: 18:56:07, ID: ST181202M2-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

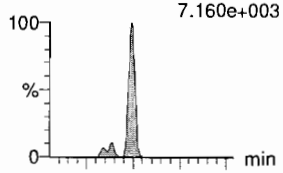
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
8.969e+003



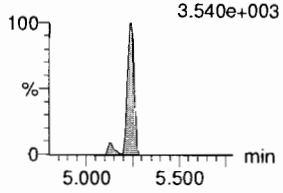
F30:MRM of 2 channels,ES-
497.9 > 169
2.992e+002



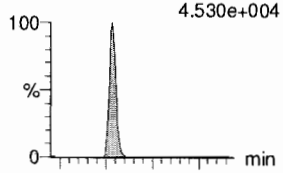
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
7.160e+003



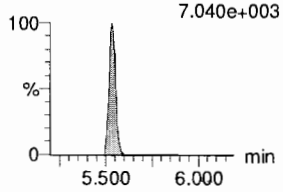
F32:MRM of 2 channels,ES-
498.9 > 99
3.540e+003



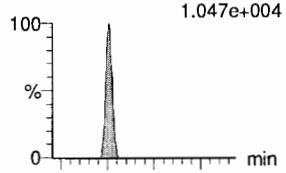
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
4.530e+004



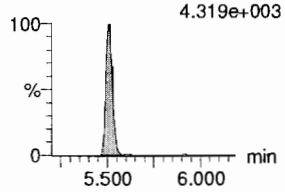
F37:MRM of 2 channels,ES-
513 > 219
7.040e+003



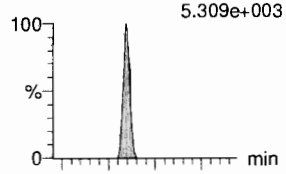
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
1.047e+004



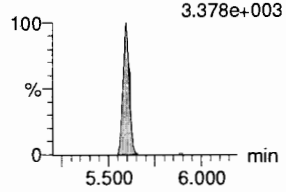
F42:MRM of 2 channels,ES-
527 > 80
4.319e+003



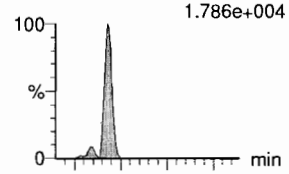
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
5.309e+003



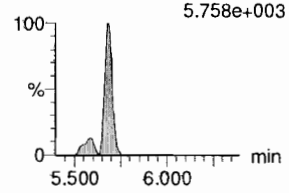
F45:MRM of 2 channels,ES-
549.1 > 99.1
3.378e+003



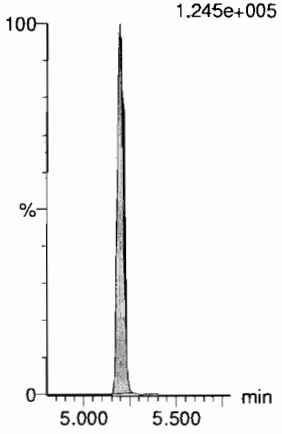
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
1.786e+004



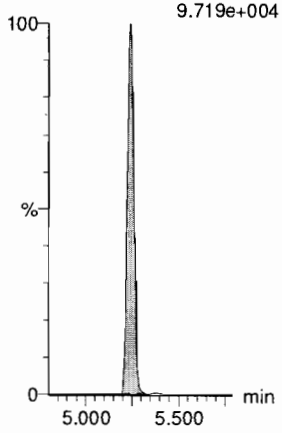
F48:MRM of 2 channels,ES-
570. > 512
5.758e+003



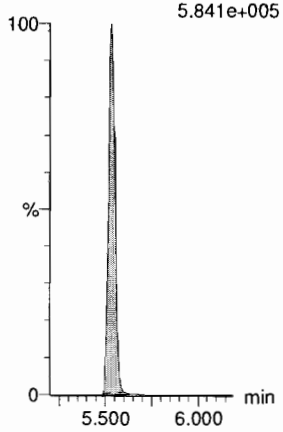
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.245e+005



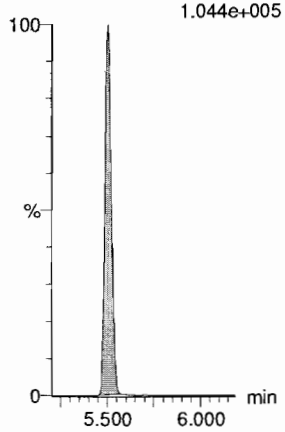
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.719e+004



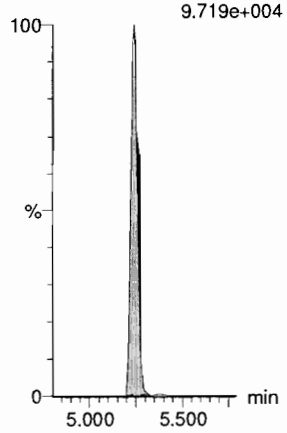
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.841e+005



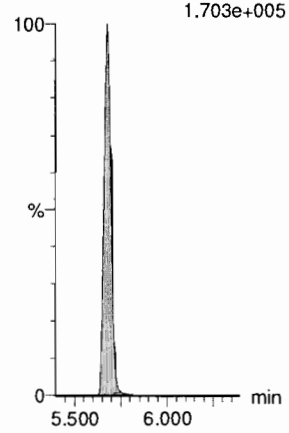
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
1.044e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.719e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.703e+005



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Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_4, Date: 02-Dec-2018, Time: 18:56:07, ID: ST181202M2-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

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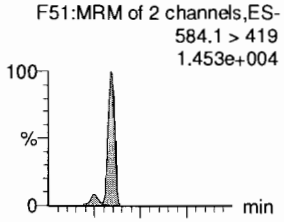
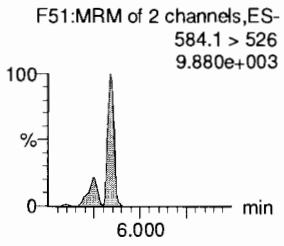
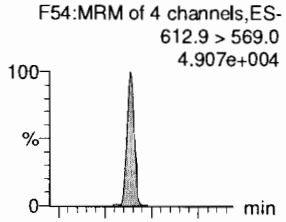
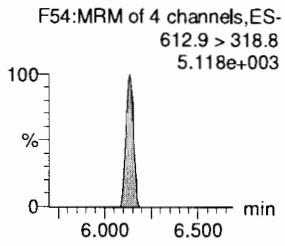




PFDoA





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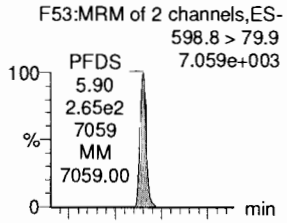

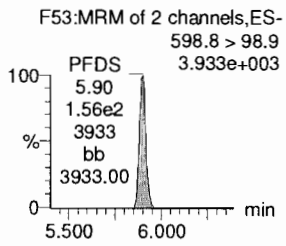

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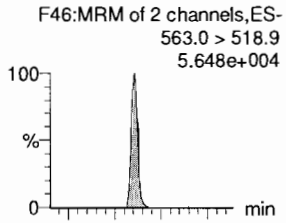
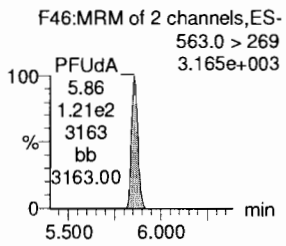
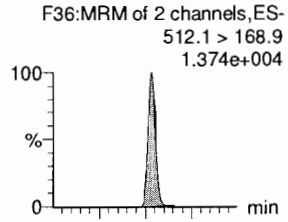
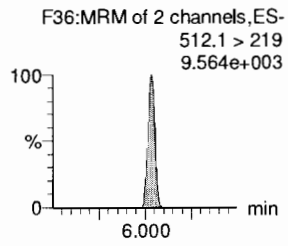




N-MeFOSA





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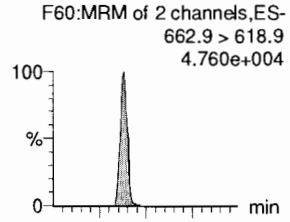
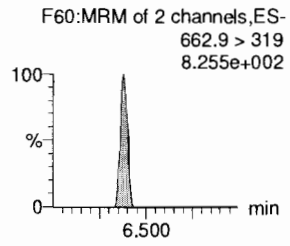
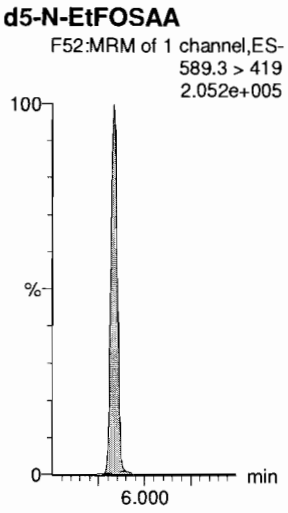
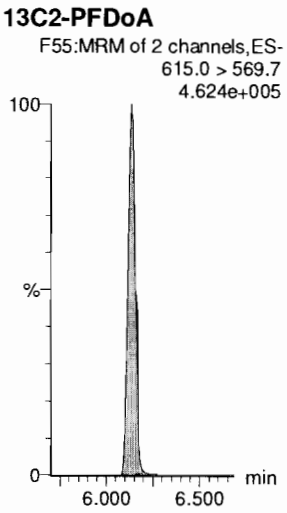




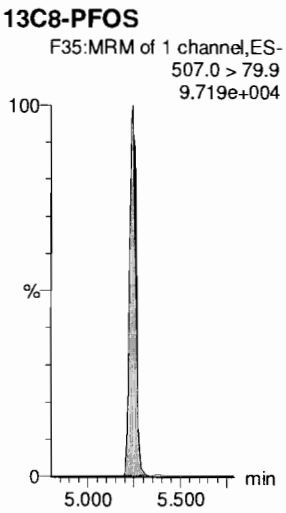
d5-N-EtFOSAA



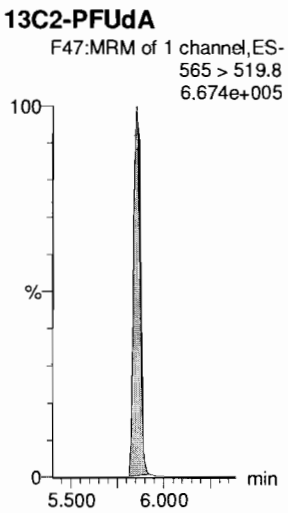
13C2-PFDoA



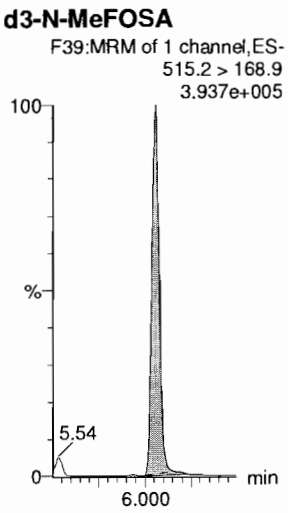
13C8-PFOS



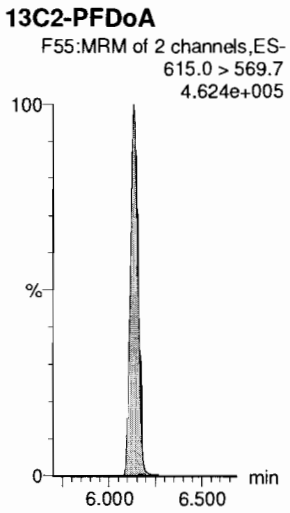
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA



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Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_4, Date: 02-Dec-2018, Time: 18:56:07, ID: ST181202M2-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

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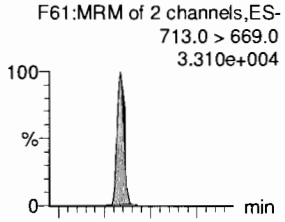

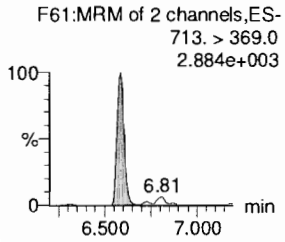

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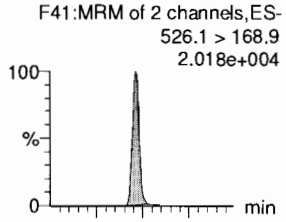
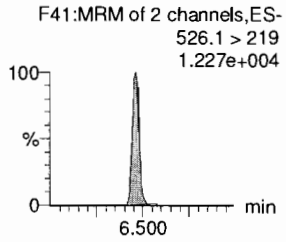
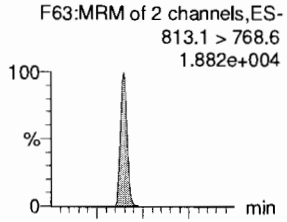
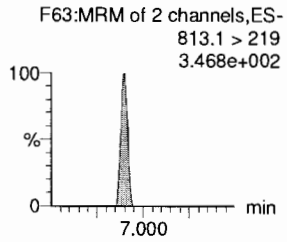


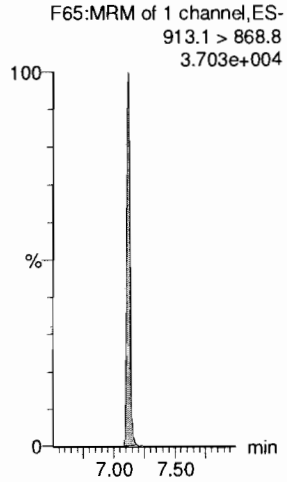


PFHxDA

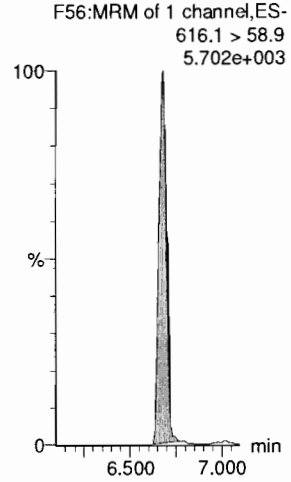




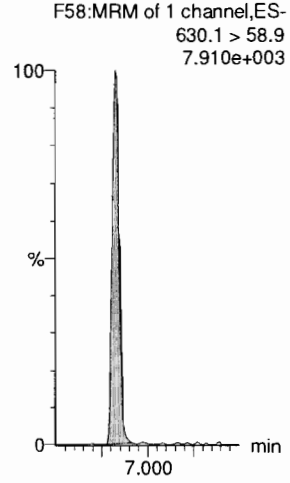
PFODA



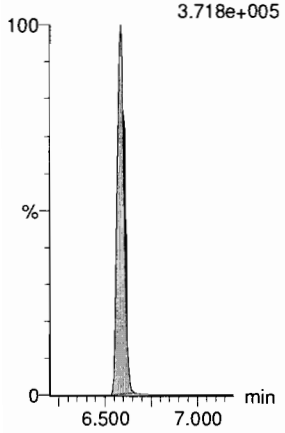
N-MeFOSE



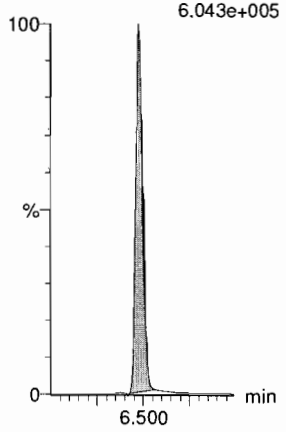
N-EtFOSE



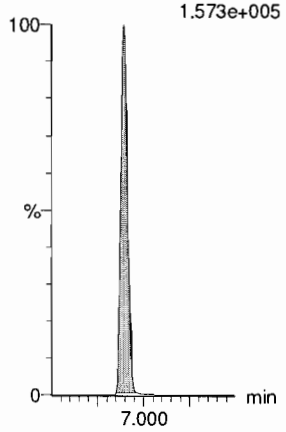
13C2-PFTeDA



d5-N-ETFOSA



13C2-PFHxDA



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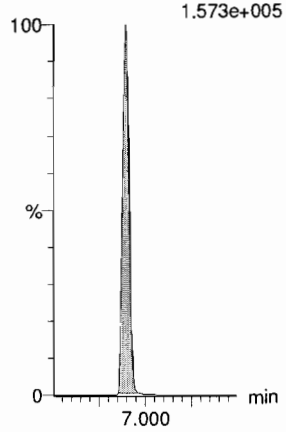
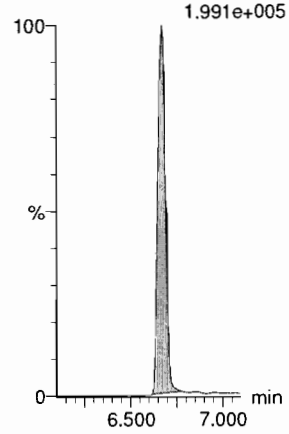
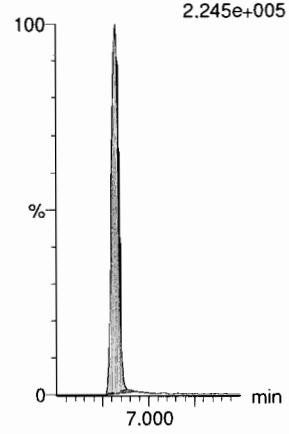


d7-N-MeFOSE



d9-N-EtFOSE



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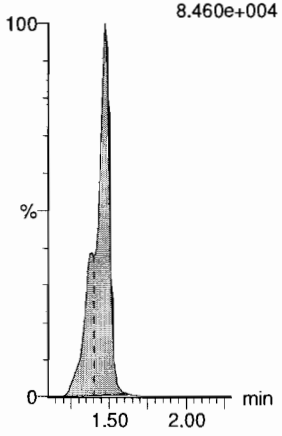
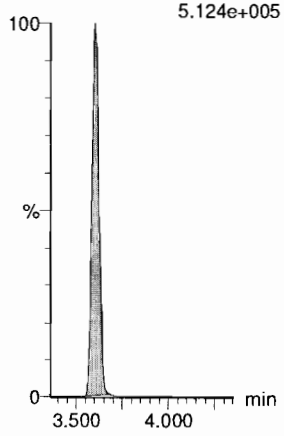
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_4, Date: 02-Dec-2018, Time: 18:56:07, ID: ST181202M2-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

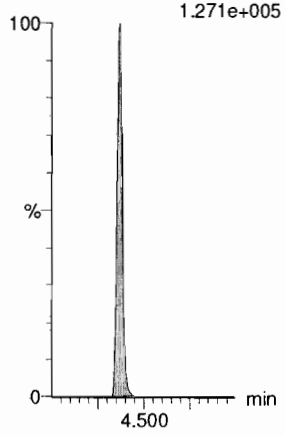
13C4-PFBA



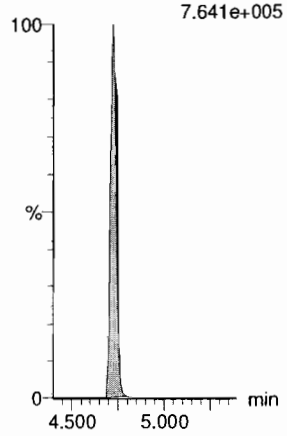
13C5-PFHxA



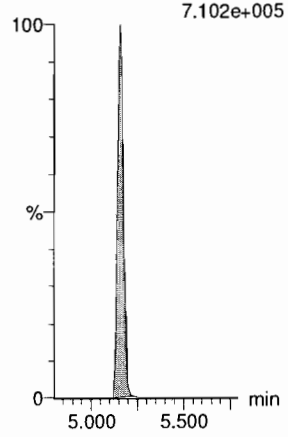
13C3-PFHxS



13C8-PFOA



13C9-PFNA



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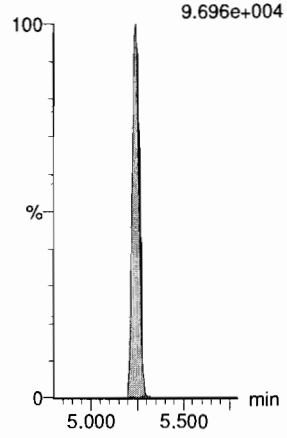

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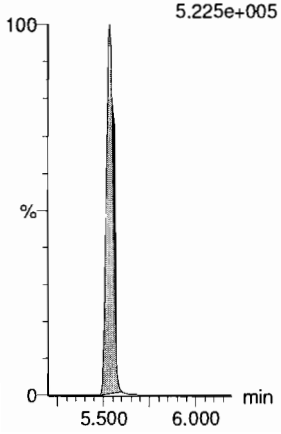

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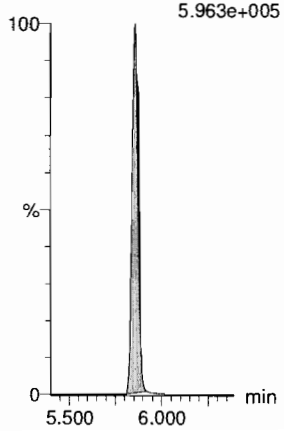

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Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_5, Date: 02-Dec-2018, Time: 19:06:45, ID: ST181202M2-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

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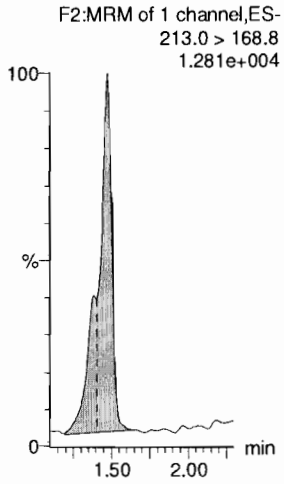

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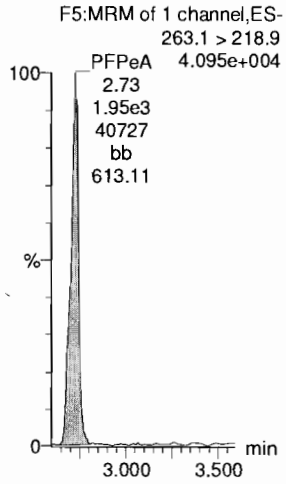

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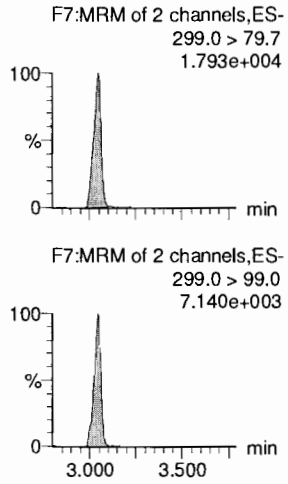

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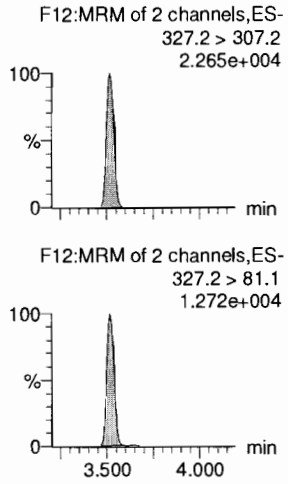

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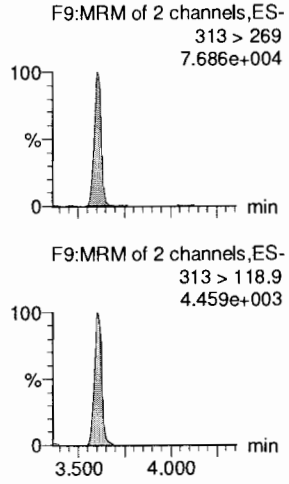

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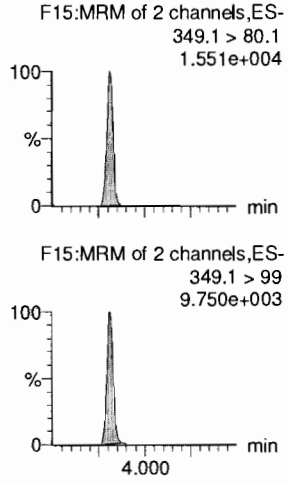

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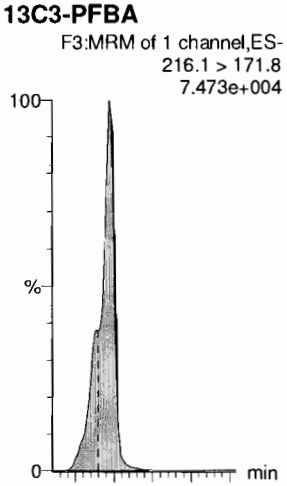

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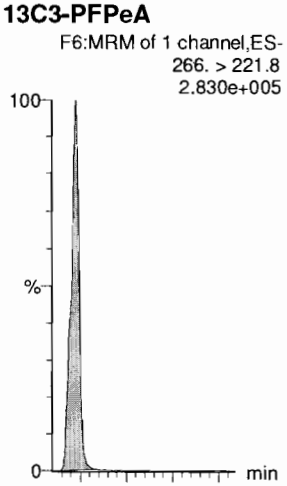

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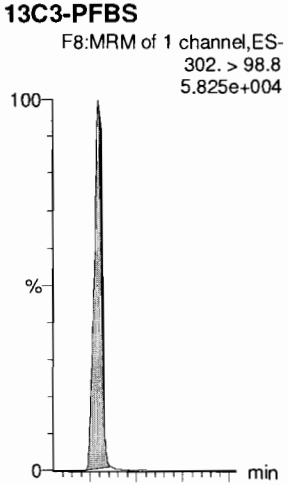
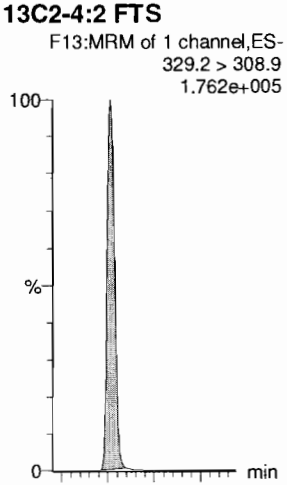


13C2-4:2 FTS



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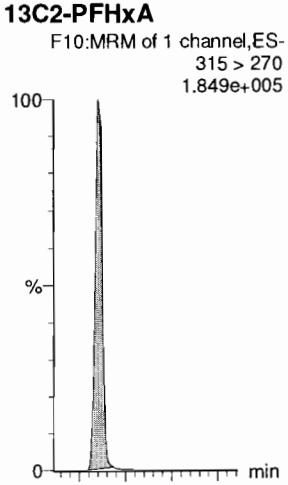

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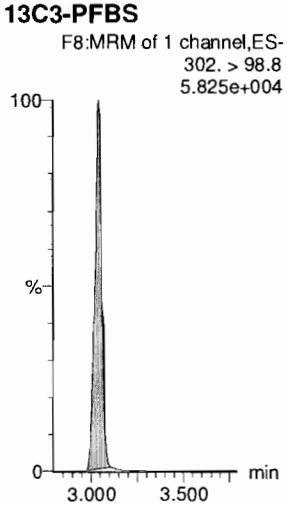

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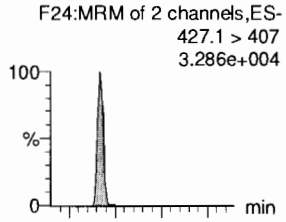
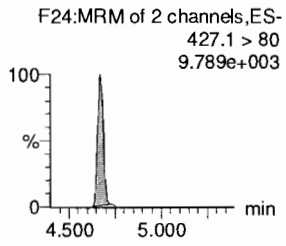
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

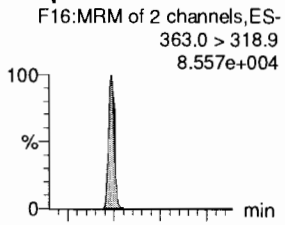
Name: 181202M2_5, Date: 02-Dec-2018, Time: 19:06:45, ID: ST181202M2-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

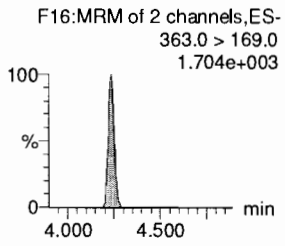
6:2 FTS



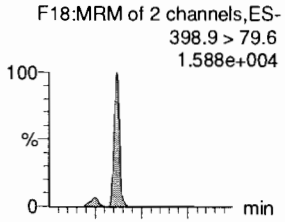


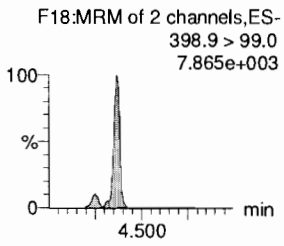
PFHpA





L-PFHxS





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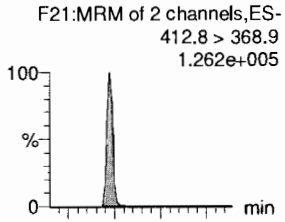

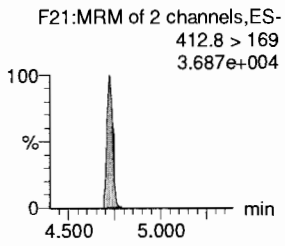

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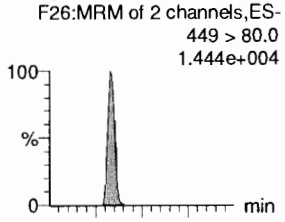

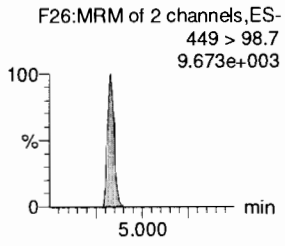

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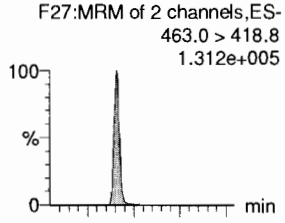
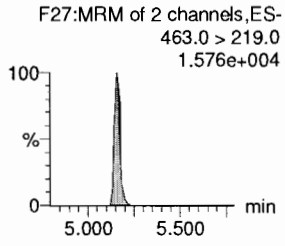
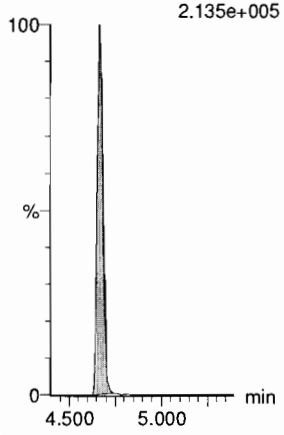
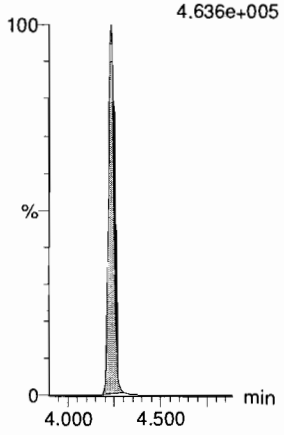




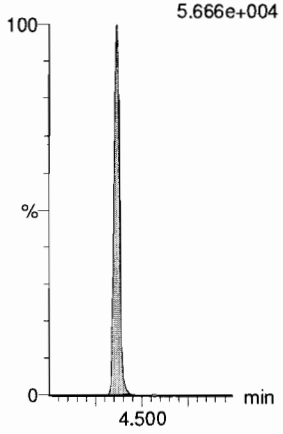
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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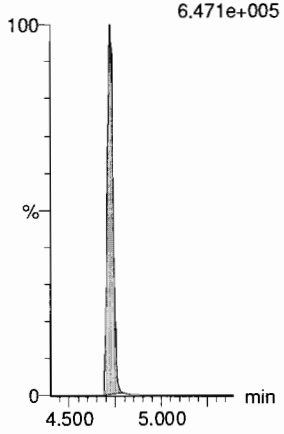
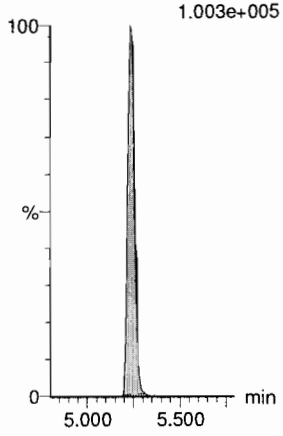


13C8-PFOS



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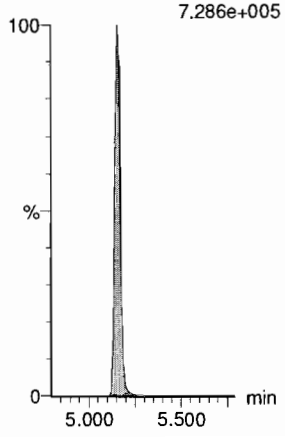

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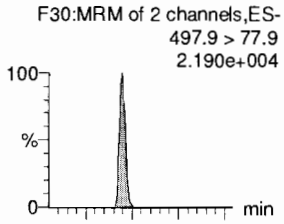
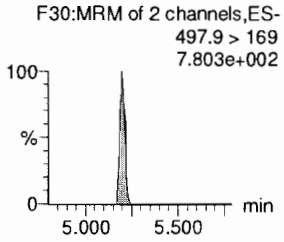
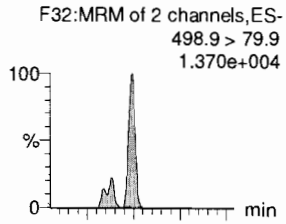
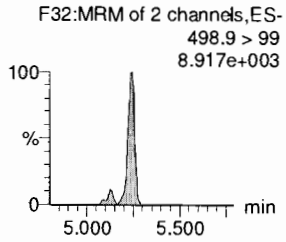
PFOSA





L-PFOS





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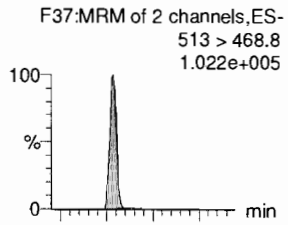
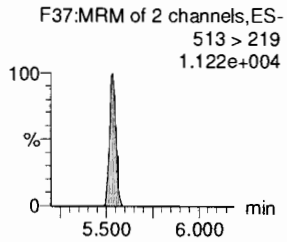
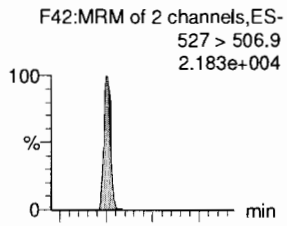
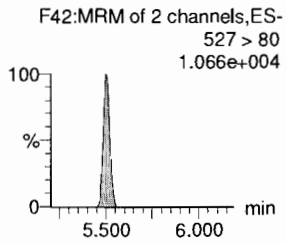




8:2 FTS





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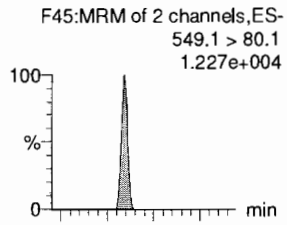

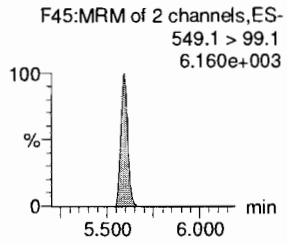

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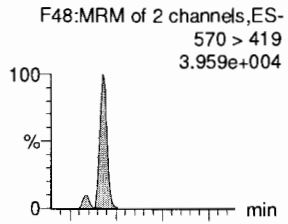
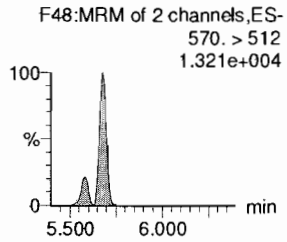
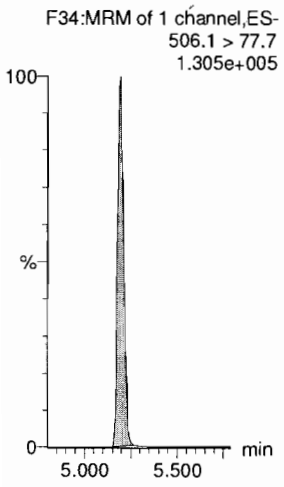




13C8-PFOSA



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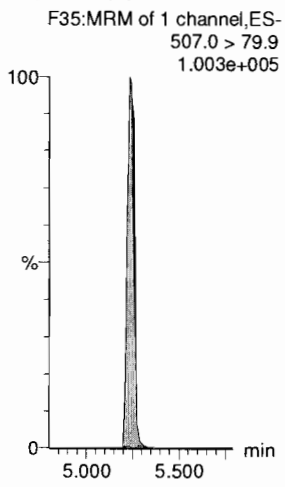

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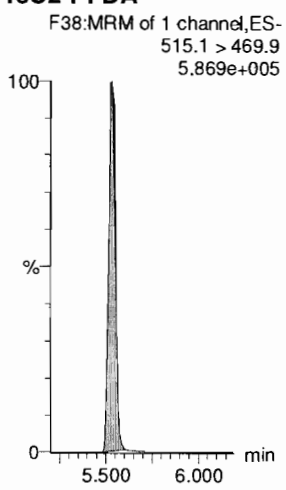
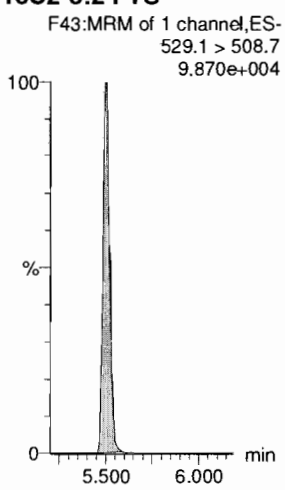


13C2-8:2 FTS



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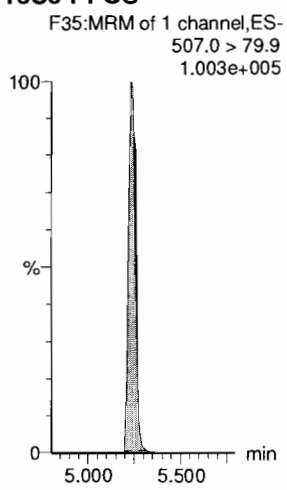
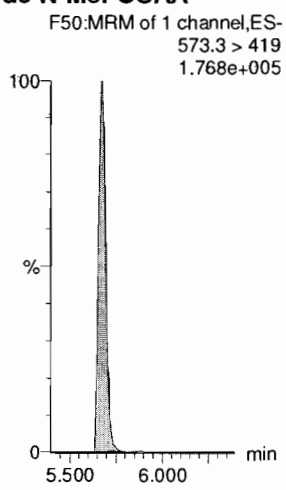


d3-N-MeFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_5, Date: 02-Dec-2018, Time: 19:06:45, ID: ST181202M2-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

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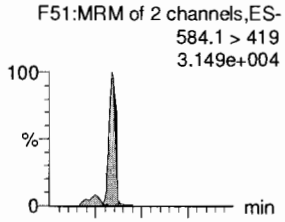
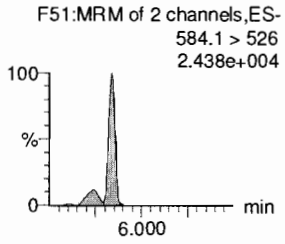
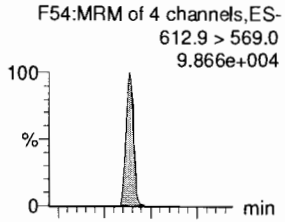
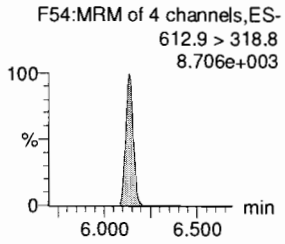




PFDoA





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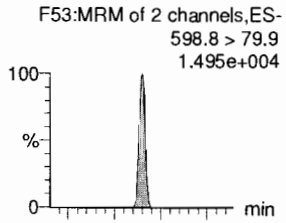

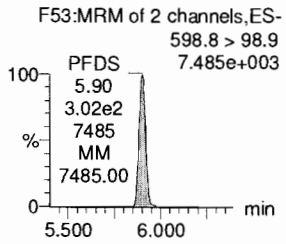

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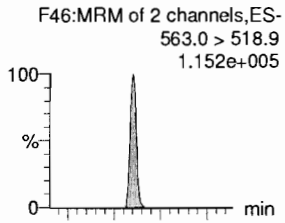

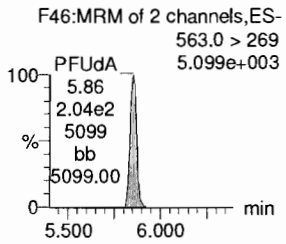

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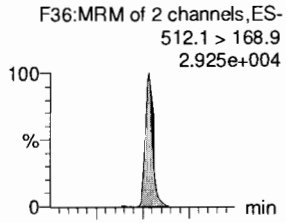

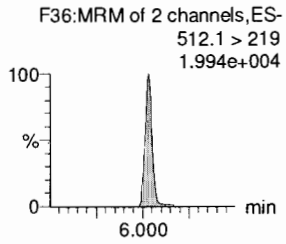

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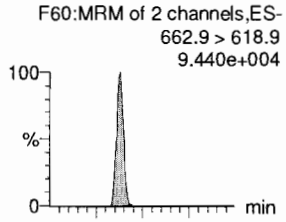
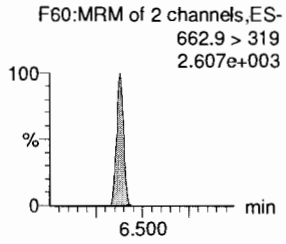
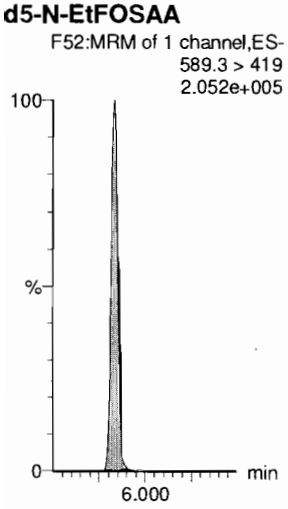
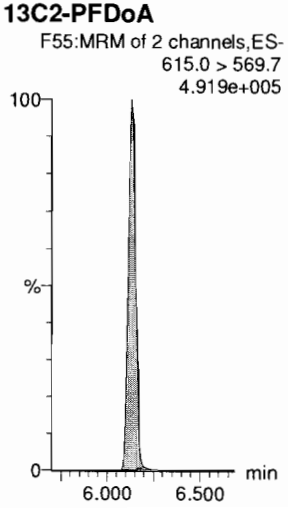




d5-N-EtFOSAA



13C2-PFDoA



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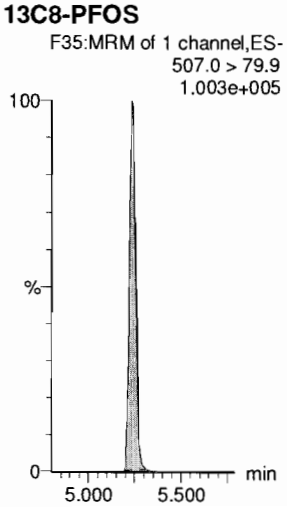
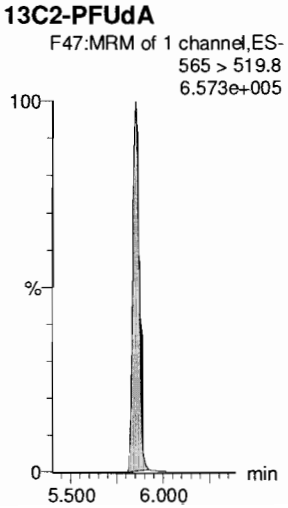


13C2-PFUdA



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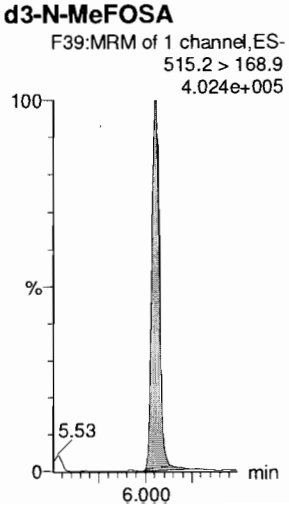

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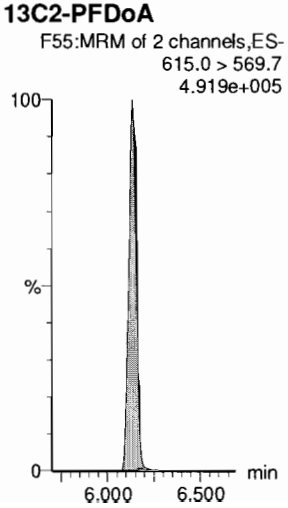

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Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_5, Date: 02-Dec-2018, Time: 19:06:45, ID: ST181202M2-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

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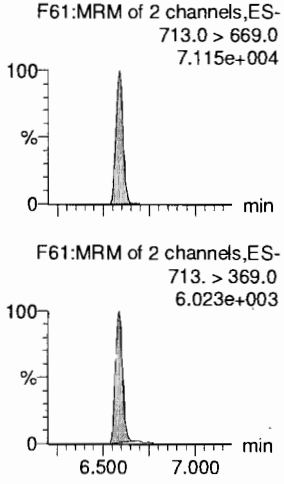
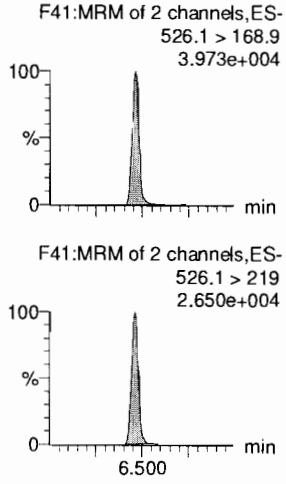
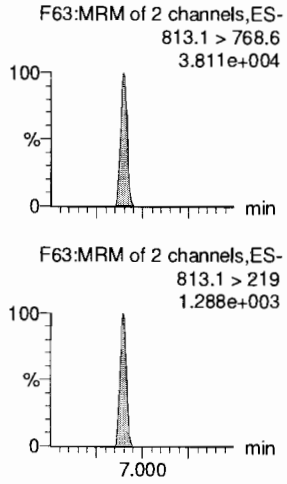


N-EtFOSA



PFHxDA



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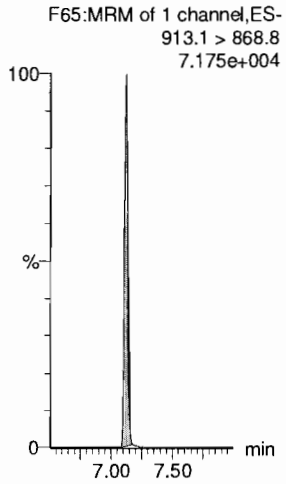

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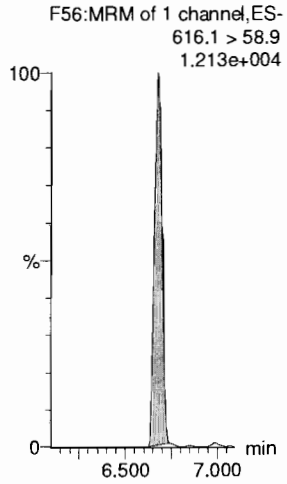

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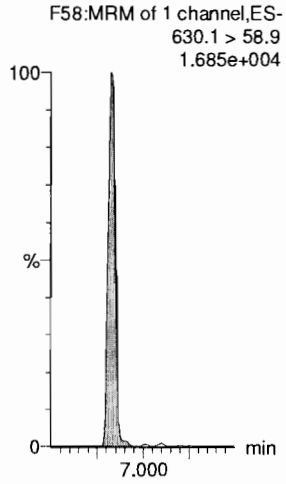

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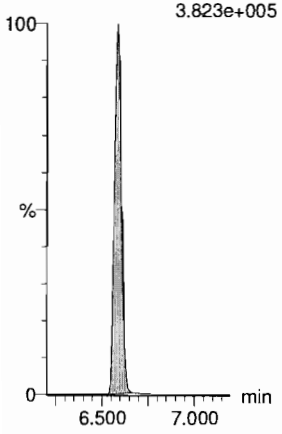
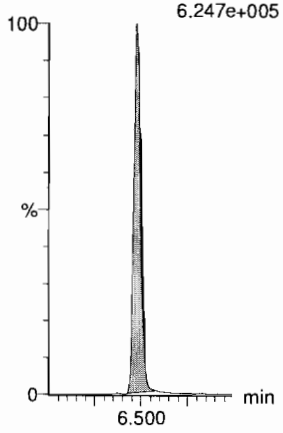


d5-N-ETFOSA



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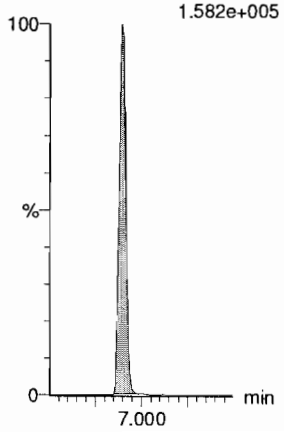

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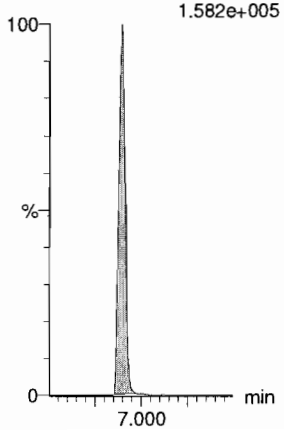

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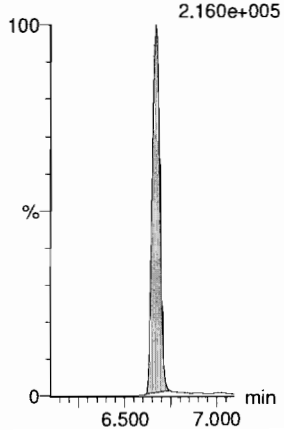
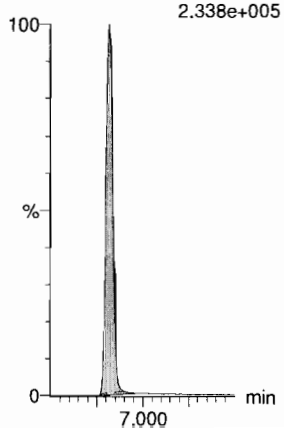


d9-N-EtFOSE



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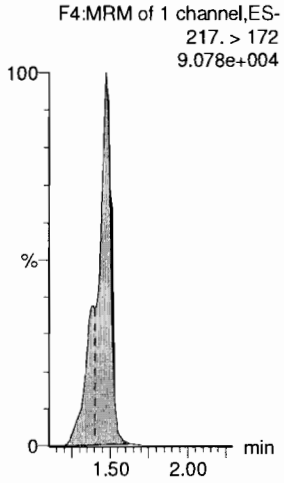
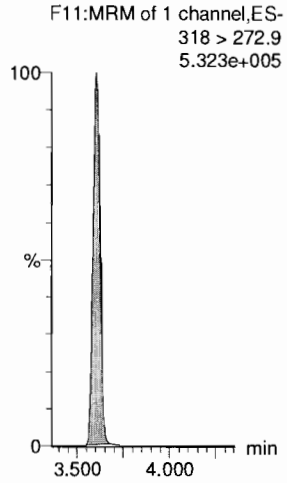
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_5, Date: 02-Dec-2018, Time: 19:06:45, ID: ST181202M2-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

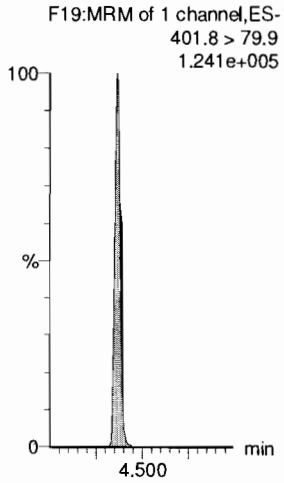
13C4-PFBA



13C5-PFHxA



13C3-PFHxS



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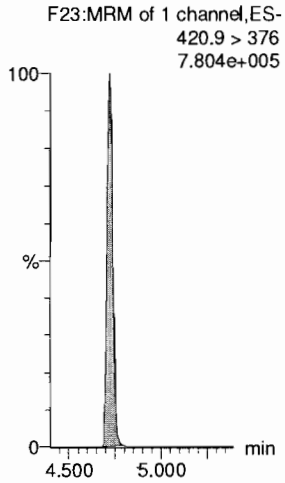

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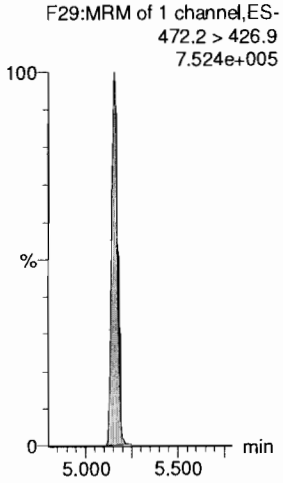
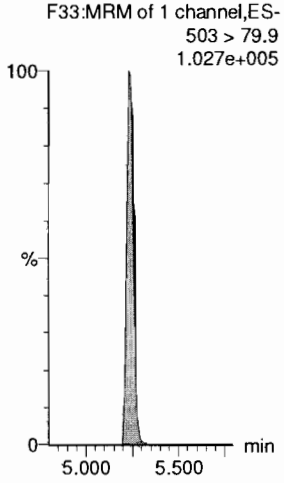


13C4-PFOS



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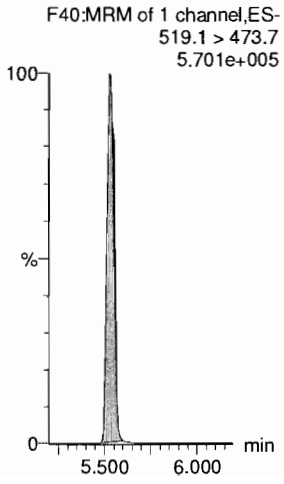
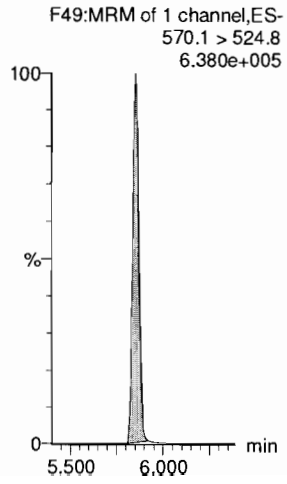


13C7-PFUdA



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Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
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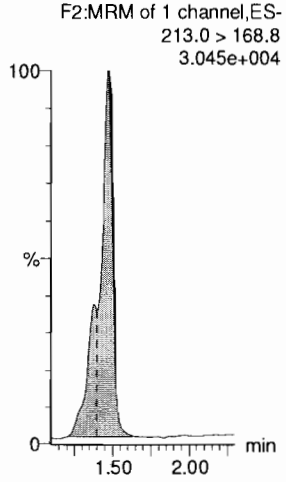
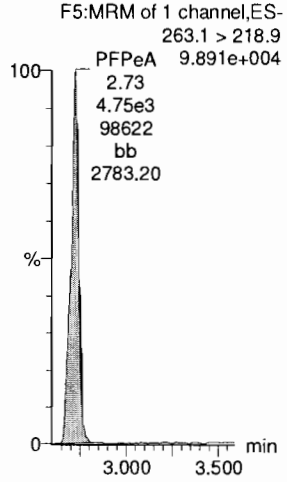
Name: 181202M2_6, Date: 02-Dec-2018, Time: 19:17:17, ID: ST181202M2-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

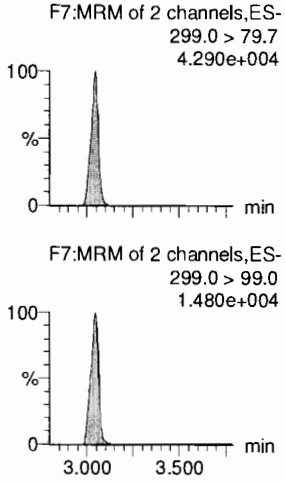
PFBA



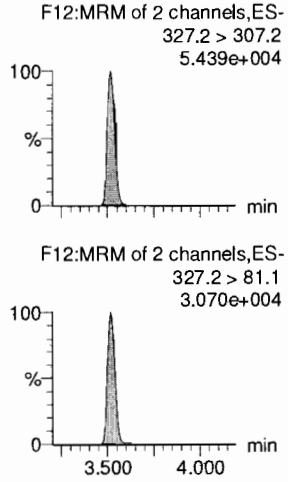
PFPeA



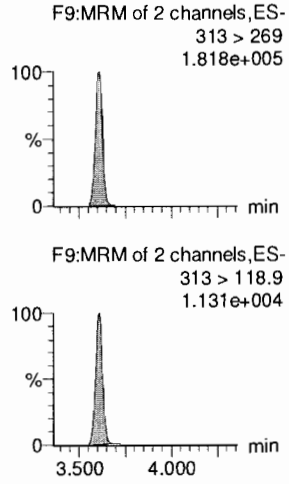
PFBS



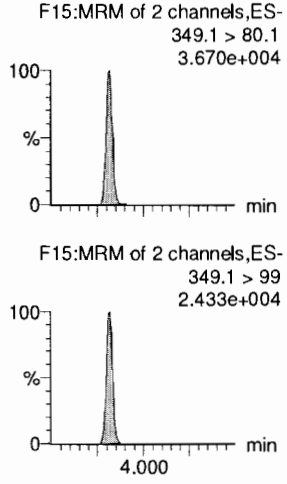
4:2 FTS



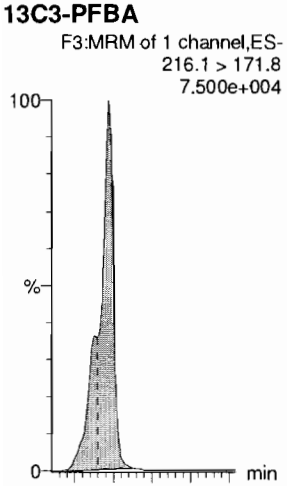
PFHxA



PFPeS



13C3-PFBA



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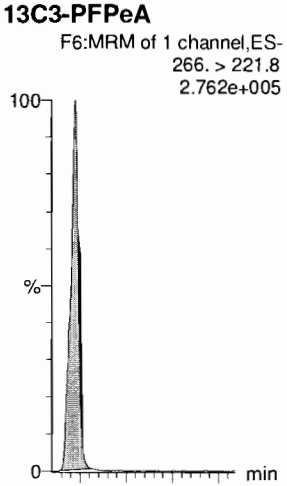

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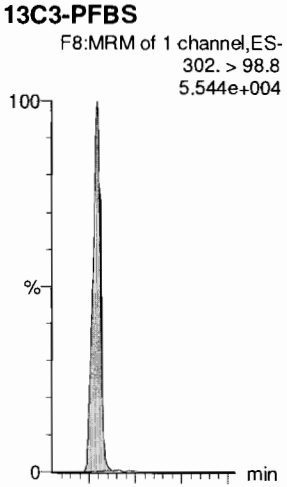
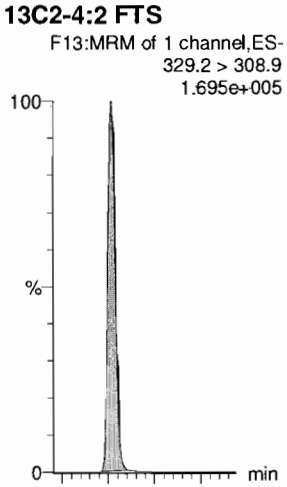
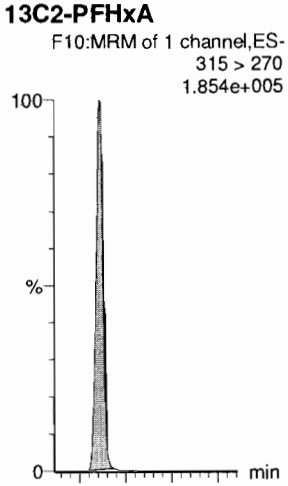


13C2-4:2 FTS



13C2-PFHxA



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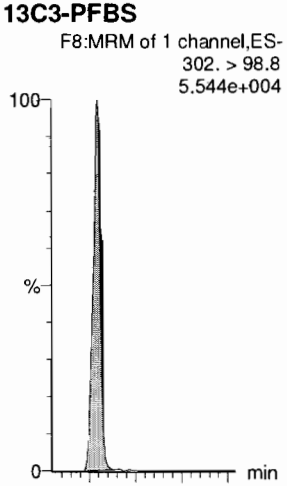
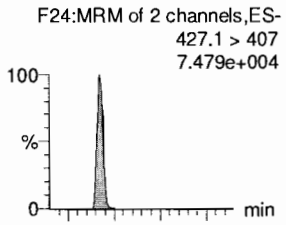


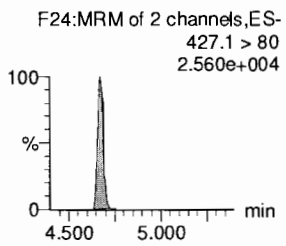
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

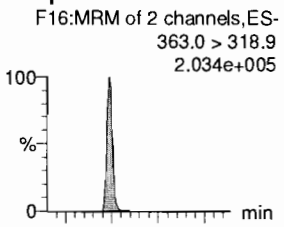
Name: 181202M2_6, Date: 02-Dec-2018, Time: 19:17:17, ID: ST181202M2-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

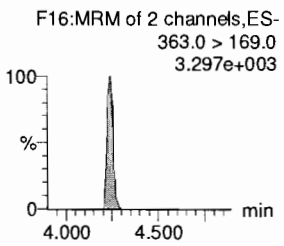
6:2 FTS



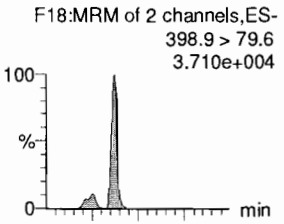


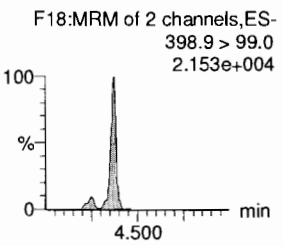
PFHpA



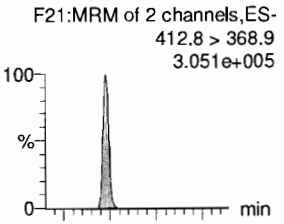


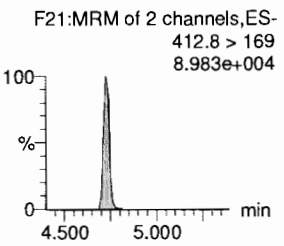
L-PFHxS



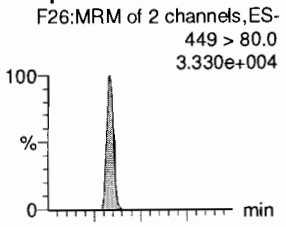


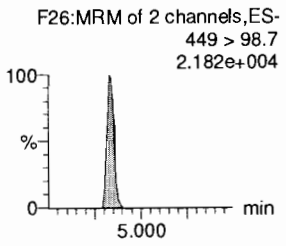
L-PFOA



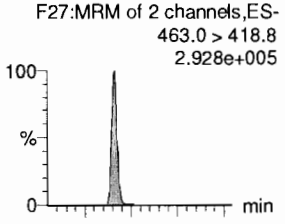


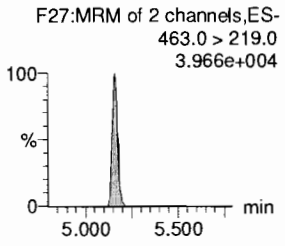
PFHpS



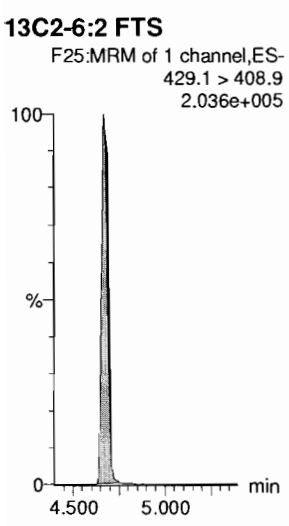


PFNA

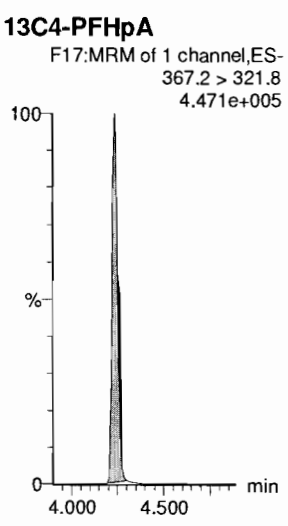




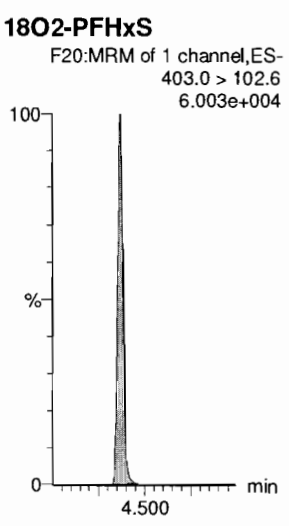
13C2-6:2 FTS



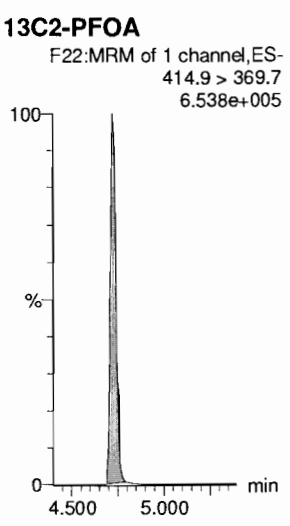
13C4-PFHpA



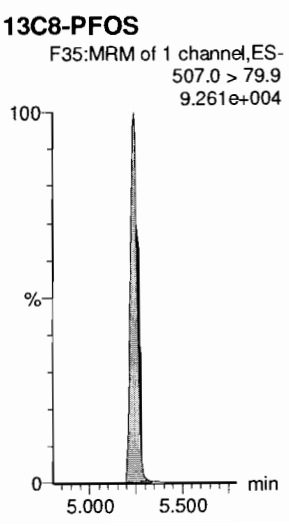
18O2-PFHxS



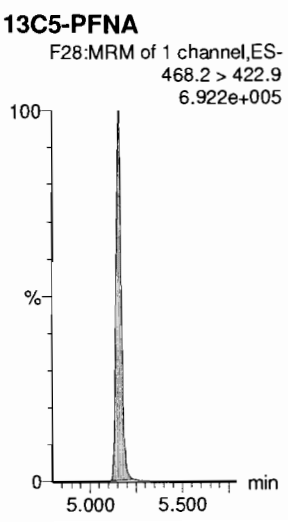
13C2-PFOA



13C8-PFOS



13C5-PFNA



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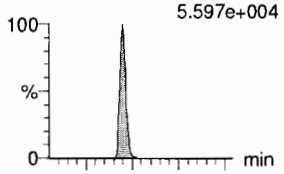
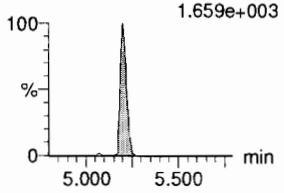
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_6, Date: 02-Dec-2018, Time: 19:17:17, ID: ST181202M2-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

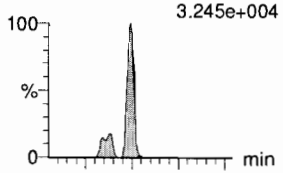
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
5.597e+004



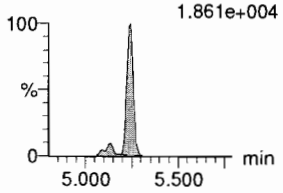
F30:MRM of 2 channels,ES-
497.9 > 169
1.659e+003



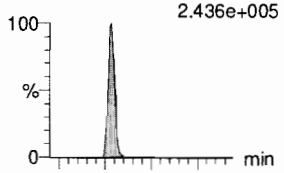
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
3.245e+004



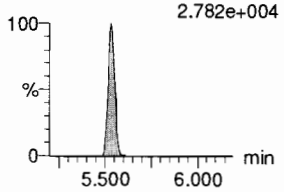
F32:MRM of 2 channels,ES-
498.9 > 99
1.861e+004



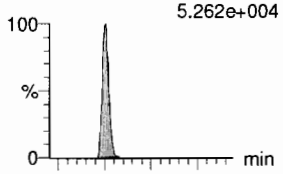
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
2.436e+005



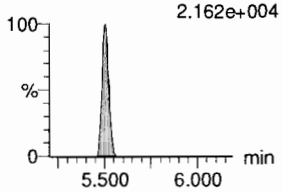
F37:MRM of 2 channels,ES-
513 > 219
2.782e+004



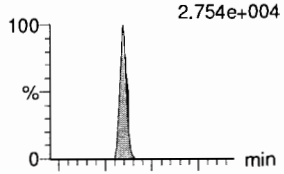
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
5.262e+004



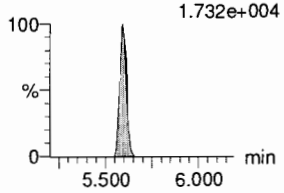
F42:MRM of 2 channels,ES-
527 > 80
2.162e+004



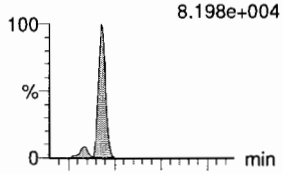
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
2.754e+004



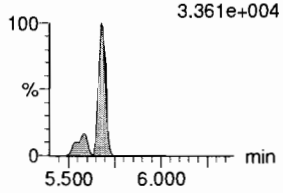
F45:MRM of 2 channels,ES-
549.1 > 99.1
1.732e+004



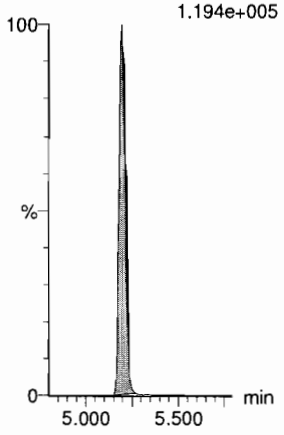
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
8.198e+004



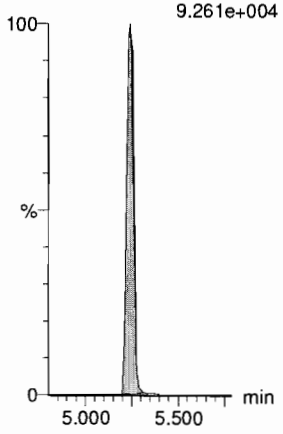
F48:MRM of 2 channels,ES-
570. > 512
3.361e+004



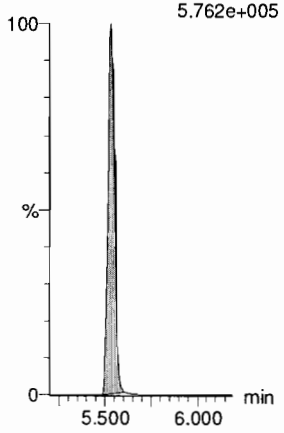
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.194e+005



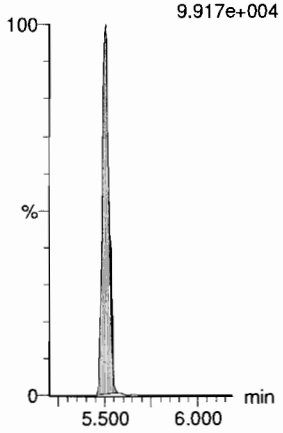
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.261e+004



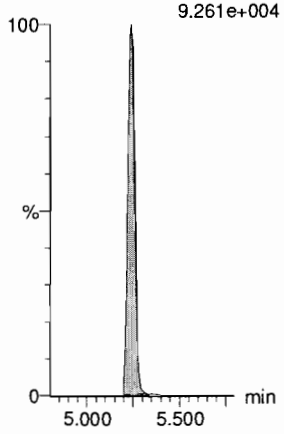
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.762e+005



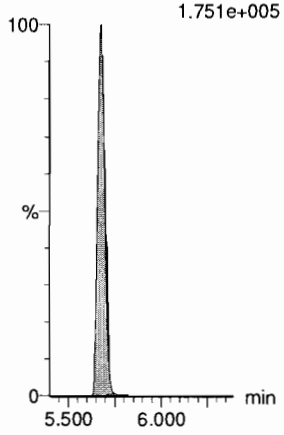
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
9.917e+004



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.261e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.751e+005

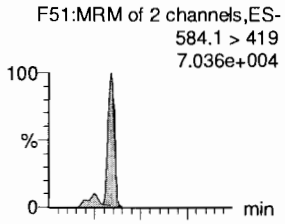


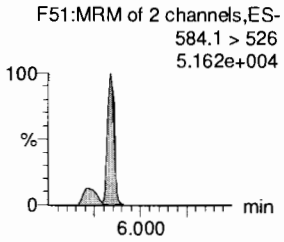
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

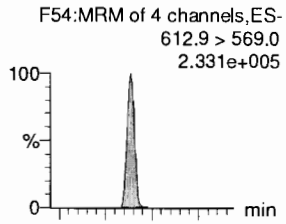
Name: 181202M2_6, Date: 02-Dec-2018, Time: 19:17:17, ID: ST181202M2-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

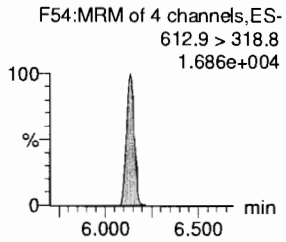
L-EtFOSAA



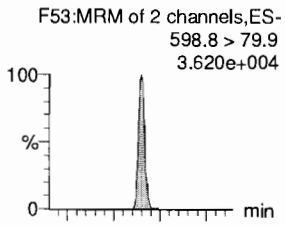


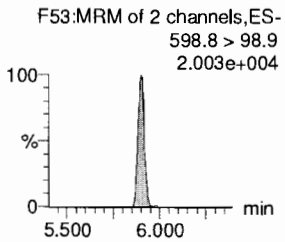
PFDoA



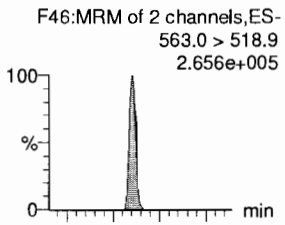


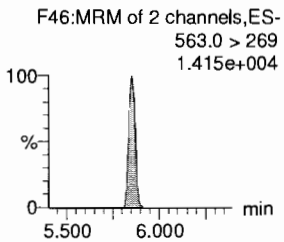
PFDS



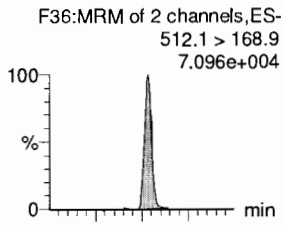


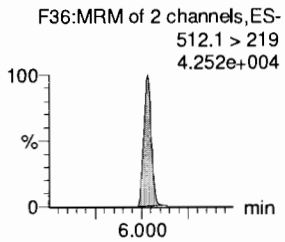
PFUdA



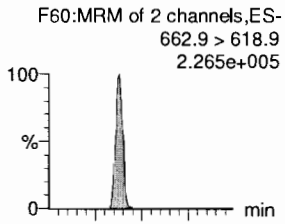


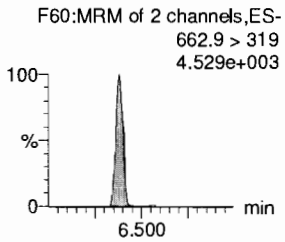
N-MeFOSA



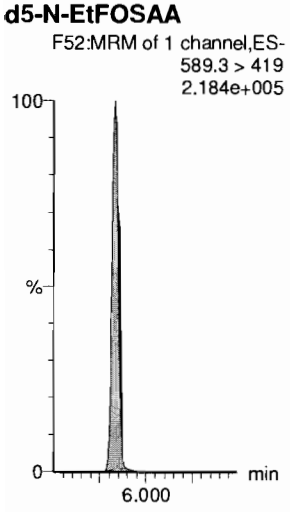


PFTrDA

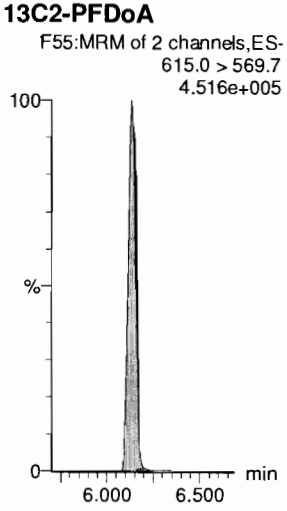




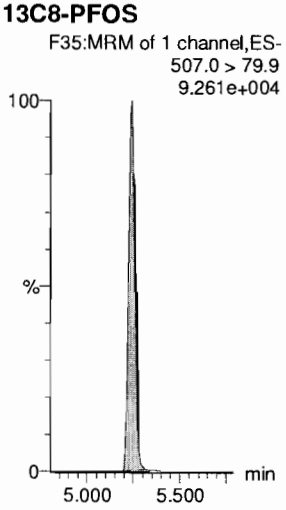
d5-N-EtFOSAA



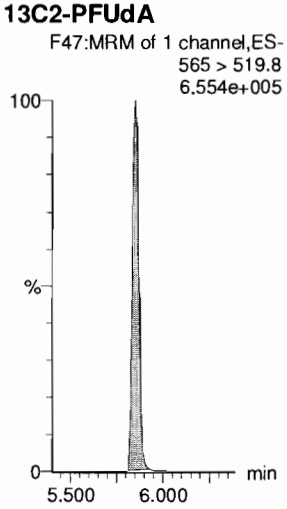
13C2-PFDoA



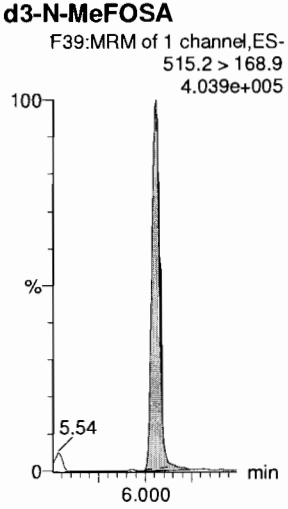
13C8-PFOS



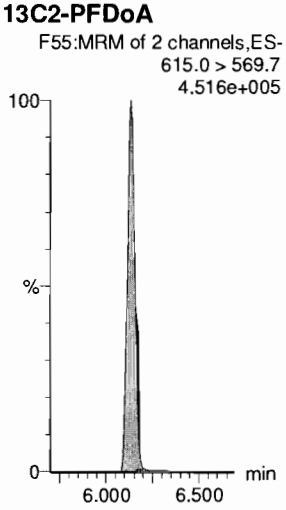
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

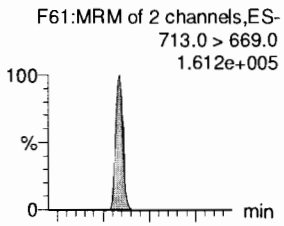


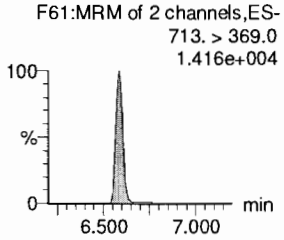
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

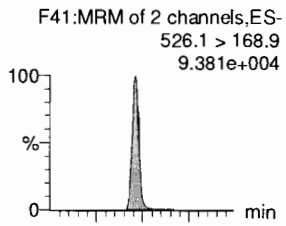
Name: 181202M2_6, Date: 02-Dec-2018, Time: 19:17:17, ID: ST181202M2-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

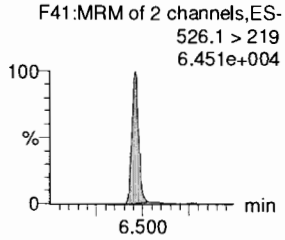
PFTeDA



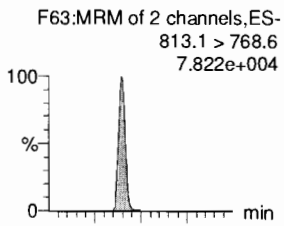


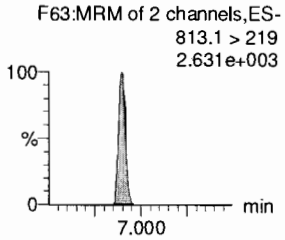
N-EtFOSA



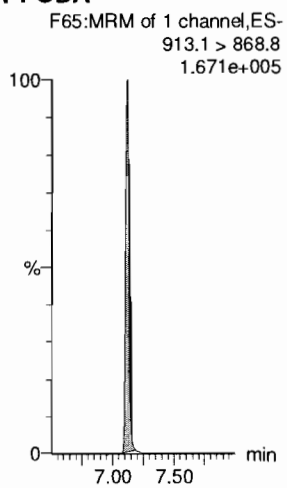


PFHxDA

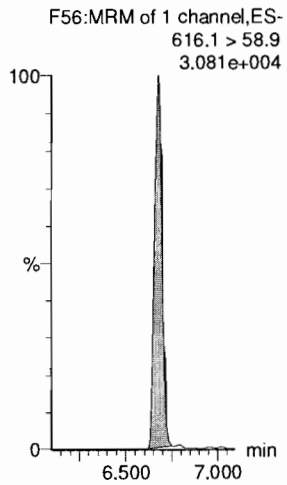




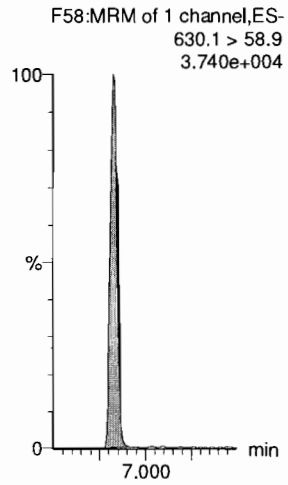
PFODA



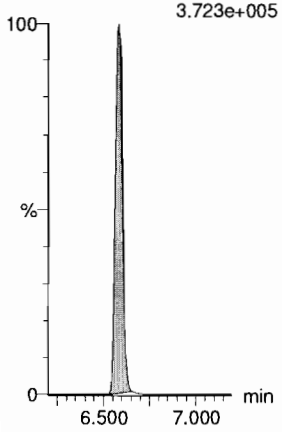
N-MeFOSE



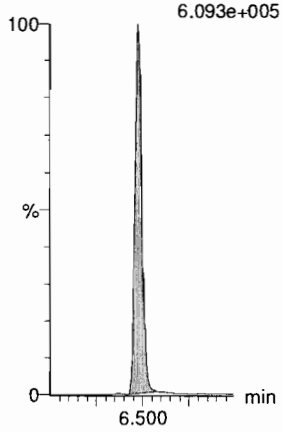
N-EtFOSE



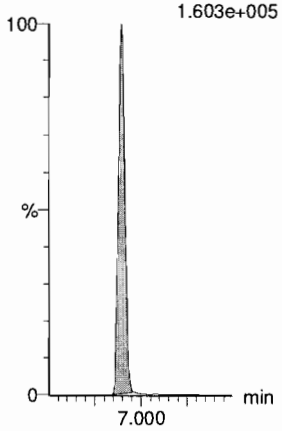
13C2-PFTeDA



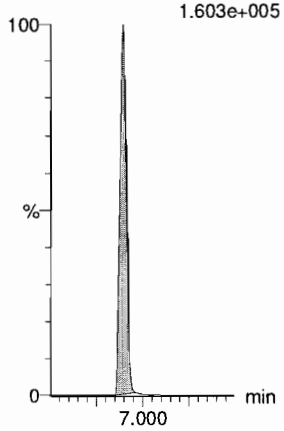
d5-N-ETFOSA



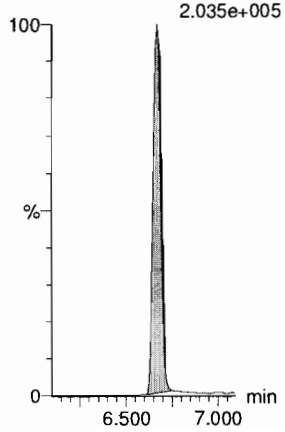
13C2-PFHxDA



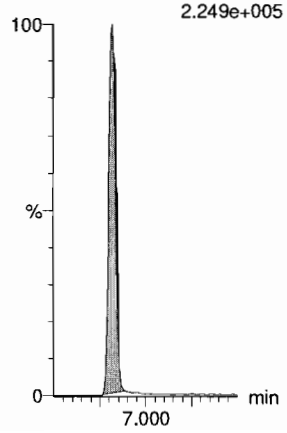
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

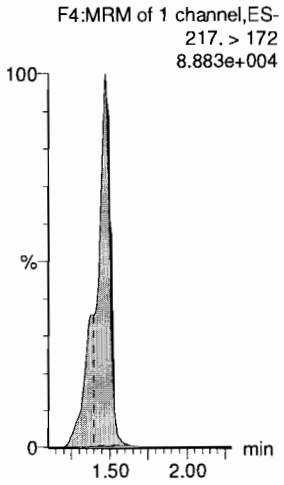


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

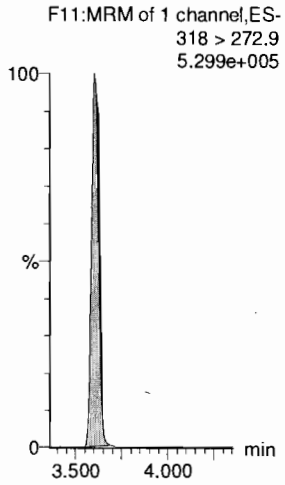
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_6, Date: 02-Dec-2018, Time: 19:17:17, ID: ST181202M2-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

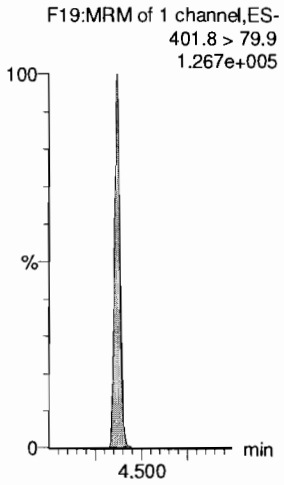
13C4-PFBA



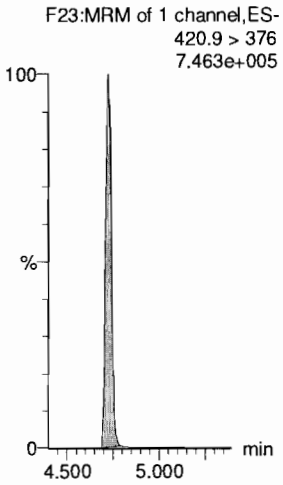
13C5-PFHxA



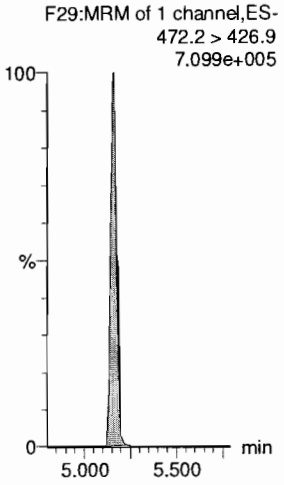
13C3-PFHxS



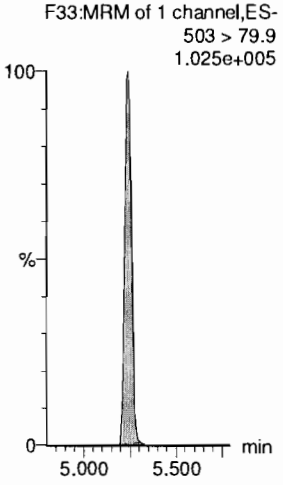
13C8-PFOA



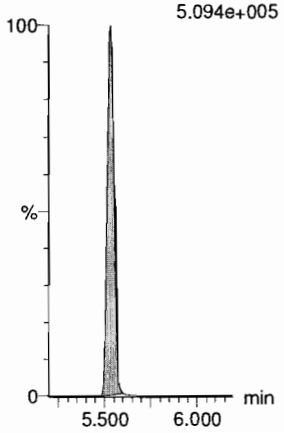
13C9-PFNA



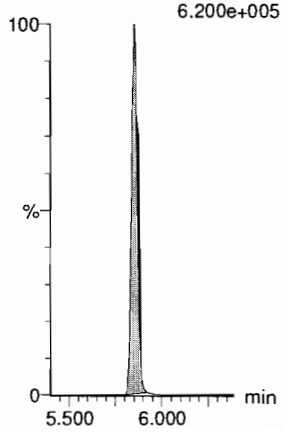
13C4-PFOS



13C6-PFDA



13C7-PFUdA

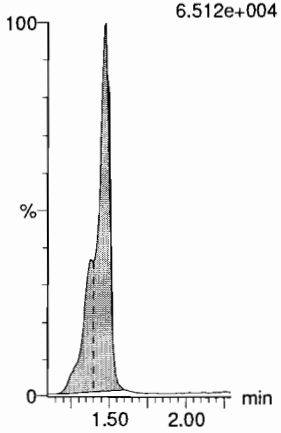


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

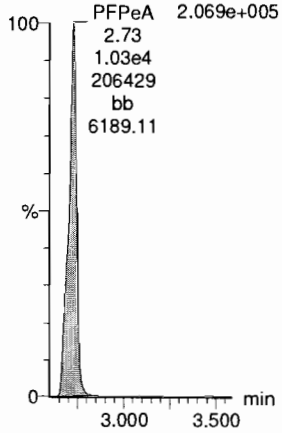
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

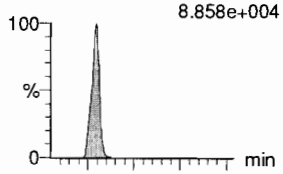
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
6.512e+004



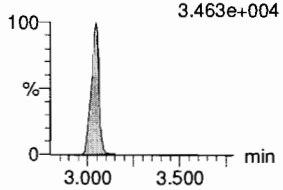
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
2.069e+005
PFPeA
2.73
1.03e4
206429
bb
6189.11



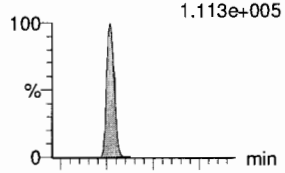
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
8.858e+004



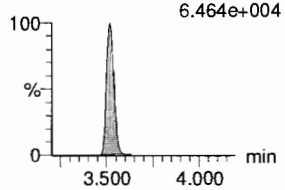
F7:MRM of 2 channels,ES-
299.0 > 99.0
3.463e+004



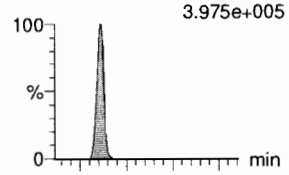
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
1.113e+005



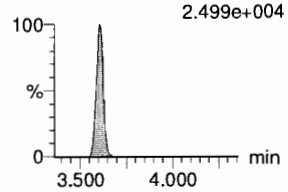
F12:MRM of 2 channels,ES-
327.2 > 81.1
6.464e+004



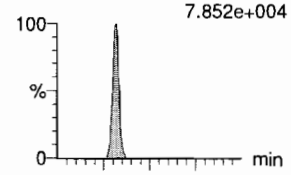
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
3.975e+005



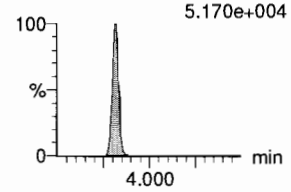
F9:MRM of 2 channels,ES-
313 > 118.9
2.499e+004



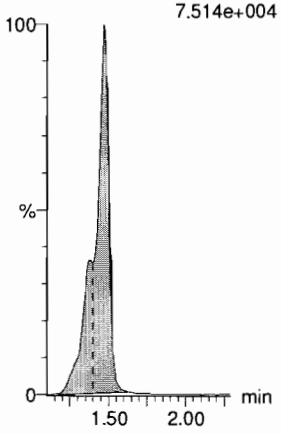
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
7.852e+004



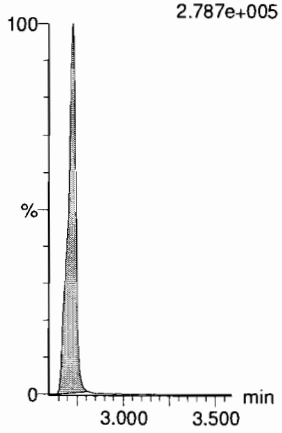
F15:MRM of 2 channels,ES-
349.1 > 99
5.170e+004



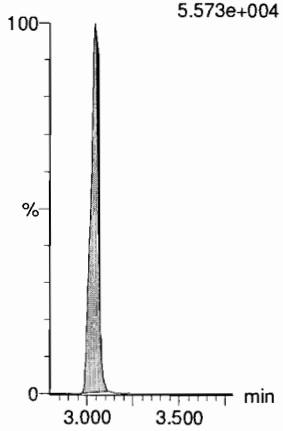
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
7.514e+004



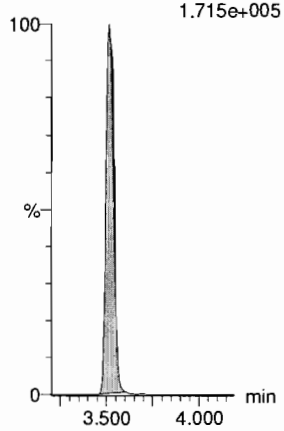
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.787e+005



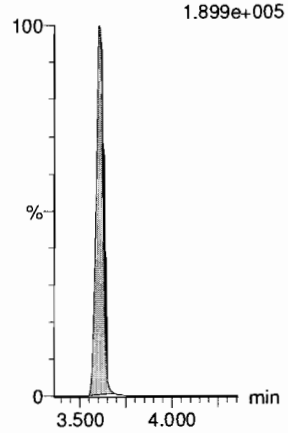
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
5.573e+004



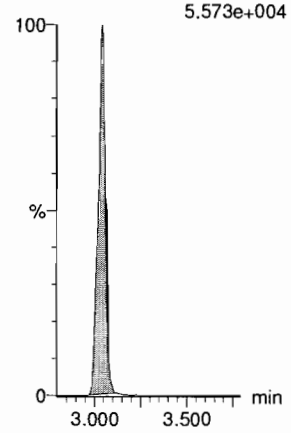
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.715e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
1.899e+005



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
5.573e+004

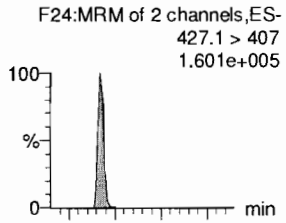


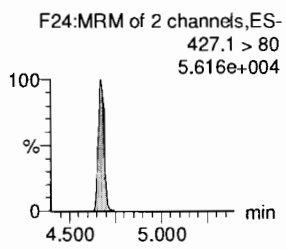
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

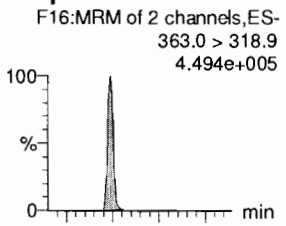
Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

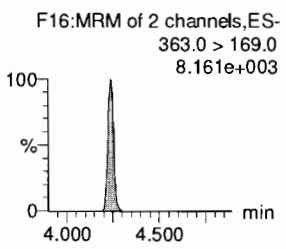
6:2 FTS



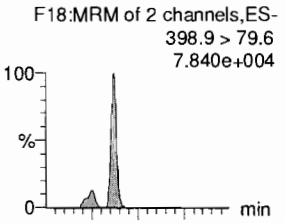


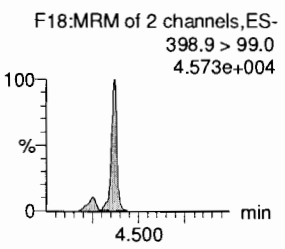
PFHpA



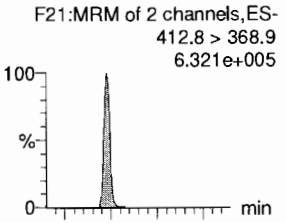


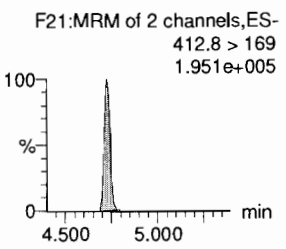
L-PFHxS



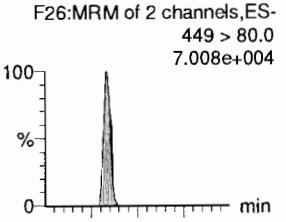


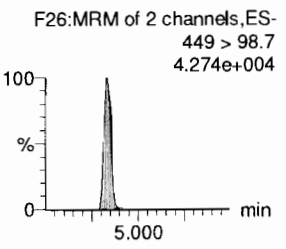
L-PFOA



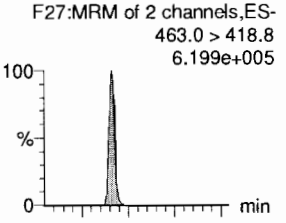


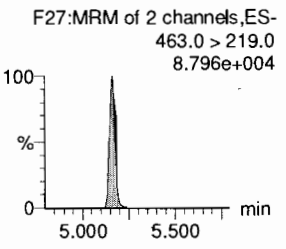
PFHpS



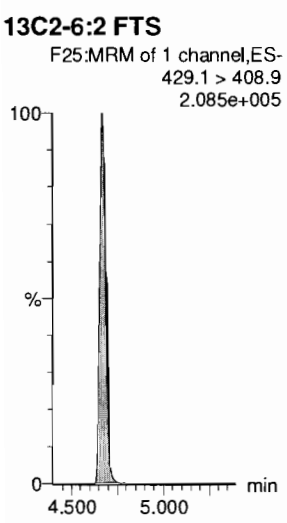


PFNA

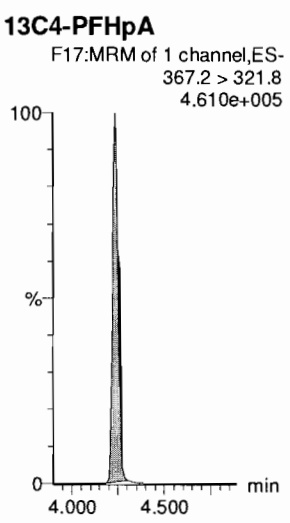




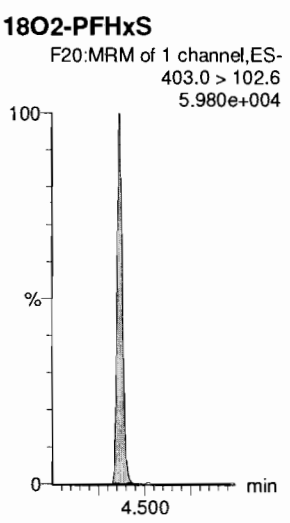
13C2-6:2 FTS



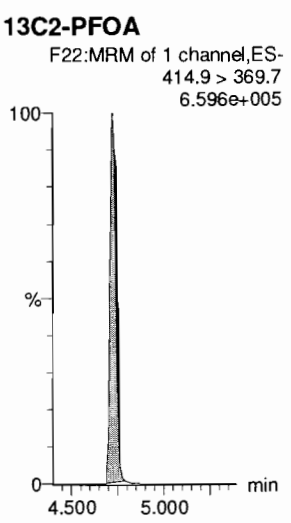
13C4-PFHpA



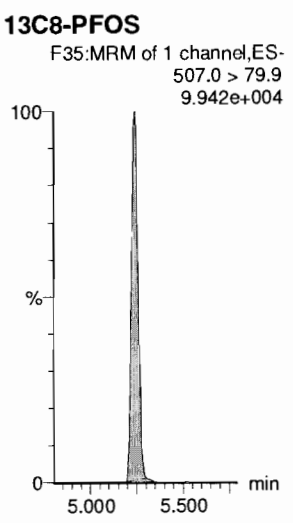
18O2-PFHxS



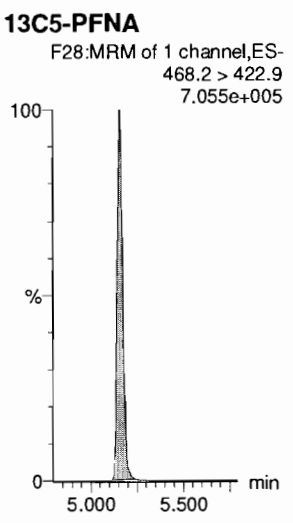
13C2-PFOA



13C8-PFOS



13C5-PFNA

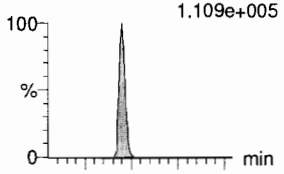


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

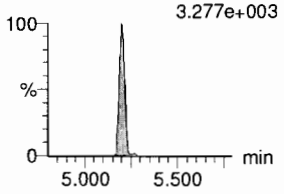
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

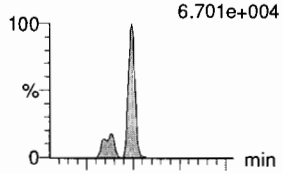
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
1.109e+005



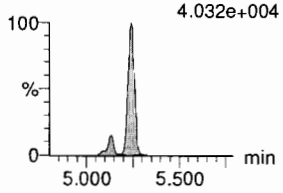
F30:MRM of 2 channels,ES-
497.9 > 169
3.277e+003



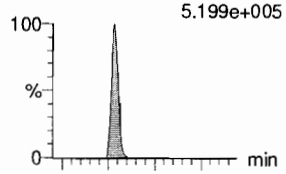
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
6.701e+004



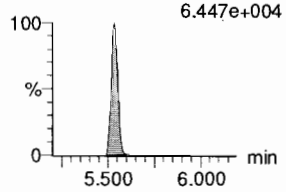
F32:MRM of 2 channels,ES-
498.9 > 99
4.032e+004



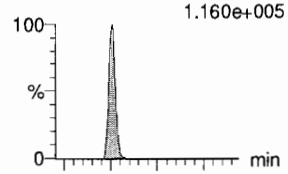
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
5.199e+005



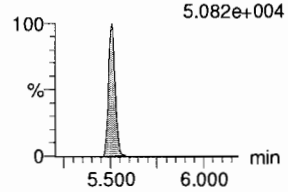
F37:MRM of 2 channels,ES-
513 > 219
6.447e+004



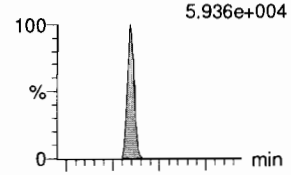
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
1.160e+005



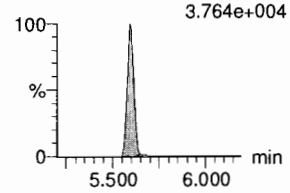
F42:MRM of 2 channels,ES-
527 > 80
5.082e+004



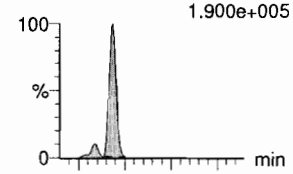
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
5.936e+004



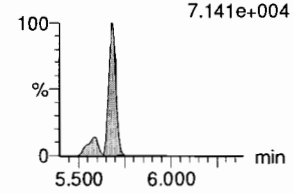
F45:MRM of 2 channels,ES-
549.1 > 99.1
3.764e+004



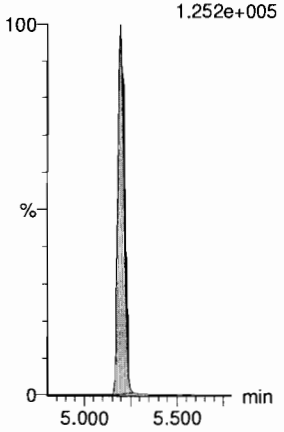
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
1.900e+005



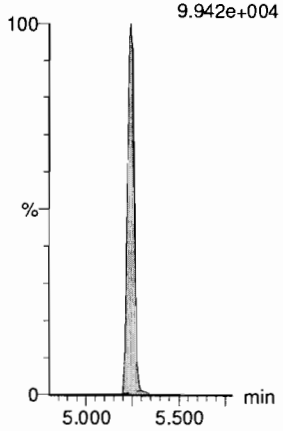
F48:MRM of 2 channels,ES-
570. > 512
7.141e+004



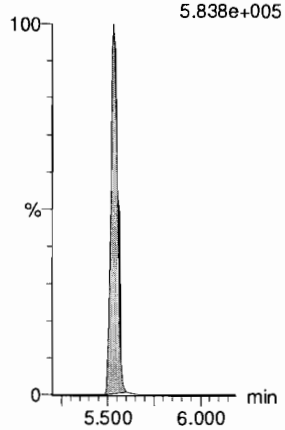
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.252e+005



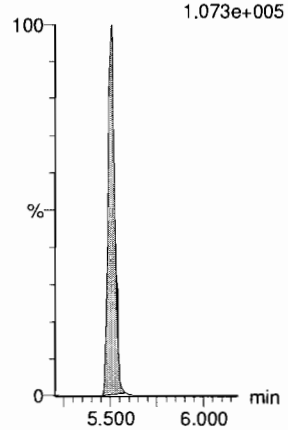
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.942e+004



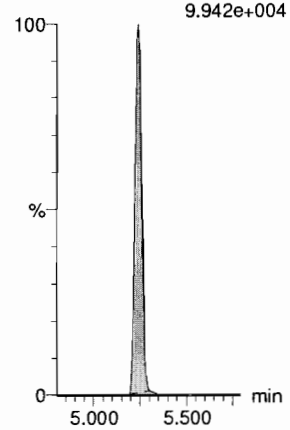
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.838e+005



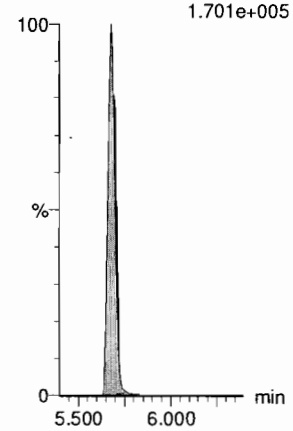
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
1.073e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.942e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.701e+005

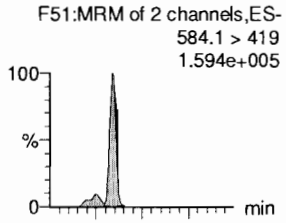


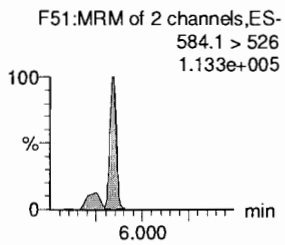
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

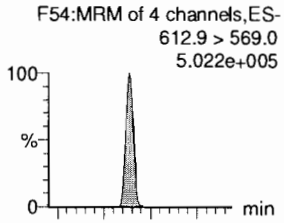
Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

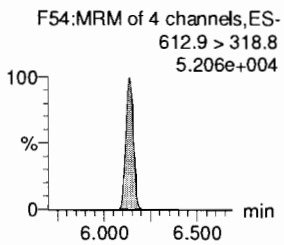
L-EtFOSAA



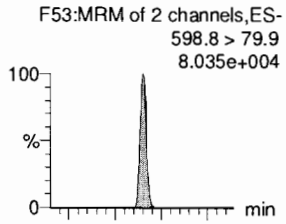


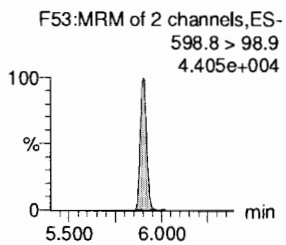
PFDoA



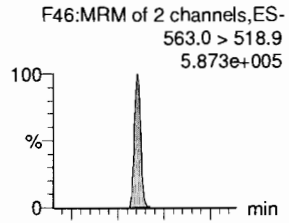


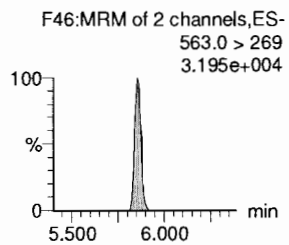
PFDS



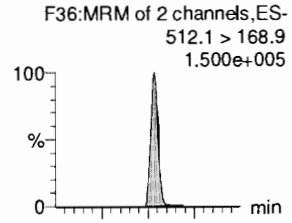


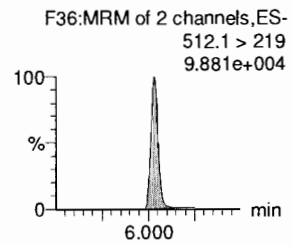
PFUdA



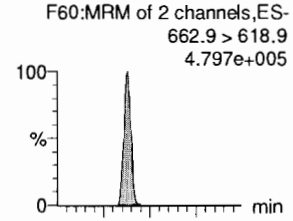


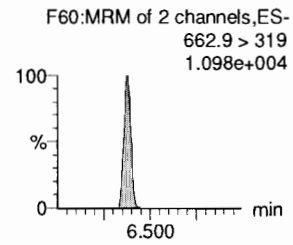
N-MeFOSA



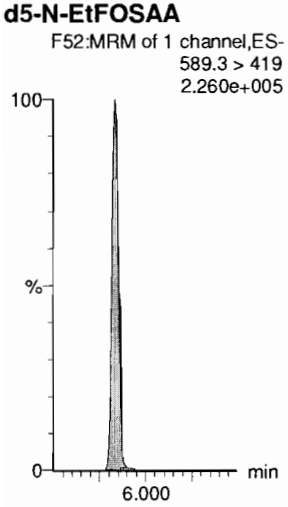


PFTrDA

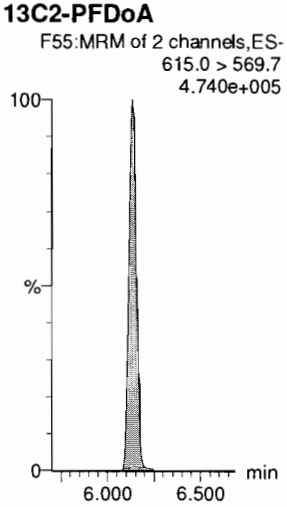




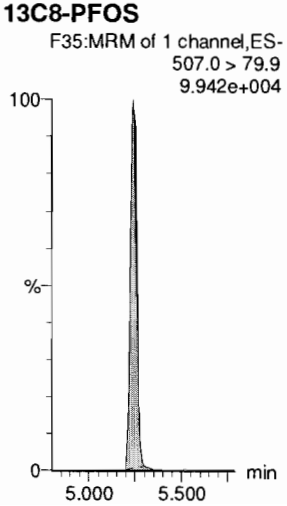
d5-N-EtFOSAA



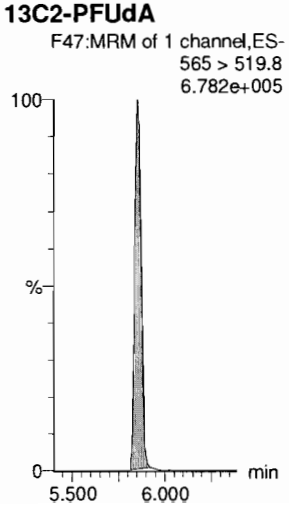
13C2-PFDoA



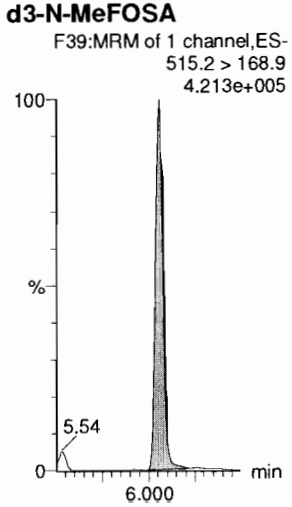
13C8-PFOS



13C2-PFUdA



d3-N-MeFOSA



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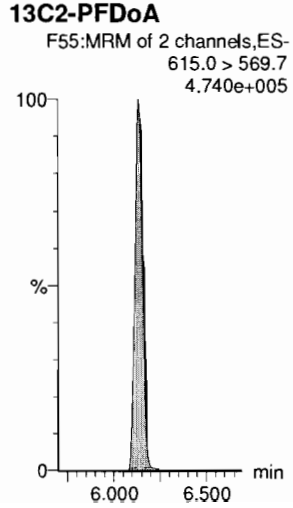

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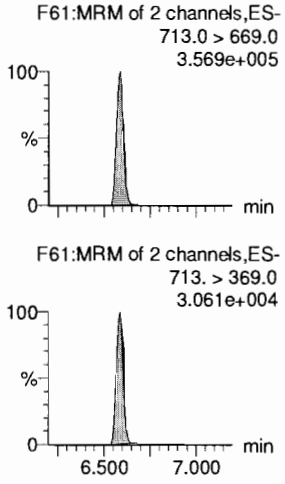
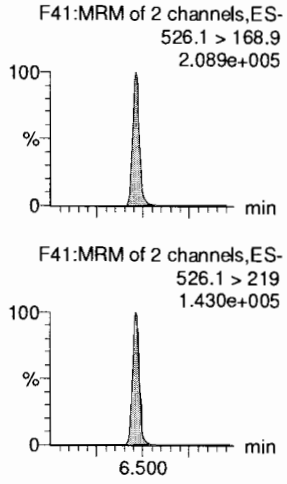
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

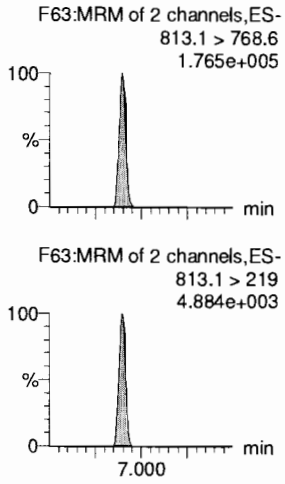
PFTeDA



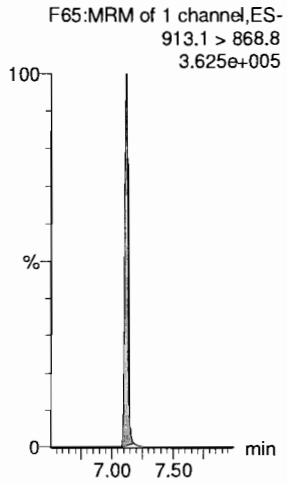
N-EtFOSA



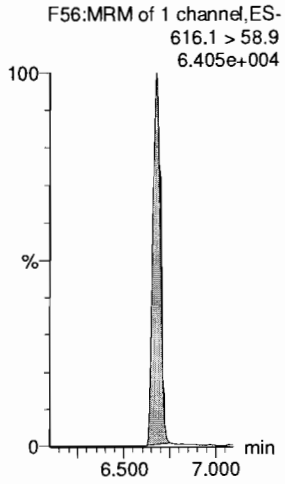
PFHxDA



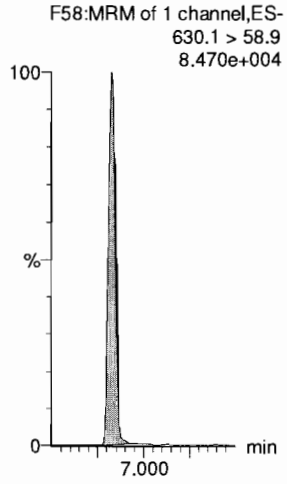
PFODA



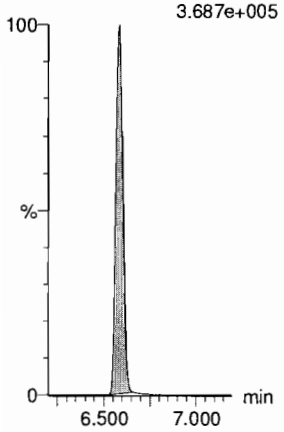
N-MeFOSE



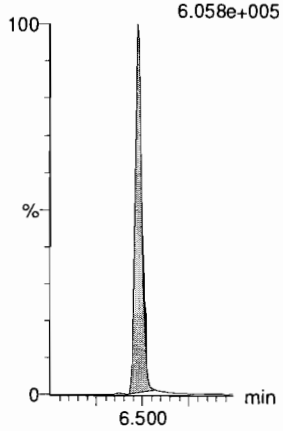
N-EtFOSE



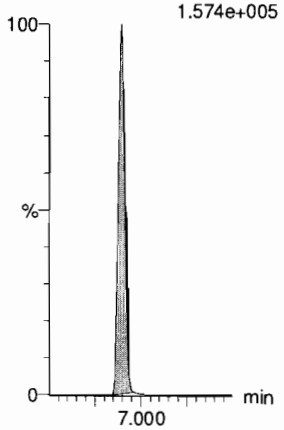
13C2-PFTeDA



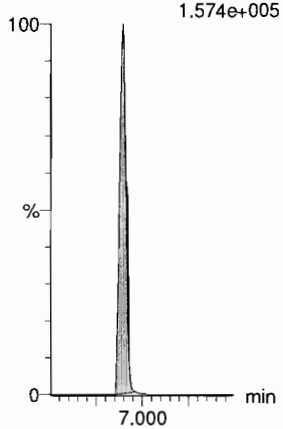
d5-N-ETFOSA



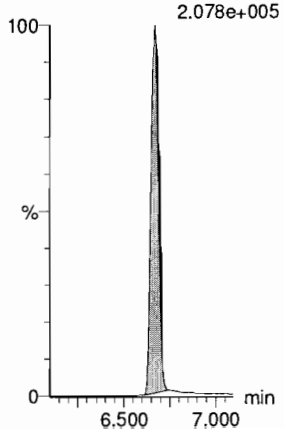
13C2-PFHxDA



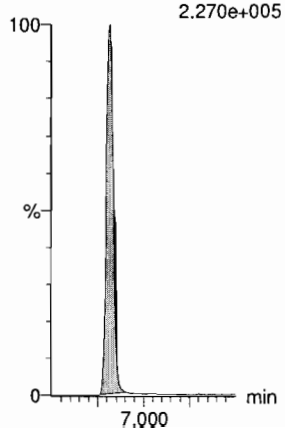
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

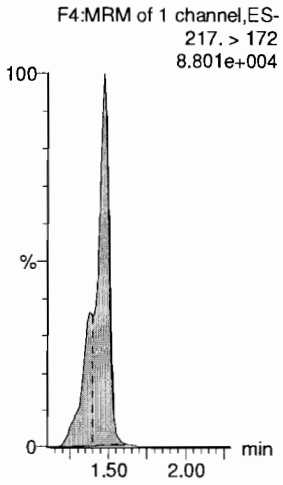


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

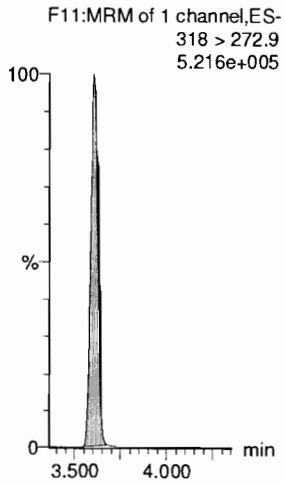
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_7, Date: 02-Dec-2018, Time: 19:27:56, ID: ST181202M2-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

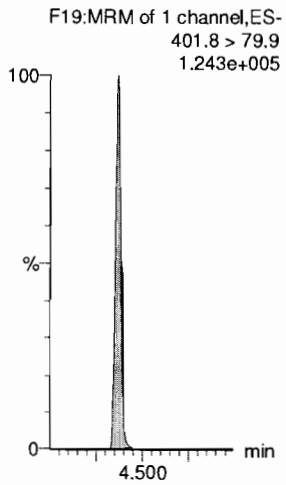
13C4-PFBA



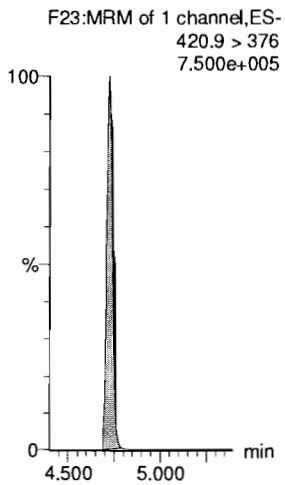
13C5-PFHxA



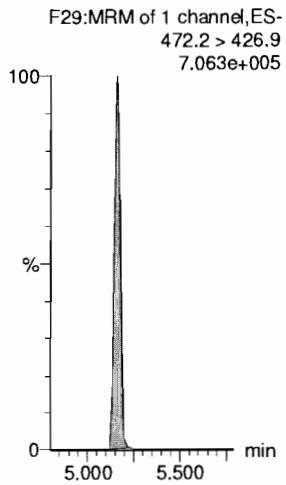
13C3-PFHxS



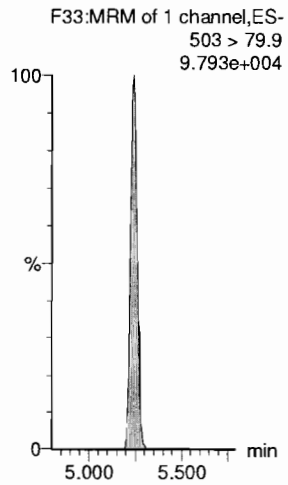
13C8-PFOA



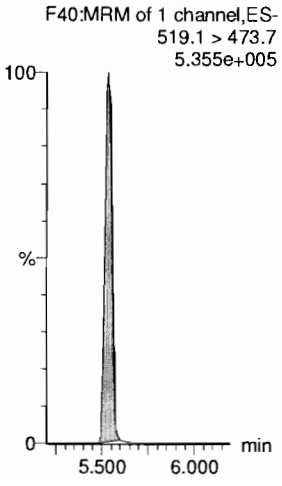
13C9-PFNA



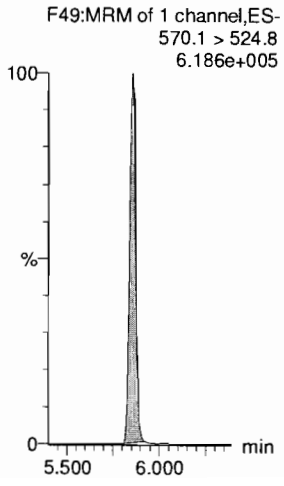
13C4-PFOS



13C6-PFDA



13C7-PFUdA

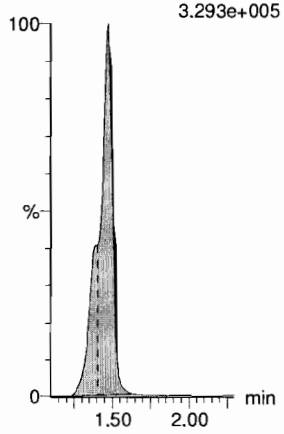


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

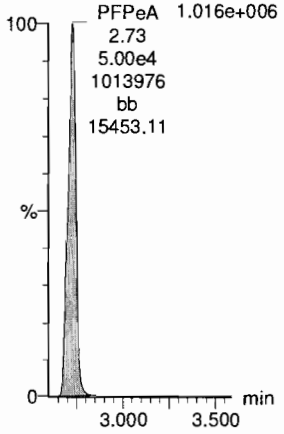
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_8, Date: 02-Dec-2018, Time: 19:38:29, ID: ST181202M2-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

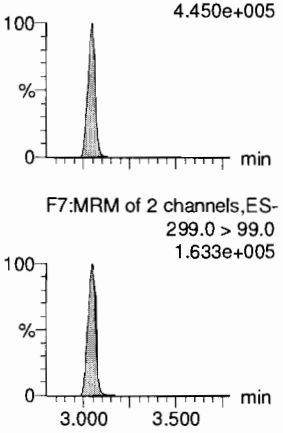
PFBA



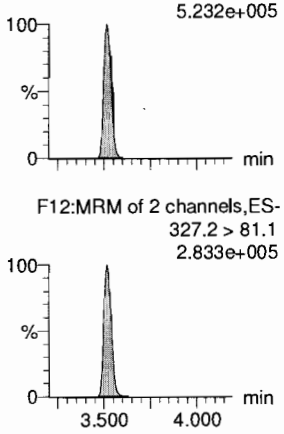
PFPeA



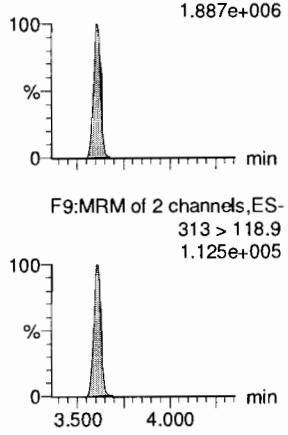
PFBS



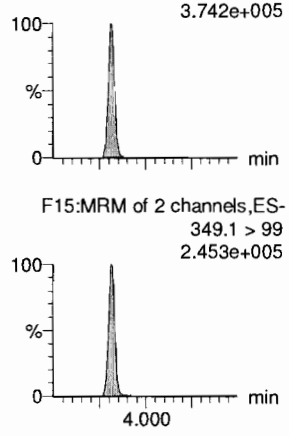
4:2 FTS



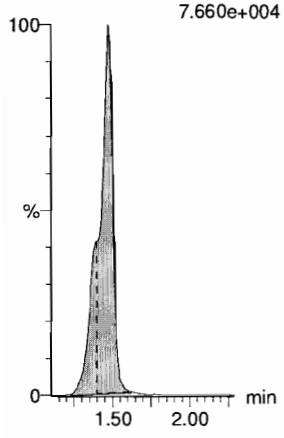
PFHxA



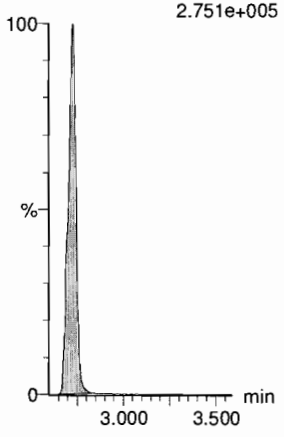
PFPeS



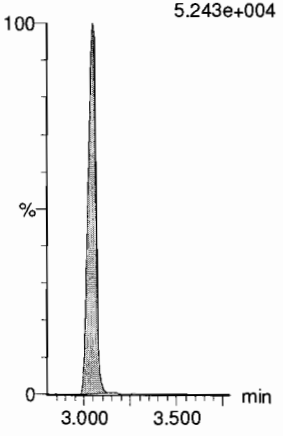
13C3-PFBA



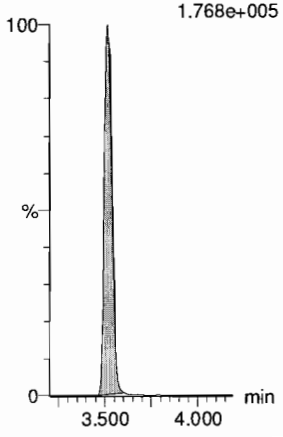
13C3-PFPeA



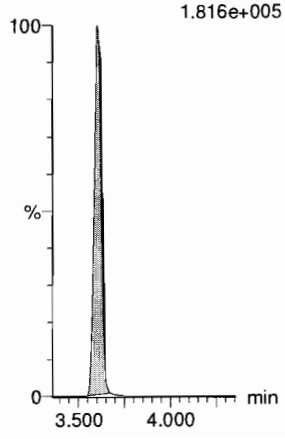
13C3-PFBS



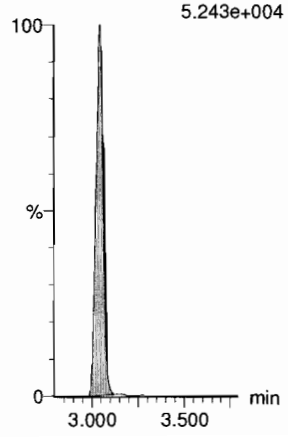
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

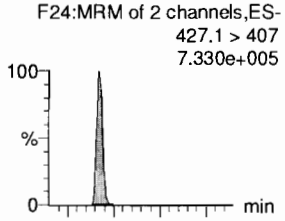


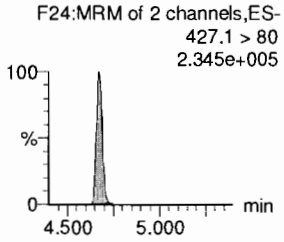
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

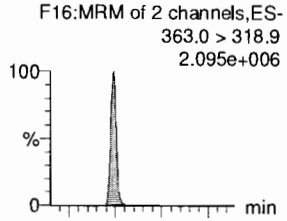
Name: 181202M2_8, Date: 02-Dec-2018, Time: 19:38:29, ID: ST181202M2-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

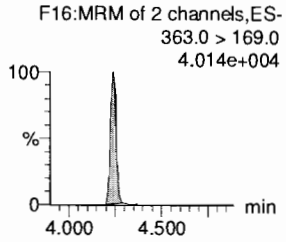
6:2 FTS



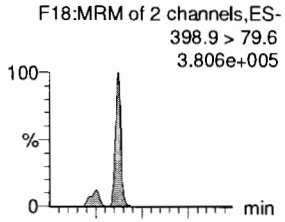


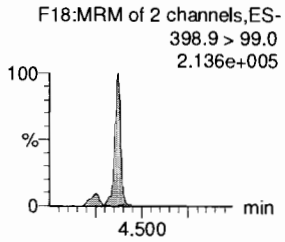
PFHpA



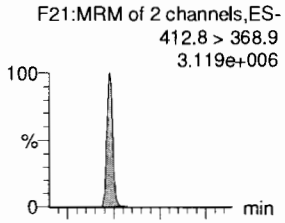


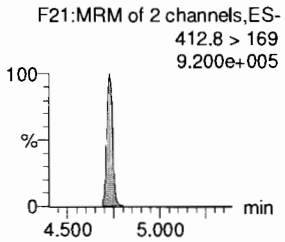
L-PFHxS



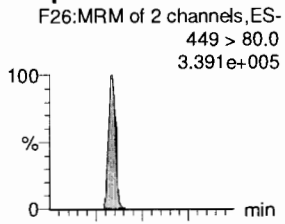


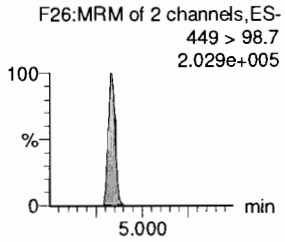
L-PFOA



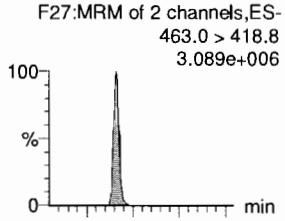


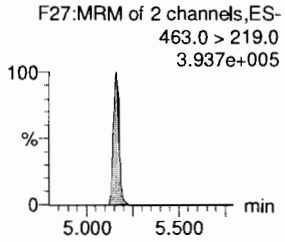
PFHpS



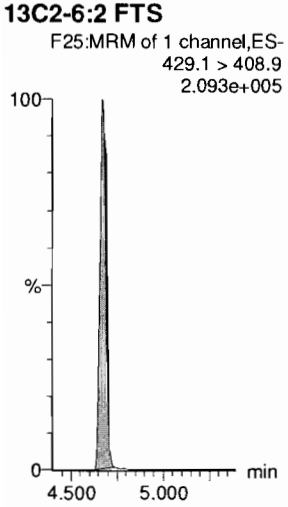


PFNA

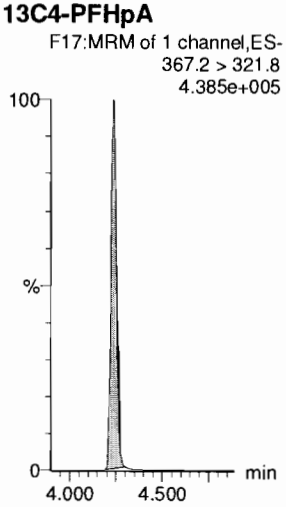




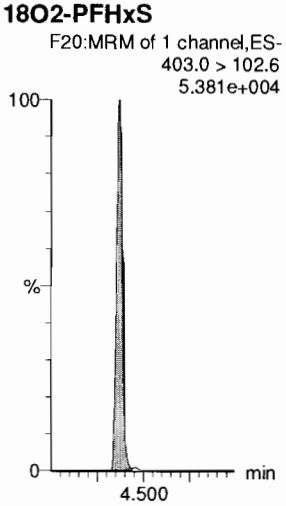
13C2-6:2 FTS



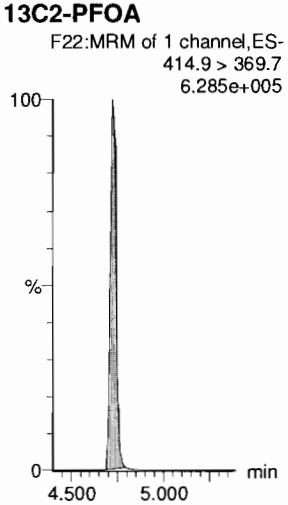
13C4-PFHpA



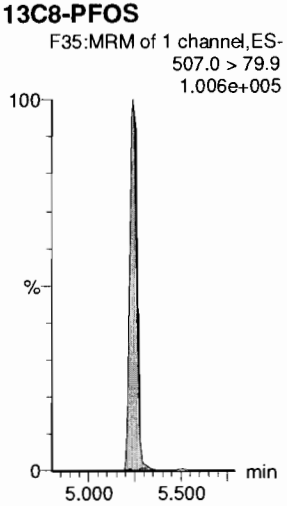
18O2-PFHxS



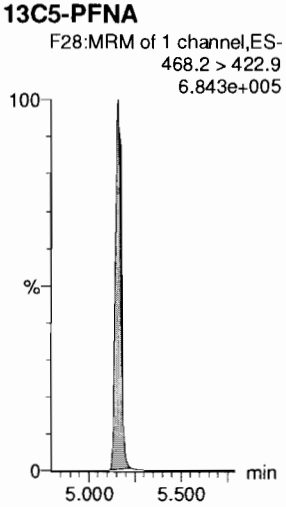
13C2-PFOA



13C8-PFOS



13C5-PFNA

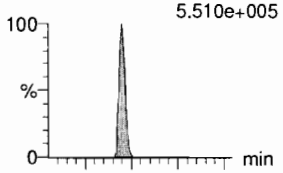


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

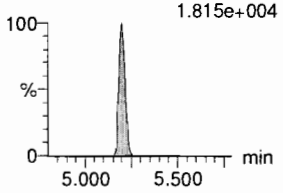
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_8, Date: 02-Dec-2018, Time: 19:38:29, ID: ST181202M2-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

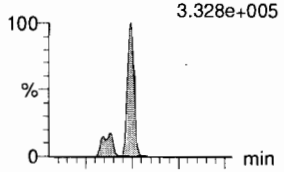
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
5.510e+005



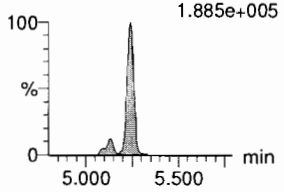
F30:MRM of 2 channels,ES-
497.9 > 169
1.815e+004



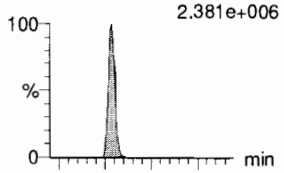
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
3.328e+005



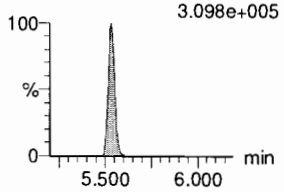
F32:MRM of 2 channels,ES-
498.9 > 99
1.885e+005



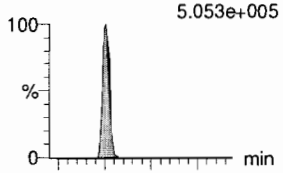
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
2.381e+006



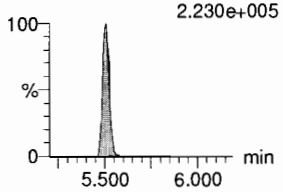
F37:MRM of 2 channels,ES-
513 > 219
3.098e+005



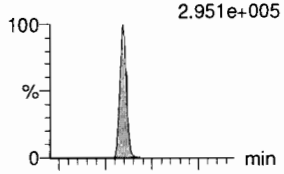
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
5.053e+005



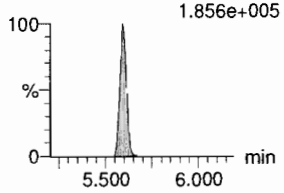
F42:MRM of 2 channels,ES-
527 > 80
2.230e+005



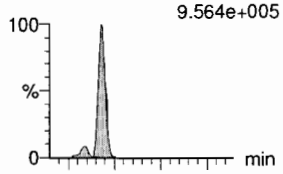
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
2.951e+005



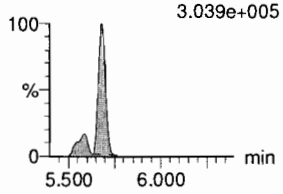
F45:MRM of 2 channels,ES-
549.1 > 99.1
1.856e+005



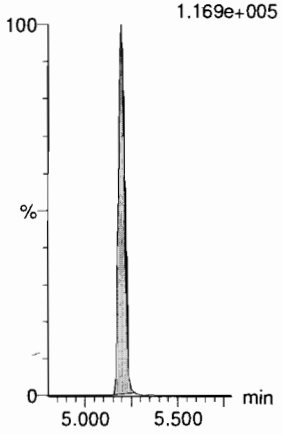
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
9.564e+005



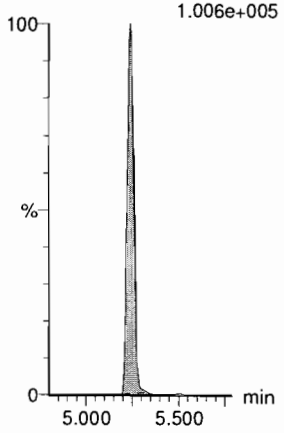
F48:MRM of 2 channels,ES-
570. > 512
3.039e+005



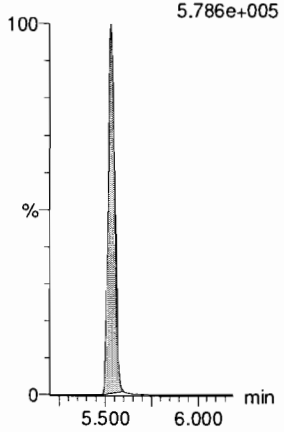
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.169e+005



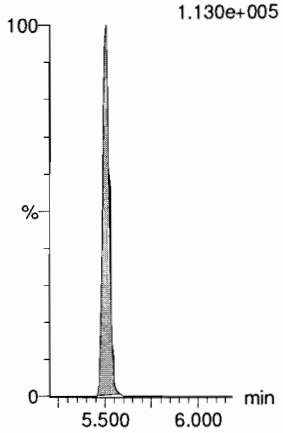
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
1.006e+005



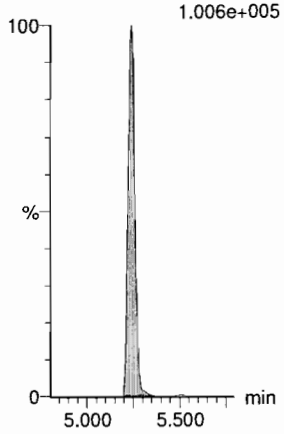
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.786e+005



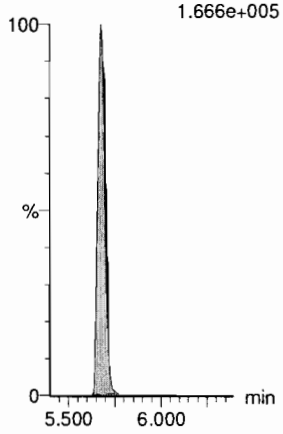
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
1.130e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
1.006e+005



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.666e+005

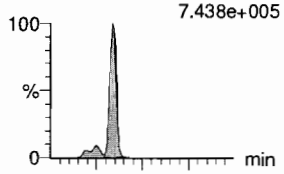


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

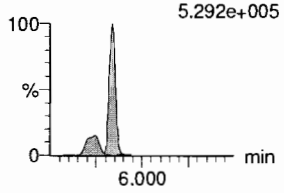
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_8, Date: 02-Dec-2018, Time: 19:38:29, ID: ST181202M2-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

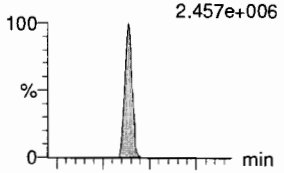
L-EtFOSAA
F51:MRM of 2 channels,ES-
584.1 > 419
7.438e+005



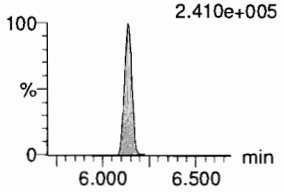
F51:MRM of 2 channels,ES-
584.1 > 526
5.292e+005



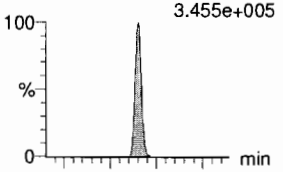
PFDoA
F54:MRM of 4 channels,ES-
612.9 > 569.0
2.457e+006



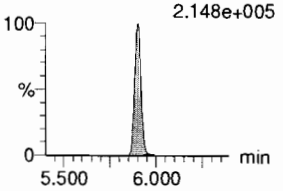
F54:MRM of 4 channels,ES-
612.9 > 318.8
2.410e+005



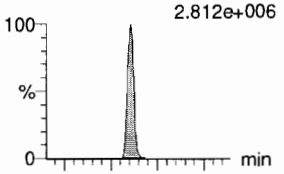
PFDS
F53:MRM of 2 channels,ES-
598.8 > 79.9
3.455e+005



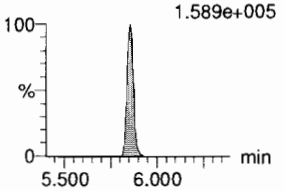
F53:MRM of 2 channels,ES-
598.8 > 98.9
2.148e+005



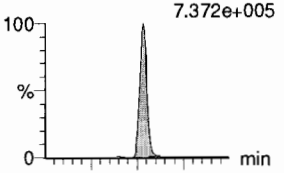
PFUdA
F46:MRM of 2 channels,ES-
563.0 > 518.9
2.812e+006



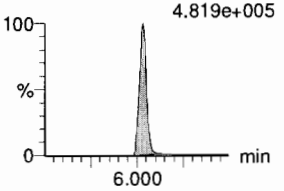
F46:MRM of 2 channels,ES-
563.0 > 269
1.589e+005



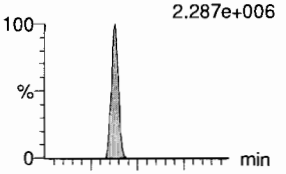
N-MeFOSA
F36:MRM of 2 channels,ES-
512.1 > 168.9
7.372e+005



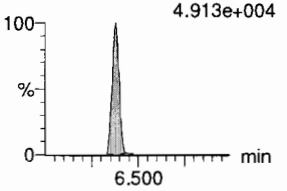
F36:MRM of 2 channels,ES-
512.1 > 219
4.819e+005



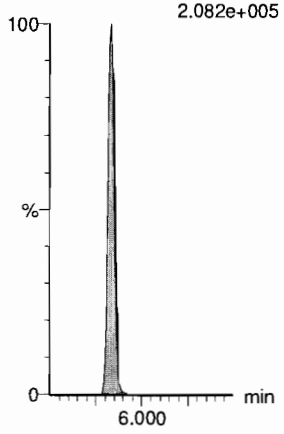
PFTrDA
F60:MRM of 2 channels,ES-
662.9 > 618.9
2.287e+006



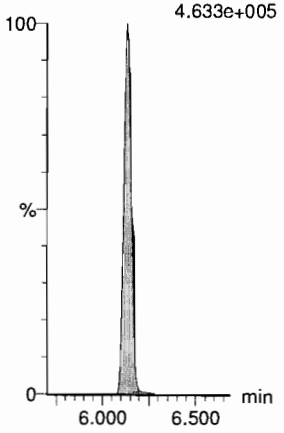
F60:MRM of 2 channels,ES-
662.9 > 319
4.913e+004



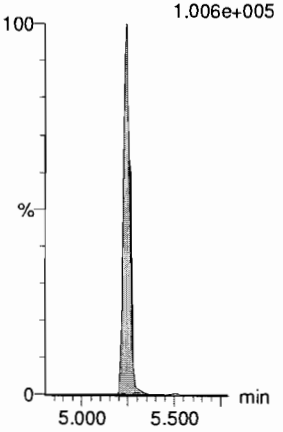
d5-N-EtFOSAA
F52:MRM of 1 channel,ES-
589.3 > 419
2.082e+005



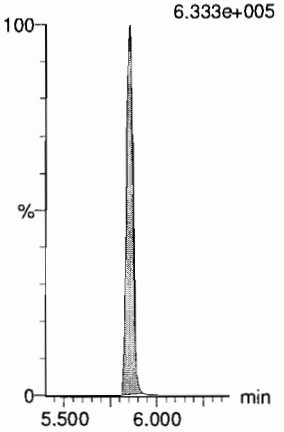
13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
4.633e+005



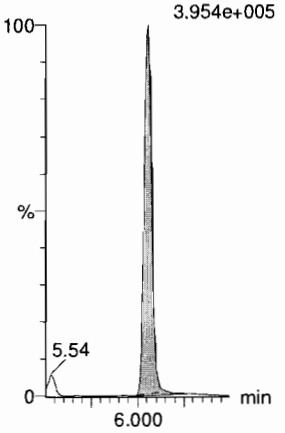
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
1.006e+005



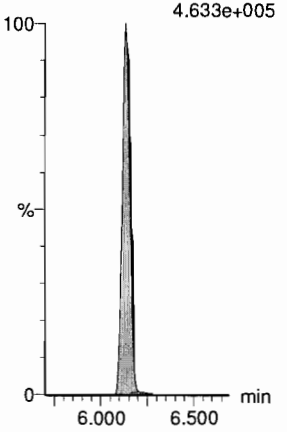
13C2-PFUdA
F47:MRM of 1 channel,ES-
565 > 519.8
6.333e+005



d3-N-MeFOSA
F39:MRM of 1 channel,ES-
515.2 > 168.9
3.954e+005



13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
4.633e+005

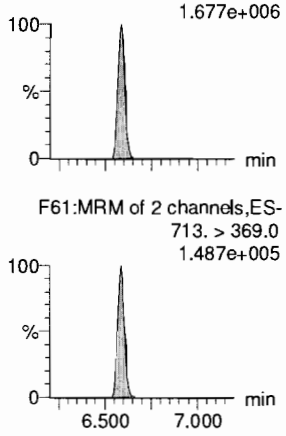


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

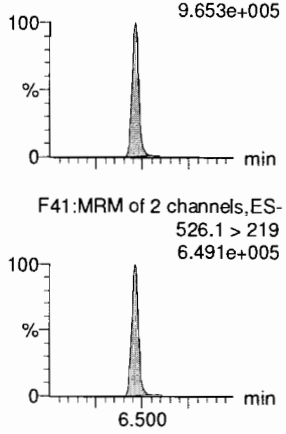
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_8, Date: 02-Dec-2018, Time: 19:38:29, ID: ST181202M2-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

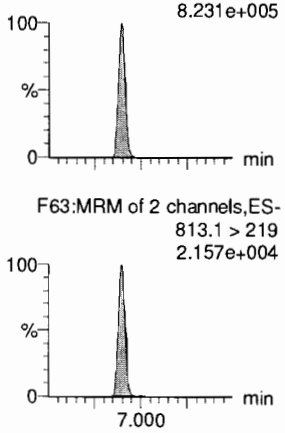
PFTeDA



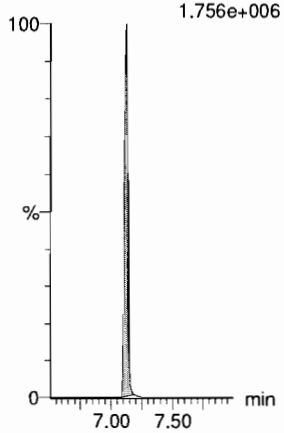
N-EtFOSA



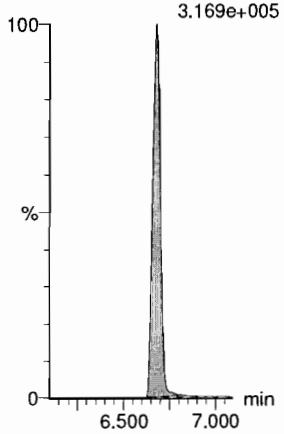
PFHxDA



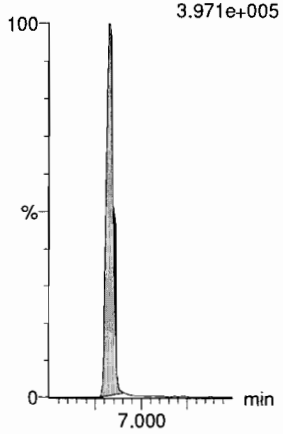
PFODA



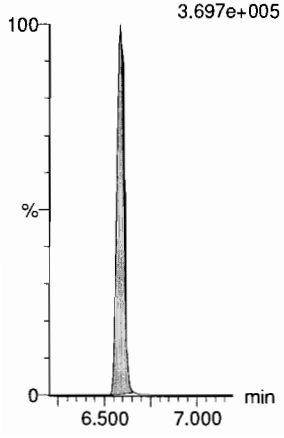
N-MeFOSE



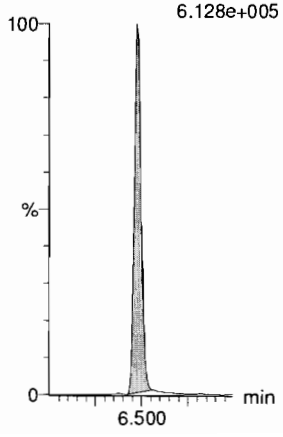
N-EtFOSE



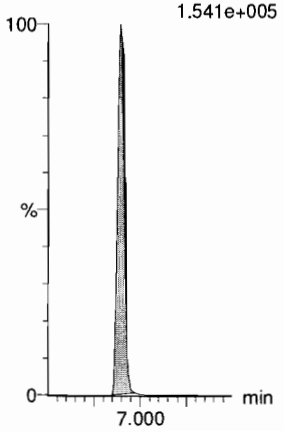
13C2-PFTeDA



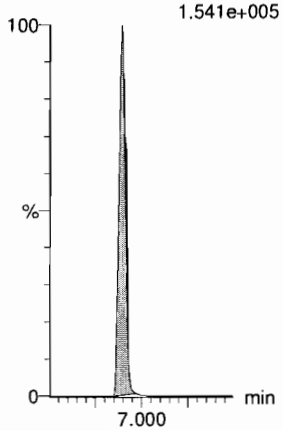
d5-N-ETFOSA



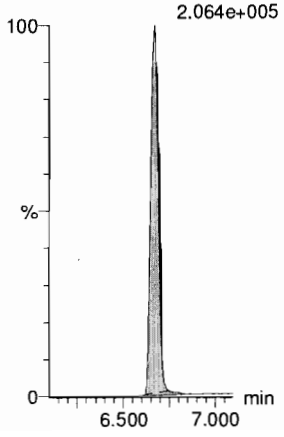
13C2-PFHxDA



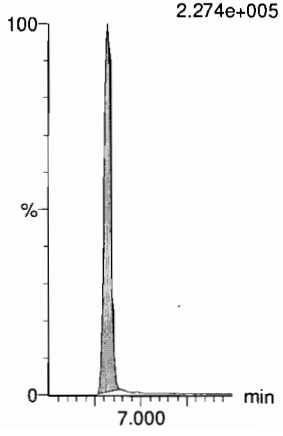
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

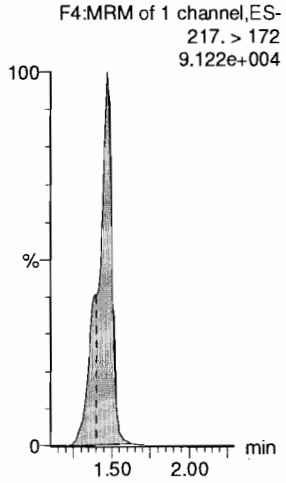


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

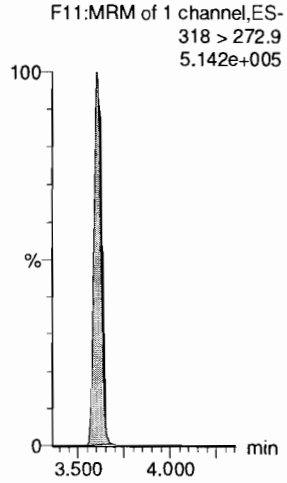
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_8, Date: 02-Dec-2018, Time: 19:38:29, ID: ST181202M2-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

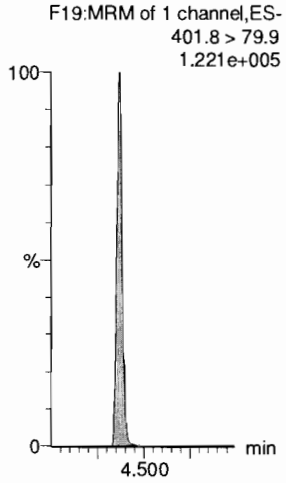
13C4-PFBA



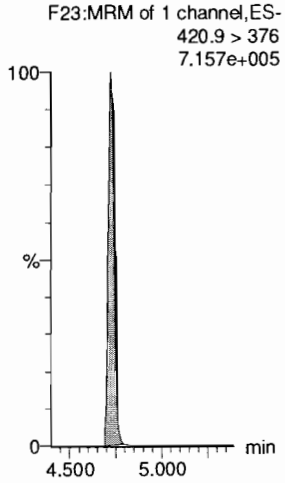
13C5-PFHxA



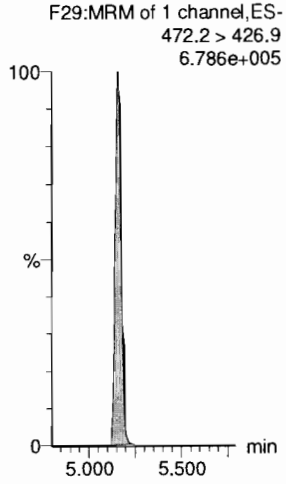
13C3-PFHxS



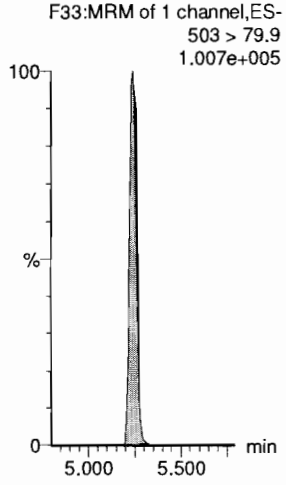
13C8-PFOA



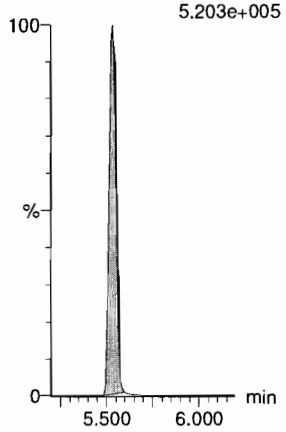
13C9-PFNA



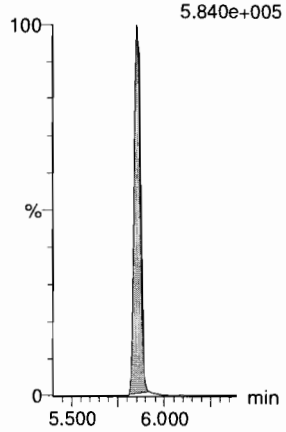
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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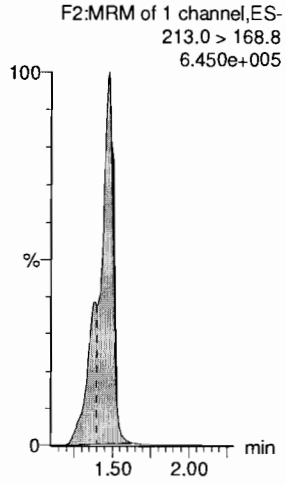
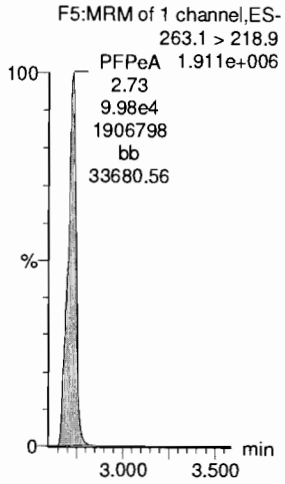
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_9, Date: 02-Dec-2018, Time: 19:49:07, ID: ST181202M2-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

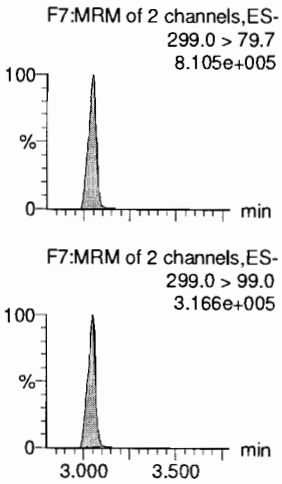
PFBA



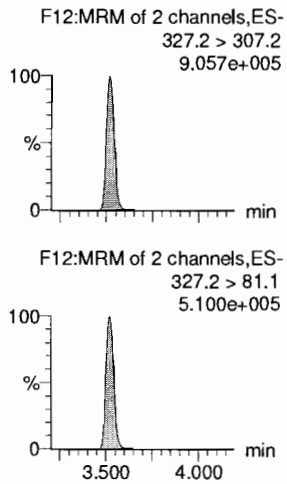
PFPeA



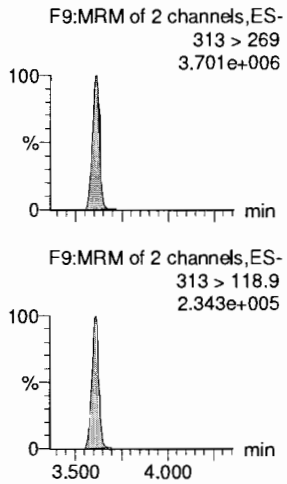
PFBS



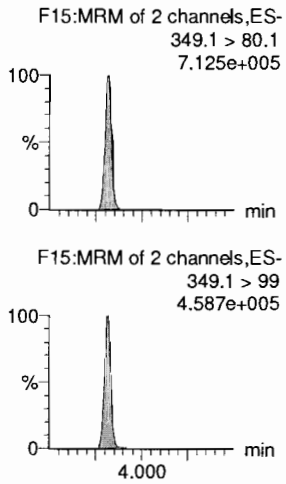
4:2 FTS



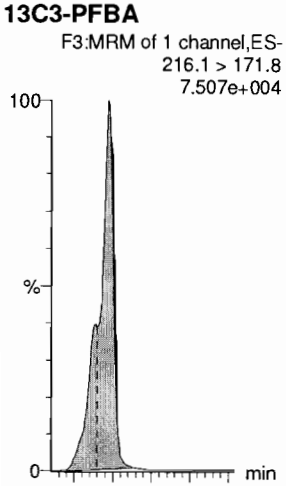
PFHxA



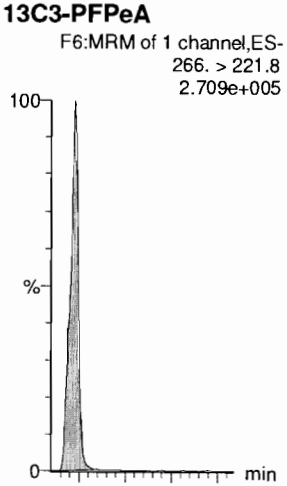
PFPeS



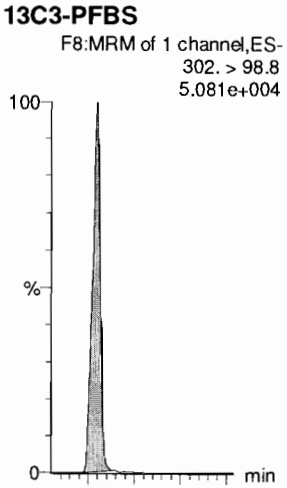
13C3-PFBA



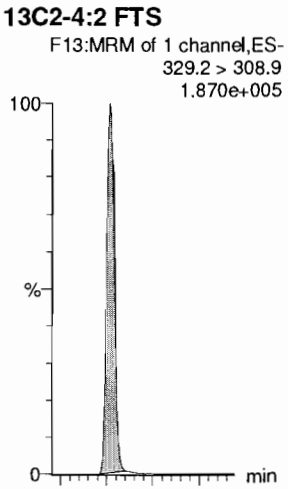
13C3-PFPeA



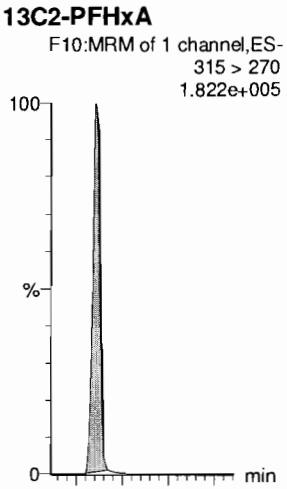
13C3-PFBS



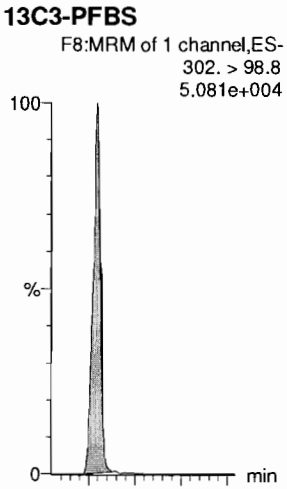
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

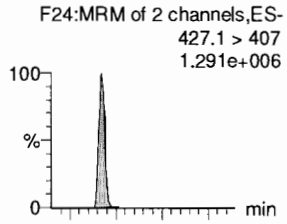


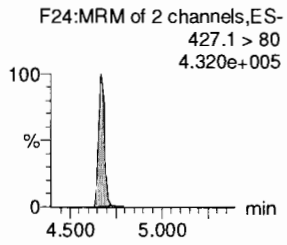
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

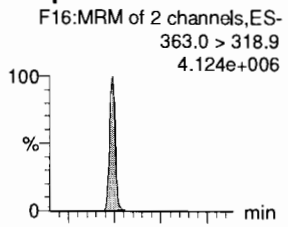
Name: 181202M2_9, Date: 02-Dec-2018, Time: 19:49:07, ID: ST181202M2-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

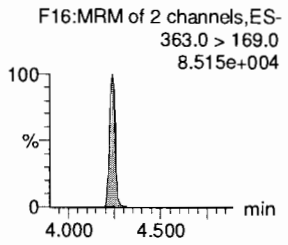
6:2 FTS



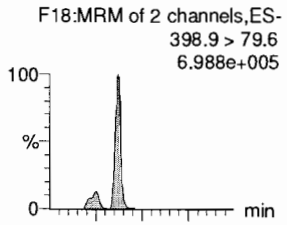


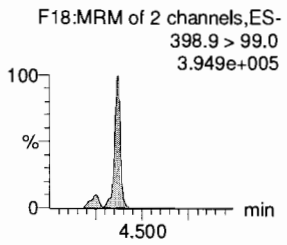
PFHpA



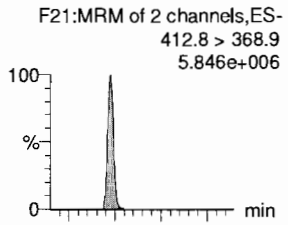


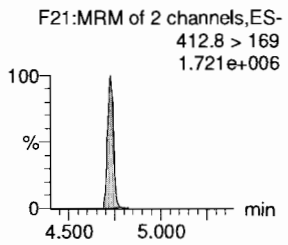
L-PFHxS



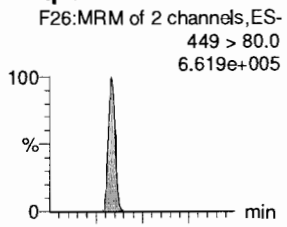


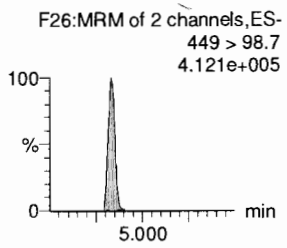
L-PFOA



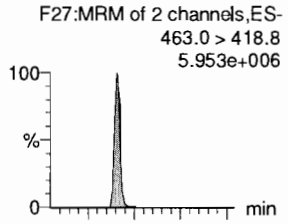


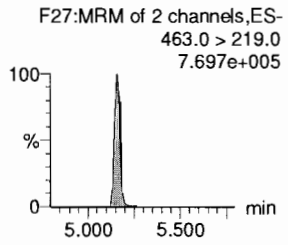
PFHpS



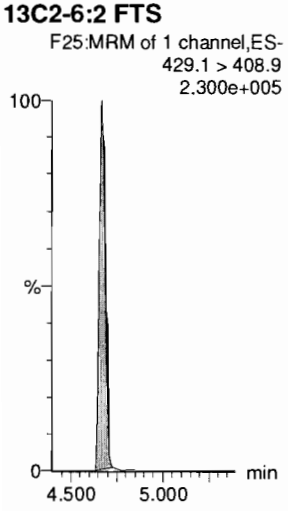


PFNA

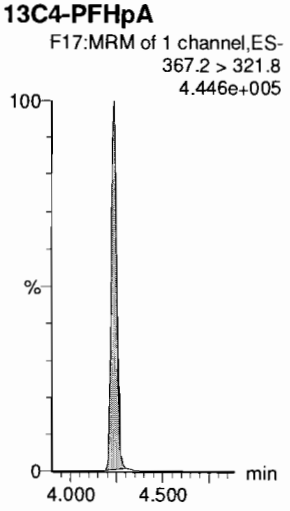




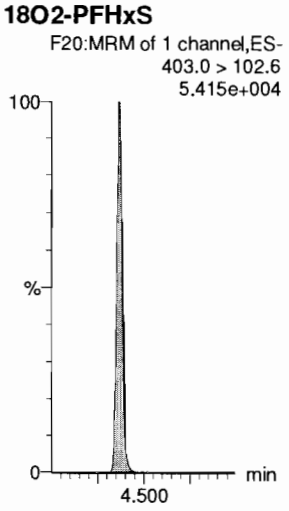
13C2-6:2 FTS



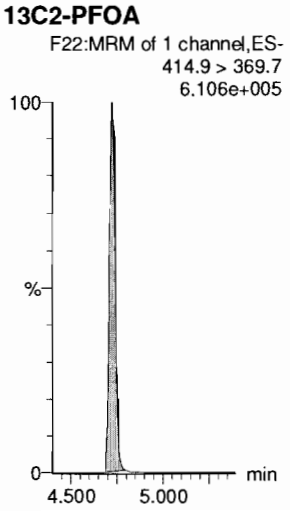
13C4-PFHpA



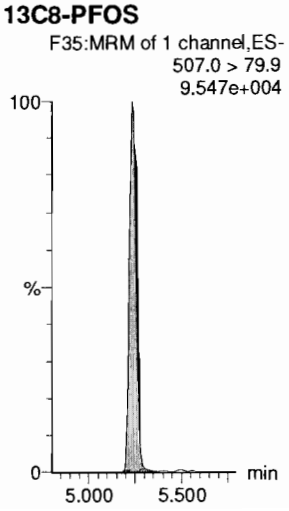
18O2-PFHxS



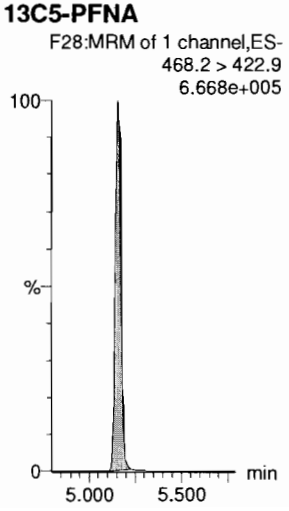
13C2-PFOA



13C8-PFOS



13C5-PFNA



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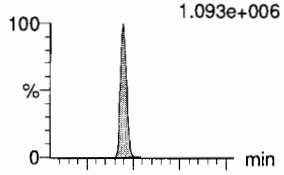
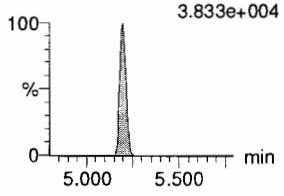
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_9, Date: 02-Dec-2018, Time: 19:49:07, ID: ST181202M2-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

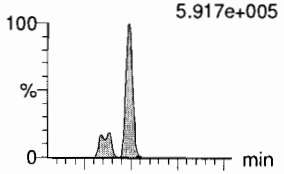
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
1.093e+006



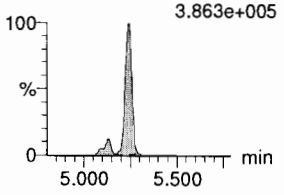
F30:MRM of 2 channels,ES-
497.9 > 169
3.833e+004



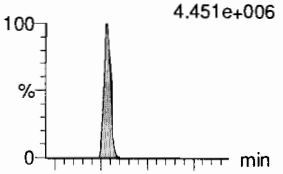
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
5.917e+005



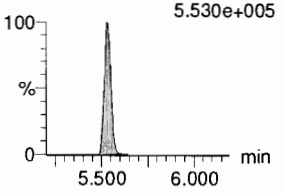
F32:MRM of 2 channels,ES-
498.9 > 99
3.863e+005



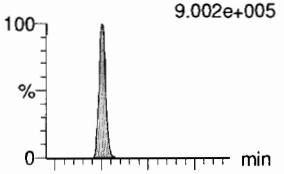
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
4.451e+006



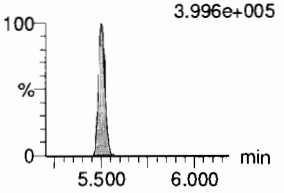
F37:MRM of 2 channels,ES-
513 > 219
5.530e+005



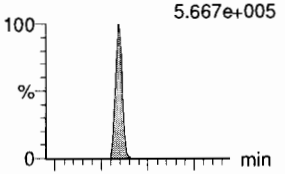
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
9.002e+005



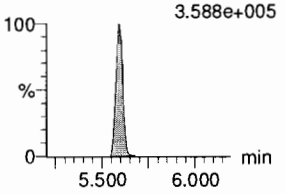
F42:MRM of 2 channels,ES-
527 > 80
3.996e+005



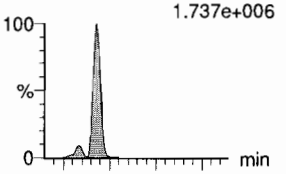
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
5.667e+005



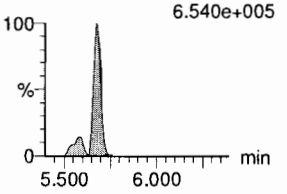
F45:MRM of 2 channels,ES-
549.1 > 99.1
3.588e+005



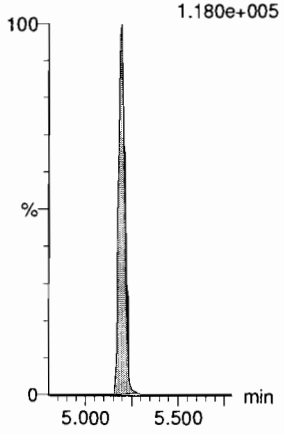
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
1.737e+006



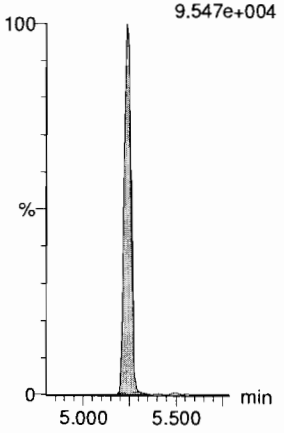
F48:MRM of 2 channels,ES-
570. > 512
6.540e+005



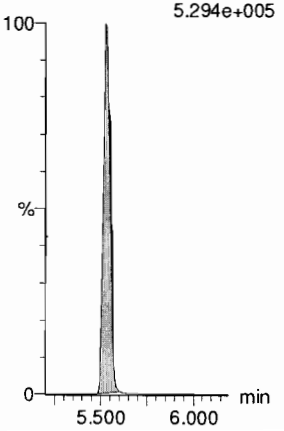
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.180e+005



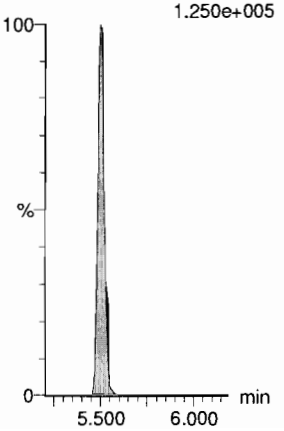
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.547e+004



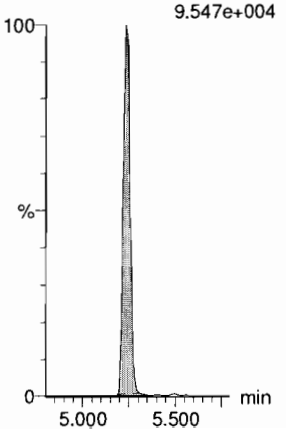
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.294e+005



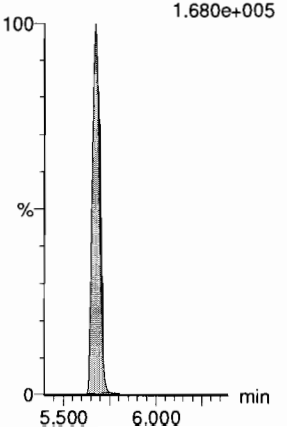
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
1.250e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.547e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.680e+005

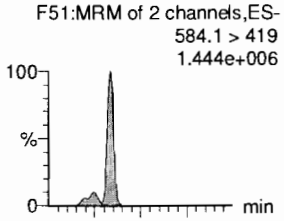


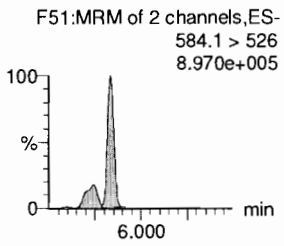
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

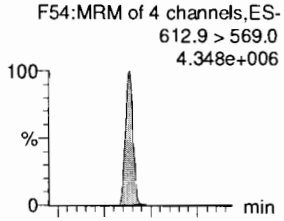
Name: 181202M2_9, Date: 02-Dec-2018, Time: 19:49:07, ID: ST181202M2-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

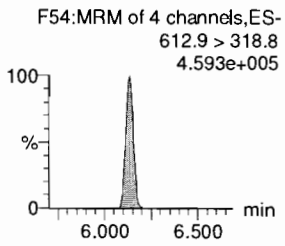
L-EtFOSAA





PFDoA





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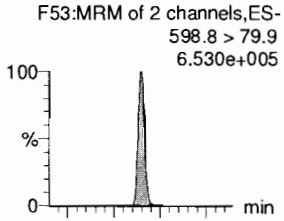

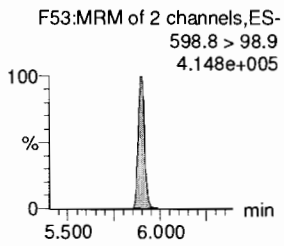

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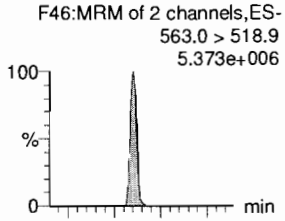

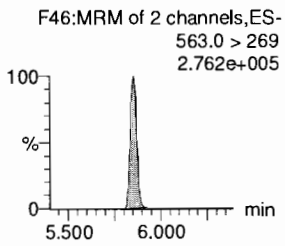

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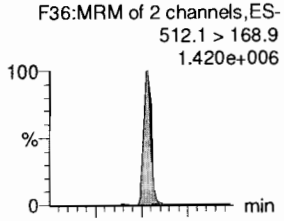
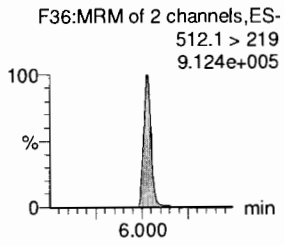
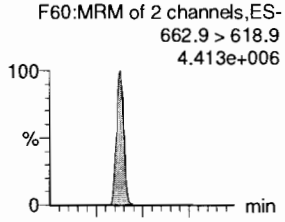
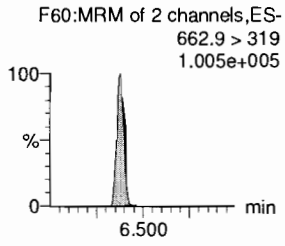


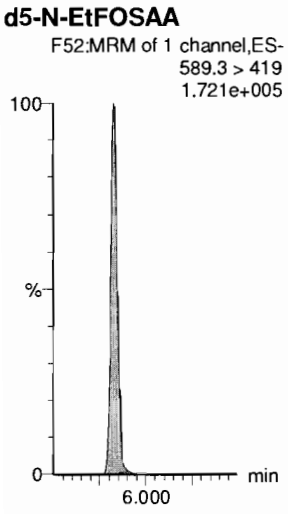


PFTrDA

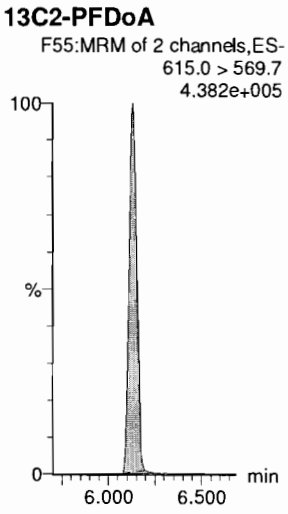




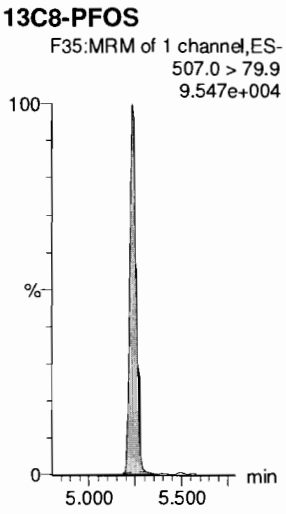
d5-N-EtFOSAA



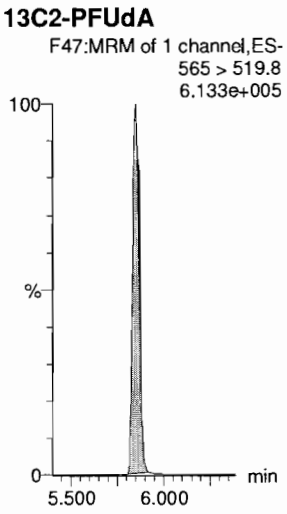
13C2-PFDoA



13C8-PFOS



13C2-PFUdA



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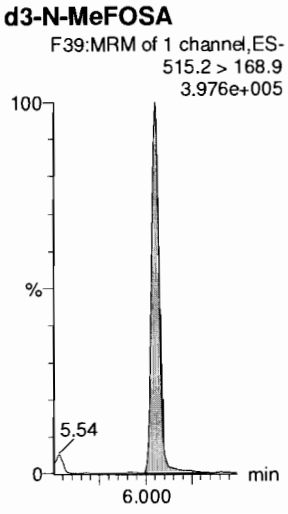

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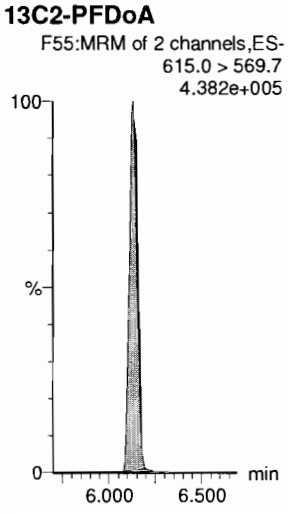

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Name: 181202M2_9, Date: 02-Dec-2018, Time: 19:49:07, ID: ST181202M2-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

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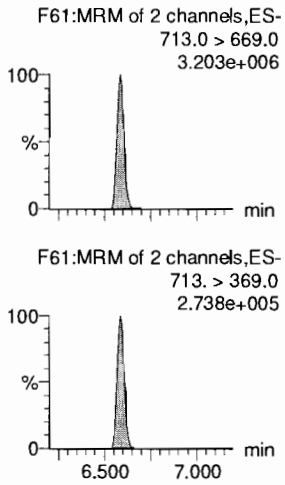

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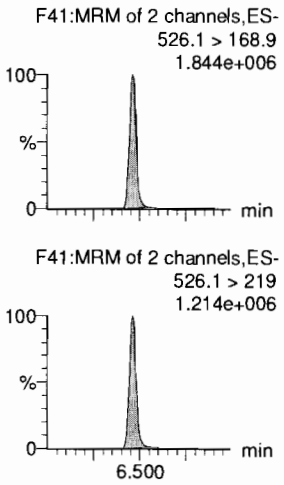
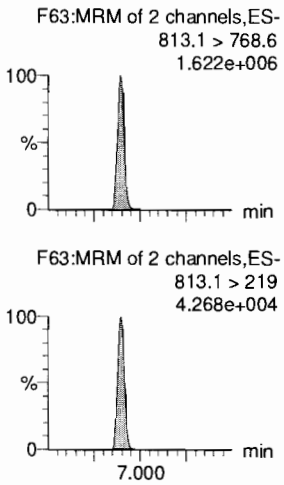


PFHxDA



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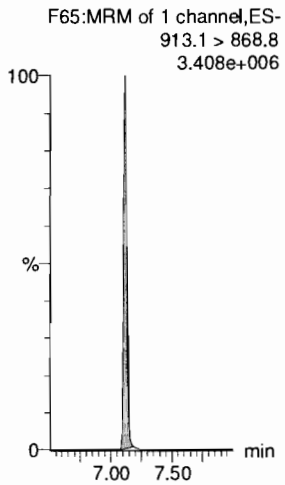
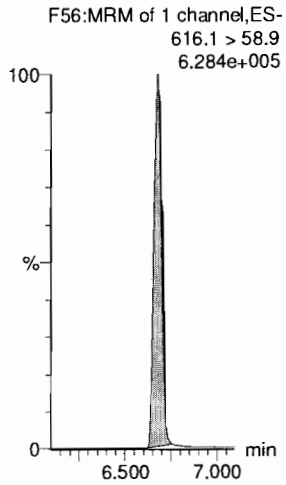


N-MeFOSE



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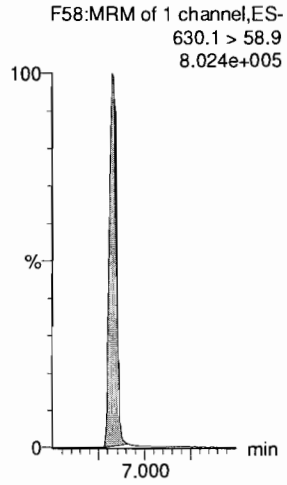

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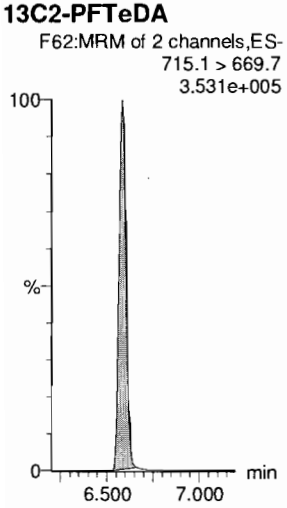
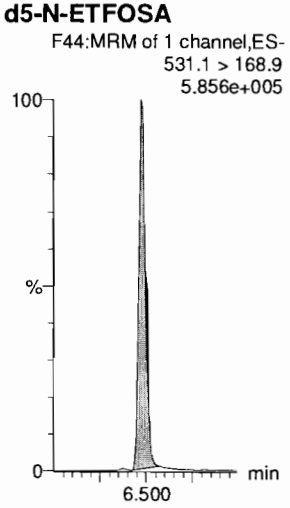
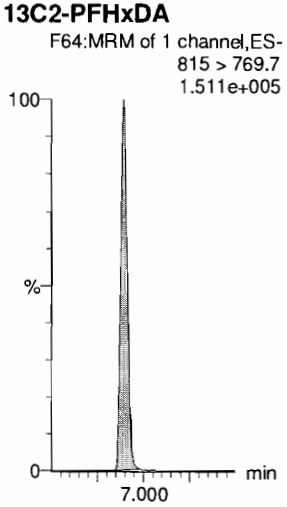


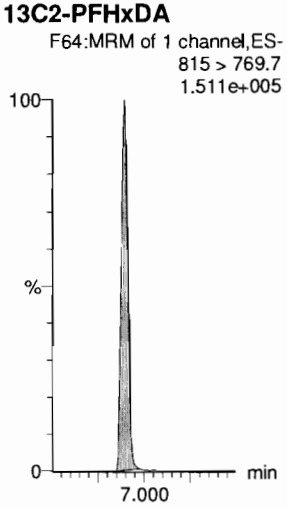
d5-N-ETFOSA



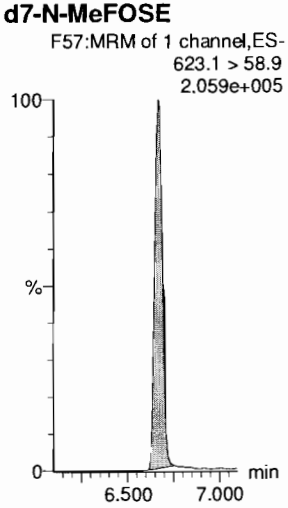
13C2-PFHxDA



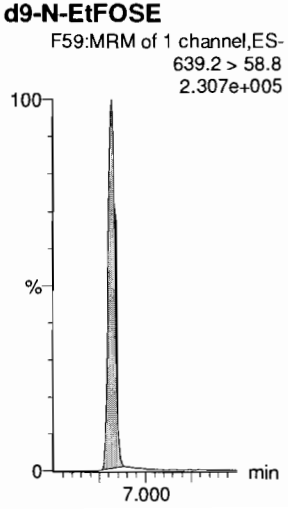
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

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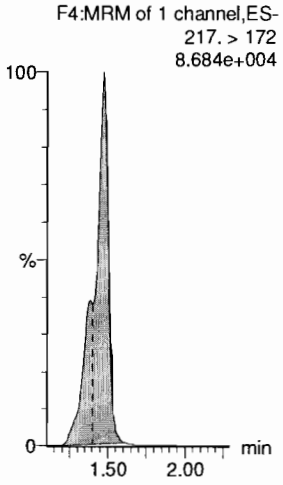
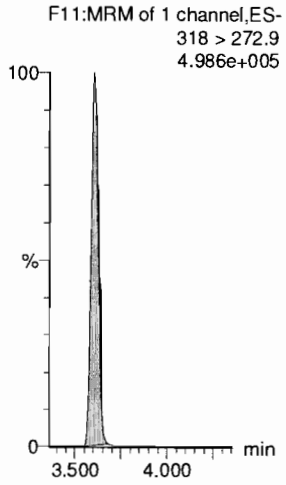
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_9, Date: 02-Dec-2018, Time: 19:49:07, ID: ST181202M2-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

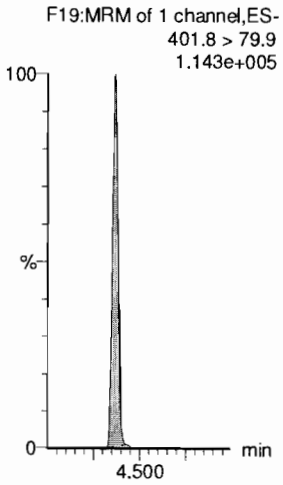
13C4-PFBA



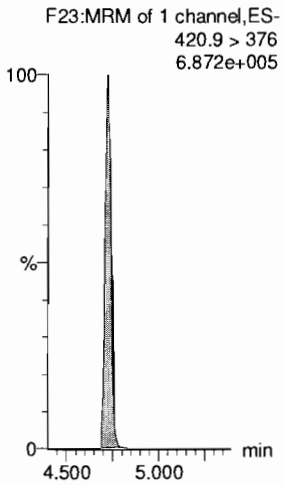
13C5-PFHxA



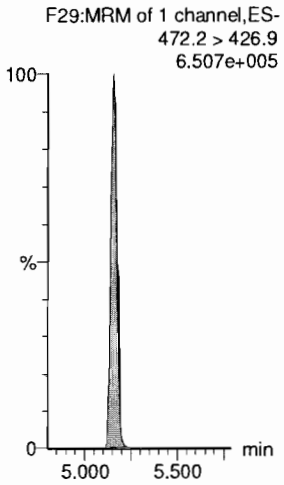
13C3-PFHxS



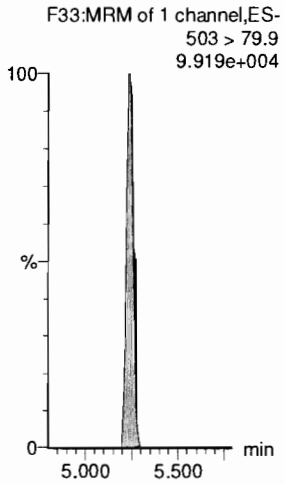
13C8-PFOA



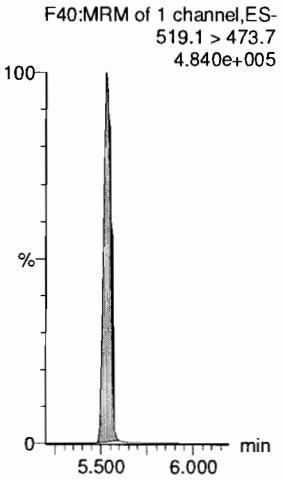
13C9-PFNA



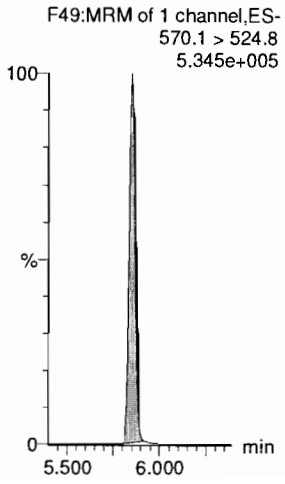
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

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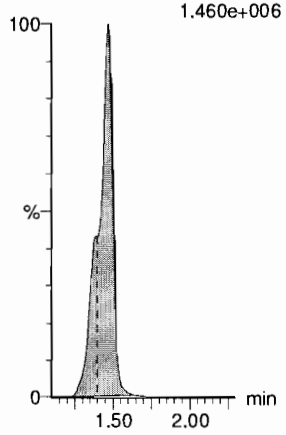
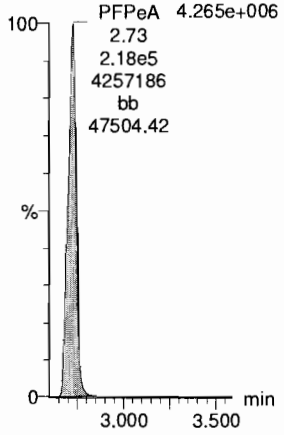
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_10, Date: 02-Dec-2018, Time: 19:59:40, ID: ST181202M2-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

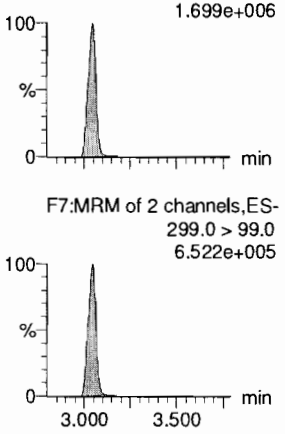
PFBA



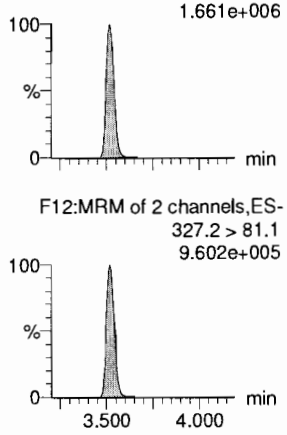
PFPeA



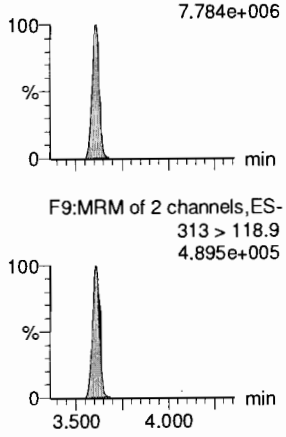
PFBS



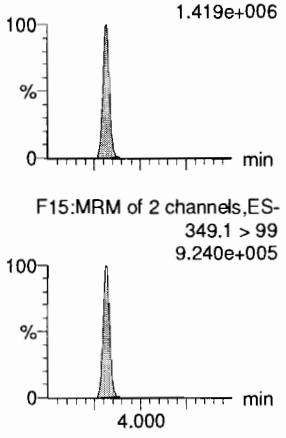
4:2 FTS



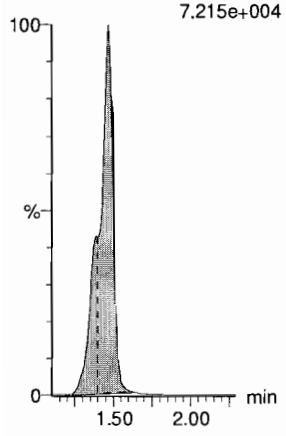
PFHxA



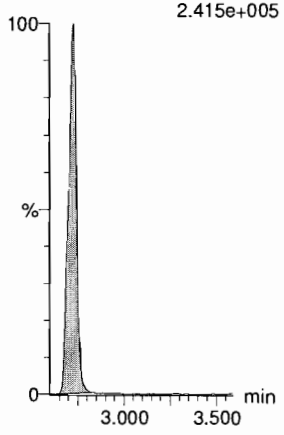
PFPeS



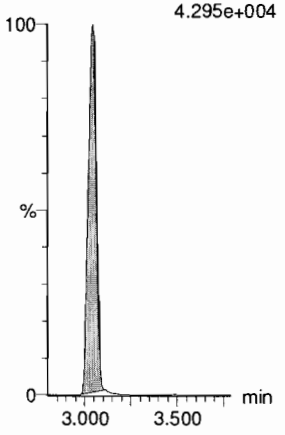
13C3-PFBA



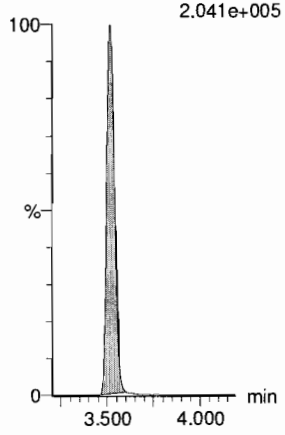
13C3-PFPeA



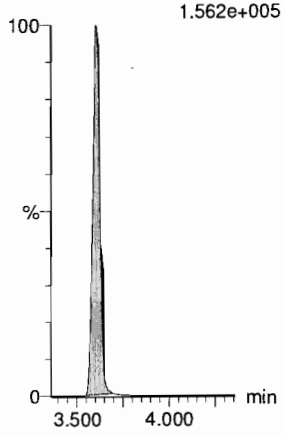
13C3-PFBS



13C2-4:2 FTS



13C2-PFHxA



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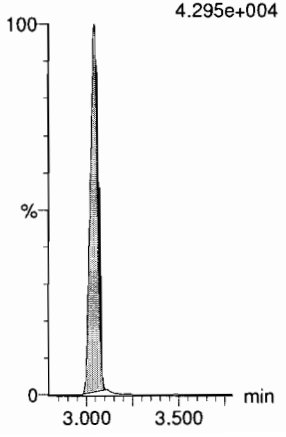

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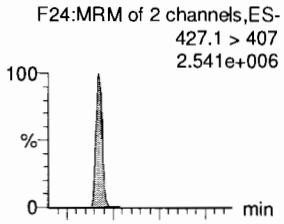
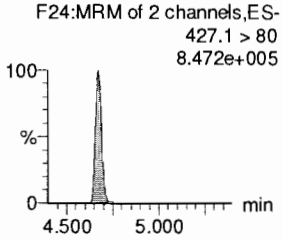
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

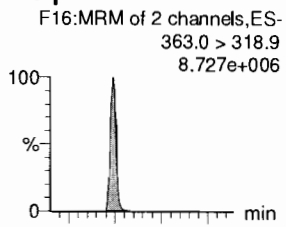
Name: 181202M2_10, Date: 02-Dec-2018, Time: 19:59:40, ID: ST181202M2-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

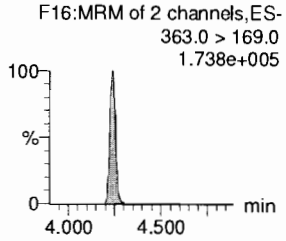
6:2 FTS





PFHpA





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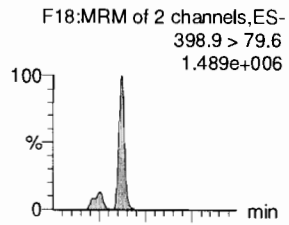

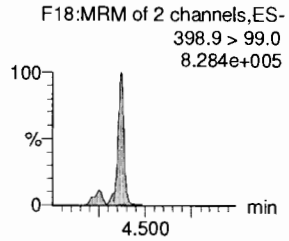

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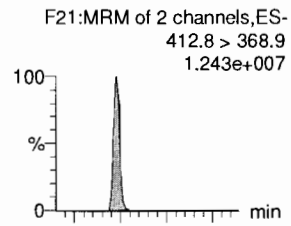

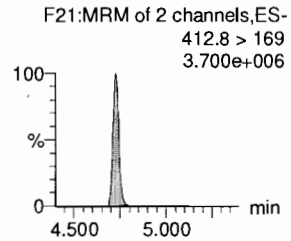

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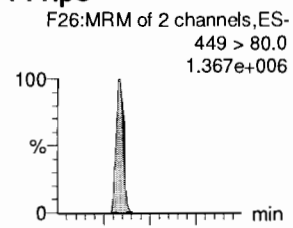

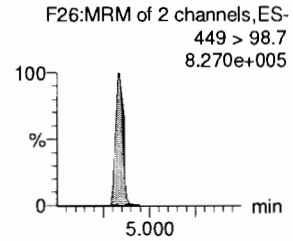

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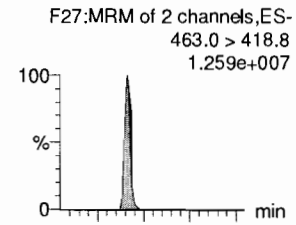
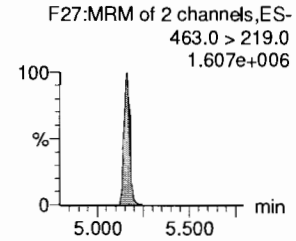
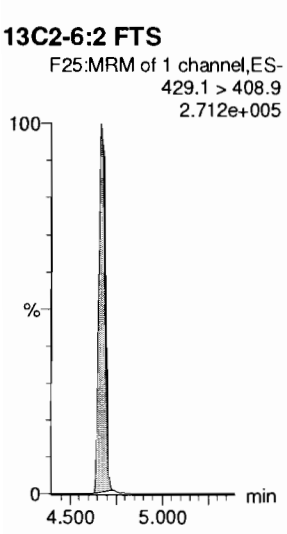
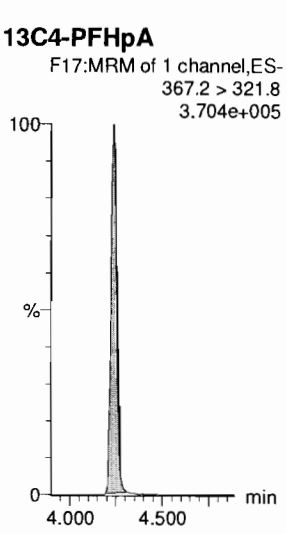




13C2-6:2 FTS



13C4-PFHpA



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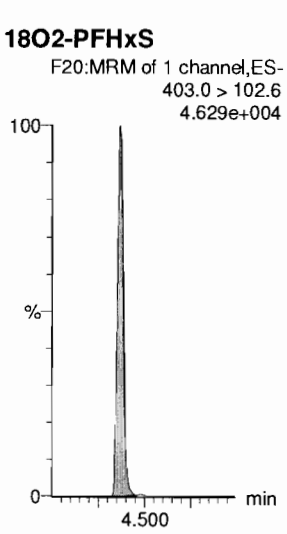

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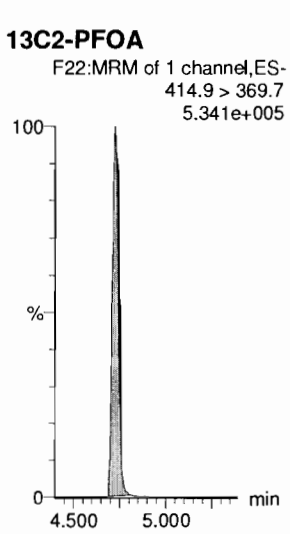

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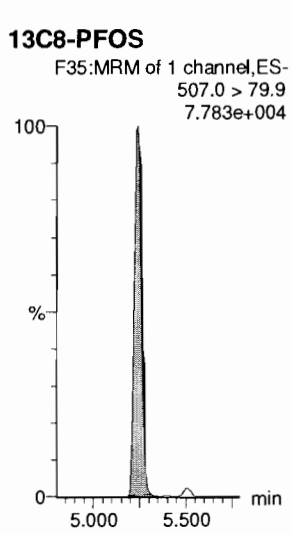
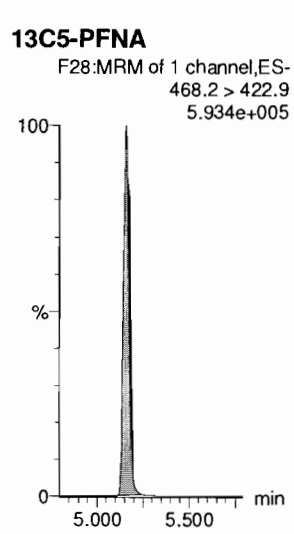


13C5-PFNA



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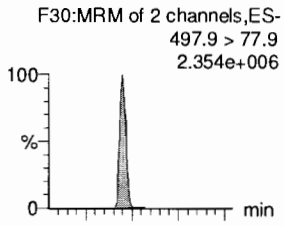
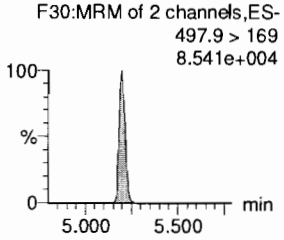
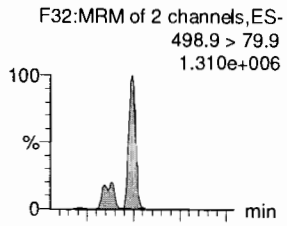
Name: 181202M2_10, Date: 02-Dec-2018, Time: 19:59:40, ID: ST181202M2-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

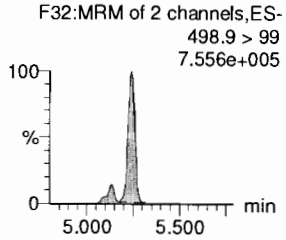
PFOSA





L-PFOS





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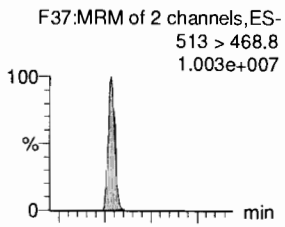

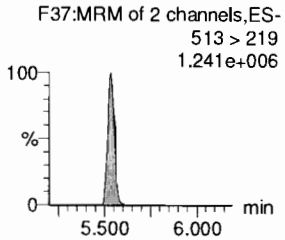

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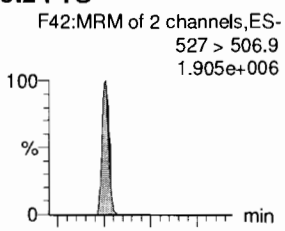

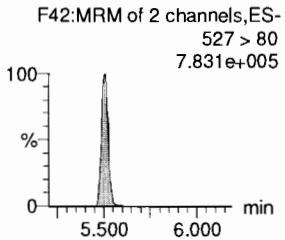

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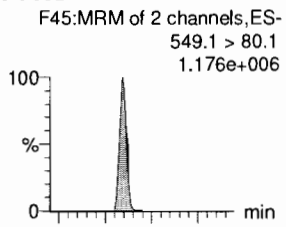

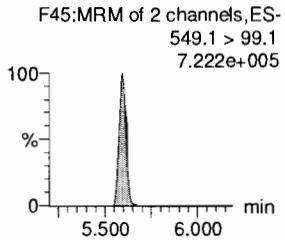

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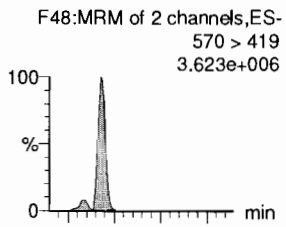
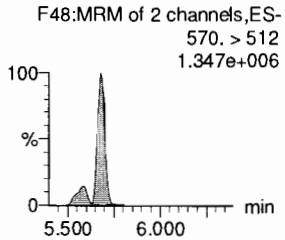
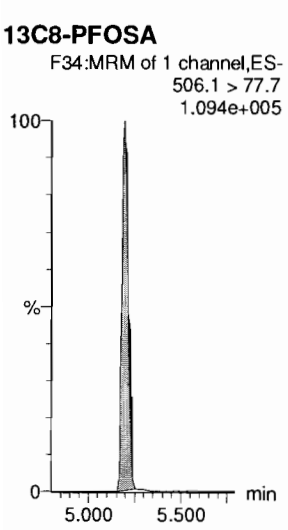




13C8-PFOSA



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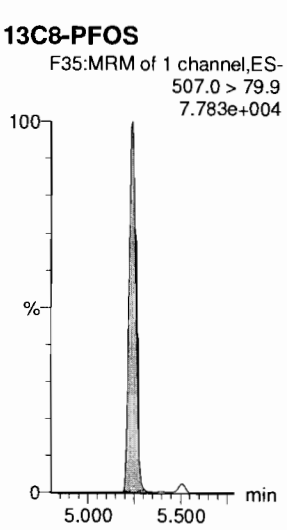

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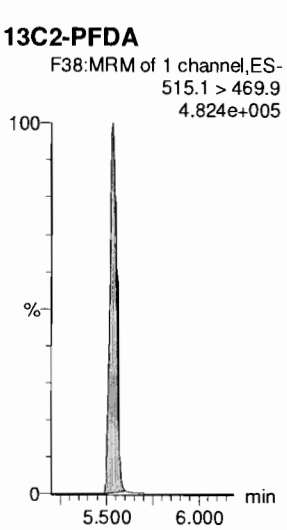
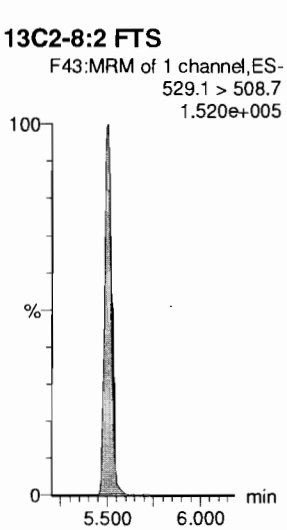


13C2-8:2 FTS



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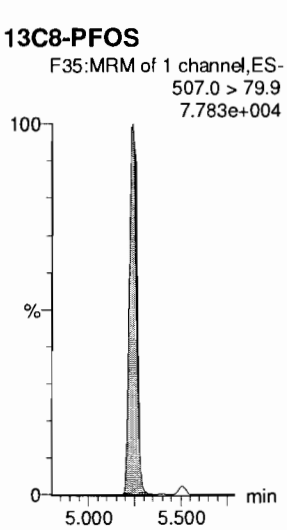
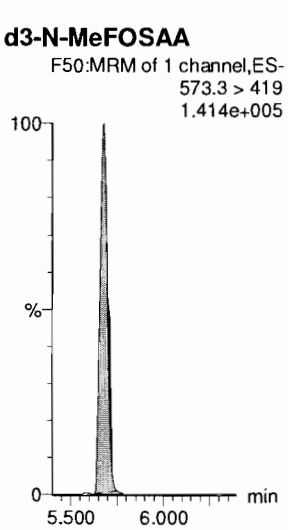


d3-N-MeFOSAA



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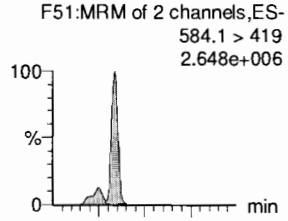
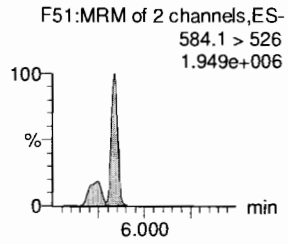
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_10, Date: 02-Dec-2018, Time: 19:59:40, ID: ST181202M2-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

L-EtFOSAA





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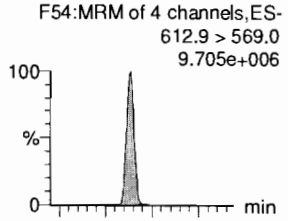

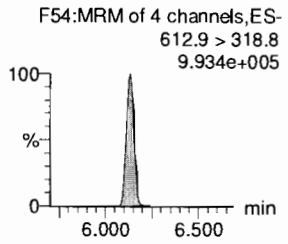

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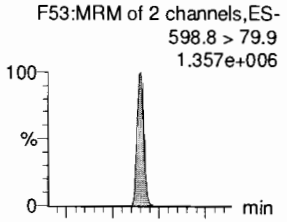

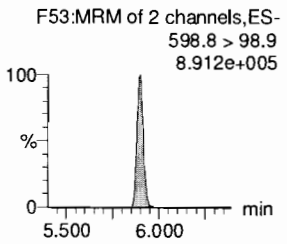

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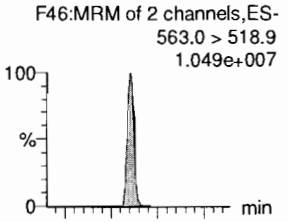
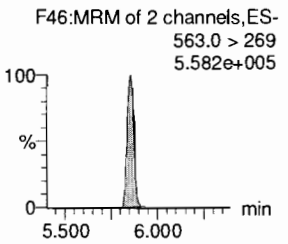
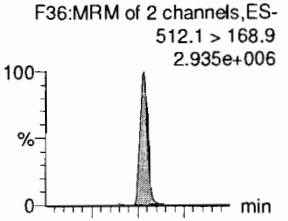
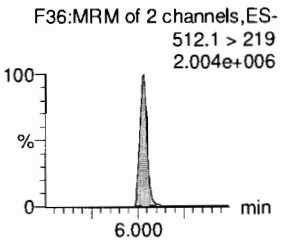




N-MeFOSA





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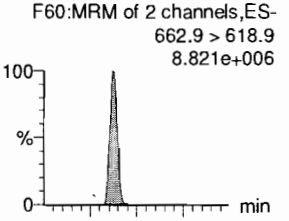

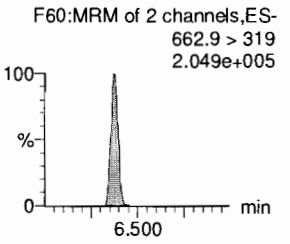

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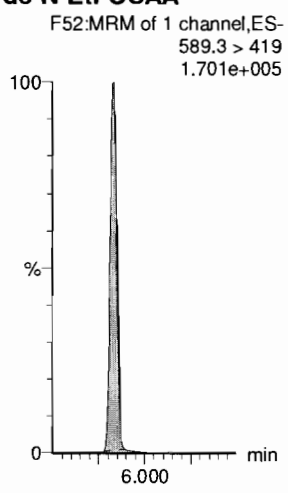
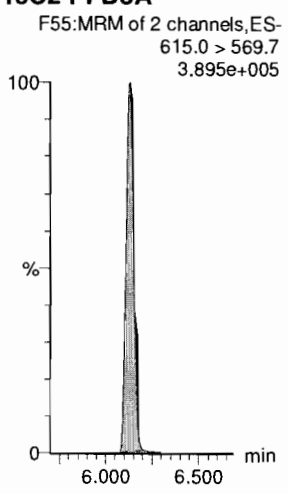
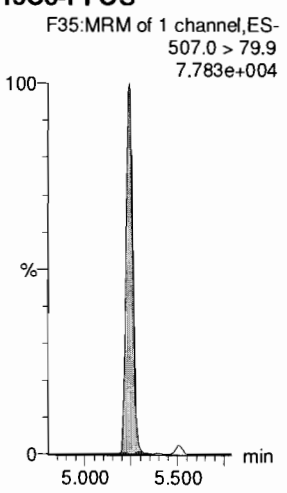


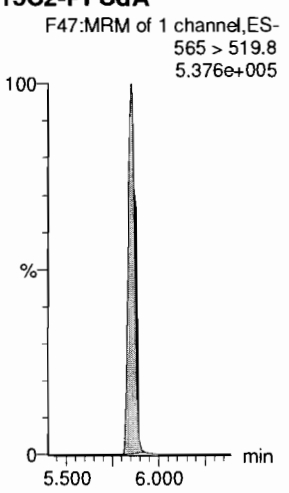
13C2-PFDoA



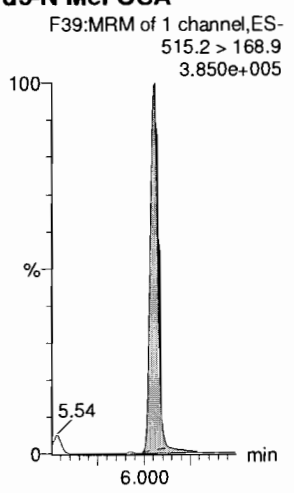
13C8-PFOS



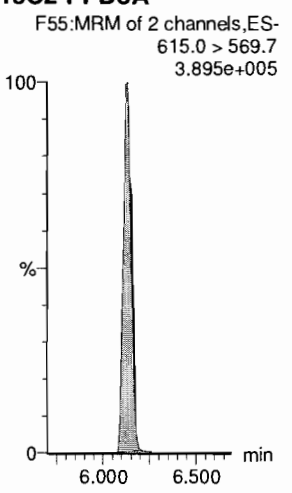
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

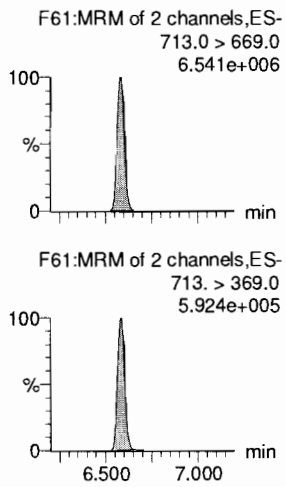


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

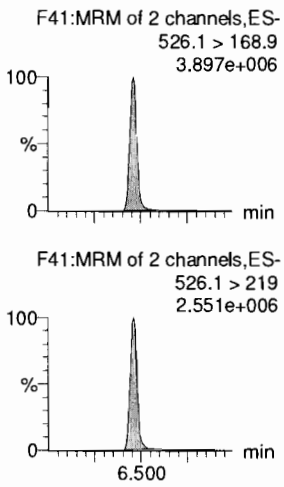
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_10, Date: 02-Dec-2018, Time: 19:59:40, ID: ST181202M2-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

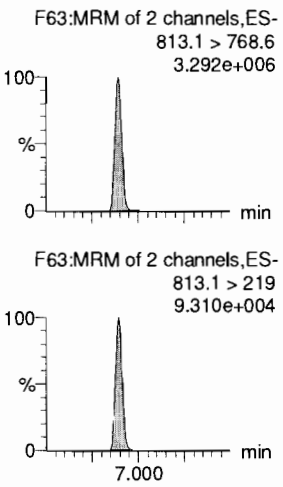
PFTeDA



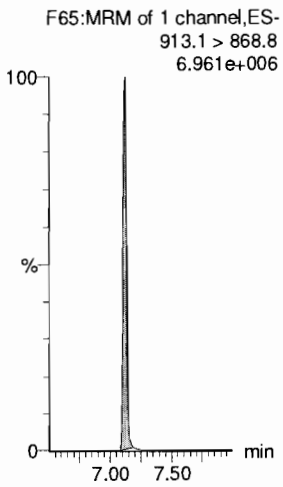
N-EtFOSA



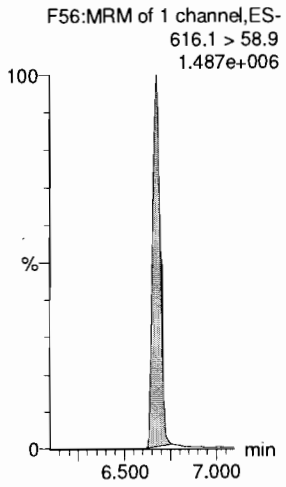
PFHxDA



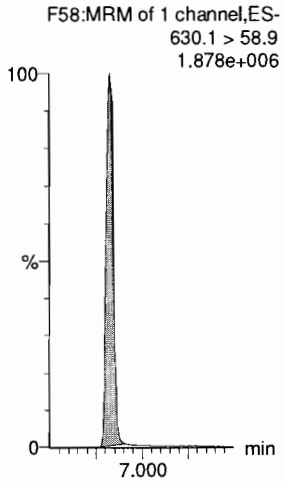
PFODA



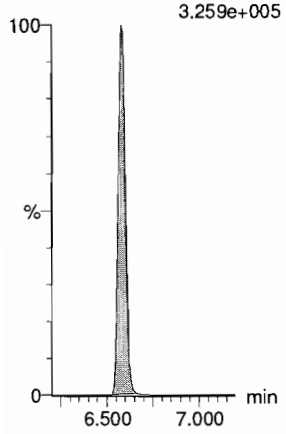
N-MeFOSE



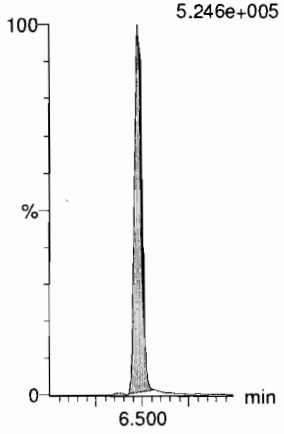
N-EtFOSE



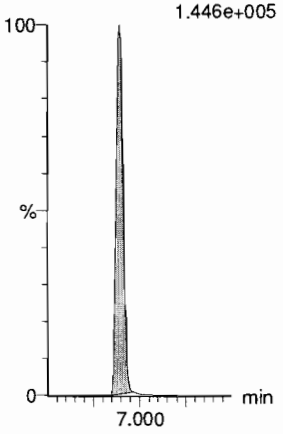
13C2-PFTeDA



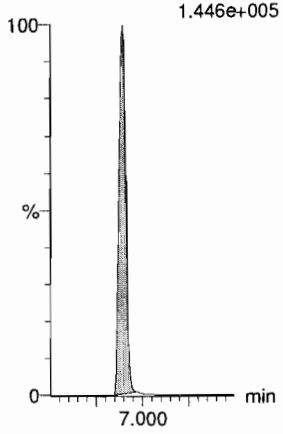
d5-N-ETFOSA



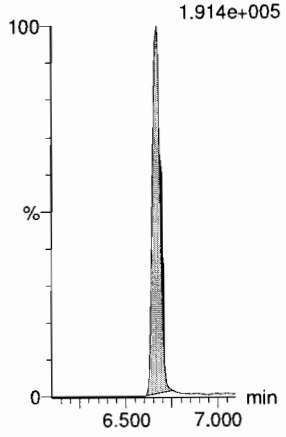
13C2-PFHxDA



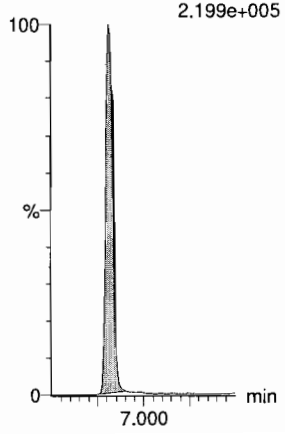
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

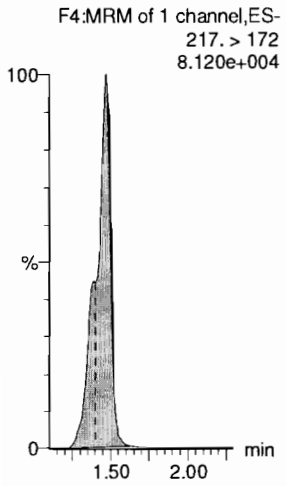


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

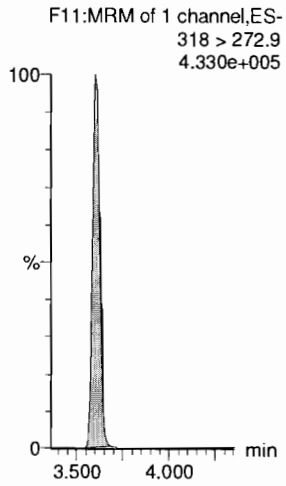
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_10, Date: 02-Dec-2018, Time: 19:59:40, ID: ST181202M2-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

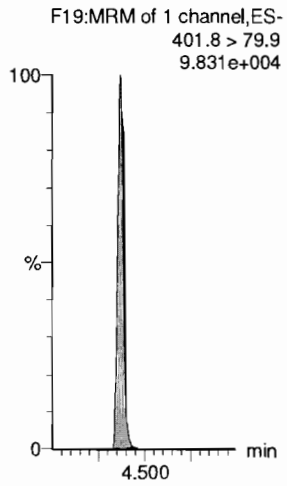
13C4-PFBA



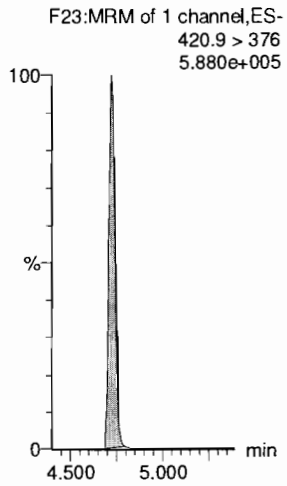
13C5-PFHxA



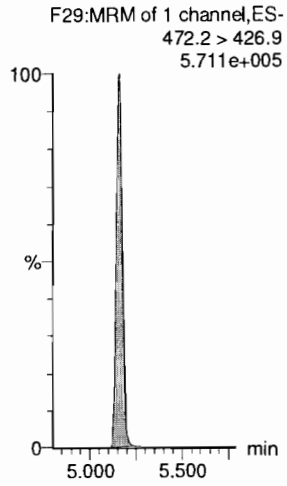
13C3-PFHxS



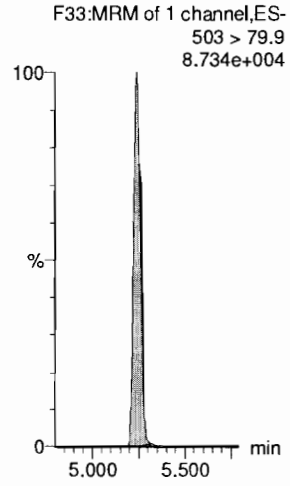
13C8-PFOA



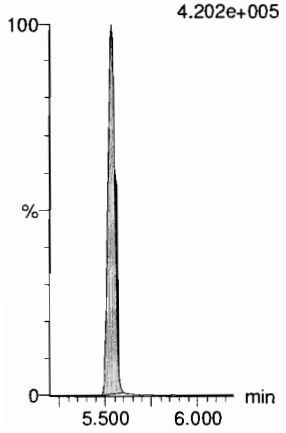
13C9-PFNA



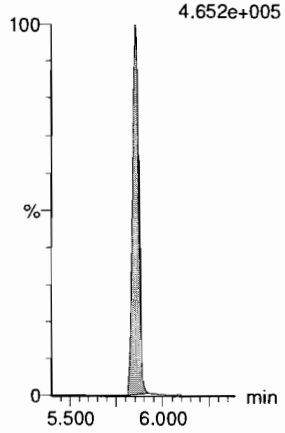
13C4-PFOS



13C6-PFDA



13C7-PFUdA

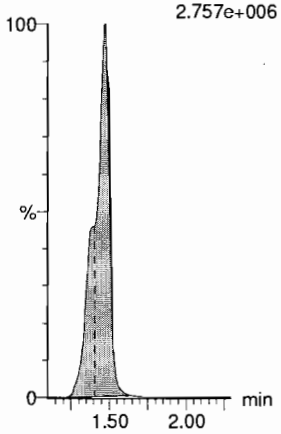


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

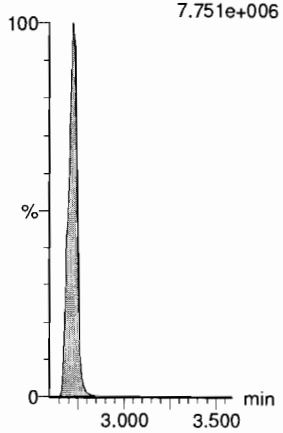
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_11, Date: 02-Dec-2018, Time: 20:10:18, ID: ST181202M2-10 PFC CS6 18K3009, Description: PFC CS7 18K3010

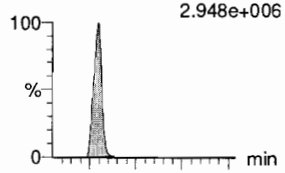
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
2.757e+006



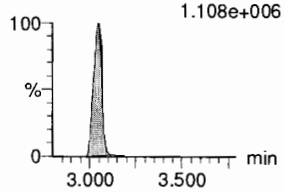
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
7.751e+006



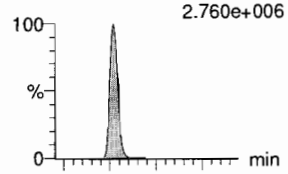
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
2.948e+006



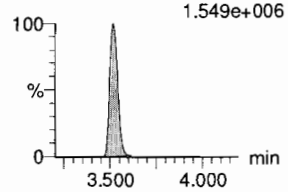
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.108e+006



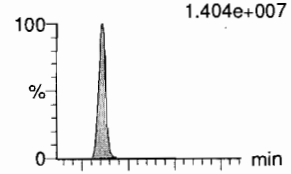
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
2.760e+006



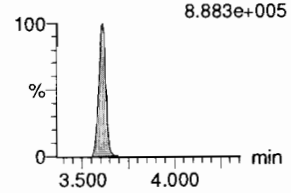
F12:MRM of 2 channels,ES-
327.2 > 81.1
1.549e+006



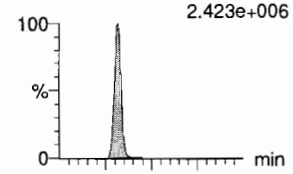
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
1.404e+007



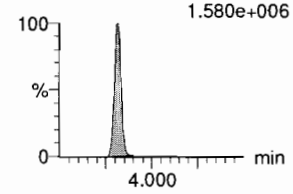
F9:MRM of 2 channels,ES-
313 > 118.9
8.883e+005



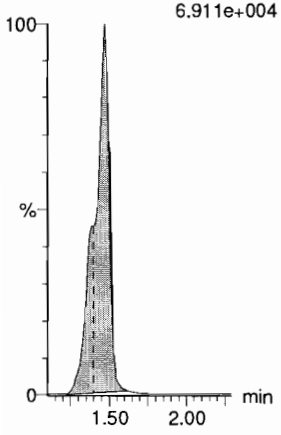
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
2.423e+006



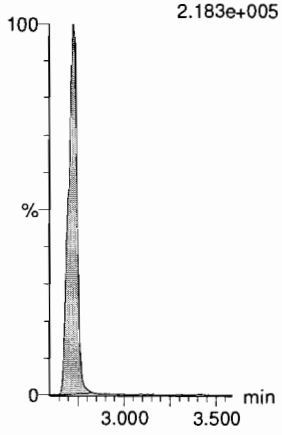
F15:MRM of 2 channels,ES-
349.1 > 99
1.580e+006



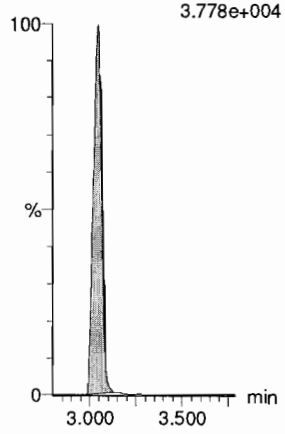
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
6.911e+004



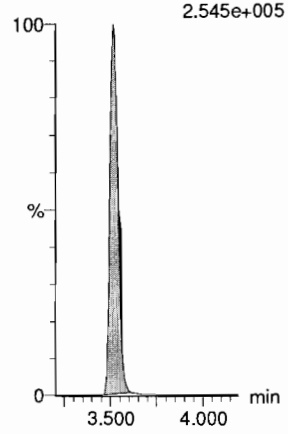
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.183e+005



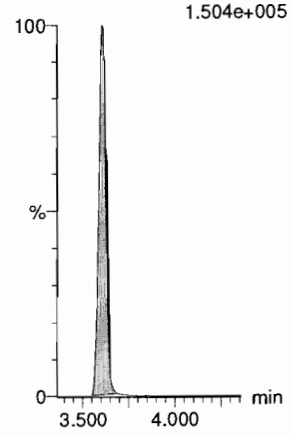
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.778e+004



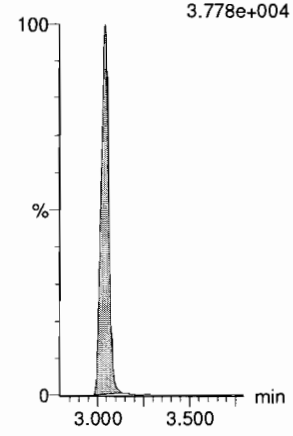
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
2.545e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
1.504e+005



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.778e+004



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

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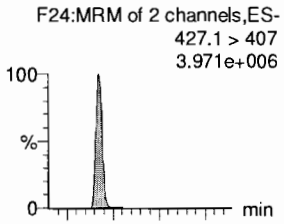
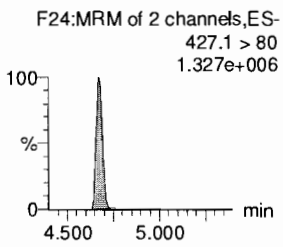
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

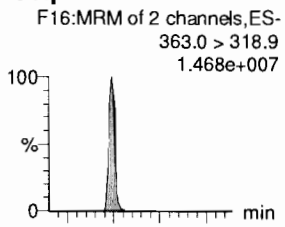
Name: 181202M2_11, Date: 02-Dec-2018, Time: 20:10:18, ID: ST181202M2-10 PFC CS6 18K3009, Description: PFC CS7 18K3010

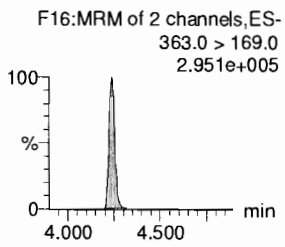
6:2 FTS



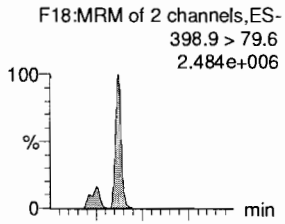


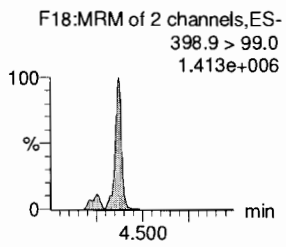
PFHpA



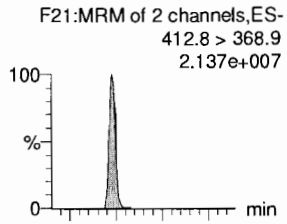


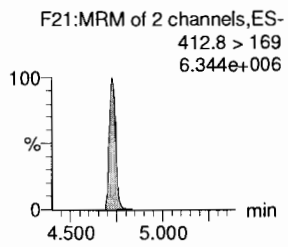
L-PFHxS



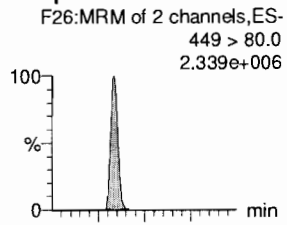


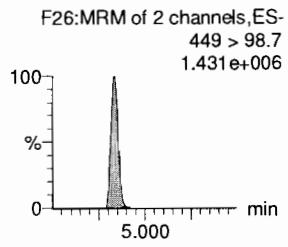
L-PFOA



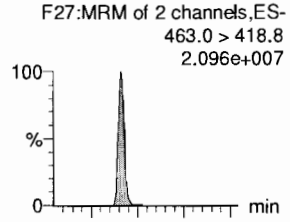


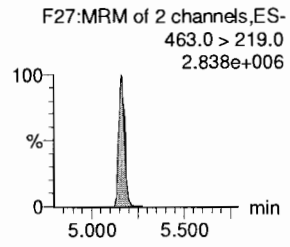
PFHpS



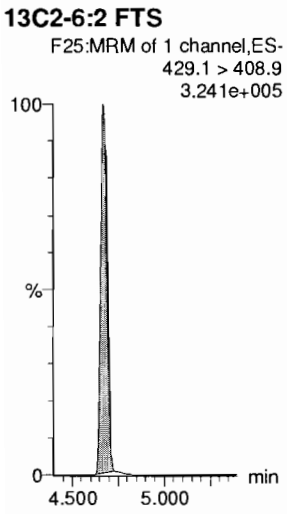


PFNA

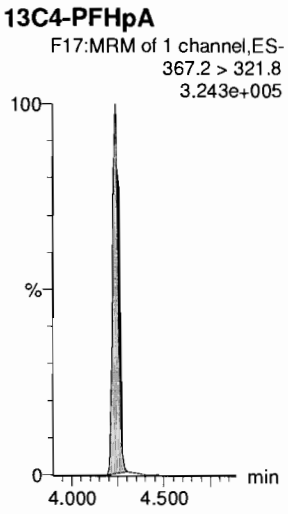




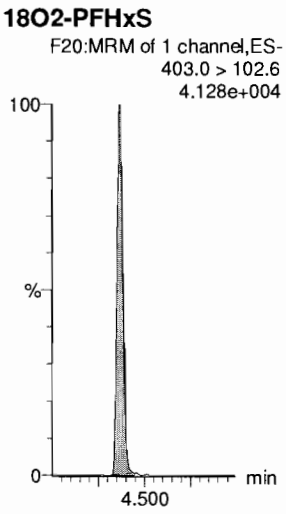
13C2-6:2 FTS



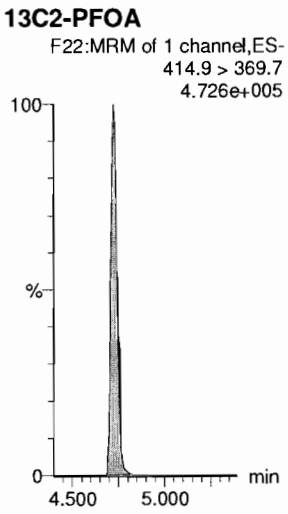
13C4-PFHpA



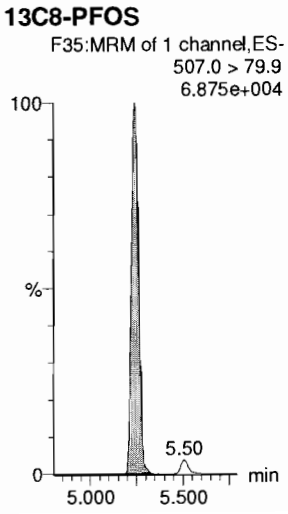
18O2-PFHxS



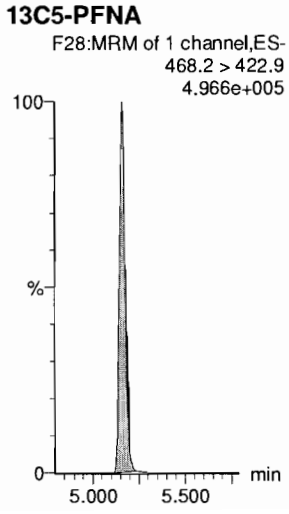
13C2-PFOA



13C8-PFOS



13C5-PFNA

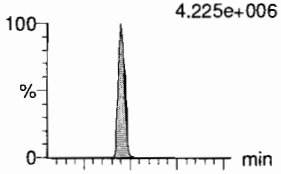


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

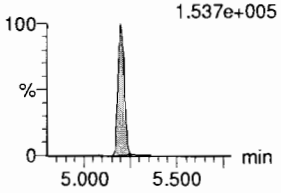
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_11, Date: 02-Dec-2018, Time: 20:10:18, ID: ST181202M2-10 PFC CS6 18K3009, Description: PFC CS7 18K3010

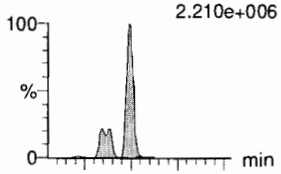
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
4.225e+006



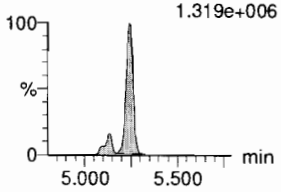
F30:MRM of 2 channels,ES-
497.9 > 169
1.537e+005



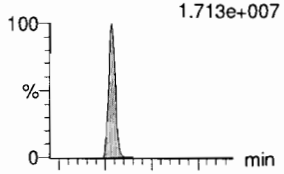
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
2.210e+006



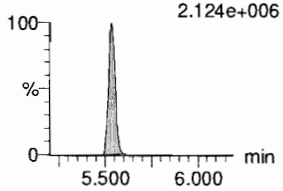
F32:MRM of 2 channels,ES-
498.9 > 99
1.319e+006



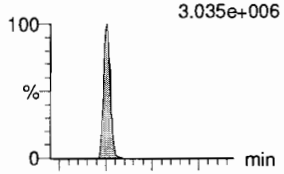
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
1.713e+007



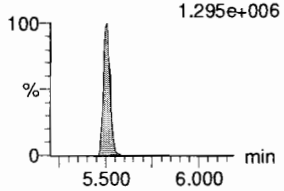
F37:MRM of 2 channels,ES-
513 > 219
2.124e+006



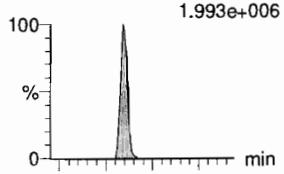
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
3.035e+006



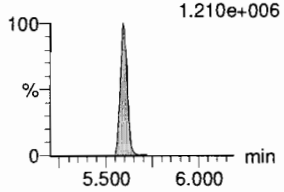
F42:MRM of 2 channels,ES-
527 > 80
1.295e+006



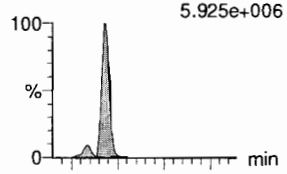
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
1.993e+006



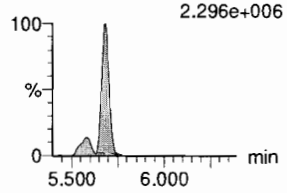
F45:MRM of 2 channels,ES-
549.1 > 99.1
1.210e+006



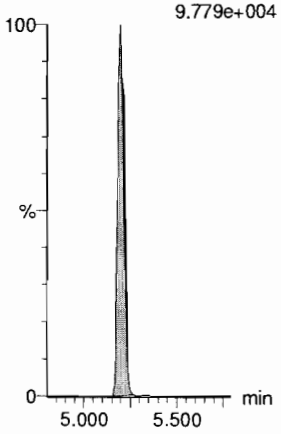
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
5.925e+006



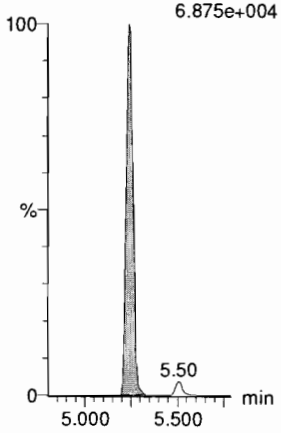
F48:MRM of 2 channels,ES-
570. > 512
2.296e+006



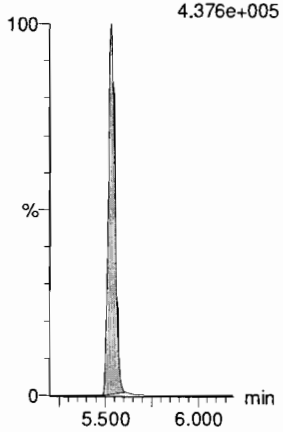
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
9.779e+004



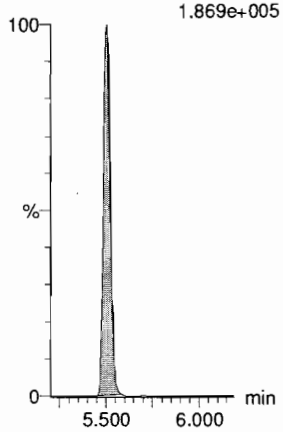
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
6.875e+004



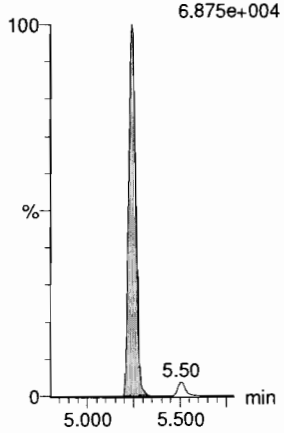
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
4.376e+005



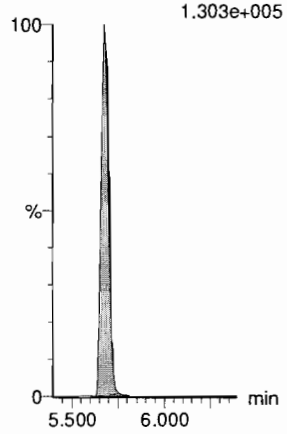
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
1.869e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
6.875e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.303e+005

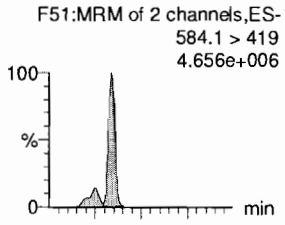


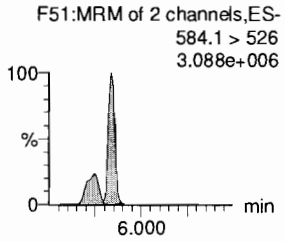
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

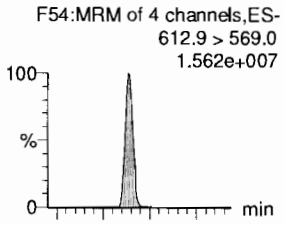
Name: 181202M2_11, Date: 02-Dec-2018, Time: 20:10:18, ID: ST181202M2-10 PFC CS6 18K3009, Description: PFC CS7 18K3010

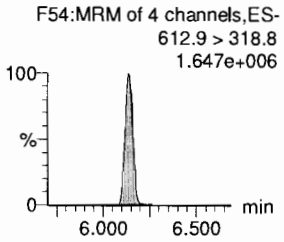
L-EtFOSAA



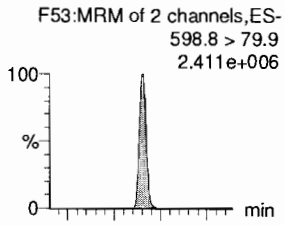


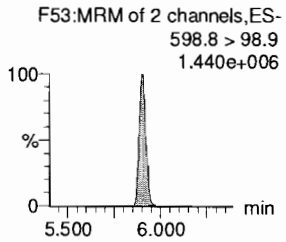
PFDoA



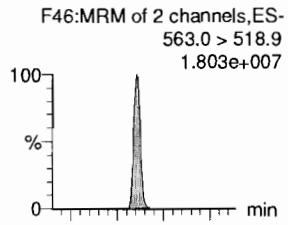


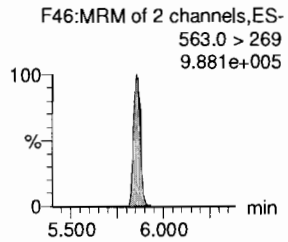
PFDS



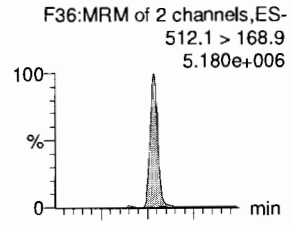


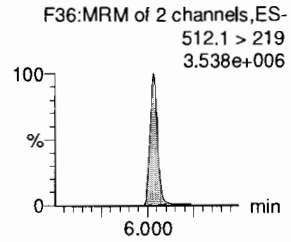
PFUdA



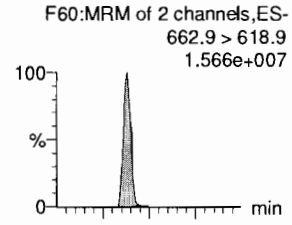


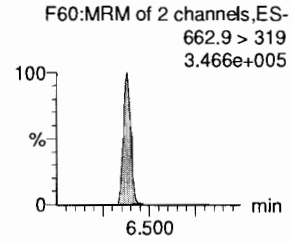
N-MeFOSA



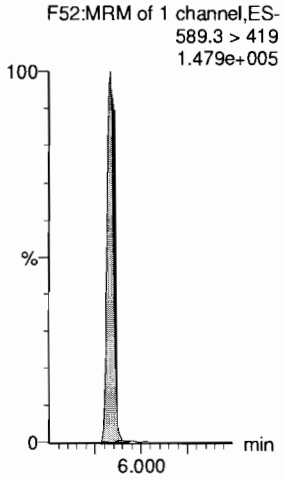


PFTrDA

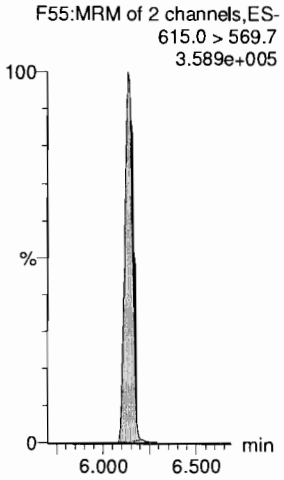




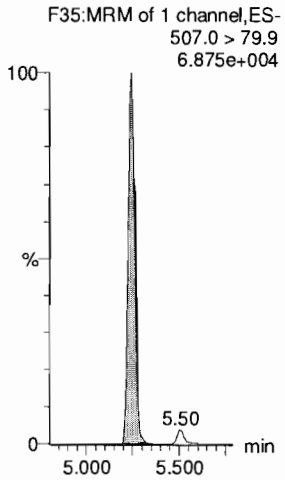
d5-N-EtFOSAA



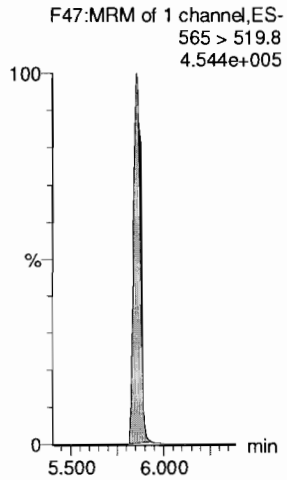
13C2-PFDoA



13C8-PFOS



13C2-PFUdA



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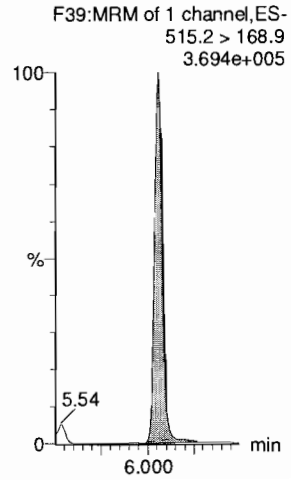

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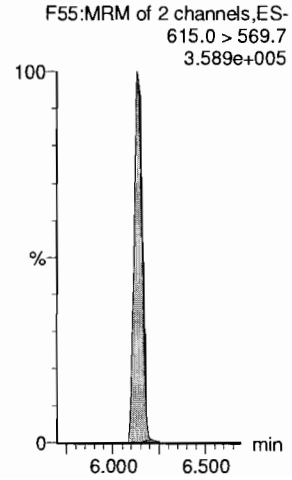

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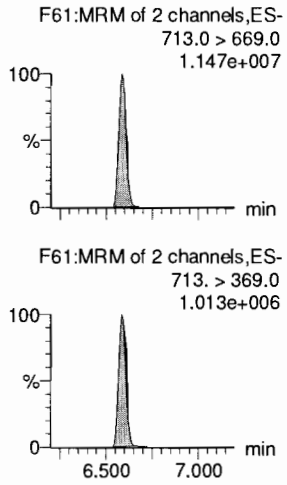
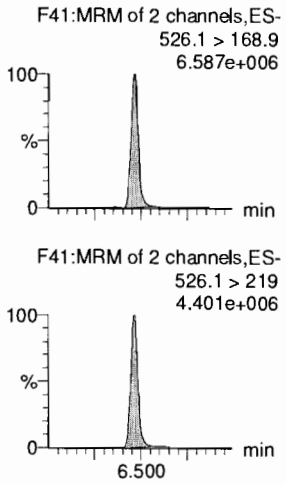
Last Altered: Monday, December 03, 2018 10:27:10 Pacific Standard Time
Printed: Monday, December 03, 2018 10:27:36 Pacific Standard Time

Name: 181202M2_11, Date: 02-Dec-2018, Time: 20:10:18, ID: ST181202M2-10 PFC CS6 18K3009, Description: PFC CS7 18K3010

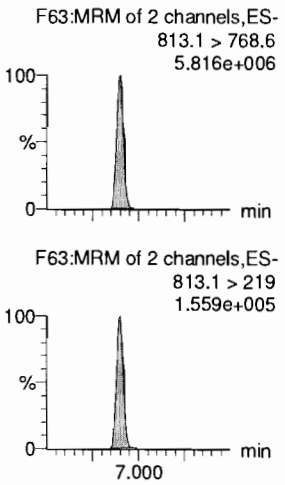
PFTeDA



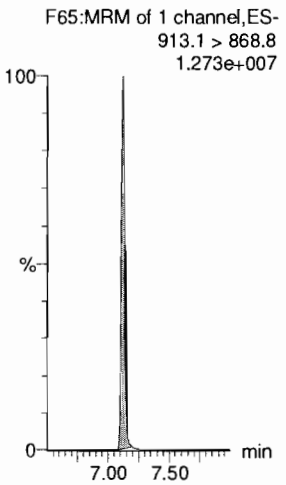
N-EtFOSA



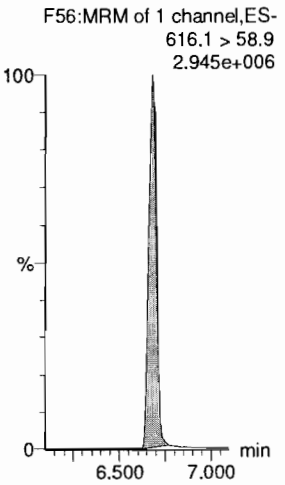
PFHxDA



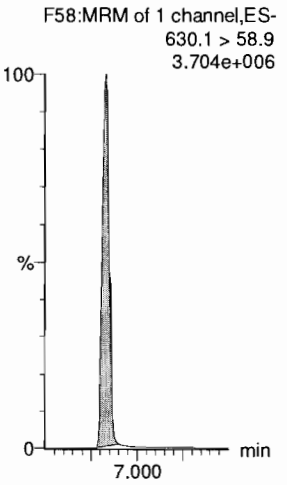
PFODA



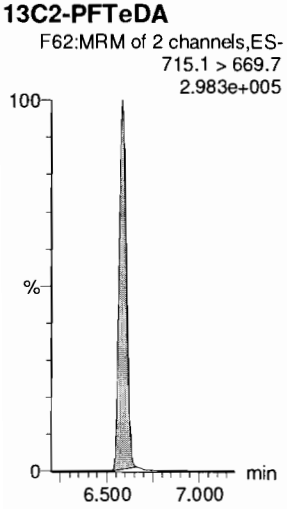
N-MeFOSE



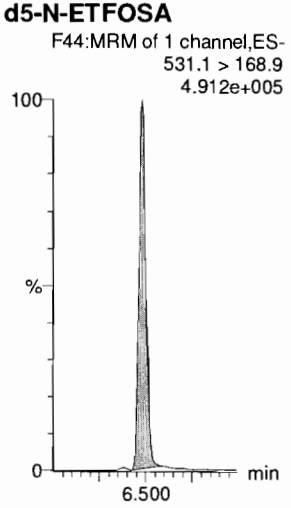
N-EtFOSE



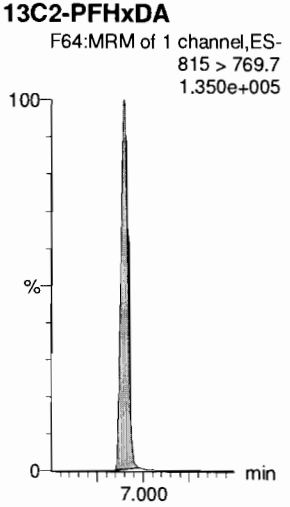
13C2-PFTeDA



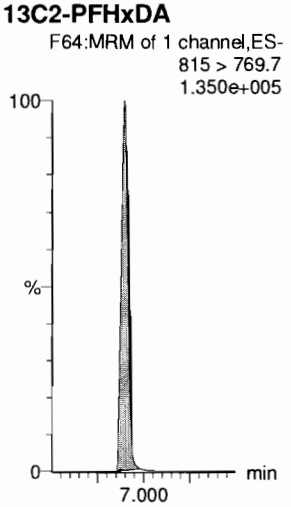
d5-N-ETFOSA



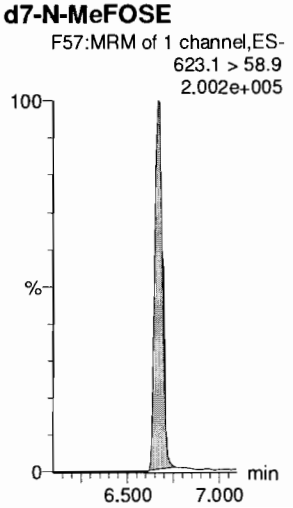
13C2-PFHxDA



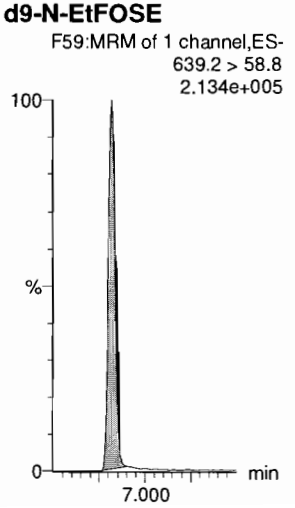
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-CRV.qld

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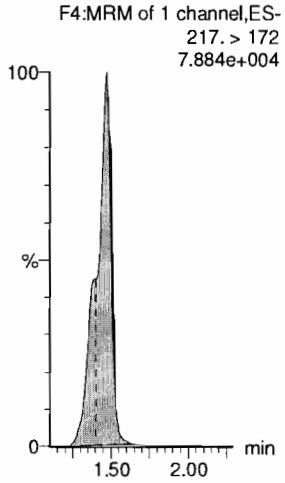
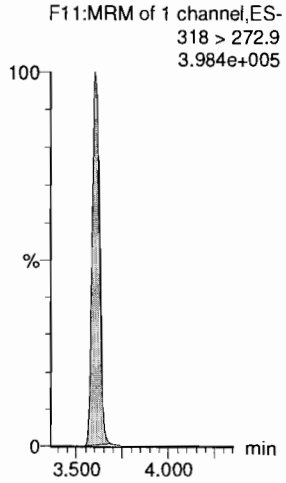
Name: 181202M2_11, Date: 02-Dec-2018, Time: 20:10:18, ID: ST181202M2-10 PFC CS6 18K3009, Description: PFC CS7 18K3010

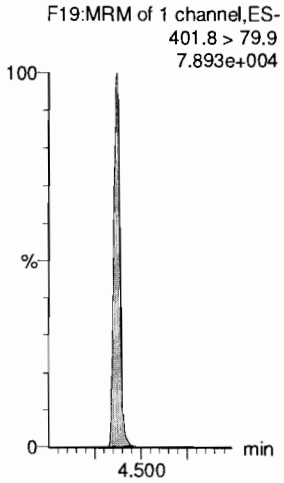
13C4-PFBA



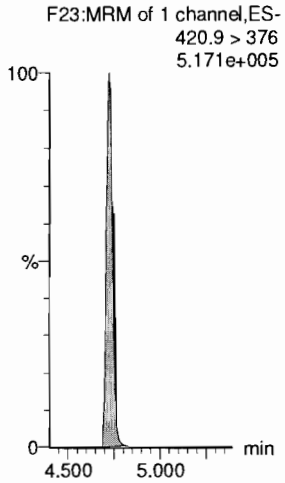
13C5-PFHxA



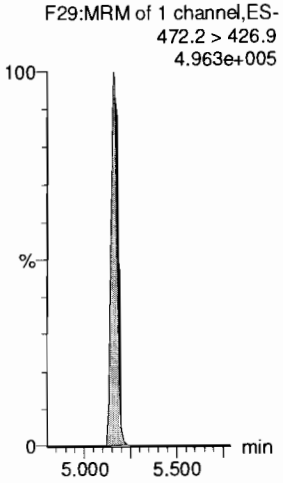
13C3-PFHxS



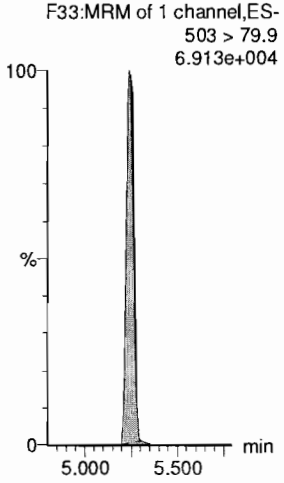
13C8-PFOA



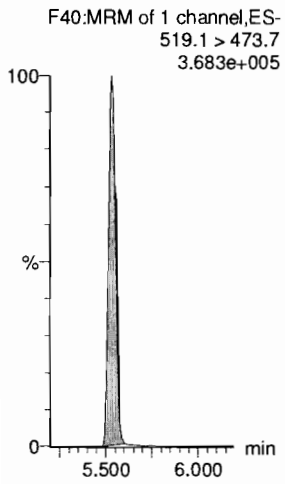
13C9-PFNA



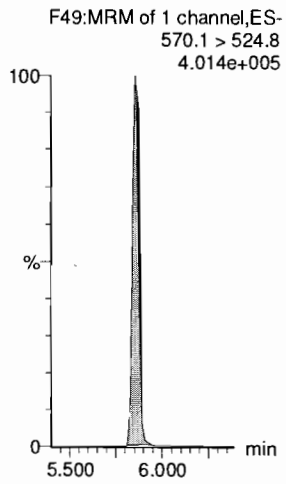
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

Last Altered: Monday, December 03, 2018 10:56:51 Pacific Standard Time
Printed: Monday, December 03, 2018 10:58:27 Pacific Standard Time

Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	6140.405	7883.377	1.00	1.47	9.736	9.5	95.0	NO		
2	2	PFPeA	263.1 > 218.9	9020.201	13594.861	1.00	2.73	8.294	9.1	91.1	NO		
3	3	PFBS	299.0 > 79.7	3115.221	2497.661	1.00	3.05	15.591	7.8	77.5	NO	2.577	NO
4	4	4:2 FTS	327.2>307.2	4357.904	7872.859	1.00	3.52	6.919	8.4	84.4	NO	1.689	NO
5	5	PFHxA	313 > 269	15517.643	8090.420	1.00	3.61	9.590	9.2	91.6	NO	16.075	NO
6	6	PFPeS	349.1>80.1	2413.071	2497.661	1.00	3.82	12.077	8.2	82.0	NO	1.481	NO
7	36	13C3-PFBA	216.1 > 171.8	7883.377	9233.056	1.00	1.47	10.673	12.4	99.2	NO		
8	37	13C3-PFPeA	266. > 221.8	13594.861	22850.570	1.00	2.73	7.437	12.3	98.5	NO		
9	38	13C3-PFBS	302. > 98.8	2497.661	4034.381	1.00	3.05	7.739	12.2	97.8	NO		
10	39	13C2-4:2 FTS	329.2>308.9	7872.859	4034.381	1.00	3.52	24.393	11.8	94.1	NO		
11	40	13C2-PFHxA	315 > 270	8090.420	22850.570	1.00	3.61	4.426	4.9	98.3	NO		
12	38	13C3-PFBS	302. > 98.8	2497.661	4034.381	1.00	3.05	7.739	12.2	97.8	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	4946.854	7317.706	1.00	4.67	8.450	8.8	88.4	NO	3.162	NO
15	7	PFHpA	363.0 > 318.9	14006.358	15581.168	1.00	4.24	11.237	9.7	96.6	NO	56.596	NO
16	8	L-PFHxS	398.9 > 79.6	2397.661	1760.062	1.00	4.37	17.028	8.6	86.2	NO	1.699	NO
17	11	L-PFOA	412.8 > 368.9	19962.924	22960.176	1.00	4.73	10.868	8.9	88.7	NO	3.291	NO
18	13	PFHpS	449 > 80.0	2535.390	4001.654	1.00	4.84	7.920	9.0	90.1	NO	1.639	NO
19	14	PFNA	463.0 > 418.8	20263.572	25965.410	1.00	5.16	9.755	8.8	88.5	NO	7.594	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	7317.706	4113.747	1.00	4.67	22.236	12.2	97.5	NO		
21	41	13C4-PFHpA	367.2 > 321.8	15581.168	22850.570	1.00	4.24	8.523	12.3	98.4	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1760.062	4034.381	1.00	4.37	5.453	11.5	91.7	NO		
23	44	13C2-PFOA	414.9 > 369.7	22960.176	25120.416	1.00	4.73	11.425	13.1	104.7	NO		
24	47	13C8-PFOS	507.0 > 79.9	4001.654	4113.747	1.00	5.24	12.159	12.6	100.5	NO		
25	45	13C5-PFNA	468.2 > 422.9	25965.410	24353.928	1.00	5.16	13.327	13.2	106.0	NO		
26	-1												
27	15	PFOSA	497.9 > 77.9	3759.528	4451.726	1.00	5.20	10.556	9.3	92.9	NO	31.998	NO
28	16	L-PFOS	498.9 > 79.9	2800.970	4001.654	1.00	5.24	8.749	8.0	79.7	NO	1.789	NO
29	18	PFDA	513 > 468.8	18661.449	24121.828	1.00	5.54	9.670	9.0	90.1	NO	8.733	NO
30	19	8:2 FTS	527 > 506.9	4210.729	4017.639	1.00	5.51	13.101	10.0	100.4	NO	2.486	NO
31	20	PFNS	549.1 > 80.1	2107.343	4001.654	1.00	5.60	6.583	8.5	85.2	NO	1.583	NO
32	21	L-MeFOSAA	570 > 419	9752.607	8318.344	1.00	5.68	14.655	9.7	97.3	NO	2.887	NO
33	46	13C8-PFOSA	506.1 > 77.7	4451.726	22712.641	1.00	5.20	2.450	12.2	97.2	NO		
34	47	13C8-PFOS	507.0 > 79.9	4001.654	4113.747	1.00	5.24	12.159	12.6	100.5	NO		
35	48	13C2-PFDA	515.1 > 469.9	24121.828	22907.691	1.00	5.54	13.163	11.7	93.6	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	4017.639	4113.747	1.00	5.51	12.208	11.2	89.9	NO		

AR 12/3/18

12/3/18

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

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(A) NOT IN ICV
AR 12/3/18

Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
37	47	13C8-PFOS	507.0 > 79.9	4001.654	4113.747	1.00	5.24	12.159	12.6	100.5	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	8318.344	22712.641	1.00	5.68	4.578	13.9	111.3	NO		
39	-1												
40	23	L-EtFOSAA	584.1 > 419	7838.116	8216.018	1.00	5.84	11.925	11.0	110.0	NO	1.522	NO
41	27	PFDoA	612.9 > 569.0	21371.295	19717.238	1.00	6.13	13.549	10.3	103.0	NO	10.832	NO
42	26	PFDS	598.8 > 79.9	2304.488	4001.654	1.00	5.90	7.199	8.8	87.8	NO	1.663	NO
43	25	PFUdA	563.0 > 518.9	19848.904	24738.699	1.00	5.86	10.029	9.3	93.2	NO	19.696	NO
44	28	N-MeFOSA	512.1 > 168.9		19386.414	1.00				(A)	NO		
45	29	PFTrDA	662.9 > 618.9	19942.900	19717.238	1.00	6.37	12.643	10.4	104.2	NO	50.720	NO
46	52	d5-N-EtFOSAA	589.3 > 419	8216.018	22712.641	1.00	5.83	4.522	12.7	101.9	NO		
47	53	13C2-PFDoA	615.0 > 569.7	19717.238	22907.691	1.00	6.13	10.759	10.8	86.7	NO		
48	47	13C8-PFOS	507.0 > 79.9	4001.654	4113.747	1.00	5.24	12.159	12.6	100.5	NO		
49	51	13C2-PFUdA	565 > 519.8	24738.699	22712.641	1.00	5.85	13.615	12.3	98.0	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	19386.414	22712.641	1.00	6.06	10.669	144.5	96.3	NO		
51	53	13C2-PFDoA	615.0 > 569.7	19717.238	22907.691	1.00	6.13	10.759	10.8	86.7	NO		
52	-1												
53	30	PFTeDA	713.0 > 669.0	14206.638	16409.135	1.00	6.59	10.822	9.6	95.6	NO	12.177	NO
54	31	N-EtFOSA	526.1 > 168.9		25249.637	1.00				(A)	NO		
55	32	PFHxDA	813.1 > 768.6		6116.390	1.00					NO		
56	33	PFODA	913.1 > 868.8		6116.390	1.00					NO		
57	34	N-MeFOSE	616.1 > 58.9		8805.960	1.00					NO		
58	35	N-EtFOSE	630.1 > 58.9		9315.738	1.00					NO		
59	55	13C2-PFTeDA	715.1 > 669.7	16409.135	22712.641	1.00	6.59	9.031	12.1	96.4	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	25249.637	22712.641	1.00	6.48	13.896	143.5	95.6	NO		
61	57	13C2-PFHxDA	815 > 769.7	6116.390	22712.641	1.00	6.89	3.366	4.7	94.3	NO		
62	57	13C2-PFHxDA	815 > 769.7	6116.390	22712.641	1.00	6.89	3.366	4.7	94.3	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	8805.960	22712.641	1.00	6.67	4.846	134.7	89.8	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	9315.738	22712.641	1.00	6.82	5.127	141.9	94.6	NO		
65	-1												
66	60	13C4-PFBA	217. > 172	9233.056	9233.056	1.00	1.47	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	22850.570	22850.570	1.00	3.61	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.8 > 79.9	4034.381	4034.381	1.00	4.37	12.500	12.5	100.0	NO		
69	63	13C8-PFOA	420.9 > 376	25120.416	25120.416	1.00	4.73	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	24353.928	24353.928	1.00	5.16	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	4113.747	4113.747	1.00	5.24	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	22907.691	22907.691	1.00	5.54	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

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Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
73	67	13C7-PFUdA	570.1 > 524.8	22712.641	22712.641	1.00	5.85	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

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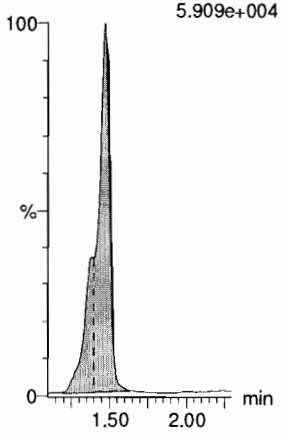
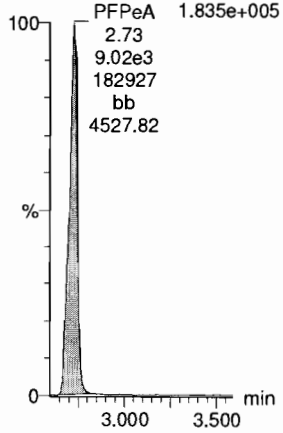
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120218.mdb 03 Dec 2018 10:27:08
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

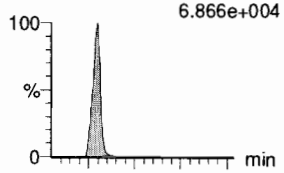
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
5.909e+004



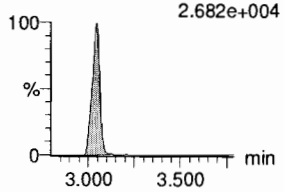
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
PFPeA 1.835e+005
2.73
9.02e3
182927
bb
4527.82



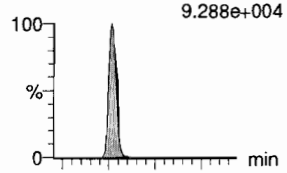
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
6.866e+004



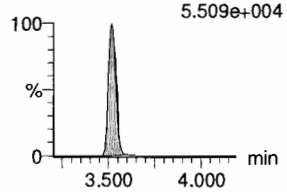
F7:MRM of 2 channels,ES-
299.0 > 99.0
2.682e+004



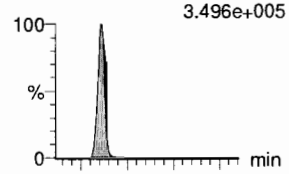
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
9.288e+004



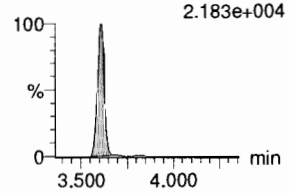
F12:MRM of 2 channels,ES-
327.2 > 81.1
5.509e+004



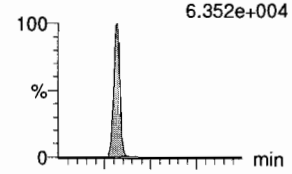
PFHxA
F9:MRM of 2 channels,ES-
313 > 269
3.496e+005



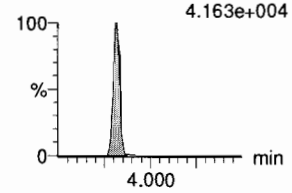
F9:MRM of 2 channels,ES-
313 > 118.9
2.183e+004



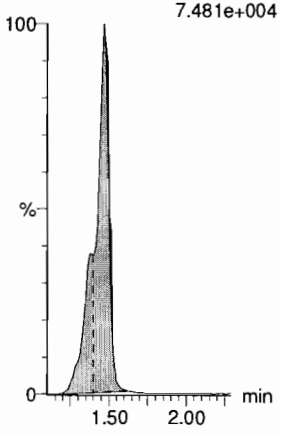
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
6.352e+004



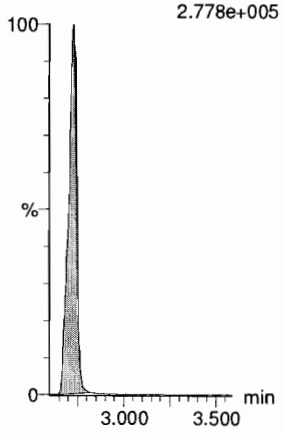
F15:MRM of 2 channels,ES-
349.1 > 99
4.163e+004



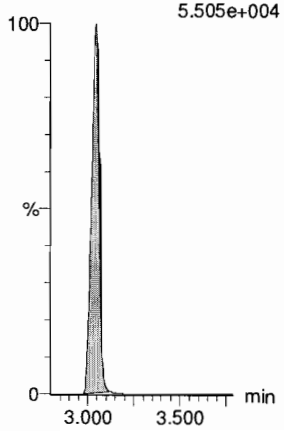
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
7.481e+004



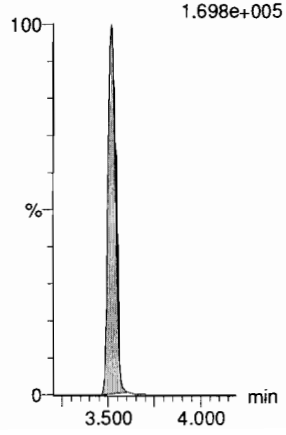
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.778e+005



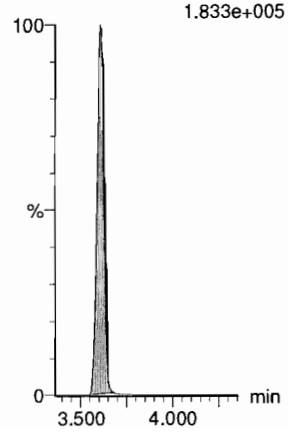
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
5.505e+004



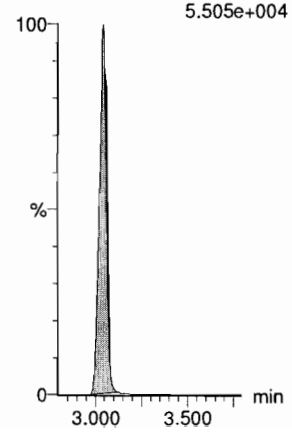
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.698e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 270
1.833e+005



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
5.505e+004

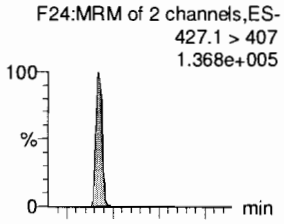


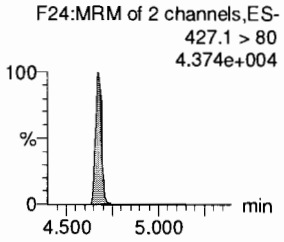
Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

Last Altered: Monday, December 03, 2018 10:56:51 Pacific Standard Time
Printed: Monday, December 03, 2018 10:58:27 Pacific Standard Time

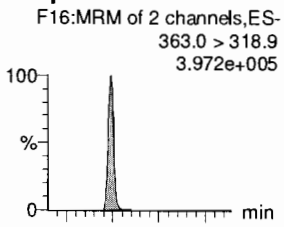
Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

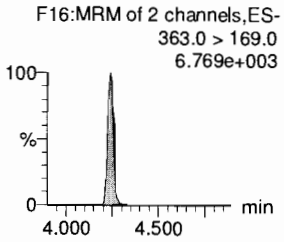
6:2 FTS



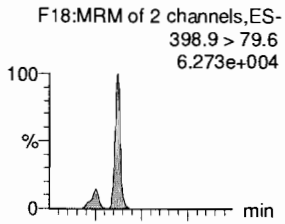


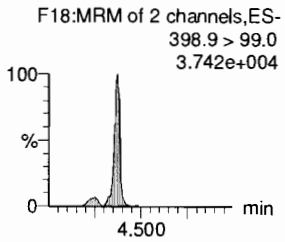
PFHpA



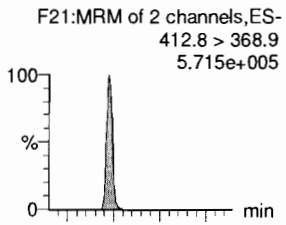


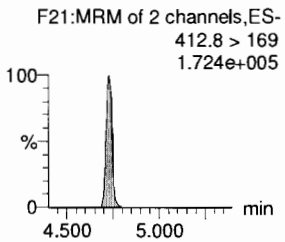
L-PFHxS



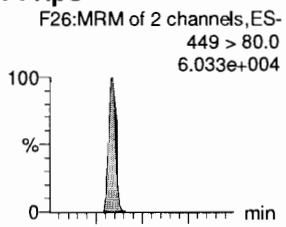


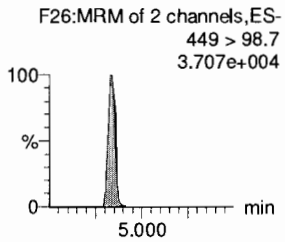
L-PFOA



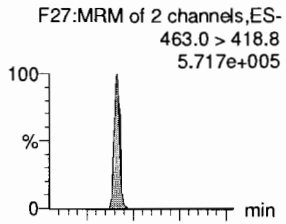


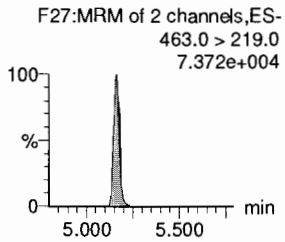
PFHpS



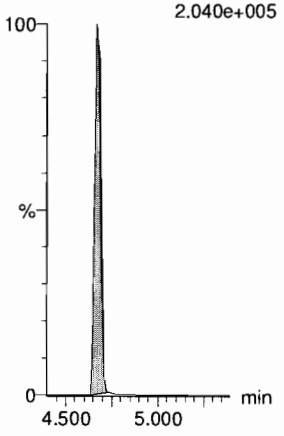


PFNA

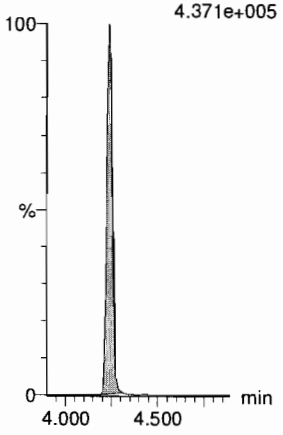




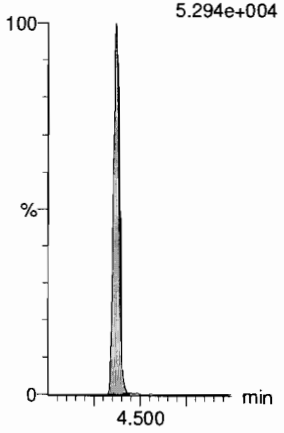
13C2-6:2 FTS



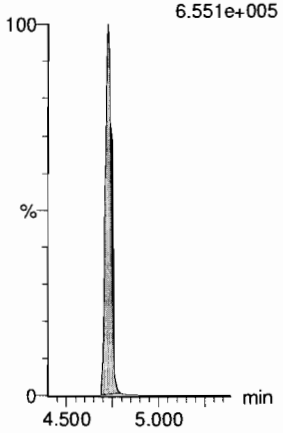
13C4-PFHpA



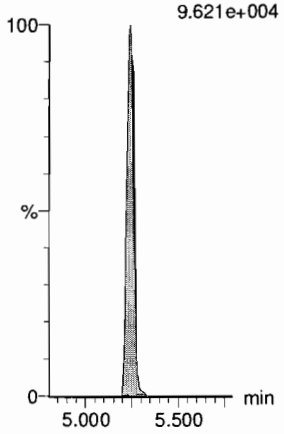
18O2-PFHxS



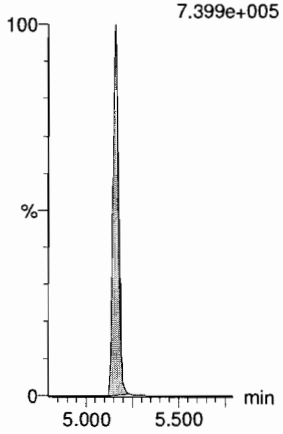
13C2-PFOA



13C8-PFOS



13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

Last Altered: Monday, December 03, 2018 10:56:51 Pacific Standard Time
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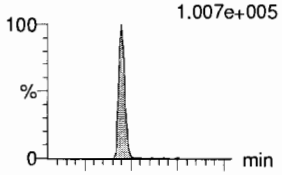
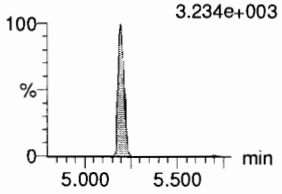
Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

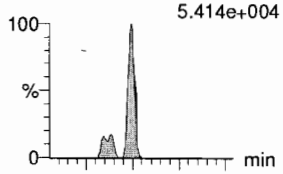
PFOSA
F30:MRM of 2 channels,ES-
497.9 > 77.9
1.007e+005



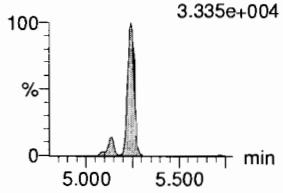
F30:MRM of 2 channels,ES-
497.9 > 169
3.234e+003



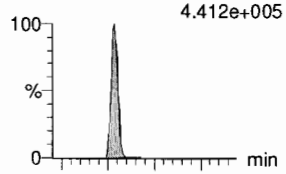
L-PFOS
F32:MRM of 2 channels,ES-
498.9 > 79.9
5.414e+004



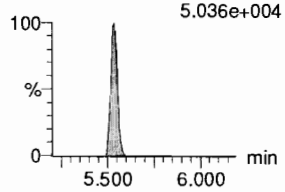
F32:MRM of 2 channels,ES-
498.9 > 99
3.335e+004



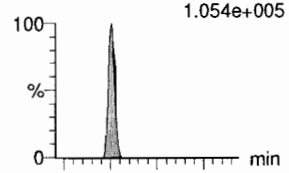
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
4.412e+005



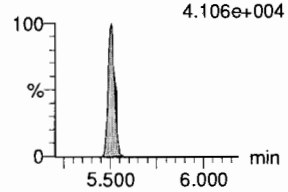
F37:MRM of 2 channels,ES-
513 > 219
5.036e+004



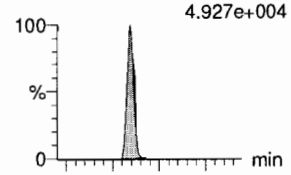
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
1.054e+005



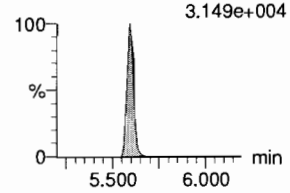
F42:MRM of 2 channels,ES-
527 > 80
4.106e+004



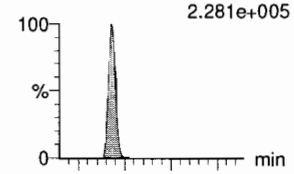
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
4.927e+004



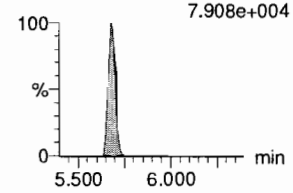
F45:MRM of 2 channels,ES-
549.1 > 99.1
3.149e+004



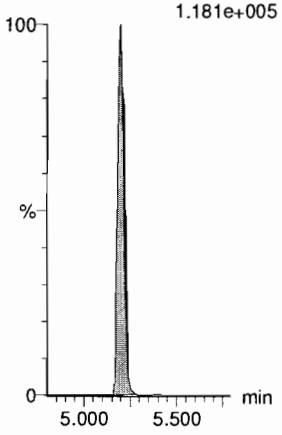
L-MeFOSAA
F48:MRM of 2 channels,ES-
570 > 419
2.281e+005



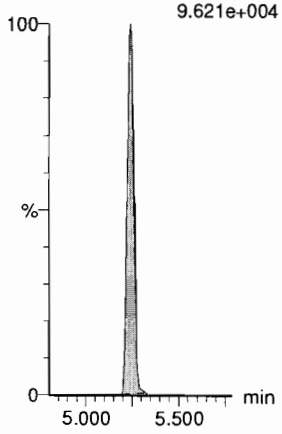
F48:MRM of 2 channels,ES-
570. > 512
7.908e+004



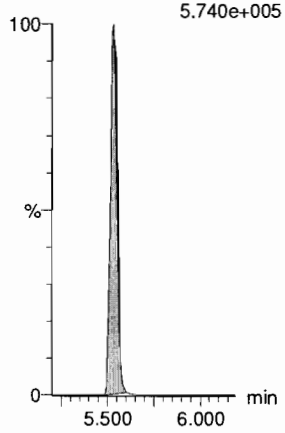
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.181e+005



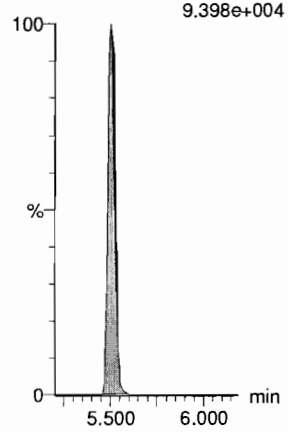
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.621e+004



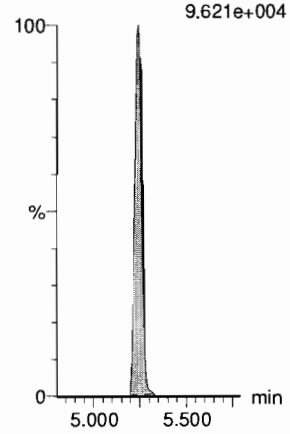
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
5.740e+005



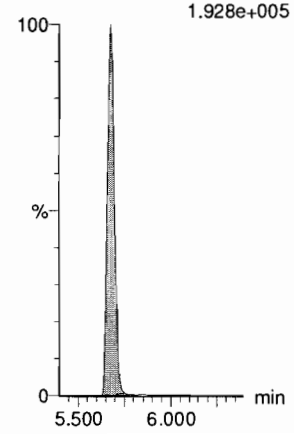
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
9.398e+004



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.621e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
1.928e+005

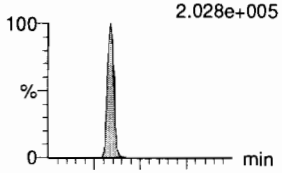


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

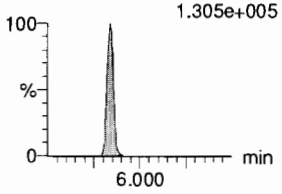
Last Altered: Monday, December 03, 2018 10:56:51 Pacific Standard Time
Printed: Monday, December 03, 2018 10:58:27 Pacific Standard Time

Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

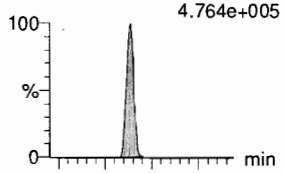
L-EtFOSAA
F51:MRM of 2 channels,ES-
584.1 > 419
2.028e+005



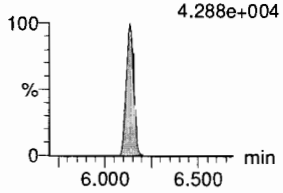
F51:MRM of 2 channels,ES-
584.1 > 526
1.305e+005



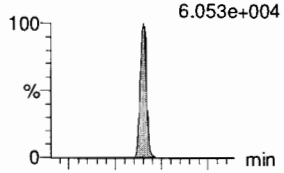
PFDoA
F54:MRM of 4 channels,ES-
612.9 > 569.0
4.764e+005



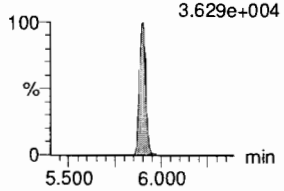
F54:MRM of 4 channels,ES-
612.9 > 318.8
4.288e+004



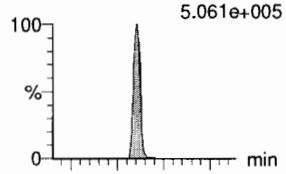
PFDS
F53:MRM of 2 channels,ES-
598.8 > 79.9
6.053e+004



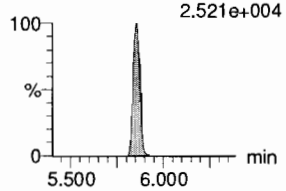
F53:MRM of 2 channels,ES-
598.8 > 98.9
3.629e+004



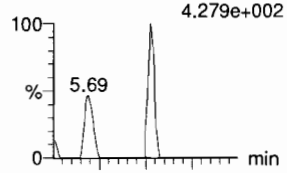
PFUdA
F46:MRM of 2 channels,ES-
563.0 > 518.9
5.061e+005



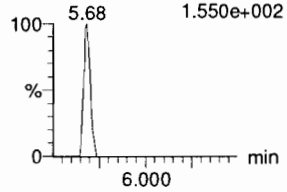
F46:MRM of 2 channels,ES-
563.0 > 269
2.521e+004



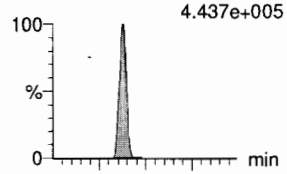
N-MeFOSA
F36:MRM of 2 channels,ES-
512.1 > 168.9
4.279e+002



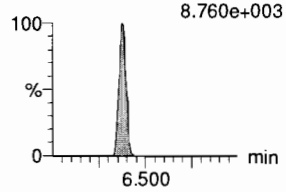
F36:MRM of 2 channels,ES-
512.1 > 219
1.550e+002



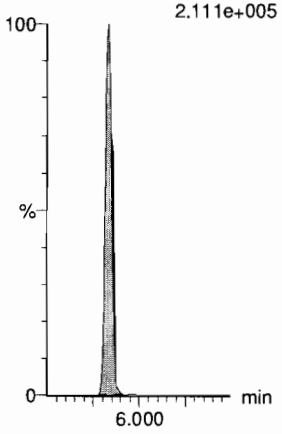
PFTrDA
F60:MRM of 2 channels,ES-
662.9 > 618.9
4.437e+005



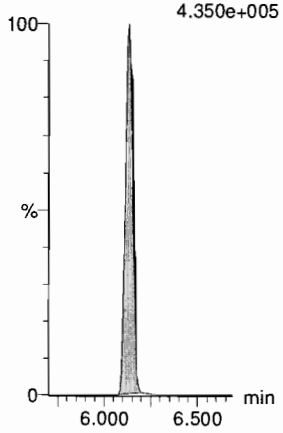
F60:MRM of 2 channels,ES-
662.9 > 319
8.760e+003



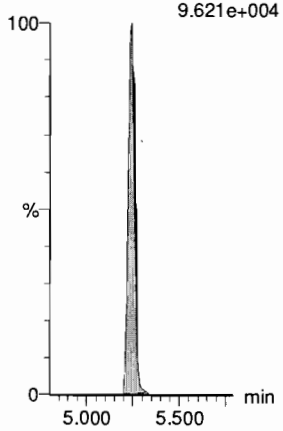
d5-N-EtFOSAA
F52:MRM of 1 channel,ES-
589.3 > 419
2.111e+005



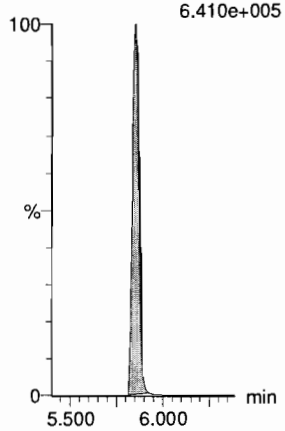
13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
4.350e+005



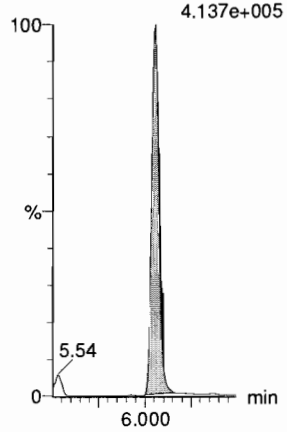
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
9.621e+004



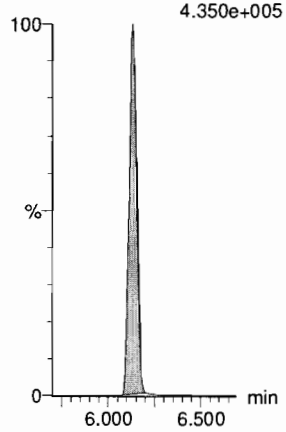
13C2-PFUdA
F47:MRM of 1 channel,ES-
565 > 519.8
6.410e+005



d3-N-MeFOSA
F39:MRM of 1 channel,ES-
515.2 > 168.9
4.137e+005



13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
4.350e+005

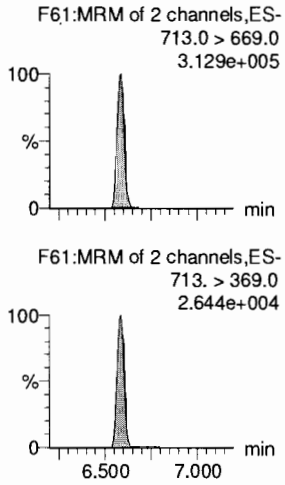


Dataset: F:\Projects\PFAS.PRO\Results\181202M2\181202M2-ICV.qld

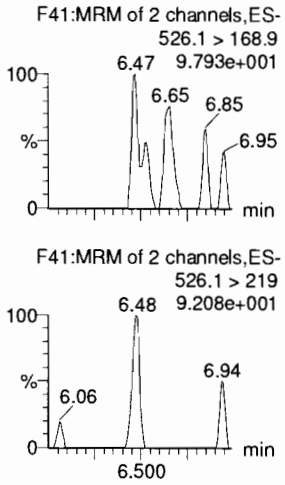
Last Altered: Monday, December 03, 2018 10:56:51 Pacific Standard Time
Printed: Monday, December 03, 2018 10:58:27 Pacific Standard Time

Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

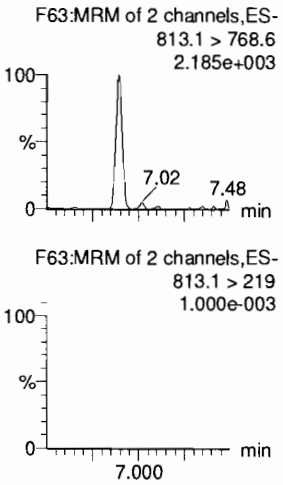
PFTeDA



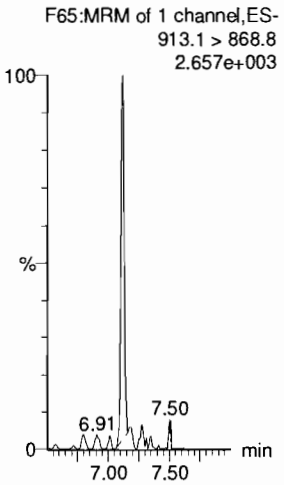
N-EtFOSA



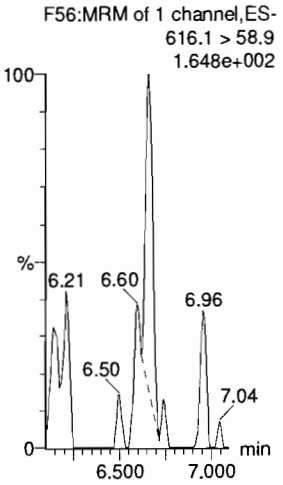
PFHxDA



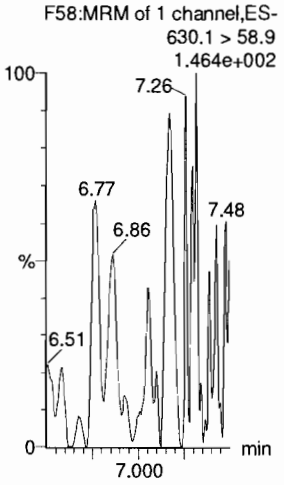
PFODA



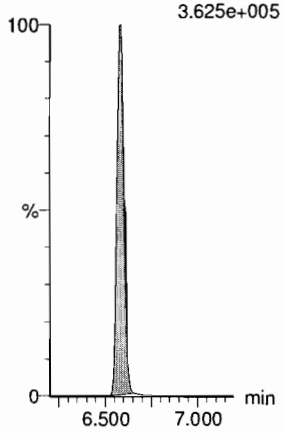
N-MeFOSE



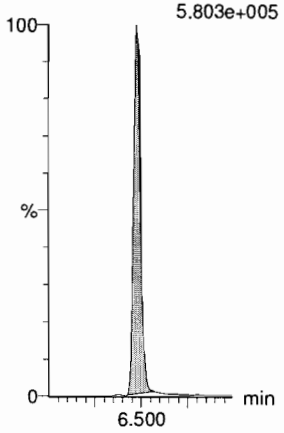
N-EtFOSE



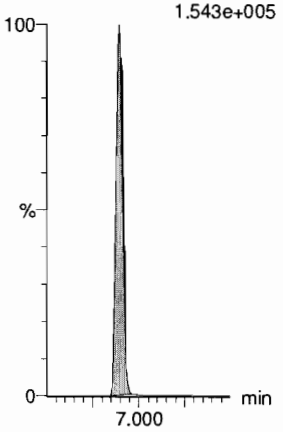
13C2-PFTeDA



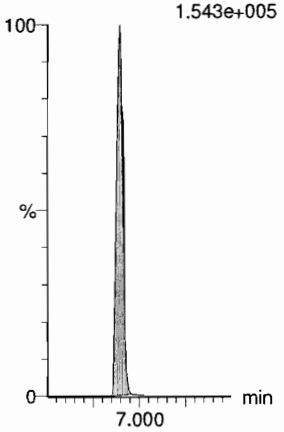
d5-N-ETFOSA



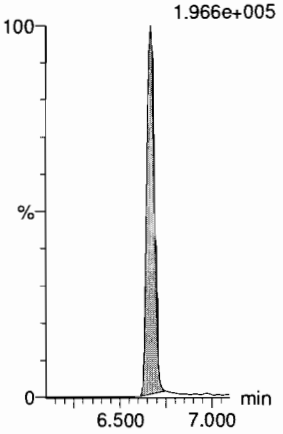
13C2-PFHxDA



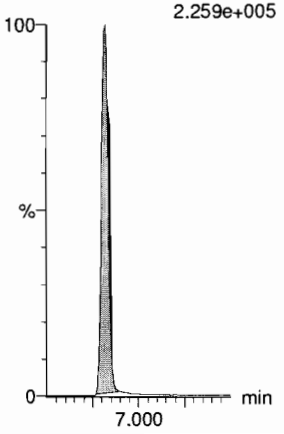
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



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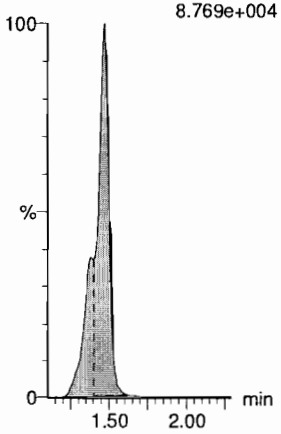
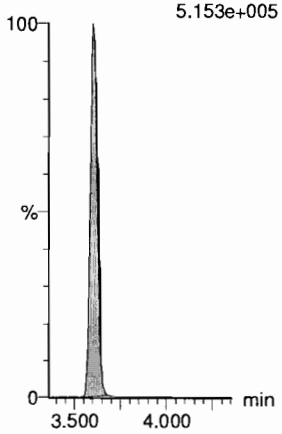
Printed: Monday, December 03, 2018 10:58:27 Pacific Standard Time

Name: 181202M2_13, Date: 02-Dec-2018, Time: 20:31:29, ID: ICV181202M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

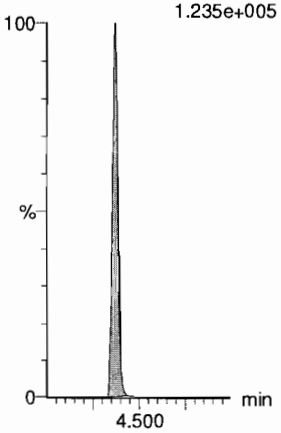
13C4-PFBA



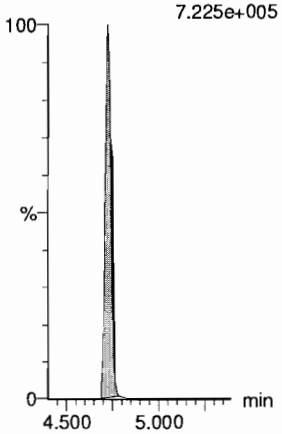
13C5-PFHxA



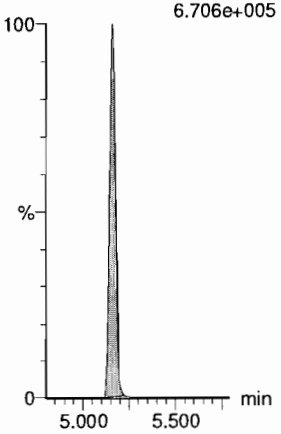
13C3-PFHxS



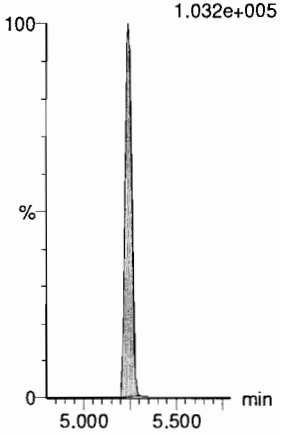
13C8-PFOA



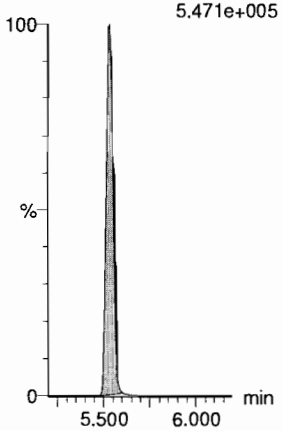
13C9-PFNA



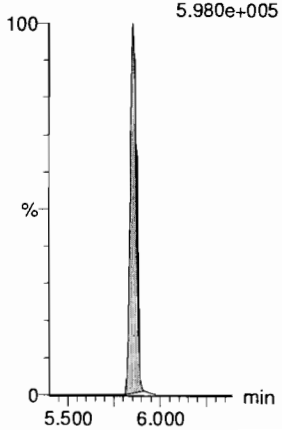
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, December 03, 2018 12:05:26 Pacific Standard Time
Printed: Monday, December 03, 2018 12:05:53 Pacific Standard Time

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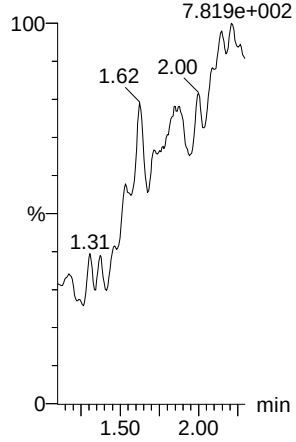
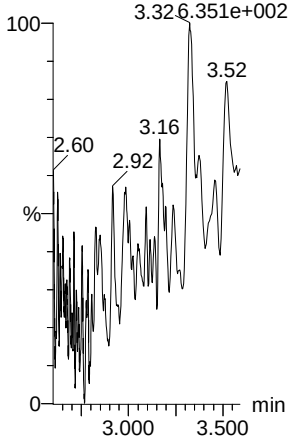
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-02-18.cdb 03 Dec 2018 10:25:29

Name: 181202M2_12, Date: 02-Dec-2018, Time: 20:20:57, ID: IPA, Description: IPA

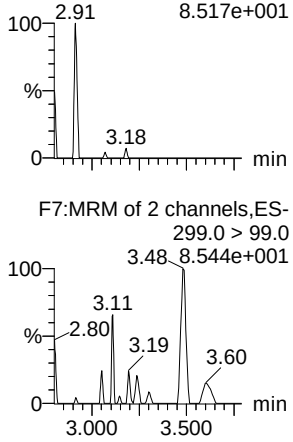
PFBA



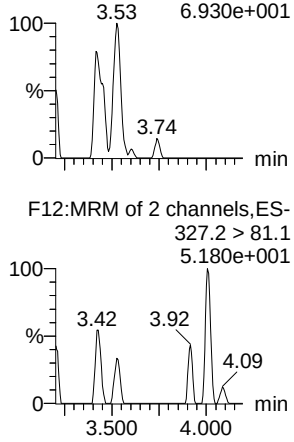
PFPeA



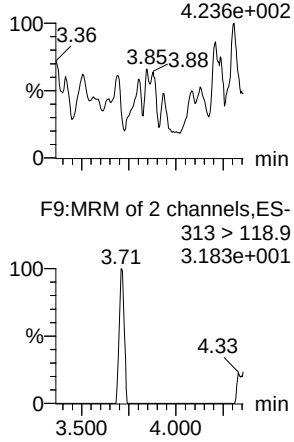
PFBS



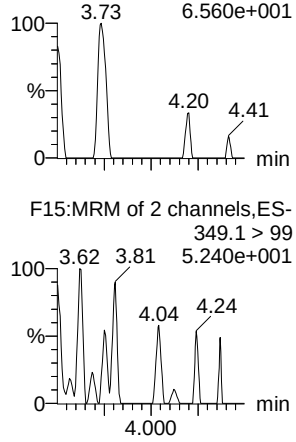
4:2 FTS



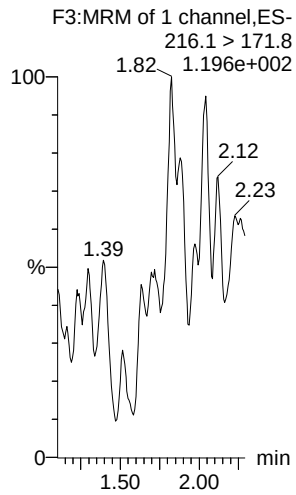
PFHxA



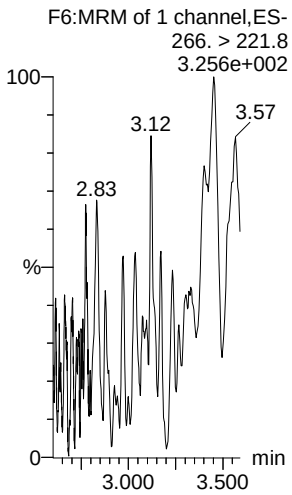
PFPeS



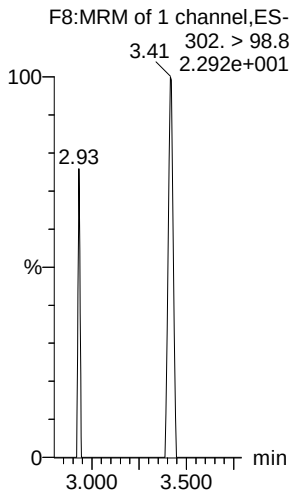
13C3-PFBA



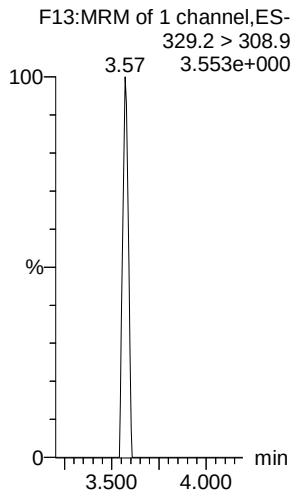
13C3-PFPeA



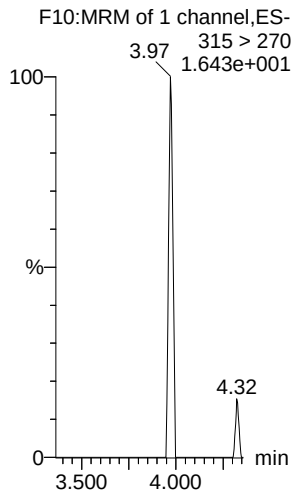
13C3-PFBS



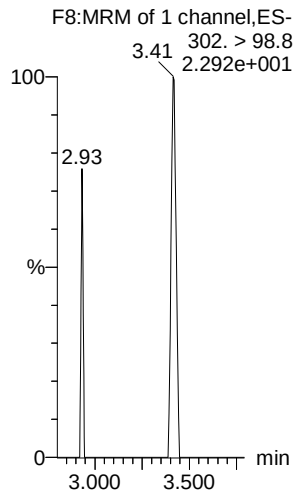
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS



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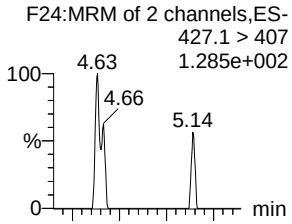
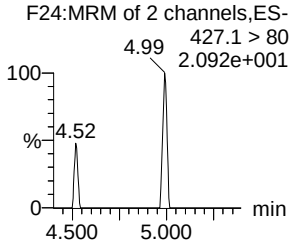
Name: 181202M2_12, Date: 02-Dec-2018, Time: 20:20:57, ID: IPA, Description: IPA

6:2 FTS





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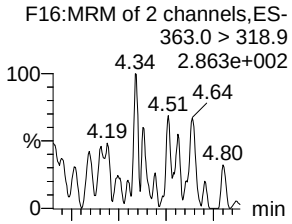

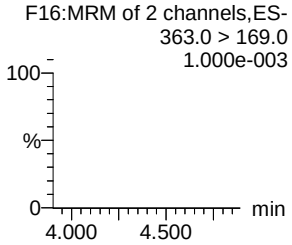

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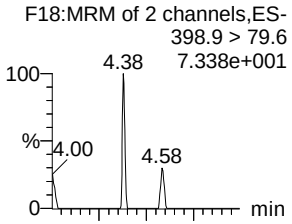

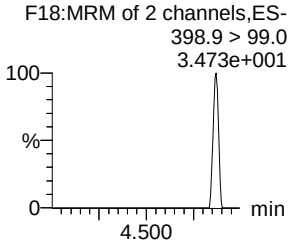

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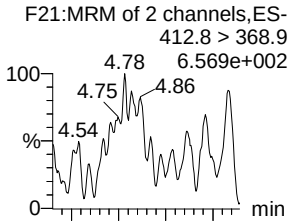

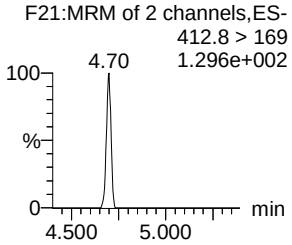

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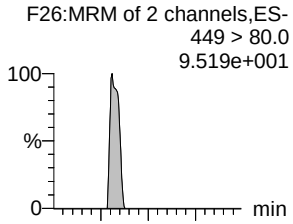

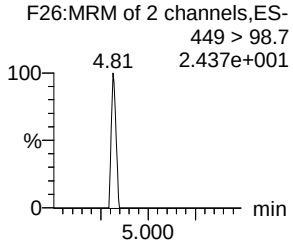

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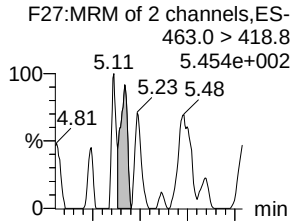
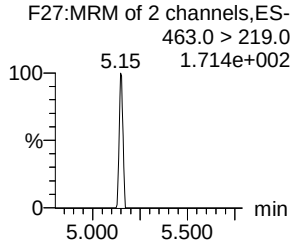
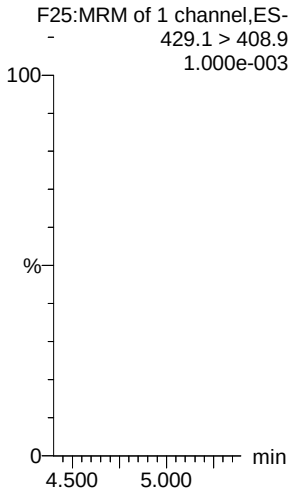




13C2-6:2 FTS



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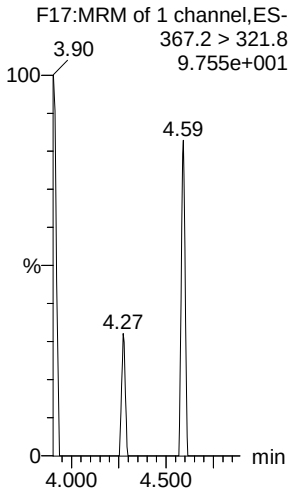
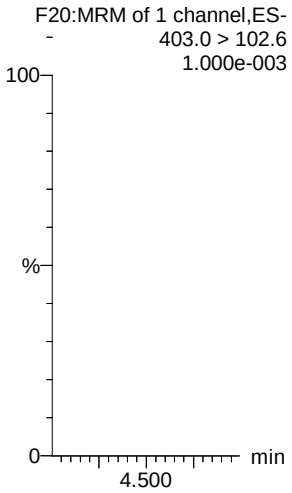


18O2-PFHxS



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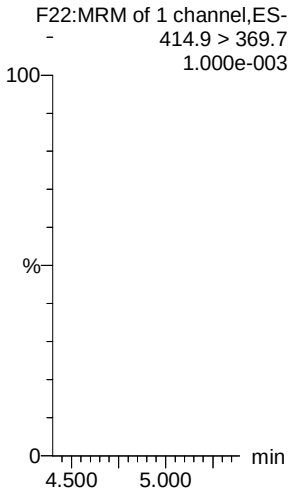

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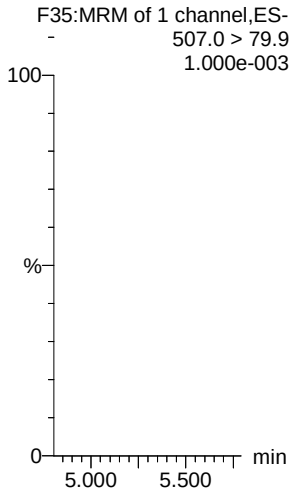

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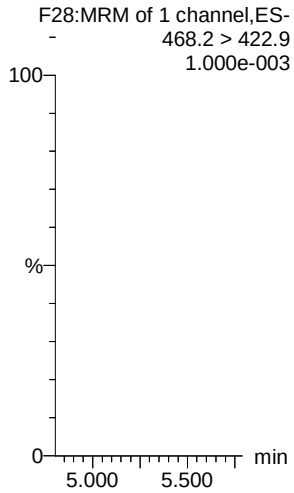

Vista Analytical Laboratory

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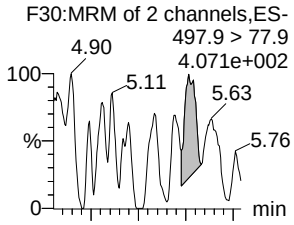

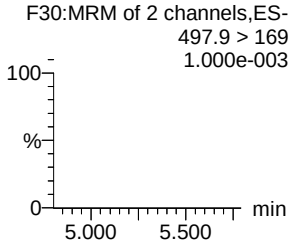

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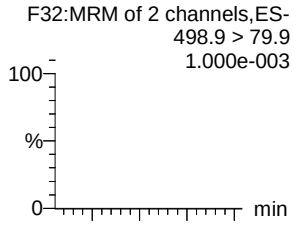

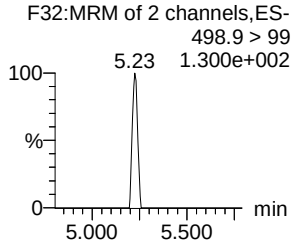

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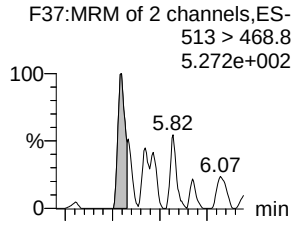

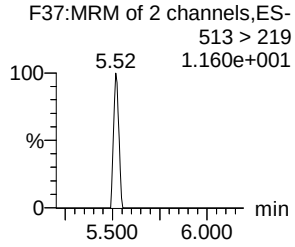

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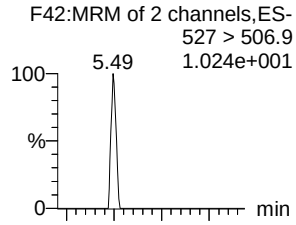

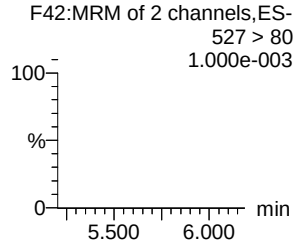

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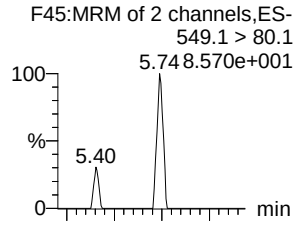

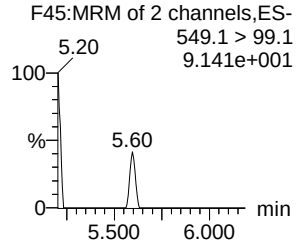

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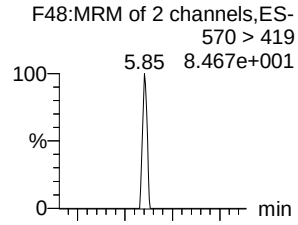

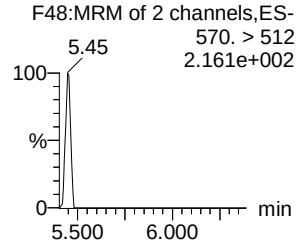

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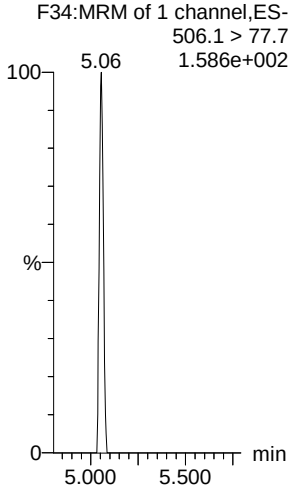

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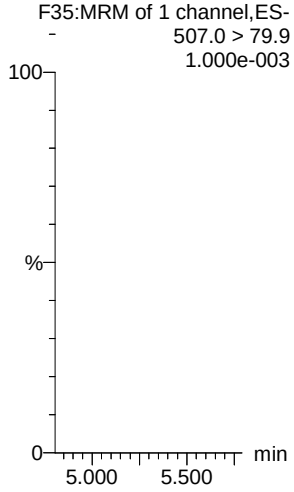

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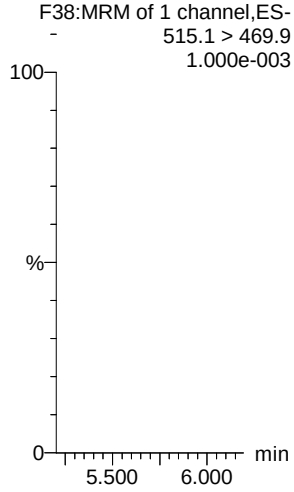
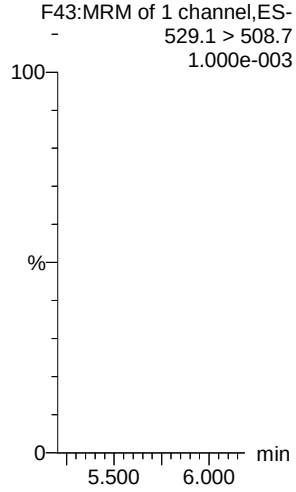


13C2-8:2 FTS



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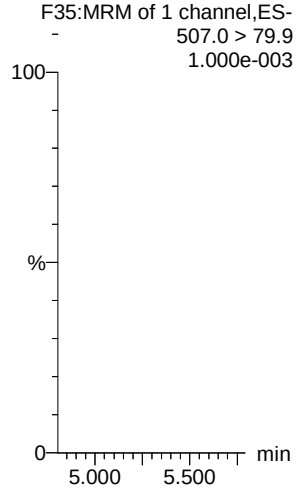

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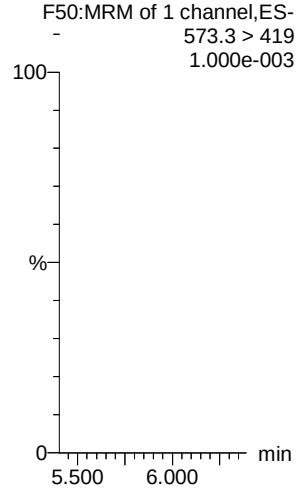

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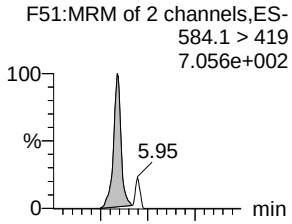
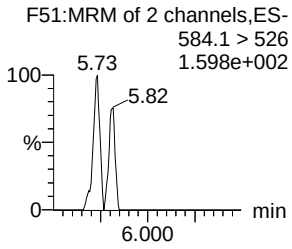
L-EtFOSAA





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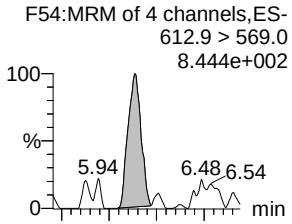

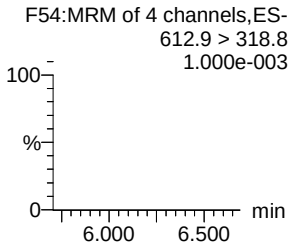

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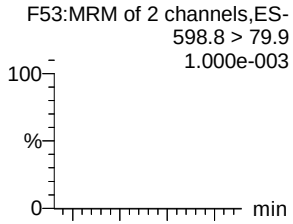

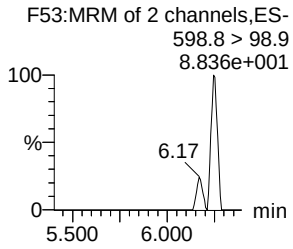

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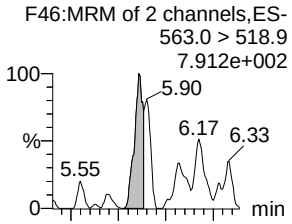

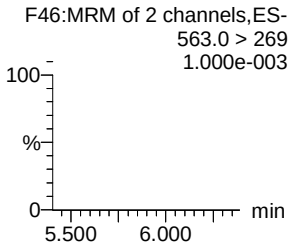

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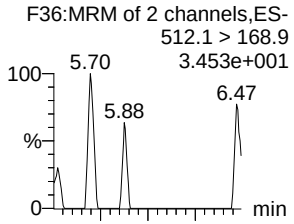

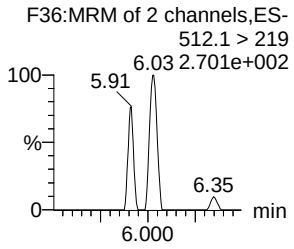

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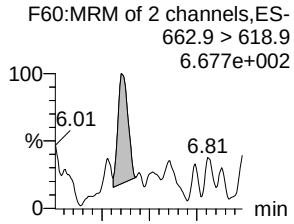

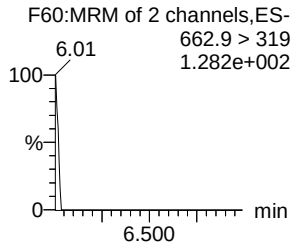

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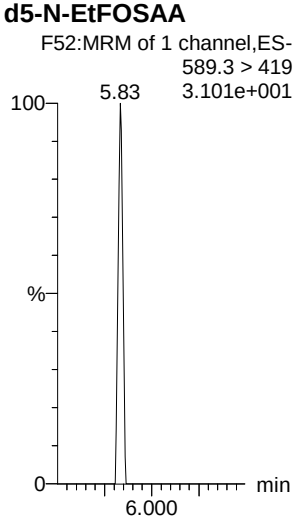

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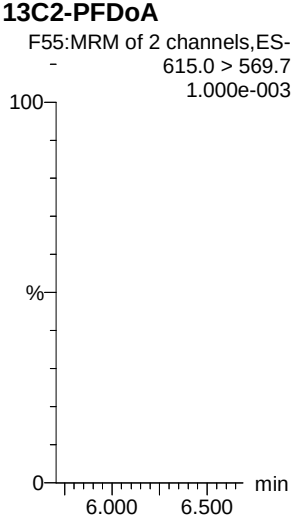

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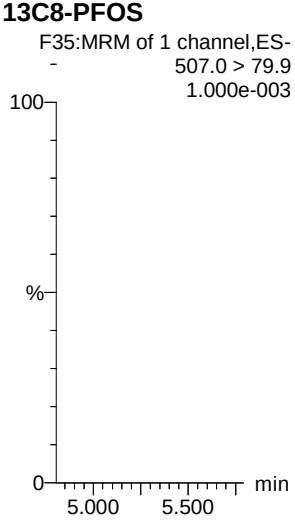

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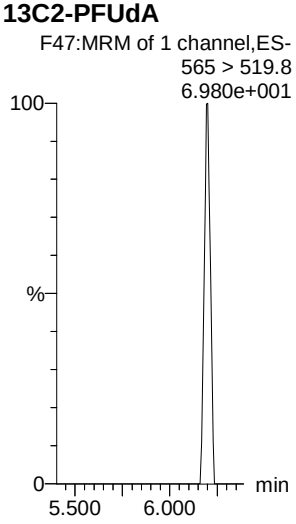

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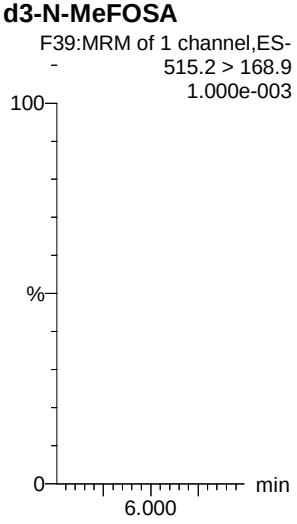
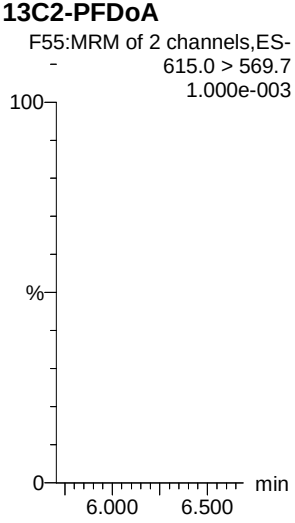


13C2-PFDoA



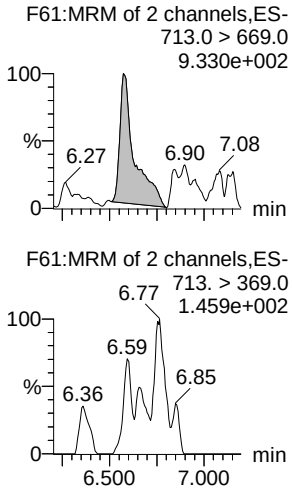
Vista Analytical Laboratory

Dataset: Untitled

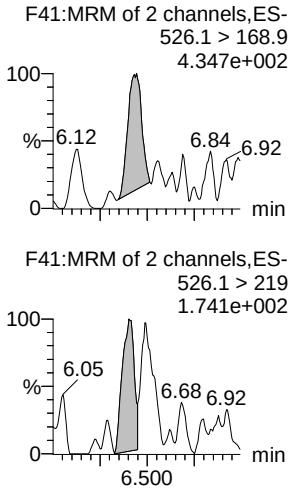
Last Altered: Monday, December 03, 2018 12:05:26 Pacific Standard Time
Printed: Monday, December 03, 2018 12:05:53 Pacific Standard Time

Name: 181202M2_12, Date: 02-Dec-2018, Time: 20:20:57, ID: IPA, Description: IPA

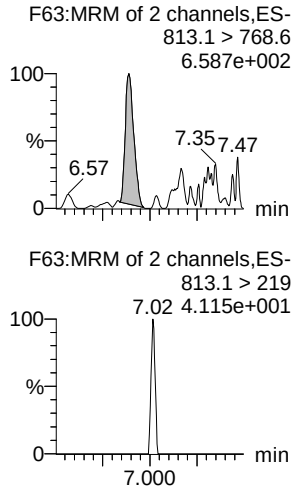
PFTeDA



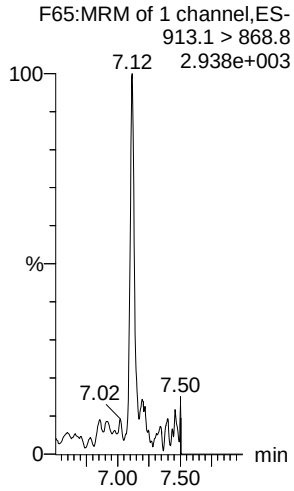
N-EtFOSA



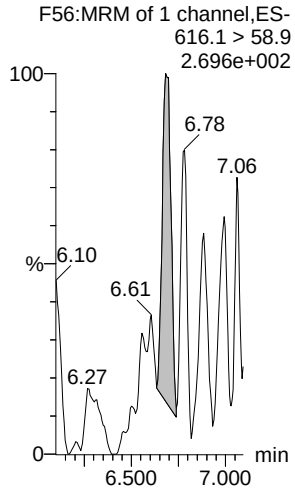
PFHxDA



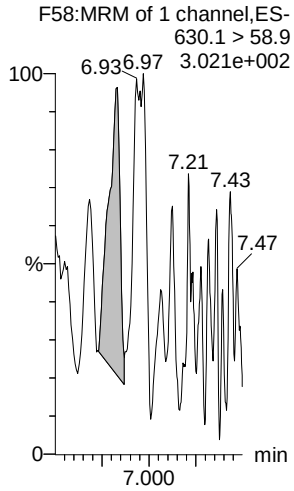
PFODA



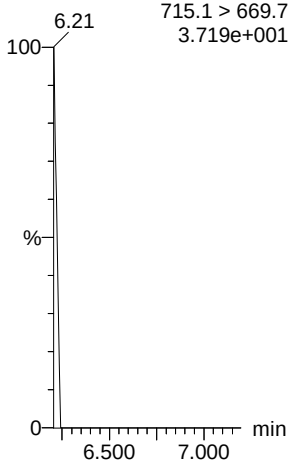
N-MeFOSE



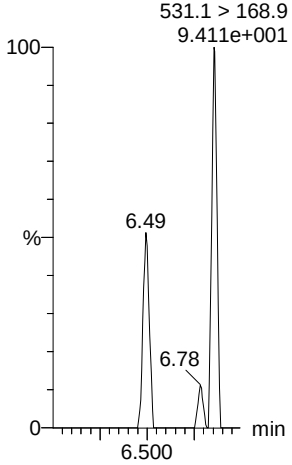
N-EtFOSE



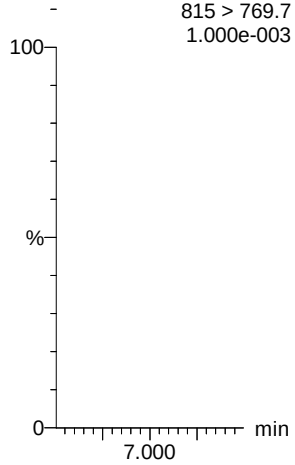
13C2-PFTeDA



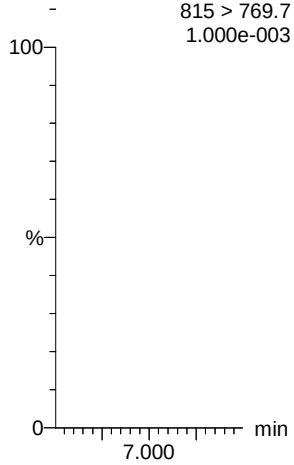
d5-N-ETFOSA



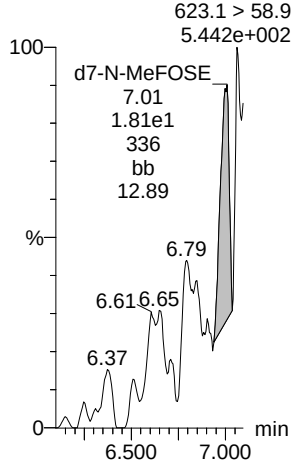
13C2-PFHxDA



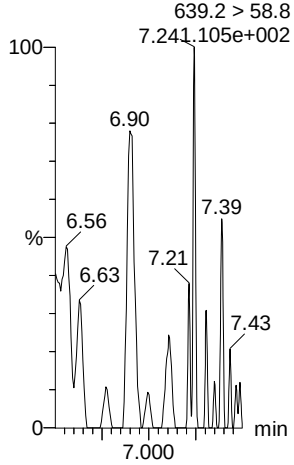
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



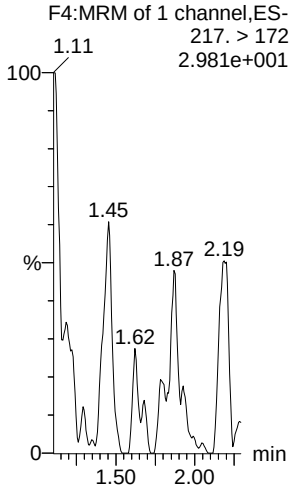
Vista Analytical Laboratory

Dataset: Untitled

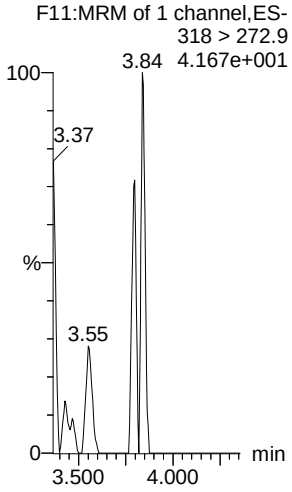
Last Altered: Monday, December 03, 2018 12:05:26 Pacific Standard Time
Printed: Monday, December 03, 2018 12:05:53 Pacific Standard Time

Name: 181202M2_12, Date: 02-Dec-2018, Time: 20:20:57, ID: IPA, Description: IPA

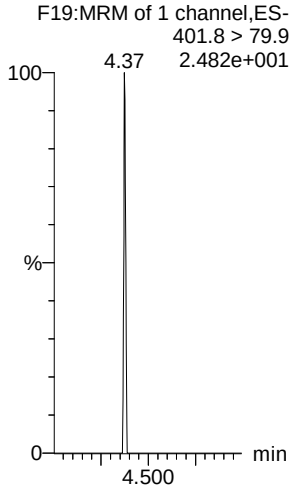
13C4-PFBA



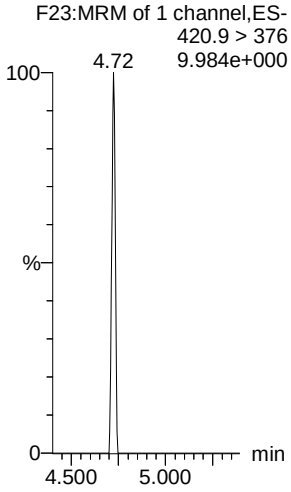
13C5-PFHxA



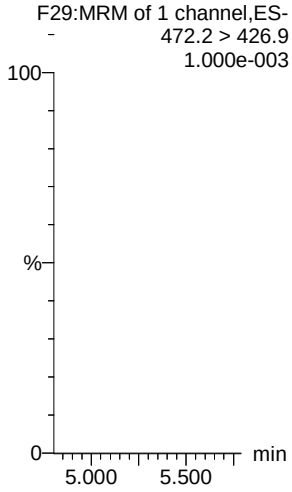
13C3-PFHxS



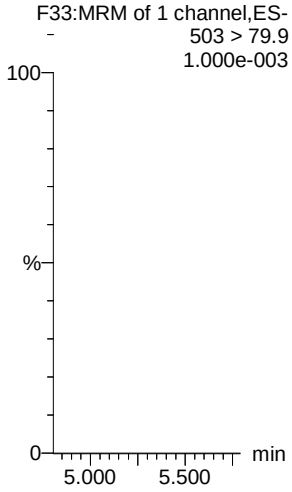
13C8-PFOA



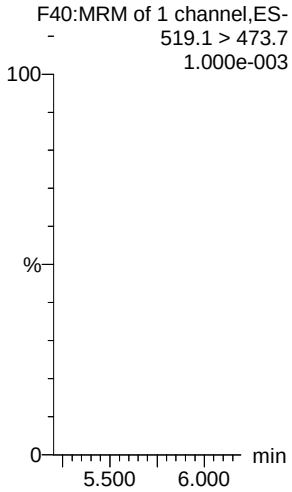
13C9-PFNA



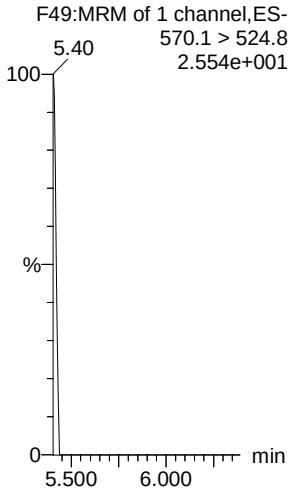
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

no low pts dropped high pt 4:2 FTS 100, 6:2 FTS, 8:2 FTS

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:52:32 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Compound name: PFBA
Correlation coefficient: r = 0.999734, r^2 = 0.999467
Calibration curve: 1.13075 * x + 0.00372357
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

12/04/18

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	181204M1_3	Standard	0.250	1.38	154.564	7425.287	0.260	0.2	-9.3	NO	0.999	NO	MM
2	2	181204M1_4	Standard	0.500	1.37	323.175	7380.422	0.547	0.5	-3.8	NO	0.999	NO	MM
3	3	181204M1_5	Standard	1.000	1.37	678.937	7506.750	1.131	1.0	-0.3	NO	0.999	NO	bb
4	4	181204M1_6	Standard	2.000	1.37	1375.279	7406.021	2.321	2.0	2.5	NO	0.999	NO	bb
5	5	181204M1_7	Standard	5.000	1.37	3203.722	7124.355	5.621	5.0	-0.6	NO	0.999	NO	MM
6	6	181204M1_8	Standard	10.000	1.37	7012.084	7420.241	11.812	10.4	4.4	NO	0.999	NO	bb
7	7	181204M1_9	Standard	50.000	1.37	33919.035	7259.589	58.404	51.6	3.3	NO	0.999	NO	bb
8	8	181204M1_10	Standard	100.000	1.37	68597.336	7211.754	118.898	105.1	5.1	NO	0.999	NO	bb
9	9	181204M1_11	Standard	250.000	1.37	159009.766	7002.477	283.846	251.0	0.4	NO	0.999	NO	MM
10	10	181204M1_12	Standard	500.000	1.37	304099.125	6835.833	556.075	491.8	-1.6	NO	0.999	NO	MM

Compound name: PFPeA
Coefficient of Determination: R^2 = 0.999847
Calibration curve: -0.000105859 * x^2 + 0.965269 * x + 0.00975116
Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	2.63	194.423	8989.211	0.270	0.3	8.0	NO	1.000	NO	MM
2	2	181204M1_4	Standard	0.500	2.63	328.166	8602.990	0.477	0.5	-3.2	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	2.62	690.393	9146.560	0.944	1.0	-3.3	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	2.63	1387.753	9183.169	1.889	1.9	-2.6	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	2.63	3272.091	8663.989	4.721	4.9	-2.3	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	2.63	6967.535	8905.920	9.779	10.1	1.3	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	2.63	33833.539	8654.983	48.864	50.9	1.8	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	2.63	66581.758	8570.831	97.105	101.7	1.7	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	2.62	148550.094	8048.980	230.697	245.6	-1.8	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	2.63	287077.219	7838.934	457.775	501.9	0.4	NO	1.000	NO	bb

12/4/18

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:52:32 Pacific Standard Time

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999441
Calibration curve: -3.60504e-005 * x^2 + 2.14448 * x + -0.111984
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	2.96	43.649	1253.408	0.435	0.3	2.1	NO	0.999	NO	bb
2	2	181204M1_4	Standard	0.500	2.96	92.594	1175.880	0.984	0.5	2.2	NO	0.999	NO	bb
3	3	181204M1_5	Standard	1.000	2.95	198.842	1254.754	1.981	1.0	-2.4	NO	0.999	NO	bb
4	4	181204M1_6	Standard	2.000	2.96	411.962	1273.756	4.043	1.9	-3.1	NO	0.999	NO	bb
5	5	181204M1_7	Standard	5.000	2.96	1002.130	1230.185	10.183	4.8	-4.0	NO	0.999	NO	bb
6	6	181204M1_8	Standard	10.000	2.96	2146.915	1213.755	22.110	10.4	3.6	NO	0.999	NO	bb
7	7	181204M1_9	Standard	50.000	2.96	10427.341	1231.697	105.823	49.4	-1.1	NO	0.999	NO	bb
8	8	181204M1_10	Standard	100.000	2.96	20135.217	1120.090	224.705	105.0	5.0	NO	0.999	NO	bb
9	9	181204M1_11	Standard	250.000	2.96	43019.551	1037.397	518.359	242.8	-2.9	NO	0.999	NO	bb
10	10	181204M1_12	Standard	500.000	2.96	78865.203	922.377	1068.777	502.7	0.5	NO	0.999	NO	bb

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999949
Calibration curve: -0.00331787 * x^2 + 1.11739 * x + -0.0126645
Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	3.44	64.108	3112.869	0.257	0.2	-3.2	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	3.44	141.788	3014.832	0.588	0.5	7.7	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	3.44	276.937	3212.243	1.078	1.0	-2.1	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	3.44	559.619	3245.375	2.155	2.0	-2.4	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	3.44	1359.831	3104.461	5.475	5.0	-0.3	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	3.44	2816.744	3239.992	10.867	10.0	0.4	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	3.44	12449.042	3268.537	47.609	50.1	0.1	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	3.44	22912.393	3647.459	78.522	99.9	-0.1	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	3.44	44623.918	4172.220	133.694			NO	1.000	NO	bbXI
10	10	181204M1_12	Standard	500.000	3.44	74720.500	5195.280	179.780			NO	1.000	NO	bbXI

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
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Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999902
Calibration curve: -0.000205953 * x^2 + 0.980486 * x + 0.00865741
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181204M1_3	Standard	0.250	3.53	310.148	6335.007	0.245	0.2	-3.7	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	3.53	602.688	5949.860	0.506	0.5	1.6	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	3.52	1385.640	6611.774	1.048	1.1	6.0	NO	1.000	NO	MM
4	4	181204M1_6	Standard	2.000	3.53	2553.106	6547.134	1.950	2.0	-1.0	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	3.53	5956.157	6241.994	4.771	4.9	-2.8	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	3.52	12786.780	6436.318	9.933	10.1	1.4	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	3.53	62491.020	6250.323	49.990	51.5	3.1	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	3.52	122465.125	6408.065	95.555	99.5	-0.5	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	3.52	269330.594	5849.149	230.231	247.7	-0.9	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	3.53	497857.500	5661.117	439.717	501.2	0.2	NO	1.000	NO	bb

Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999285
Calibration curve: -0.000230863 * x^2 + 1.47225 * x + -0.0226728
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	3.74	38.134	1253.408	0.380	0.3	9.5	NO	0.999	NO	bb
2	2	181204M1_4	Standard	0.500	3.74	62.859	1175.880	0.668	0.5	-6.1	NO	0.999	NO	bb
3	3	181204M1_5	Standard	1.000	3.73	151.999	1254.754	1.514	1.0	4.4	NO	0.999	NO	bb
4	4	181204M1_6	Standard	2.000	3.74	284.745	1273.756	2.794	1.9	-4.3	NO	0.999	NO	bb
5	5	181204M1_7	Standard	5.000	3.74	640.437	1230.185	6.508	4.4	-11.2	NO	0.999	NO	bb
6	6	181204M1_8	Standard	10.000	3.74	1506.491	1213.755	15.515	10.6	5.7	NO	0.999	NO	bb
7	7	181204M1_9	Standard	50.000	3.74	7161.788	1231.697	72.682	49.8	-0.5	NO	0.999	NO	bb
8	8	181204M1_10	Standard	100.000	3.74	13631.022	1120.090	152.120	105.1	5.1	NO	0.999	NO	bb
9	9	181204M1_11	Standard	250.000	3.74	28447.893	1037.397	342.780	242.0	-3.2	NO	0.999	NO	bb
10	10	181204M1_12	Standard	500.000	3.74	50353.152	922.377	682.383	503.2	0.6	NO	0.999	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
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Compound name: PFHpA
Correlation coefficient: r = 0.999752, r^2 = 0.999504
Calibration curve: 1.31637 * x + 0.0808582
Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, 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	181204M1_3	Standard	0.250	4.17	277.004	8444.182	0.410	0.3	0.0	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	4.17	458.158	8524.782	0.672	0.4	-10.2	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	4.17	943.948	8736.271	1.351	1.0	-3.5	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	4.17	1953.994	9038.124	2.702	2.0	-0.4	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	4.17	4653.665	8287.162	7.019	5.3	5.4	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	4.17	9508.473	8679.348	13.694	10.3	3.4	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	4.17	46140.254	8398.871	68.670	52.1	4.2	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	4.17	90172.203	8248.318	136.652	103.7	3.7	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	4.17	193592.094	7558.306	320.164	243.2	-2.7	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	4.16	345686.281	6558.147	658.887	500.5	0.1	NO	1.000	NO	bb

Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999578
Calibration curve: -0.000245324 * x^2 + 2.15839 * x + -0.0780056
Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181204M1_3	Standard	0.250	4.31	47.251	1092.375	0.541	0.3	14.7	NO	1.000	NO	MM
2	2	181204M1_4	Standard	0.500	4.30	78.905	1089.452	0.905	0.5	-8.9	NO	1.000	NO	MM
3	3	181204M1_5	Standard	1.000	4.30	201.055	1171.316	2.146	1.0	3.0	NO	1.000	NO	MM
4	4	181204M1_6	Standard	2.000	4.30	347.854	1202.023	3.617	1.7	-14.4	NO	1.000	NO	MM
5	5	181204M1_7	Standard	5.000	4.30	858.744	1116.653	9.613	4.5	-10.2	NO	1.000	NO	MM
6	6	181204M1_8	Standard	10.000	4.30	1902.601	1110.402	21.418	10.0	-0.3	NO	1.000	NO	MM
7	7	181204M1_9	Standard	50.000	4.30	9324.089	1101.421	105.819	49.3	-1.3	NO	1.000	NO	MM
8	8	181204M1_10	Standard	100.000	4.30	18171.033	1021.773	222.298	104.3	4.3	NO	1.000	NO	MM
9	9	181204M1_11	Standard	250.000	4.30	39417.004	955.294	515.771	245.9	-1.7	NO	1.000	NO	MM
10	10	181204M1_12	Standard	500.000	4.30	70222.852	860.277	1020.352	501.3	0.3	NO	1.000	NO	MM

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Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999660
Calibration curve: -0.00421918 * x^2 + 1.36329 * x + 0.0538838
Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181204M1_3	Standard	0.250	4.60	120.279	3708.444	0.405	0.3	3.2	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	4.60	208.607	3462.517	0.753	0.5	2.7	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	4.60	434.687	3704.760	1.467	1.0	4.0	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	4.60	872.918	3679.805	2.965	2.1	7.5	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	4.60	1940.486	3685.356	6.582	4.9	-2.8	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	4.60	3997.365	3690.987	13.538	10.2	2.1	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	4.60	17773.043	3899.852	56.967	49.3	-1.5	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	4.60	32614.270	4313.138	94.520	100.6	0.6	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	4.60	66361.664	4964.753	167.082			NO	1.000	NO	bbXI
10	10	181204M1_12	Standard	500.000	4.60	112941.875	6470.049	218.201			NO	1.000	NO	bbXI

Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999788
Calibration curve: -0.000378013 * x^2 + 1.46194 * x + 0.0514405
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	4.66	541.511	15035.225	0.450	0.3	9.1	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	4.66	843.444	14390.147	0.733	0.5	-6.8	NO	1.000	NO	MM
3	3	181204M1_5	Standard	1.000	4.66	1706.728	14460.963	1.475	1.0	-2.6	NO	1.000	NO	MM
4	4	181204M1_6	Standard	2.000	4.66	3453.804	14677.848	2.941	2.0	-1.1	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	4.66	8186.981	14339.614	7.137	4.9	-2.9	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	4.65	18041.516	15222.832	14.815	10.1	1.2	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	4.65	86132.422	14330.657	75.130	52.1	4.1	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	4.65	162174.281	14186.666	142.893	100.3	0.3	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	4.65	354625.438	13185.007	336.201	245.5	-1.8	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	4.65	637979.688	12480.174	638.993	502.3	0.5	NO	1.000	NO	bb

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Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999733
Calibration curve: -0.000269422 * x^2 + 0.88954 * x + -0.0270283
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	4.77	52.720	2896.477	0.228	0.3	14.5	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	4.76	81.742	2779.626	0.368	0.4	-11.3	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	4.76	172.624	3052.664	0.707	0.8	-17.5	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	4.76	419.388	2882.541	1.819	2.1	3.8	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	4.76	970.164	2649.266	4.578	5.2	3.7	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	4.76	2032.648	2687.601	9.454	10.7	6.9	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	4.76	9592.013	2759.353	43.452	49.6	-0.8	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	4.76	18417.336	2621.137	87.831	101.9	1.9	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	4.76	40104.852	2478.883	202.232	245.7	-1.7	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	4.76	69408.789	2290.841	378.730	502.2	0.4	NO	1.000	NO	bb

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999730
Calibration curve: -0.000146988 * x^2 + 1.22558 * x + -0.0623249
Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	5.09	334.526	15516.605	0.269	0.3	8.3	NO	1.000	NO	MM
2	2	181204M1_4	Standard	0.500	5.09	618.878	14983.445	0.516	0.5	-5.6	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	5.09	1443.870	15056.938	1.199	1.0	2.9	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	5.09	2939.736	15786.823	2.328	2.0	-2.5	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	5.09	6847.301	14627.146	5.852	4.8	-3.4	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	5.09	14638.565	15396.641	11.885	9.8	-2.4	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	5.09	71969.000	14581.606	61.695	50.7	1.4	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	5.09	138504.906	13890.458	124.640	103.0	3.0	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	5.09	295022.781	12677.210	290.899	244.6	-2.2	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	5.09	529802.750	11451.670	578.303	502.2	0.4	NO	1.000	NO	bb

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Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999746
Calibration curve: -0.000147193 * x^2 + 1.06988 * x + 0.0577565
Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	5.13	80.002	3841.032	0.260	0.2	-24.3	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	5.13	190.221	3521.425	0.675	0.6	15.4	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	5.13	331.758	4021.830	1.031	0.9	-9.0	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	5.13	750.012	3855.072	2.432	2.2	11.0	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	5.13	1627.229	3755.546	5.416	5.0	0.2	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	5.13	3345.311	3717.410	11.249	10.5	4.8	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	5.13	16275.565	3715.910	54.750	51.5	3.0	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	5.13	31681.928	3740.192	105.883	100.3	0.3	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	5.13	68900.648	3394.959	253.687	245.3	-1.9	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	5.12	127605.305	3188.262	500.293	502.3	0.5	NO	1.000	NO	bb

Compound name: L-PFOS
Correlation coefficient: r = 0.999697, r^2 = 0.999395
Calibration curve: 1.0525 * x + 0.00293563
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, 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	181204M1_3	Standard	0.250	5.17	55.345	2896.477	0.239	0.2	-10.3	NO	0.999	NO	MM
2	2	181204M1_4	Standard	0.500	5.17	116.885	2779.626	0.526	0.5	-0.7	NO	0.999	NO	MM
3	3	181204M1_5	Standard	1.000	5.17	250.239	3052.664	1.025	1.0	-2.9	NO	0.999	NO	MM
4	4	181204M1_6	Standard	2.000	5.17	487.124	2882.541	2.112	2.0	0.2	NO	0.999	NO	MM
5	5	181204M1_7	Standard	5.000	5.17	1145.895	2649.266	5.407	5.1	2.7	NO	0.999	NO	MM
6	6	181204M1_8	Standard	10.000	5.17	2368.565	2687.601	11.016	10.5	4.6	NO	0.999	NO	MM
7	7	181204M1_9	Standard	50.000	5.17	12022.821	2759.353	54.464	51.7	3.5	NO	0.999	NO	MM
8	8	181204M1_10	Standard	100.000	5.17	23344.686	2621.137	111.329	105.8	5.8	NO	0.999	NO	MM
9	9	181204M1_11	Standard	250.000	5.17	52107.250	2478.883	262.756	249.6	-0.1	NO	0.999	NO	MM
10	10	181204M1_12	Standard	500.000	5.17	94774.375	2290.841	517.137	491.3	-1.7	NO	0.999	NO	MM

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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999831
Calibration curve: -0.000231433 * x^2 + 1.24031 * x + -0.0250627
Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	5.47	378.082	16102.663	0.293	0.3	2.7	NO	1.000	NO	MM
2	2	181204M1_4	Standard	0.500	5.47	782.063	15675.970	0.624	0.5	4.6	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	5.47	1549.933	17165.064	1.129	0.9	-7.0	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	5.47	3225.472	16174.564	2.493	2.0	1.5	NO	1.000	NO	MM
5	5	181204M1_7	Standard	5.000	5.47	7396.280	16040.857	5.764	4.7	-6.6	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	5.47	16344.307	15923.703	12.830	10.4	3.8	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	5.47	75488.141	15405.449	61.251	49.9	-0.3	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	5.47	148561.344	14936.151	124.330	102.2	2.2	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	5.47	322249.563	13816.138	291.552	246.4	-1.4	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	5.47	591143.375	13106.873	563.772	501.5	0.3	NO	1.000	NO	bb

Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999350
Calibration curve: -0.00486929 * x^2 + 1.57536 * x + 0.00453743
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	5.44	66.984	2615.101	0.320	0.2	-19.8	NO	0.999	NO	bb
2	2	181204M1_4	Standard	0.500	5.43	200.019	2919.919	0.856	0.5	8.3	NO	0.999	NO	bb
3	3	181204M1_5	Standard	1.000	5.44	391.567	3053.916	1.603	1.0	1.8	NO	0.999	NO	bb
4	4	181204M1_6	Standard	2.000	5.44	777.340	2896.193	3.355	2.1	7.0	NO	0.999	NO	bb
5	5	181204M1_7	Standard	5.000	5.44	1801.051	2885.138	7.803	5.0	0.6	NO	0.999	NO	bb
6	6	181204M1_8	Standard	10.000	5.43	3843.862	3027.348	15.871	10.4	4.1	NO	0.999	NO	bb
7	7	181204M1_9	Standard	50.000	5.43	17251.063	3318.676	64.977	48.5	-3.0	NO	0.999	NO	bb
8	8	181204M1_10	Standard	100.000	5.43	32493.852	3706.240	109.592	101.2	1.2	NO	0.999	NO	bb
9	9	181204M1_11	Standard	250.000	5.43	62841.621	4365.152	179.953			NO	0.999	NO	bbXI
10	10	181204M1_12	Standard	500.000	5.43	102355.086	5584.811	229.093			NO	0.999	NO	bbXI

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Compound name: PFNS
Coefficient of Determination: R^2 = 0.999502
Calibration curve: -0.00021817 * x^2 + 0.706595 * x + -0.104495
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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 181204M1_3	Standard	0.250	5.54	17.201	2896.477	0.074	0.3	1.2	NO	1.000	NO	bb
2	2 181204M1_4	Standard	0.500	5.54	55.073	2779.626	0.248	0.5	-0.3	NO	1.000	NO	bb
3	3 181204M1_5	Standard	1.000	5.54	110.623	3052.664	0.453	0.8	-21.1	NO	1.000	NO	bb
4	4 181204M1_6	Standard	2.000	5.54	329.518	2882.541	1.429	2.2	8.6	NO	1.000	NO	bb
5	5 181204M1_7	Standard	5.000	5.53	782.666	2649.266	3.693	5.4	7.7	NO	1.000	NO	bb
6	6 181204M1_8	Standard	10.000	5.53	1539.287	2687.601	7.159	10.3	3.1	NO	1.000	NO	bb
7	7 181204M1_9	Standard	50.000	5.53	7627.400	2759.353	34.552	49.8	-0.4	NO	1.000	NO	bb
8	8 181204M1_10	Standard	100.000	5.53	14809.410	2621.137	70.625	103.4	3.4	NO	1.000	NO	bb
9	9 181204M1_11	Standard	250.000	5.53	31456.990	2478.883	158.625	242.8	-2.9	NO	1.000	NO	bb
10	10 181204M1_12	Standard	500.000	5.53	55043.938	2290.841	300.348	503.5	0.7	NO	1.000	NO	bb

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.997852
Calibration curve: -0.000676442 * x^2 + 2.14579 * x + -0.130314
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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 181204M1_3	Standard	0.250	5.63	148.455	4300.197	0.432	0.3	4.7	NO	0.998	NO	MM
2	2 181204M1_4	Standard	0.500	5.62	206.326	4029.929	0.640	0.4	-28.2	NO	0.998	NO	MM
3	3 181204M1_5	Standard	1.000	5.62	701.090	4455.110	1.967	1.0	-2.2	NO	0.998	NO	MM
4	4 181204M1_6	Standard	2.000	5.62	1390.123	4082.574	4.256	2.0	2.3	NO	0.998	NO	MM
5	5 181204M1_7	Standard	5.000	5.62	3375.117	4052.865	10.410	4.9	-1.6	NO	0.998	NO	MM
6	6 181204M1_8	Standard	10.000	5.62	7162.715	4197.091	21.332	10.0	0.3	NO	0.998	NO	MM
7	7 181204M1_9	Standard	50.000	5.62	33449.766	4222.680	99.018	46.9	-6.2	NO	0.998	NO	MM
8	8 181204M1_10	Standard	100.000	5.62	67482.883	3695.445	228.264	110.3	10.3	NO	0.998	NO	MM
9	9 181204M1_11	Standard	250.000	5.62	141310.891	3731.464	473.376	238.6	-4.6	NO	0.998	NO	MM
10	10 181204M1_12	Standard	500.000	5.62	257400.531	3533.715	910.517	504.7	0.9	NO	0.998	NO	MM

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Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999846
Calibration curve: -0.000162872 * x^2 + 1.26431 * x + -0.0171617
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	5.78	158.295	6269.860	0.316	0.3	5.3	NO	1.000	NO	MM
2	2	181204M1_4	Standard	0.500	5.78	316.718	5978.375	0.662	0.5	7.5	NO	1.000	NO	MM
3	3	181204M1_5	Standard	1.000	5.78	579.500	6405.352	1.131	0.9	-9.2	NO	1.000	NO	MM
4	4	181204M1_6	Standard	2.000	5.78	1223.603	5943.261	2.574	2.0	2.5	NO	1.000	NO	MM
5	5	181204M1_7	Standard	5.000	5.78	2777.693	5944.591	5.841	4.6	-7.3	NO	1.000	NO	MM
6	6	181204M1_8	Standard	10.000	5.78	6030.585	6038.198	12.484	9.9	-1.0	NO	1.000	NO	MM
7	7	181204M1_9	Standard	50.000	5.78	29184.980	5720.660	63.771	50.8	1.6	NO	1.000	NO	MM
8	8	181204M1_10	Standard	100.000	5.78	55053.883	5420.673	126.954	101.8	1.8	NO	1.000	NO	MM
9	9	181204M1_11	Standard	250.000	5.77	117965.102	4886.182	301.782	246.5	-1.4	NO	1.000	NO	MM
10	10	181204M1_12	Standard	500.000	5.77	200474.188	4226.243	592.944	501.4	0.3	NO	1.000	NO	MM

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN945 SCN960**
Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999910
Calibration curve: -0.000285043 * x^2 + 1.01699 * x + 0.00259841
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	5.79	365.112	19439.045	0.235	0.2	-8.7	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	5.79	775.425	17972.426	0.539	0.5	5.6	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	5.79	1699.204	19364.027	1.097	1.1	7.6	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	5.79	3333.134	19359.100	2.152	2.1	5.7	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	5.79	7097.224	19225.064	4.615	4.5	-9.2	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	5.79	15167.627	19032.217	9.962	9.8	-1.8	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	5.79	74410.430	18523.750	50.213	50.1	0.1	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	5.79	145521.422	18272.420	99.550	100.7	0.7	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	5.79	307235.813	16268.550	236.066	249.6	-0.2	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	5.79	523958.031	14977.641	437.284	500.1	0.0	NO	1.000	NO	bb

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999564
Calibration curve: -0.00025762 * x^2 + 1.07743 * x + -0.0595269
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	5.84	39.963	2896.477	0.172	0.2	-13.9	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	5.84	114.142	2779.626	0.513	0.5	6.3	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	5.84	246.233	3052.664	1.008	1.0	-0.9	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	5.84	472.589	2882.541	2.049	2.0	-2.1	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	5.84	1153.177	2649.266	5.441	5.1	2.2	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	5.84	2476.963	2687.601	11.520	10.8	7.8	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	5.84	11656.059	2759.353	52.803	49.7	-0.7	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	5.84	22753.846	2621.137	108.511	103.3	3.3	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	5.84	48914.262	2478.883	246.655	243.1	-2.8	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	5.84	87392.492	2290.841	476.858	503.2	0.6	NO	1.000	NO	bb

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Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999915
Calibration curve: -0.000347708 * x^2 + 1.32325 * x + -0.0167654
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	6.08	483.492	17651.691	0.342	0.3	8.6	NO	1.000	NO	MM
2	2	181204M1_4	Standard	0.500	6.08	833.676	17582.484	0.593	0.5	-7.9	NO	1.000	NO	MM
3	3	181204M1_5	Standard	1.000	6.08	1810.706	18486.018	1.224	0.9	-6.2	NO	1.000	NO	MM
4	4	181204M1_6	Standard	2.000	6.08	3822.907	17450.748	2.738	2.1	4.2	NO	1.000	NO	MM
5	5	181204M1_7	Standard	5.000	6.08	8923.990	17273.506	6.458	4.9	-2.0	NO	1.000	NO	MM
6	6	181204M1_8	Standard	10.000	6.07	18792.639	17513.943	13.413	10.2	1.8	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	6.07	93534.922	17497.186	66.821	51.2	2.4	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	6.07	174155.078	16917.977	128.676	99.9	-0.1	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	6.07	378871.313	15460.053	306.331	247.6	-1.0	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	6.07	661932.188	14366.854	575.920	501.3	0.3	NO	1.000	NO	bb

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999390
Calibration curve: -0.00010549 * x^2 + 1.07251 * x + -0.108505
Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181204M1_3	Standard	1.250	5.99	99.100	11859.900	1.253	1.3	1.6	NO	0.999	NO	bb
2	2	181204M1_4	Standard	2.500	5.99	168.562	11569.147	2.185	2.1	-14.4	NO	0.999	NO	bb
3	3	181204M1_5	Standard	5.000	5.99	450.001	12345.749	5.467	5.2	4.0	NO	0.999	NO	bb
4	4	181204M1_6	Standard	10.000	5.99	871.424	11997.025	10.896	10.3	2.7	NO	0.999	NO	bb
5	5	181204M1_7	Standard	25.000	5.99	1893.622	11574.287	24.541	23.0	-7.9	NO	0.999	NO	bb
6	6	181204M1_8	Standard	50.000	5.99	4342.781	11933.927	54.585	51.3	2.5	NO	0.999	NO	bb
7	7	181204M1_9	Standard	250.000	5.99	21307.838	11919.366	268.150	256.6	2.6	NO	0.999	NO	bb
8	8	181204M1_10	Standard	500.000	5.99	41083.457	11712.507	526.149	517.0	3.4	NO	0.999	NO	bb
9	9	181204M1_11	Standard	1250.000	5.98	87641.086	11545.137	1138.675	1204.5	-3.6	NO	0.999	NO	bb
10	10	181204M1_12	Standard	2500.000	5.98	157553.922	11605.159	2036.430	2526.9	1.1	NO	0.999	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999740
Calibration curve: -0.000406642 * x^2 + 1.3473 * x + 0.00505024
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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 181204M1_3	Standard	0.250	6.32	456.484	17651.691	0.323	0.2	-5.5	NO	1.000	NO	bb
2	2 181204M1_4	Standard	0.500	6.32	991.124	17582.484	0.705	0.5	3.9	NO	1.000	NO	bb
3	3 181204M1_5	Standard	1.000	6.32	1927.783	18486.018	1.304	1.0	-3.6	NO	1.000	NO	bb
4	4 181204M1_6	Standard	2.000	6.32	3866.451	17450.748	2.770	2.1	2.7	NO	1.000	NO	bb
5	5 181204M1_7	Standard	5.000	6.32	9103.971	17273.506	6.588	4.9	-2.1	NO	1.000	NO	bb
6	6 181204M1_8	Standard	10.000	6.32	19346.051	17513.943	13.808	10.3	2.8	NO	1.000	NO	bb
7	7 181204M1_9	Standard	50.000	6.32	94234.727	17497.186	67.321	50.7	1.5	NO	1.000	NO	bb
8	8 181204M1_10	Standard	100.000	6.32	180854.500	16917.977	133.626	102.3	2.3	NO	1.000	NO	bb
9	9 181204M1_11	Standard	250.000	6.32	376532.656	15460.053	304.440	243.9	-2.4	NO	1.000	NO	bb
10	10 181204M1_12	Standard	500.000	6.32	660633.500	14366.854	574.790	503.0	0.6	NO	1.000	NO	bb

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999880
Calibration curve: -0.000339863 * x^2 + 1.61037 * x + 0.0106903
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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 181204M1_3	Standard	0.250	6.53	399.102	12070.012	0.413	0.3	0.0	NO	1.000	NO	bb
2	2 181204M1_4	Standard	0.500	6.53	776.975	12204.263	0.796	0.5	-2.5	NO	1.000	NO	bb
3	3 181204M1_5	Standard	1.000	6.53	1720.609	13465.264	1.597	1.0	-1.5	NO	1.000	NO	bb
4	4 181204M1_6	Standard	2.000	6.53	3515.806	13394.853	3.281	2.0	1.6	NO	1.000	NO	bb
5	5 181204M1_7	Standard	5.000	6.53	8069.067	12746.364	7.913	4.9	-1.8	NO	1.000	NO	bb
6	6 181204M1_8	Standard	10.000	6.53	17775.584	13040.645	17.039	10.6	6.0	NO	1.000	NO	bb
7	7 181204M1_9	Standard	50.000	6.53	82783.219	13137.947	78.763	49.4	-1.2	NO	1.000	NO	bb
8	8 181204M1_10	Standard	100.000	6.53	160354.563	12915.573	155.195	98.4	-1.6	NO	1.000	NO	bb
9	9 181204M1_11	Standard	250.000	6.53	353442.844	11465.735	385.325	252.8	1.1	NO	1.000	NO	bb
10	10 181204M1_12	Standard	500.000	6.53	633376.188	11014.244	718.815	498.9	-0.2	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999701
Calibration curve: -6.74187e-005 * x^2 + 0.873431 * x + -0.157096
Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	1.250	6.45	106.659	17468.000	0.916	1.2	-1.7	NO	1.000	NO	bb
2	2	181204M1_4	Standard	2.500	6.44	236.826	16843.033	2.109	2.6	3.8	NO	1.000	NO	bb
3	3	181204M1_5	Standard	5.000	6.44	491.219	18065.963	4.079	4.9	-3.0	NO	1.000	NO	bb
4	4	181204M1_6	Standard	10.000	6.44	1031.416	18571.803	8.330	9.7	-2.8	NO	1.000	NO	bb
5	5	181204M1_7	Standard	25.000	6.44	2483.221	17259.262	21.582	24.9	-0.3	NO	1.000	NO	bb
6	6	181204M1_8	Standard	50.000	6.44	5195.507	17841.553	43.680	50.4	0.8	NO	1.000	NO	bb
7	7	181204M1_9	Standard	250.000	6.44	25153.438	17044.455	221.363	258.8	3.5	NO	1.000	NO	bb
8	8	181204M1_10	Standard	500.000	6.44	47236.191	16637.488	425.871	507.7	1.5	NO	1.000	NO	bb
9	9	181204M1_11	Standard	1250.000	6.44	101872.695	15864.631	963.206	1217.4	-2.6	NO	1.000	NO	bb
10	10	181204M1_12	Standard	2500.000	6.44	175164.109	14830.850	1771.619	2517.9	0.7	NO	1.000	NO	bb

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999954
Calibration curve: -0.000230365 * x^2 + 0.516071 * x + 0.0214432
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	0.250	6.85	173.308	5504.491	0.157	0.3	5.4	NO	1.000	NO	bb
2	2	181204M1_4	Standard	0.500	6.85	333.476	5827.799	0.286	0.5	2.6	NO	1.000	NO	bb
3	3	181204M1_5	Standard	1.000	6.85	672.813	6555.719	0.513	1.0	-4.7	NO	1.000	NO	bb
4	4	181204M1_6	Standard	2.000	6.85	1383.358	6577.808	1.052	2.0	-0.1	NO	1.000	NO	bb
5	5	181204M1_7	Standard	5.000	6.85	3046.673	5984.501	2.545	4.9	-2.0	NO	1.000	NO	bb
6	6	181204M1_8	Standard	10.000	6.85	5999.192	5977.149	5.018	9.7	-2.8	NO	1.000	NO	bb
7	7	181204M1_9	Standard	50.000	6.85	31905.613	6215.099	25.668	50.8	1.7	NO	1.000	NO	bb
8	8	181204M1_10	Standard	100.000	6.85	65409.141	6620.280	49.401	100.2	0.2	NO	1.000	NO	bb
9	9	181204M1_11	Standard	250.000	6.85	139454.000	6107.531	114.166	248.8	-0.5	NO	1.000	NO	bb
10	10	181204M1_12	Standard	500.000	6.85	246617.109	6145.451	200.650	500.6	0.1	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: PFODA
Coefficient of Determination: R^2 = 0.999244
Calibration curve: -0.000313067 * x^2 + 0.872352 * x + 0.0186819
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, 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	181204M1_3	Standard	0.250	7.08	249.358	5504.491	0.227	0.2	-4.7	NO	0.999	NO	bb
2	2	181204M1_4	Standard	0.500	7.08	499.109	5827.799	0.428	0.5	-6.1	NO	0.999	NO	bb
3	3	181204M1_5	Standard	1.000	7.08	1176.468	6555.719	0.897	1.0	0.8	NO	0.999	NO	bb
4	4	181204M1_6	Standard	2.000	7.08	2365.422	6577.808	1.798	2.0	2.1	NO	0.999	NO	MM
5	5	181204M1_7	Standard	5.000	7.08	5424.635	5984.501	4.532	5.2	3.7	NO	0.999	NO	bb
6	6	181204M1_8	Standard	10.000	7.08	11378.751	5977.149	9.519	10.9	9.3	NO	0.999	NO	bb
7	7	181204M1_9	Standard	50.000	7.08	56507.277	6215.099	45.460	53.1	6.2	NO	0.999	NO	bb
8	8	181204M1_10	Standard	100.000	7.08	111351.344	6620.280	84.099	100.0	-0.0	NO	0.999	NO	bb
9	9	181204M1_11	Standard	250.000	7.08	234502.719	6107.531	191.978	240.9	-3.7	NO	0.999	NO	bb
10	10	181204M1_12	Standard	500.000	7.08	443622.000	6145.451	360.935	505.4	1.1	NO	0.999	NO	bb

Compound name: N-MeFOSE
Coefficient of Determination: R^2 = 0.999504
Calibration curve: -1.65942e-005 * x^2 + 0.922354 * x + -0.0629456
Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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	181204M1_3	Standard	1.250	6.68	87.260	9820.526	1.333	1.5	21.1	NO	1.000	NO	bb
2	2	181204M1_4	Standard	2.500	6.68	131.994	9515.937	2.081	2.3	-7.0	NO	1.000	NO	bb
3	3	181204M1_5	Standard	5.000	6.68	270.370	9861.699	4.112	4.5	-9.5	NO	1.000	NO	bb
4	4	181204M1_6	Standard	10.000	6.68	553.149	9923.607	8.361	9.1	-8.7	NO	1.000	NO	bb
5	5	181204M1_7	Standard	25.000	6.68	1416.320	9379.859	22.649	24.6	-1.5	NO	1.000	NO	bb
6	6	181204M1_8	Standard	50.000	6.68	2961.410	9474.796	46.883	50.9	1.9	NO	1.000	NO	bb
7	7	181204M1_9	Standard	250.000	6.68	15274.698	9710.577	235.949	257.1	2.8	NO	1.000	NO	bb
8	8	181204M1_10	Standard	500.000	6.68	30254.150	9618.228	471.825	516.4	3.3	NO	1.000	NO	bb
9	9	181204M1_11	Standard	1250.000	6.68	69661.164	9561.808	1092.803	1211.3	-3.1	NO	1.000	NO	bb
10	10	181204M1_12	Standard	2500.000	6.68	147324.469	9974.334	2215.553	2516.0	0.6	NO	1.000	NO	bb

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Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.999621
Calibration curve: -3.7557e-005 * x^2 + 1.08551 * x + 0.00269404
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, 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 181204M1_3	Standard	1.250	6.83	90.614	9912.401	1.371	1.3	0.9	NO	1.000	NO	bb
2	2 181204M1_4	Standard	2.500	6.83	181.610	9266.712	2.940	2.7	8.2	NO	1.000	NO	bb
3	3 181204M1_5	Standard	5.000	6.83	345.562	9706.496	5.340	4.9	-1.6	NO	1.000	NO	bb
4	4 181204M1_6	Standard	10.000	6.83	675.876	9820.937	10.323	9.5	-4.9	NO	1.000	NO	bb
5	5 181204M1_7	Standard	25.000	6.83	1601.374	9405.834	25.538	23.5	-5.8	NO	1.000	NO	bb
6	6 181204M1_8	Standard	50.000	6.83	3480.271	9712.923	53.747	49.6	-0.8	NO	1.000	NO	bb
7	7 181204M1_9	Standard	250.000	6.83	17803.242	9555.589	279.469	259.8	3.9	NO	1.000	NO	bb
8	8 181204M1_10	Standard	500.000	6.83	35205.969	9689.584	545.007	511.1	2.2	NO	1.000	NO	bb
9	9 181204M1_11	Standard	1250.000	6.83	80066.977	9489.974	1265.551	1217.1	-2.6	NO	1.000	NO	bb
10	10 181204M1_12	Standard	2500.000	6.83	161149.563	9699.893	2492.031	2514.5	0.6	NO	1.000	NO	bb

Compound name: 13C3-PFBA
Response Factor: 0.809184
RRF SD: 0.0101255, Relative SD: 1.25132
Response type: Internal Std (Ref 60), 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 181204M1_3	Standard	12.500	1.37	7425.287	9186.443	10.104	12.5	-0.1	NO		NO	bb
2	2 181204M1_4	Standard	12.500	1.37	7380.422	8951.333	10.306	12.7	1.9	NO		NO	bb
3	3 181204M1_5	Standard	12.500	1.37	7506.750	9362.224	10.023	12.4	-0.9	NO		NO	bb
4	4 181204M1_6	Standard	12.500	1.37	7406.021	9359.069	9.892	12.2	-2.2	NO		NO	bb
5	5 181204M1_7	Standard	12.500	1.37	7124.355	8825.378	10.091	12.5	-0.2	NO		NO	bb
6	6 181204M1_8	Standard	12.500	1.37	7420.241	9090.454	10.203	12.6	0.9	NO		NO	bb
7	7 181204M1_9	Standard	12.500	1.37	7259.589	8900.758	10.195	12.6	0.8	NO		NO	bb
8	8 181204M1_10	Standard	12.500	1.37	7211.754	8907.866	10.120	12.5	0.1	NO		NO	bb
9	9 181204M1_11	Standard	12.500	1.37	7002.477	8773.262	9.977	12.3	-1.4	NO		NO	MM
10	10 181204M1_12	Standard	12.500	1.37	6835.833	8346.316	10.238	12.7	1.2	NO		NO	MM

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Compound name: 13C3-PFPeA
Response Factor: 0.540906
RRF SD: 0.0185587, Relative SD: 3.43104
Response type: Internal Std (Ref 61), 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 181204M1_3	Standard	12.500	2.63	8989.211	17243.568	6.516	12.0	-3.6	NO		NO	bb
2	2 181204M1_4	Standard	12.500	2.63	8602.990	16239.676	6.622	12.2	-2.1	NO		NO	bb
3	3 181204M1_5	Standard	12.500	2.63	9146.560	17128.539	6.675	12.3	-1.3	NO		NO	bb
4	4 181204M1_6	Standard	12.500	2.63	9183.169	17559.799	6.537	12.1	-3.3	NO		NO	bb
5	5 181204M1_7	Standard	12.500	2.63	8663.989	16038.809	6.752	12.5	-0.1	NO		NO	bb
6	6 181204M1_8	Standard	12.500	2.63	8905.920	16863.189	6.602	12.2	-2.4	NO		NO	bb
7	7 181204M1_9	Standard	12.500	2.63	8654.983	16046.215	6.742	12.5	-0.3	NO		NO	bb
8	8 181204M1_10	Standard	12.500	2.63	8570.831	15562.825	6.884	12.7	1.8	NO		NO	bb
9	9 181204M1_11	Standard	12.500	2.63	8048.980	14274.027	7.049	13.0	4.2	NO		NO	bb
10	10 181204M1_12	Standard	12.500	2.63	7838.934	13544.980	7.234	13.4	7.0	NO		NO	bb

Compound name: 13C3-PFBS
Response Factor: 0.499727
RRF SD: 0.0118538, Relative SD: 2.37206
Response type: Internal Std (Ref 62), 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 181204M1_3	Standard	12.500	2.96	1253.408	2521.000	6.215	12.4	-0.5	NO		NO	bb
2	2 181204M1_4	Standard	12.500	2.96	1175.880	2375.701	6.187	12.4	-1.0	NO		NO	bb
3	3 181204M1_5	Standard	12.500	2.95	1254.754	2612.776	6.003	12.0	-3.9	NO		NO	bb
4	4 181204M1_6	Standard	12.500	2.96	1273.756	2518.080	6.323	12.7	1.2	NO		NO	bb
5	5 181204M1_7	Standard	12.500	2.96	1230.185	2441.664	6.298	12.6	0.8	NO		NO	bb
6	6 181204M1_8	Standard	12.500	2.95	1213.755	2430.288	6.243	12.5	-0.1	NO		NO	bb
7	7 181204M1_9	Standard	12.500	2.95	1231.697	2373.557	6.487	13.0	3.8	NO		NO	bb
8	8 181204M1_10	Standard	12.500	2.95	1120.090	2242.168	6.244	12.5	-0.0	NO		NO	bb
9	9 181204M1_11	Standard	12.500	2.95	1037.397	2143.470	6.050	12.1	-3.2	NO		NO	bb
10	10 181204M1_12	Standard	12.500	2.95	922.377	1796.888	6.416	12.8	2.7	NO		NO	bb

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Compound name: 13C2-4:2 FTS
Response Factor: 1.32881
RRF SD: 0.129999, Relative SD: 9.7831
Response type: Internal Std (Ref 62), 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	181204M1_3	Standard	12.500	3.44	3112.869	2521.000	15.435	11.6	-7.1	NO		NO	bb
2	2	181204M1_4	Standard	12.500	3.44	3014.832	2375.701	15.863	11.9	-4.5	NO		NO	bb
3	3	181204M1_5	Standard	12.500	3.44	3212.243	2612.776	15.368	11.6	-7.5	NO		NO	bb
4	4	181204M1_6	Standard	12.500	3.44	3245.375	2518.080	16.110	12.1	-3.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	3.44	3104.461	2441.664	15.893	12.0	-4.3	NO		NO	bb
6	6	181204M1_8	Standard	12.500	3.44	3239.992	2430.288	16.665	12.5	0.3	NO		NO	bb
7	7	181204M1_9	Standard	12.500	3.44	3268.537	2373.557	17.213	13.0	3.6	NO		NO	bb
8	8	181204M1_10	Standard	12.500	3.44	3647.459	2242.168	20.334	15.3	22.4	NO		NO	bb
9	9	181204M1_11	Standard	12.500	3.44	4172.220	2143.470	24.331	18.3	46.5	NO		NO	bbX
10	10	181204M1_12	Standard	12.500	3.44	5195.280	1796.888	36.141	27.2	117.6	NO		NO	bbX

Compound name: 13C2-PFHxA
Response Factor: 0.973119
RRF SD: 0.0463203, Relative SD: 4.75998
Response type: Internal Std (Ref 61), 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	181204M1_3	Standard	5.000	3.53	6335.007	17243.568	4.592	4.7	-5.6	NO		NO	bb
2	2	181204M1_4	Standard	5.000	3.53	5949.860	16239.676	4.580	4.7	-5.9	NO		NO	bb
3	3	181204M1_5	Standard	5.000	3.52	6611.774	17128.539	4.825	5.0	-0.8	NO		NO	bb
4	4	181204M1_6	Standard	5.000	3.52	6547.134	17559.799	4.661	4.8	-4.2	NO		NO	bb
5	5	181204M1_7	Standard	5.000	3.53	6241.994	16038.809	4.865	5.0	-0.0	NO		NO	bb
6	6	181204M1_8	Standard	5.000	3.52	6436.318	16863.189	4.771	4.9	-1.9	NO		NO	bb
7	7	181204M1_9	Standard	5.000	3.52	6250.323	16046.215	4.869	5.0	0.1	NO		NO	bb
8	8	181204M1_10	Standard	5.000	3.52	6408.065	15562.825	5.147	5.3	5.8	NO		NO	bb
9	9	181204M1_11	Standard	5.000	3.52	5849.149	14274.027	5.122	5.3	5.3	NO		NO	bb
10	10	181204M1_12	Standard	5.000	3.53	5661.117	13544.980	5.224	5.4	7.4	NO		NO	bb

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Compound name: 13C4-PFHpA
Response Factor: 0.513788
RRF SD: 0.0156647, Relative SD: 3.04887
Response type: Internal Std (Ref 61), 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 181204M1_3	Standard	12.500	4.17	8444.182	17243.568	6.121	11.9	-4.7	NO		NO	bb
2	2 181204M1_4	Standard	12.500	4.17	8524.782	16239.676	6.562	12.8	2.2	NO		NO	bb
3	3 181204M1_5	Standard	12.500	4.17	8736.271	17128.539	6.376	12.4	-0.7	NO		NO	bb
4	4 181204M1_6	Standard	12.500	4.17	9038.124	17559.799	6.434	12.5	0.2	NO		NO	bb
5	5 181204M1_7	Standard	12.500	4.17	8287.162	16038.809	6.459	12.6	0.6	NO		NO	bb
6	6 181204M1_8	Standard	12.500	4.17	8679.348	16863.189	6.434	12.5	0.2	NO		NO	bb
7	7 181204M1_9	Standard	12.500	4.17	8398.871	16046.215	6.543	12.7	1.9	NO		NO	bb
8	8 181204M1_10	Standard	12.500	4.17	8248.318	15562.825	6.625	12.9	3.2	NO		NO	bb
9	9 181204M1_11	Standard	12.500	4.17	7558.306	14274.027	6.619	12.9	3.1	NO		NO	bb
10	10 181204M1_12	Standard	12.500	4.16	6558.147	13544.980	6.052	11.8	-5.8	NO		NO	bb

Compound name: 18O2-PFHxS
Response Factor: 0.457597
RRF SD: 0.0137566, Relative SD: 3.00628
Response type: Internal Std (Ref 62), 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 181204M1_3	Standard	12.500	4.30	1092.375	2521.000	5.416	11.8	-5.3	NO		NO	bb
2	2 181204M1_4	Standard	12.500	4.30	1089.452	2375.701	5.732	12.5	0.2	NO		NO	bb
3	3 181204M1_5	Standard	12.500	4.30	1171.316	2612.776	5.604	12.2	-2.0	NO		NO	bb
4	4 181204M1_6	Standard	12.500	4.30	1202.023	2518.080	5.967	13.0	4.3	NO		NO	bb
5	5 181204M1_7	Standard	12.500	4.30	1116.653	2441.664	5.717	12.5	-0.1	NO		NO	bb
6	6 181204M1_8	Standard	12.500	4.30	1110.402	2430.288	5.711	12.5	-0.2	NO		NO	bb
7	7 181204M1_9	Standard	12.500	4.30	1101.421	2373.557	5.800	12.7	1.4	NO		NO	bb
8	8 181204M1_10	Standard	12.500	4.30	1021.773	2242.168	5.696	12.4	-0.4	NO		NO	bb
9	9 181204M1_11	Standard	12.500	4.30	955.294	2143.470	5.571	12.2	-2.6	NO		NO	bb
10	10 181204M1_12	Standard	12.500	4.29	860.277	1796.888	5.984	13.1	4.6	NO		NO	bb

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Compound name: 13C2-6:2 FTS
Response Factor: 1.41228
RRF SD: 0.144475, Relative SD: 10.2299
Response type: Internal Std (Ref 65), 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 181204M1_3	Standard	12.500	4.60	3708.444	2788.671	16.623	11.8	-5.8	NO		NO	bb
2	2 181204M1_4	Standard	12.500	4.60	3462.517	2591.844	16.699	11.8	-5.4	NO		NO	bb
3	3 181204M1_5	Standard	12.500	4.60	3704.760	2823.260	16.403	11.6	-7.1	NO		NO	bb
4	4 181204M1_6	Standard	12.500	4.60	3679.805	2741.773	16.777	11.9	-5.0	NO		NO	bb
5	5 181204M1_7	Standard	12.500	4.60	3685.356	2770.565	16.627	11.8	-5.8	NO		NO	bb
6	6 181204M1_8	Standard	12.500	4.60	3690.987	2700.544	17.084	12.1	-3.2	NO		NO	bb
7	7 181204M1_9	Standard	12.500	4.60	3899.852	2455.471	19.853	14.1	12.5	NO		NO	bb
8	8 181204M1_10	Standard	12.500	4.60	4313.138	2547.693	21.162	15.0	19.9	NO		NO	bb
9	9 181204M1_11	Standard	12.500	4.60	4964.753	2162.964	28.692	20.3	62.5	NO		NO	bbX
10	10 181204M1_12	Standard	12.500	4.60	6470.049	2146.335	37.681	26.7	113.4	NO		NO	bbX

Compound name: 13C2-PFOA
Response Factor: 0.691238
RRF SD: 0.0283945, Relative SD: 4.10778
Response type: Internal Std (Ref 63), 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 181204M1_3	Standard	12.500	4.66	15035.225	21800.590	8.621	12.5	-0.2	NO		NO	bb
2	2 181204M1_4	Standard	12.500	4.65	14390.147	21255.275	8.463	12.2	-2.1	NO		NO	bb
3	3 181204M1_5	Standard	12.500	4.66	14460.963	21727.584	8.319	12.0	-3.7	NO		NO	bb
4	4 181204M1_6	Standard	12.500	4.65	14677.848	22883.371	8.018	11.6	-7.2	NO		NO	bb
5	5 181204M1_7	Standard	12.500	4.66	14339.614	21118.514	8.488	12.3	-1.8	NO		NO	bb
6	6 181204M1_8	Standard	12.500	4.65	15222.832	21397.141	8.893	12.9	2.9	NO		NO	bb
7	7 181204M1_9	Standard	12.500	4.65	14330.657	20512.875	8.733	12.6	1.1	NO		NO	bb
8	8 181204M1_10	Standard	12.500	4.65	14186.666	20590.383	8.612	12.5	-0.3	NO		NO	bb
9	9 181204M1_11	Standard	12.500	4.65	13185.007	18326.928	8.993	13.0	4.1	NO		NO	bb
10	10 181204M1_12	Standard	12.500	4.65	12480.174	16837.416	9.265	13.4	7.2	NO		NO	bb

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Compound name: 13C5-PFNA
Response Factor: 1.00847
RRF SD: 0.0352488, Relative SD: 3.49527
Response type: Internal Std (Ref 64), 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	181204M1_3	Standard	12.500	5.09	15516.605	14777.663	13.125	13.0	4.1	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.09	14983.445	14108.556	13.275	13.2	5.3	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.09	15056.938	15835.503	11.885	11.8	-5.7	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.09	15786.823	15904.291	12.408	12.3	-1.6	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.09	14627.146	14668.844	12.464	12.4	-1.1	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.09	15396.641	14947.035	12.876	12.8	2.1	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.09	14581.606	14434.903	12.627	12.5	0.2	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.09	13890.458	13940.485	12.455	12.4	-1.2	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.09	12677.210	12311.692	12.871	12.8	2.1	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.09	11451.670	11857.629	12.072	12.0	-4.2	NO		NO	bb

Compound name: 13C8-PFOSA
Response Factor: 0.197838
RRF SD: 0.0104805, Relative SD: 5.29753
Response type: Internal Std (Ref 67), 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	181204M1_3	Standard	12.500	5.13	3841.032	20065.037	2.393	12.1	-3.2	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.13	3521.425	18599.396	2.367	12.0	-4.3	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.13	4021.830	19672.180	2.556	12.9	3.3	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.13	3855.072	20687.504	2.329	11.8	-5.8	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.13	3755.546	19247.578	2.439	12.3	-1.4	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.12	3717.410	19652.740	2.364	12.0	-4.4	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.12	3715.910	19104.764	2.431	12.3	-1.7	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.12	3740.192	18493.598	2.528	12.8	2.2	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.12	3394.959	16578.785	2.560	12.9	3.5	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.12	3188.262	14424.402	2.763	14.0	11.7	NO		NO	bb

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Compound name: 13C8-PFOS
Response Factor: 1.05611
RRF SD: 0.0562247, Relative SD: 5.32376
Response type: Internal Std (Ref 65), 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 181204M1_3	Standard	12.500	5.17	2896.477	2788.671	12.983	12.3	-1.7	NO		NO	bb
2	2 181204M1_4	Standard	12.500	5.17	2779.626	2591.844	13.406	12.7	1.5	NO		NO	bb
3	3 181204M1_5	Standard	12.500	5.17	3052.664	2823.260	13.516	12.8	2.4	NO		NO	bb
4	4 181204M1_6	Standard	12.500	5.17	2882.541	2741.773	13.142	12.4	-0.5	NO		NO	bb
5	5 181204M1_7	Standard	12.500	5.17	2649.266	2770.565	11.953	11.3	-9.5	NO		NO	bb
6	6 181204M1_8	Standard	12.500	5.17	2687.601	2700.544	12.440	11.8	-5.8	NO		NO	bb
7	7 181204M1_9	Standard	12.500	5.17	2759.353	2455.471	14.047	13.3	6.4	NO		NO	bb
8	8 181204M1_10	Standard	12.500	5.17	2621.137	2547.693	12.860	12.2	-2.6	NO		NO	bb
9	9 181204M1_11	Standard	12.500	5.17	2478.883	2162.964	14.326	13.6	8.5	NO		NO	bb
10	10 181204M1_12	Standard	12.500	5.17	2290.841	2146.335	13.342	12.6	1.1	NO		NO	bb

Compound name: 13C2-PFDA
Response Factor: 0.935982
RRF SD: 0.0293384, Relative SD: 3.13451
Response type: Internal Std (Ref 66), 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 181204M1_3	Standard	12.500	5.47	16102.663	17108.799	11.765	12.6	0.6	NO		NO	bb
2	2 181204M1_4	Standard	12.500	5.47	15675.970	16179.683	12.111	12.9	3.5	NO		NO	bb
3	3 181204M1_5	Standard	12.500	5.47	17165.064	18403.881	11.659	12.5	-0.4	NO		NO	bb
4	4 181204M1_6	Standard	12.500	5.47	16174.564	18437.227	10.966	11.7	-6.3	NO		NO	bb
5	5 181204M1_7	Standard	12.500	5.47	16040.857	17570.539	11.412	12.2	-2.5	NO		NO	bb
6	6 181204M1_8	Standard	12.500	5.47	15923.703	16892.943	11.783	12.6	0.7	NO		NO	bb
7	7 181204M1_9	Standard	12.500	5.47	15405.449	16962.604	11.353	12.1	-3.0	NO		NO	bb
8	8 181204M1_10	Standard	12.500	5.47	14936.151	15792.305	11.822	12.6	1.0	NO		NO	bb
9	9 181204M1_11	Standard	12.500	5.47	13816.138	14249.540	12.120	12.9	3.6	NO		NO	bb
10	10 181204M1_12	Standard	12.500	5.47	13106.873	13643.642	12.008	12.8	2.6	NO		NO	bb

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Compound name: 13C2-8:2 FTS
Response Factor: 1.14638
RRF SD: 0.171157, Relative SD: 14.9303
Response type: Internal Std (Ref 65), 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 181204M1_3	Standard	12.500	5.44	2615.101	2788.671	11.722	10.2	-18.2	NO		NO	bb
2	2 181204M1_4	Standard	12.500	5.44	2919.919	2591.844	14.082	12.3	-1.7	NO		NO	bb
3	3 181204M1_5	Standard	12.500	5.44	3053.916	2823.260	13.521	11.8	-5.6	NO		NO	bb
4	4 181204M1_6	Standard	12.500	5.44	2896.193	2741.773	13.204	11.5	-7.9	NO		NO	bb
5	5 181204M1_7	Standard	12.500	5.44	2885.138	2770.565	13.017	11.4	-9.2	NO		NO	bb
6	6 181204M1_8	Standard	12.500	5.43	3027.348	2700.544	14.013	12.2	-2.2	NO		NO	bb
7	7 181204M1_9	Standard	12.500	5.43	3318.676	2455.471	16.894	14.7	17.9	NO		NO	bb
8	8 181204M1_10	Standard	12.500	5.43	3706.240	2547.693	18.184	15.9	26.9	NO		NO	bb
9	9 181204M1_11	Standard	12.500	5.43	4365.152	2162.964	25.227	22.0	76.0	NO		NO	bbX
10	10 181204M1_12	Standard	12.500	5.43	5584.811	2146.335	32.525	28.4	127.0	NO		NO	bbX

Compound name: d3-N-MeFOSAA
Response Factor: 0.216983
RRF SD: 0.0137273, Relative SD: 6.32646
Response type: Internal Std (Ref 67), 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 181204M1_3	Standard	12.500	5.62	4300.197	20065.037	2.679	12.3	-1.2	NO		NO	bb
2	2 181204M1_4	Standard	12.500	5.61	4029.929	18599.396	2.708	12.5	-0.1	NO		NO	bb
3	3 181204M1_5	Standard	12.500	5.62	4455.110	19672.180	2.831	13.0	4.4	NO		NO	bb
4	4 181204M1_6	Standard	12.500	5.61	4082.574	20687.504	2.467	11.4	-9.1	NO		NO	bb
5	5 181204M1_7	Standard	12.500	5.62	4052.865	19247.578	2.632	12.1	-3.0	NO		NO	MM
6	6 181204M1_8	Standard	12.500	5.61	4197.091	19652.740	2.670	12.3	-1.6	NO		NO	bb
7	7 181204M1_9	Standard	12.500	5.61	4222.680	19104.764	2.763	12.7	1.9	NO		NO	bb
8	8 181204M1_10	Standard	12.500	5.61	3695.445	18493.598	2.498	11.5	-7.9	NO		NO	bb
9	9 181204M1_11	Standard	12.500	5.61	3731.464	16578.785	2.813	13.0	3.7	NO		NO	bb
10	10 181204M1_12	Standard	12.500	5.61	3533.715	14424.402	3.062	14.1	12.9	NO		NO	bb

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Compound name: 13C2-PFUdA
Response Factor: 0.979974
RRF SD: 0.0265736, Relative SD: 2.71166
Response type: Internal Std (Ref 67), 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	181204M1_3	Standard	12.500	5.80	19439.045	20065.037	12.110	12.4	-1.1	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.80	17972.426	18599.396	12.079	12.3	-1.4	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.80	19364.027	19672.180	12.304	12.6	0.4	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.80	19359.100	20687.504	11.697	11.9	-4.5	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.80	19225.064	19247.578	12.485	12.7	1.9	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.79	19032.217	19652.740	12.105	12.4	-1.2	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.79	18523.750	19104.764	12.120	12.4	-1.1	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.79	18272.420	18493.598	12.351	12.6	0.8	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.79	16268.550	16578.785	12.266	12.5	0.1	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.79	14977.641	14424.402	12.979	13.2	6.0	NO		NO	bb

Compound name: d5-N-EtFOSAA
Response Factor: 0.304316
RRF SD: 0.0129156, Relative SD: 4.24414
Response type: Internal Std (Ref 67), 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	181204M1_3	Standard	12.500	5.77	6269.860	20065.037	3.906	12.8	2.7	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.77	5978.375	18599.396	4.018	13.2	5.6	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.77	6405.352	19672.180	4.070	13.4	7.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.77	5943.261	20687.504	3.591	11.8	-5.6	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.77	5944.591	19247.578	3.861	12.7	1.5	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.77	6038.198	19652.740	3.841	12.6	1.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.77	5720.660	19104.764	3.743	12.3	-1.6	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.77	5420.673	18493.598	3.664	12.0	-3.7	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.77	4886.182	16578.785	3.684	12.1	-3.2	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.76	4226.243	14424.402	3.662	12.0	-3.7	NO		NO	bb

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Compound name: 13C2-PFDoA
Response Factor: 1.033
RRF SD: 0.0450361, Relative SD: 4.35974
Response type: Internal Std (Ref 66), 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	181204M1_3	Standard	12.500	6.08	17651.691	17108.799	12.897	12.5	-0.1	NO		NO	bb
2	2	181204M1_4	Standard	12.500	6.08	17582.484	16179.683	13.584	13.1	5.2	NO		NO	bb
3	3	181204M1_5	Standard	12.500	6.08	18486.018	18403.881	12.556	12.2	-2.8	NO		NO	bb
4	4	181204M1_6	Standard	12.500	6.08	17450.748	18437.227	11.831	11.5	-8.4	NO		NO	bb
5	5	181204M1_7	Standard	12.500	6.08	17273.506	17570.539	12.289	11.9	-4.8	NO		NO	bb
6	6	181204M1_8	Standard	12.500	6.07	17513.943	16892.943	12.960	12.5	0.4	NO		NO	bb
7	7	181204M1_9	Standard	12.500	6.07	17497.186	16962.604	12.894	12.5	-0.1	NO		NO	bb
8	8	181204M1_10	Standard	12.500	6.07	16917.977	15792.305	13.391	13.0	3.7	NO		NO	bb
9	9	181204M1_11	Standard	12.500	6.07	15460.053	14249.540	13.562	13.1	5.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	6.07	14366.854	13643.642	13.163	12.7	1.9	NO		NO	bb

Compound name: d3-N-MeFOSA
Response Factor: 0.0532276
RRF SD: 0.00552722, Relative SD: 10.3841
Response type: Internal Std (Ref 67), 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	181204M1_3	Standard	150.000	6.02	11859.900	20065.037	7.388	138.8	-7.5	NO		NO	bb
2	2	181204M1_4	Standard	150.000	6.02	11569.147	18599.396	7.775	146.1	-2.6	NO		NO	bb
3	3	181204M1_5	Standard	150.000	6.02	12345.749	19672.180	7.845	147.4	-1.7	NO		NO	bb
4	4	181204M1_6	Standard	150.000	6.02	11997.025	20687.504	7.249	136.2	-9.2	NO		NO	bb
5	5	181204M1_7	Standard	150.000	6.02	11574.287	19247.578	7.517	141.2	-5.9	NO		NO	bb
6	6	181204M1_8	Standard	150.000	6.01	11933.927	19652.740	7.590	142.6	-4.9	NO		NO	bb
7	7	181204M1_9	Standard	150.000	6.01	11919.366	19104.764	7.799	146.5	-2.3	NO		NO	bb
8	8	181204M1_10	Standard	150.000	6.01	11712.507	18493.598	7.917	148.7	-0.8	NO		NO	bb
9	9	181204M1_11	Standard	150.000	6.01	11545.137	16578.785	8.705	163.5	9.0	NO		NO	bb
10	10	181204M1_12	Standard	150.000	6.01	11605.159	14424.402	10.057	188.9	26.0	NO		NO	bb

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Compound name: 13C2-PFTeDA
Response Factor: 0.67567
RRF SD: 0.0417889, Relative SD: 6.18482
Response type: Internal Std (Ref 67), 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 181204M1_3	Standard	12.500	6.53	12070.012	20065.037	7.519	11.1	-11.0	NO		NO	bb
2	2 181204M1_4	Standard	12.500	6.53	12204.263	18599.396	8.202	12.1	-2.9	NO		NO	bb
3	3 181204M1_5	Standard	12.500	6.53	13465.264	19672.180	8.556	12.7	1.3	NO		NO	bb
4	4 181204M1_6	Standard	12.500	6.53	13394.853	20687.504	8.094	12.0	-4.2	NO		NO	bb
5	5 181204M1_7	Standard	12.500	6.53	12746.364	19247.578	8.278	12.3	-2.0	NO		NO	bb
6	6 181204M1_8	Standard	12.500	6.53	13040.645	19652.740	8.294	12.3	-1.8	NO		NO	bb
7	7 181204M1_9	Standard	12.500	6.53	13137.947	19104.764	8.596	12.7	1.8	NO		NO	bb
8	8 181204M1_10	Standard	12.500	6.53	12915.573	18493.598	8.730	12.9	3.4	NO		NO	bb
9	9 181204M1_11	Standard	12.500	6.53	11465.735	16578.785	8.645	12.8	2.4	NO		NO	bb
10	10 181204M1_12	Standard	12.500	6.53	11014.244	14424.402	9.545	14.1	13.0	NO		NO	bb

Compound name: d5-N-ETFOSA
Response Factor: 0.0764471
RRF SD: 0.00372962, Relative SD: 4.8787
Response type: Internal Std (Ref 67), 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 181204M1_3	Standard	150.000	6.46	17468.000	20065.037	10.882	142.3	-5.1	NO		NO	bb
2	2 181204M1_4	Standard	150.000	6.46	16843.033	18599.396	11.320	148.1	-1.3	NO		NO	bb
3	3 181204M1_5	Standard	150.000	6.46	18065.963	19672.180	11.479	150.2	0.1	NO		NO	bb
4	4 181204M1_6	Standard	150.000	6.46	18571.803	20687.504	11.222	146.8	-2.1	NO		NO	bb
5	5 181204M1_7	Standard	150.000	6.46	17259.262	19247.578	11.209	146.6	-2.3	NO		NO	bb
6	6 181204M1_8	Standard	150.000	6.46	17841.553	19652.740	11.348	148.4	-1.0	NO		NO	bb
7	7 181204M1_9	Standard	150.000	6.46	17044.455	19104.764	11.152	145.9	-2.7	NO		NO	bb
8	8 181204M1_10	Standard	150.000	6.46	16637.488	18493.598	11.245	147.1	-1.9	NO		NO	bb
9	9 181204M1_11	Standard	150.000	6.46	15864.631	16578.785	11.962	156.5	4.3	NO		NO	bb
10	10 181204M1_12	Standard	150.000	6.46	14830.850	14424.402	12.852	168.1	12.1	NO		NO	bb

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Compound name: 13C2-PFHxDA
Response Factor: 0.832917
RRF SD: 0.105304, Relative SD: 12.6428
Response type: Internal Std (Ref 67), 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 181204M1_3	Standard	5.000	6.85	5504.491	20065.037	3.429	4.1	-17.7	NO		NO	bb
2	2 181204M1_4	Standard	5.000	6.85	5827.799	18599.396	3.917	4.7	-6.0	NO		NO	bb
3	3 181204M1_5	Standard	5.000	6.85	6555.719	19672.180	4.166	5.0	0.0	NO		NO	bb
4	4 181204M1_6	Standard	5.000	6.85	6577.808	20687.504	3.975	4.8	-4.6	NO		NO	bb
5	5 181204M1_7	Standard	5.000	6.85	5984.501	19247.578	3.887	4.7	-6.7	NO		NO	bb
6	6 181204M1_8	Standard	5.000	6.85	5977.149	19652.740	3.802	4.6	-8.7	NO		NO	bb
7	7 181204M1_9	Standard	5.000	6.85	6215.099	19104.764	4.066	4.9	-2.4	NO		NO	bb
8	8 181204M1_10	Standard	5.000	6.85	6620.280	18493.598	4.475	5.4	7.4	NO		NO	bb
9	9 181204M1_11	Standard	5.000	6.85	6107.531	16578.785	4.605	5.5	10.6	NO		NO	bb
10	10 181204M1_12	Standard	5.000	6.84	6145.451	14424.402	5.326	6.4	27.9	NO		NO	bb

Compound name: d7-N-MeFOSE
Response Factor: 0.0437341
RRF SD: 0.00541613, Relative SD: 12.3842
Response type: Internal Std (Ref 67), 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 181204M1_3	Standard	150.000	6.68	9820.526	20065.037	6.118	139.9	-6.7	NO		NO	bb
2	2 181204M1_4	Standard	150.000	6.68	9515.937	18599.396	6.395	146.2	-2.5	NO		NO	bb
3	3 181204M1_5	Standard	150.000	6.68	9861.699	19672.180	6.266	143.3	-4.5	NO		NO	bb
4	4 181204M1_6	Standard	150.000	6.67	9923.607	20687.504	5.996	137.1	-8.6	NO		NO	bb
5	5 181204M1_7	Standard	150.000	6.67	9379.859	19247.578	6.092	139.3	-7.1	NO		NO	bb
6	6 181204M1_8	Standard	150.000	6.67	9474.796	19652.740	6.026	137.8	-8.1	NO		NO	bb
7	7 181204M1_9	Standard	150.000	6.67	9710.577	19104.764	6.354	145.3	-3.1	NO		NO	bb
8	8 181204M1_10	Standard	150.000	6.67	9618.228	18493.598	6.501	148.6	-0.9	NO		NO	bb
9	9 181204M1_11	Standard	150.000	6.67	9561.808	16578.785	7.209	164.8	9.9	NO		NO	bb
10	10 181204M1_12	Standard	150.000	6.67	9974.334	14424.402	8.644	197.6	31.8	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: d9-N-EtFOSE
Response Factor: 0.0434356
RRF SD: 0.00496421, Relative SD: 11.4289
Response type: Internal Std (Ref 67), 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	181204M1_3	Standard	150.000	6.82	9912.401	20065.037	6.175	142.2	-5.2	NO		NO	bb
2	2	181204M1_4	Standard	150.000	6.82	9266.712	18599.396	6.228	143.4	-4.4	NO		NO	bb
3	3	181204M1_5	Standard	150.000	6.82	9706.496	19672.180	6.168	142.0	-5.3	NO		NO	bb
4	4	181204M1_6	Standard	150.000	6.82	9820.937	20687.504	5.934	136.6	-8.9	NO		NO	bb
5	5	181204M1_7	Standard	150.000	6.82	9405.834	19247.578	6.108	140.6	-6.2	NO		NO	bb
6	6	181204M1_8	Standard	150.000	6.82	9712.923	19652.740	6.178	142.2	-5.2	NO		NO	bb
7	7	181204M1_9	Standard	150.000	6.82	9555.589	19104.764	6.252	143.9	-4.0	NO		NO	bb
8	8	181204M1_10	Standard	150.000	6.82	9689.584	18493.598	6.549	150.8	0.5	NO		NO	bb
9	9	181204M1_11	Standard	150.000	6.82	9489.974	16578.785	7.155	164.7	9.8	NO		NO	bb
10	10	181204M1_12	Standard	150.000	6.82	9699.893	14424.402	8.406	193.5	29.0	NO		NO	bb

Compound name: 13C4-PFBA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 60), 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	181204M1_3	Standard	12.500	1.38	9186.443	9186.443	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	1.38	8951.333	8951.333	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	1.37	9362.224	9362.224	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	1.37	9359.069	9359.069	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	1.37	8825.378	8825.378	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	1.37	9090.454	9090.454	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	1.37	8900.758	8900.758	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	1.37	8907.866	8907.866	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	1.37	8773.262	8773.262	12.500	12.5	0.0	NO		NO	MM
10	10	181204M1_12	Standard	12.500	1.37	8346.316	8346.316	12.500	12.5	0.0	NO		NO	MM

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 61), 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	181204M1_3	Standard	12.500	3.53	17243.568	17243.568	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	3.53	16239.676	16239.676	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	3.52	17128.539	17128.539	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	3.52	17559.799	17559.799	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	3.52	16038.809	16038.809	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	3.52	16863.189	16863.189	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	3.52	16046.215	16046.215	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	3.52	15562.825	15562.825	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	3.52	14274.027	14274.027	12.500	12.5	0.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	3.53	13544.980	13544.980	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 62), 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	181204M1_3	Standard	12.500	4.30	2521.000	2521.000	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	4.30	2375.701	2375.701	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	4.30	2612.776	2612.776	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	4.30	2518.080	2518.080	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	4.30	2441.664	2441.664	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	4.30	2430.288	2430.288	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	4.30	2373.557	2373.557	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	4.30	2242.168	2242.168	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	4.30	2143.470	2143.470	12.500	12.5	0.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	4.29	1796.888	1796.888	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 63), 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	181204M1_3	Standard	12.500	4.66	21800.590	21800.590	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	4.65	21255.275	21255.275	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	4.66	21727.584	21727.584	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	4.65	22883.371	22883.371	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	4.65	21118.514	21118.514	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	4.65	21397.141	21397.141	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	4.65	20512.875	20512.875	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	4.65	20590.383	20590.383	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	4.65	18326.928	18326.928	12.500	12.5	0.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	4.65	16837.416	16837.416	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 64), 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	181204M1_3	Standard	12.500	5.09	14777.663	14777.663	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.09	14108.556	14108.556	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.09	15835.503	15835.503	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.09	15904.291	15904.291	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.09	14668.844	14668.844	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.09	14947.035	14947.035	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.09	14434.903	14434.903	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.09	13940.485	13940.485	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.09	12311.692	12311.692	12.500	12.5	0.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.08	11857.629	11857.629	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 65), 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	181204M1_3	Standard	12.500	5.17	2788.671	2788.671	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.17	2591.844	2591.844	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.17	2823.260	2823.260	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.17	2741.773	2741.773	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.17	2770.565	2770.565	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.17	2700.544	2700.544	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.17	2455.471	2455.471	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.17	2547.693	2547.693	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.17	2162.964	2162.964	12.500	12.5	0.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.17	2146.335	2146.335	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 66), 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	181204M1_3	Standard	12.500	5.47	17108.799	17108.799	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.47	16179.683	16179.683	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.47	18403.881	18403.881	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.47	18437.227	18437.227	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.47	17570.539	17570.539	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.47	16892.943	16892.943	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.47	16962.604	16962.604	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.47	15792.305	15792.305	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.47	14249.540	14249.540	12.500	12.5	0.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.47	13643.642	13643.642	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C7-PFUdA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 67), 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	181204M1_3	Standard	12.500	5.80	20065.037	20065.037	12.500	12.5	0.0	NO		NO	bb
2	2	181204M1_4	Standard	12.500	5.79	18599.396	18599.396	12.500	12.5	0.0	NO		NO	bb
3	3	181204M1_5	Standard	12.500	5.80	19672.180	19672.180	12.500	12.5	0.0	NO		NO	bb
4	4	181204M1_6	Standard	12.500	5.80	20687.504	20687.504	12.500	12.5	0.0	NO		NO	bb
5	5	181204M1_7	Standard	12.500	5.80	19247.578	19247.578	12.500	12.5	0.0	NO		NO	bb
6	6	181204M1_8	Standard	12.500	5.79	19652.740	19652.740	12.500	12.5	0.0	NO		NO	bb
7	7	181204M1_9	Standard	12.500	5.79	19104.764	19104.764	12.500	12.5	0.0	NO		NO	bb
8	8	181204M1_10	Standard	12.500	5.79	18493.598	18493.598	12.500	12.5	0.0	NO		NO	bb
9	9	181204M1_11	Standard	12.500	5.79	16578.785	16578.785	12.500	12.5	0.0	NO		NO	bb
10	10	181204M1_12	Standard	12.500	5.79	14424.402	14424.402	12.500	12.5	0.0	NO		NO	MM

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Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBA	36	0.9995	NO	
2	2	PFPeA	37	0.9998	NO	
3	3	PFBS	38	0.9994	NO	
4	4	4:2 FTS	39	0.9999	NO	
5	5	PFHxA	40	0.9999	NO	
6	6	PFPeS	38	0.9993	NO	
7	7	PFHpA	41	0.9995	NO	
8	8	L-PFHxS	42	0.9996	NO	
9	10	6:2 FTS	43	0.9997	NO	
10	11	L-PFOA	44	0.9998	NO	
11	13	PFHpS	47	0.9997	NO	
12	14	PFNA	45	0.9997	NO	
13	15	PFOSA	46	0.9997	NO	
14	16	L-PFOS	47	0.9994	NO	
15	18	PFDA	48	0.9998	NO	
16	19	8:2 FTS	49	0.9994	NO	
17	20	PFNS	47	0.9995	NO	
18	21	L-MeFOSAA	50	0.9979	NO	
19	23	L-EtFOSAA	52	0.9998	NO	

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Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

	#	Name	IS#	CoD	CoD Flag	%RSD
1	25	PFUdA	51	0.9999	NO	
2	26	PFDS	47	0.9996	NO	
3	27	PFDoA	53	0.9999	NO	
4	28	N-MeFOSA	54	0.9994	NO	
5	29	PFTrDA	53	0.9997	NO	
6	30	PFTeDA	55	0.9999	NO	
7	31	N-EtFOSA	56	0.9997	NO	
8	32	PFHxDA	57	1.0000	NO	
9	33	PFODA	57	0.9992	NO	
10	34	N-MeFOSE	58	0.9995	NO	
11	35	N-EtFOSE	59	0.9996	NO	
12	36	13C3-PFBA	60		NO	1.251
13	37	13C3-PFPeA	61		NO	3.431
14	38	13C3-PFBS	62		NO	2.372
15	39	13C2-4:2 FTS	62		NO	9.783
16	40	13C2-PFHxA	61		NO	4.760
17	41	13C4-PFHpA	61		NO	3.049
18	42	18O2-PFHxS	62		NO	3.006
19	43	13C2-6:2 FTS	65		NO	10.230
20	44	13C2-PFOA	63		NO	4.108
21	45	13C5-PFNA	64		NO	3.495
22	46	13C8-PFOSA	67		NO	5.298
23	47	13C8-PFOS	65		NO	5.324
24	48	13C2-PFDA	66		NO	3.135
25	49	13C2-8:2 FTS	65		NO	14.930
26	50	d3-N-MeFOSAA	67		NO	6.326
27	51	13C2-PFUdA	67		NO	2.712
28	52	d5-N-EtFOSAA	67		NO	4.244
29	53	13C2-PFDoA	66		NO	4.360
30	54	d3-N-MeFOSA	67		NO	10.384
31	55	13C2-PFTeDA	67		NO	6.185
32	56	d5-N-ETFOSA	67		NO	4.879

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:54:56 Pacific Standard Time

Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

	#	Name	IS#	CoD	CoD Flag	%RSD
33	57	13C2-PFHxDA	67		NO	12.643
34	58	d7-N-MeFOSE	67		NO	12.384
35	59	d9-N-EtFOSE	67		NO	11.429
36	60	13C4-PFBA	60		NO	0.000
37	61	13C5-PFHxA	61		NO	0.000
38	62	13C3-PFHxS	62		NO	0.000
39	63	13C8-PFOA	63		NO	0.000
40	64	13C9-PFNA	64		NO	0.000
41	65	13C4-PFOS	65		NO	0.000
42	66	13C6-PFDA	66		NO	0.000
43	67	13C7-PFUdA	67		NO	0.000

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:00:53 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

	Name	Ion Ratio	Ratio out?
1	PFBA		
2	PFPeA		
3	PFBS	3.262	NO
4	4:2 FTS	2.018	NO
5	PFHxA	14.932	NO
6	PFPeS	1.434	NO
7	PFHpA	13.460	NO
8	L-PFHxS	2.027	NO
9	6:2 FTS	3.057	NO
10	L-PFOA	3.250	NO
11	PFHpS	1.949	NO
12	PFNA	4.450	NO
13	PFOSA	39.967	NO
14	L-PFOS	2.111	NO
15	PFDA	5.968	NO
16	8:2 FTS	2.714	NO
17	PFNS	1.710	NO
18	L-MeFOSAA	2.307	NO
19	L-EtFOSAA	1.316	NO

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:01:08 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

	Name	Ion Ratio	Ratio out?
1	PFUdA	10.641	NO
2	PFDS	1.881	NO
3	PFDoA	8.538	NO
4	N-MeFOSA	1.551	NO
5	PFTrDA	27.256	NO
6	PFTeDA	13.166	NO
7	N-EtFOSA	1.710	NO
8	PFHxDA	20.373	NO
9	PFODA		
10	N-MeFOSE		
11	N-EtFOSE		

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, December 04, 2018 15:04:22 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:04:38 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Compound name: PFBA

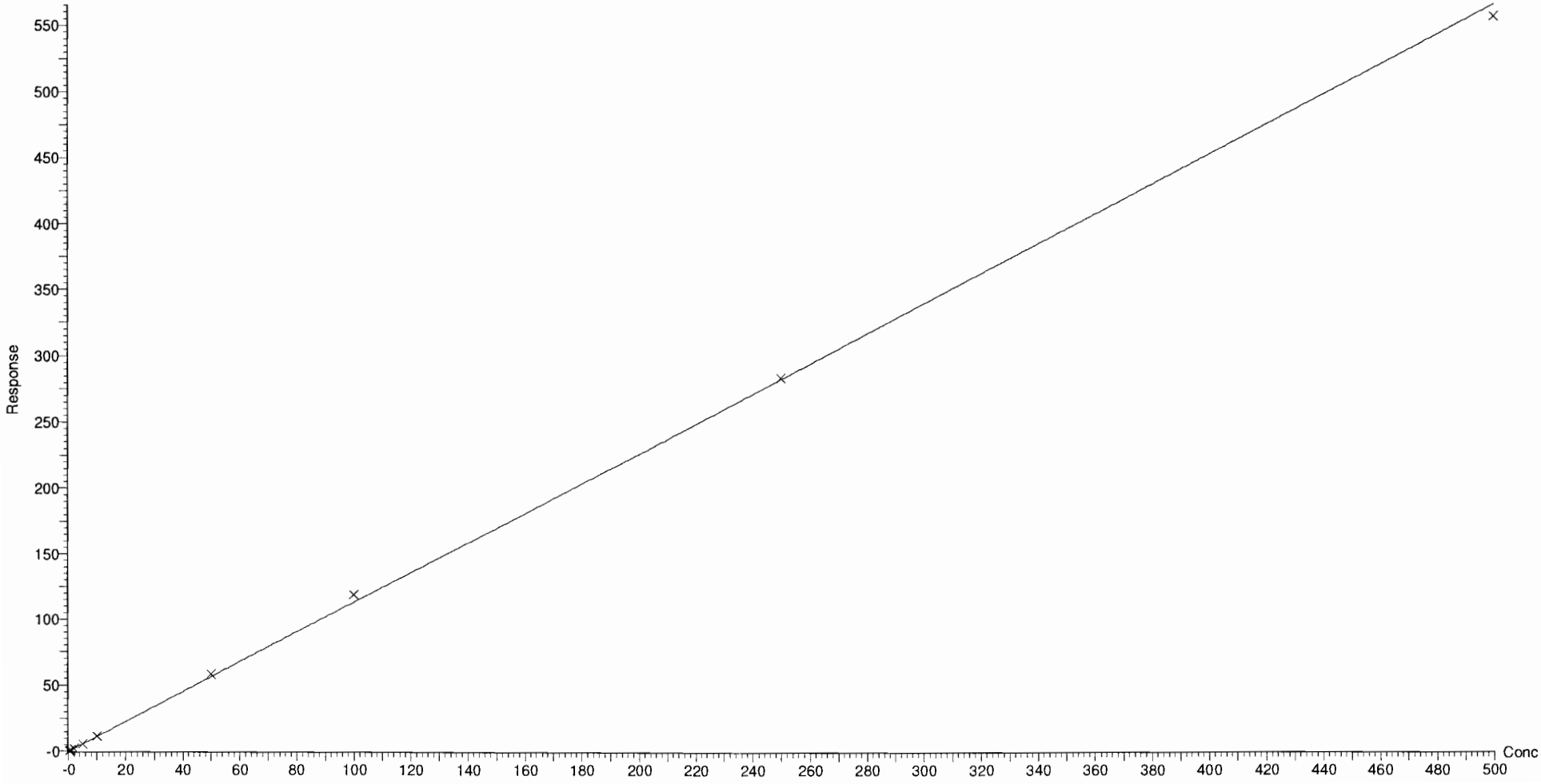
	#	Name	ID	Acq.Date	Acq.Time
1	1	181204M1_1	IPA	04-Dec-18	11:34:05
2	2	181204M1_2	IPA	04-Dec-18	11:44:40
3	3	181204M1_3	ST181204M1-1 PFC CS-2 18K3001	04-Dec-18	11:55:12
4	4	181204M1_4	ST181204M1-2 PFC CS-1 18K3002	04-Dec-18	12:05:51
5	5	181204M1_5	ST181204M1-3 PFC CS0 18K3003	04-Dec-18	12:16:24
6	6	181204M1_6	ST181204M1-4 PFC CS1 18K3004	04-Dec-18	12:27:03
7	7	181204M1_7	ST181204M1-5 PFC CS2 18K3005	04-Dec-18	12:37:35
8	8	181204M1_8	ST181204M1-6 PFC CS3 18K3006	04-Dec-18	12:48:14
9	9	181204M1_9	ST181204M1-7 PFC CS4 18K3007	04-Dec-18	12:58:46
10	10	181204M1_10	ST181204M1-8 PFC CS5 18K3008	04-Dec-18	13:09:24
11	11	181204M1_11	ST181204M1-9 PFC CS6 18K3009	04-Dec-18	13:20:03
12	12	181204M1_12	ST181204M1-10 PFC CS7 18K3010	04-Dec-18	13:30:57
13	13	181204M1_13	IPA MBF 12/04/18	04-Dec-18	13:41:31
14	14	181204M1_14	ICV181204M1-1 PFC ICV 18K3011	04-Dec-18	13:52:09
15	15	181204M1_15	IPA	04-Dec-18	14:02:42

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

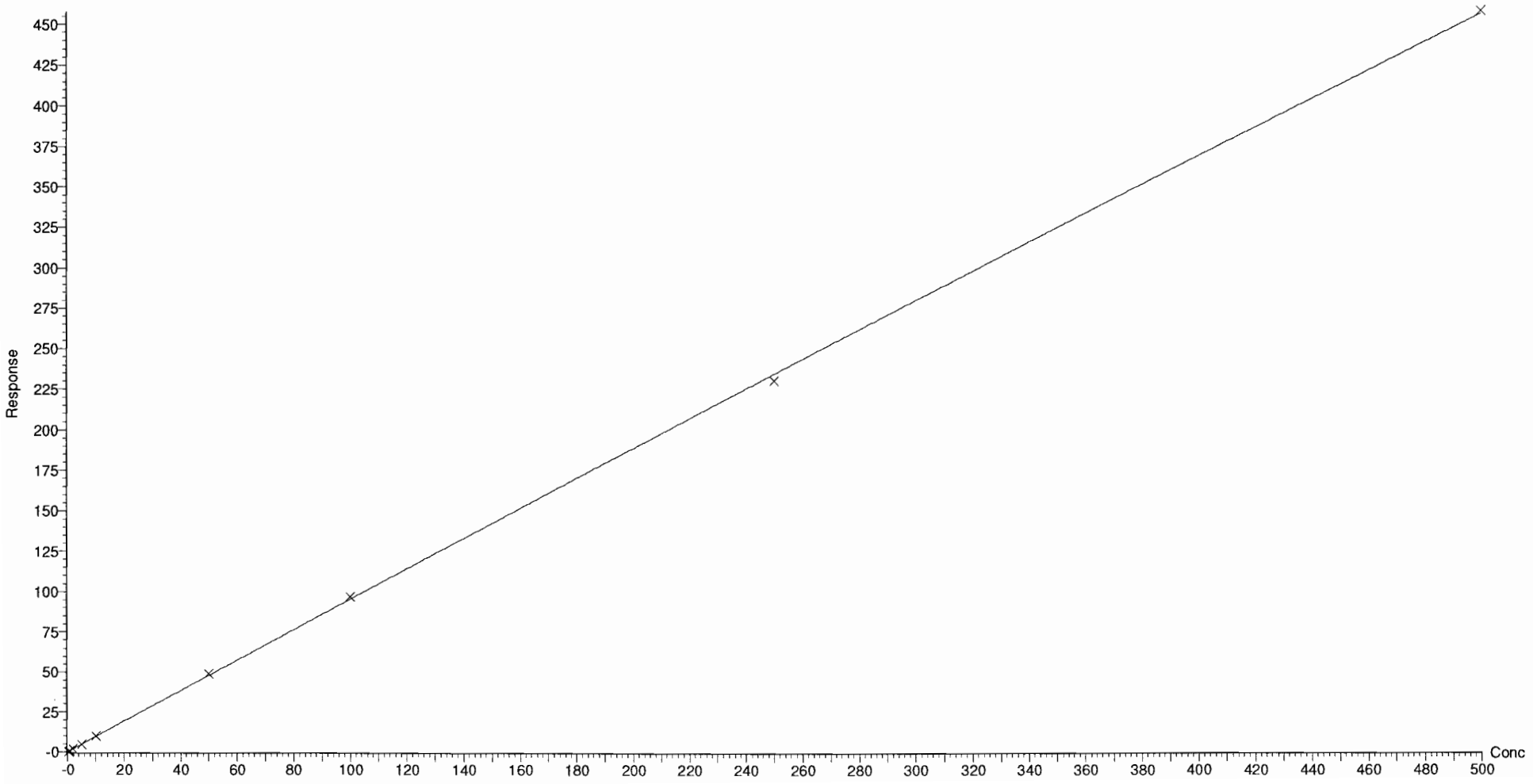
Compound name: PFBA
Correlation coefficient: r = 0.999734, r^2 = 0.999467
Calibration curve: 1.13075 * x + 0.00372357
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

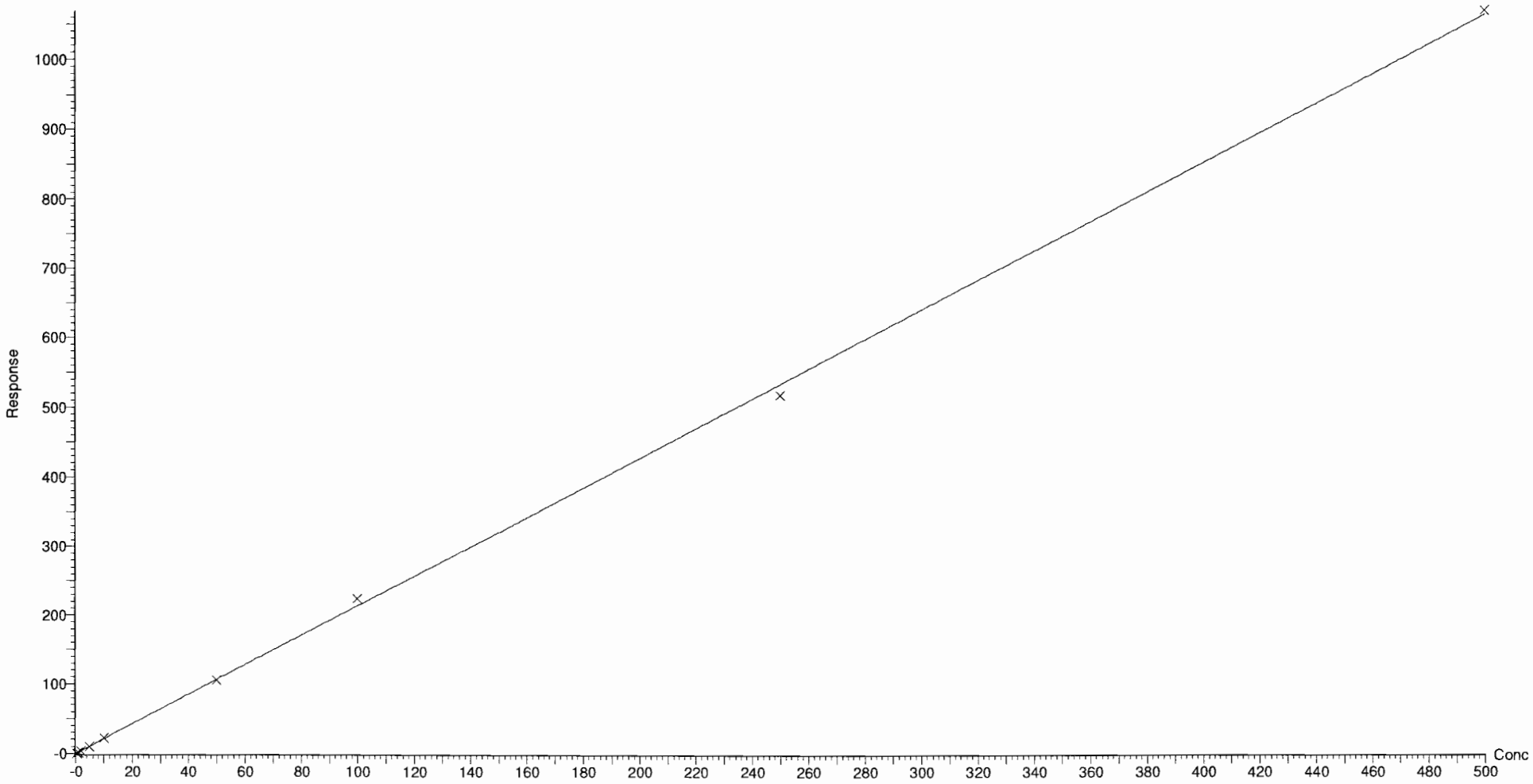
Compound name: PFPeA
Coefficient of Determination: R^2 = 0.999847
Calibration curve: -0.000105859 * x^2 + 0.965269 * x + 0.00975116
Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

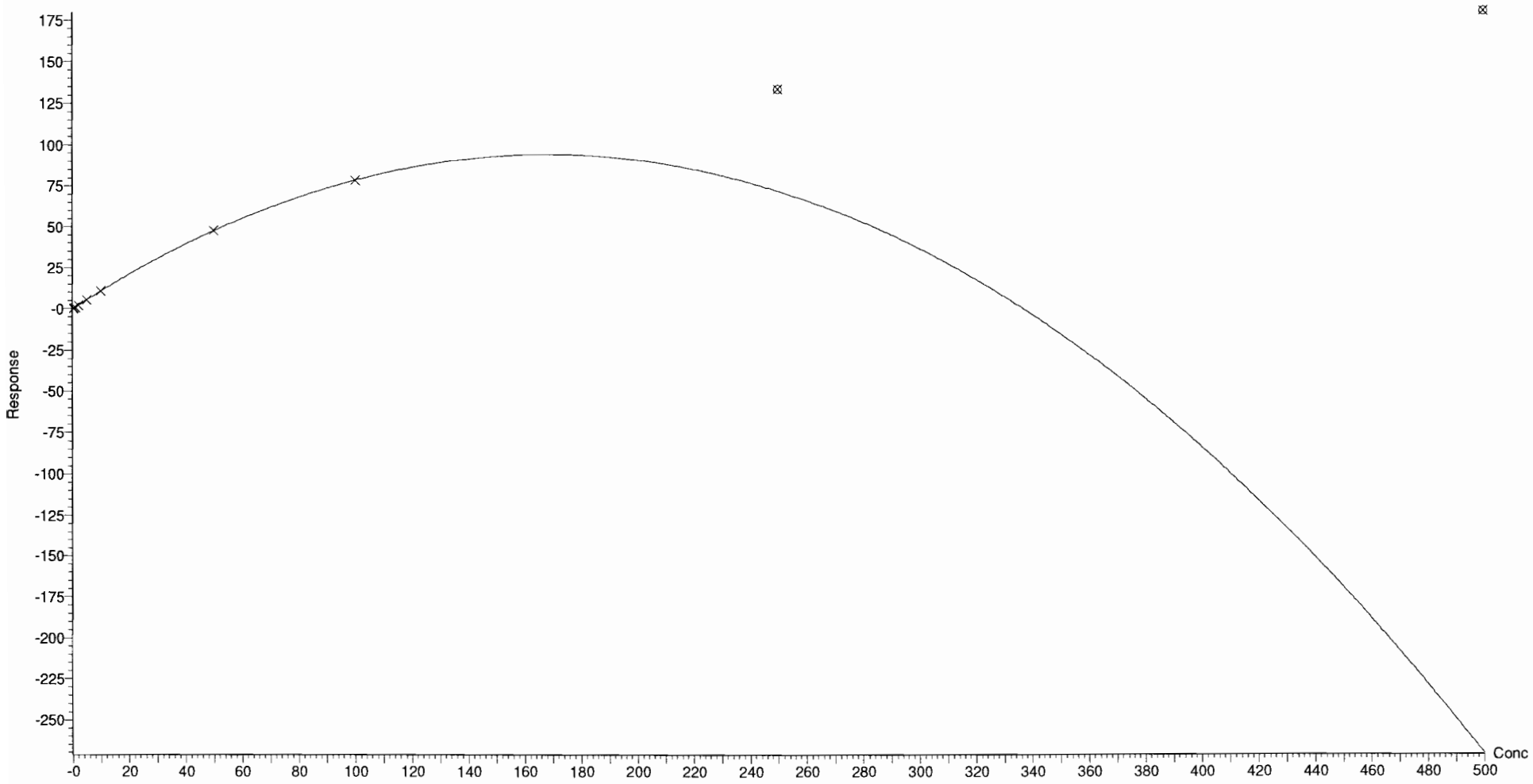
Compound name: PFBS
Coefficient of Determination: R^2 = 0.999441
Calibration curve: -3.60504e-005 * x^2 + 2.14448 * x + -0.111984
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

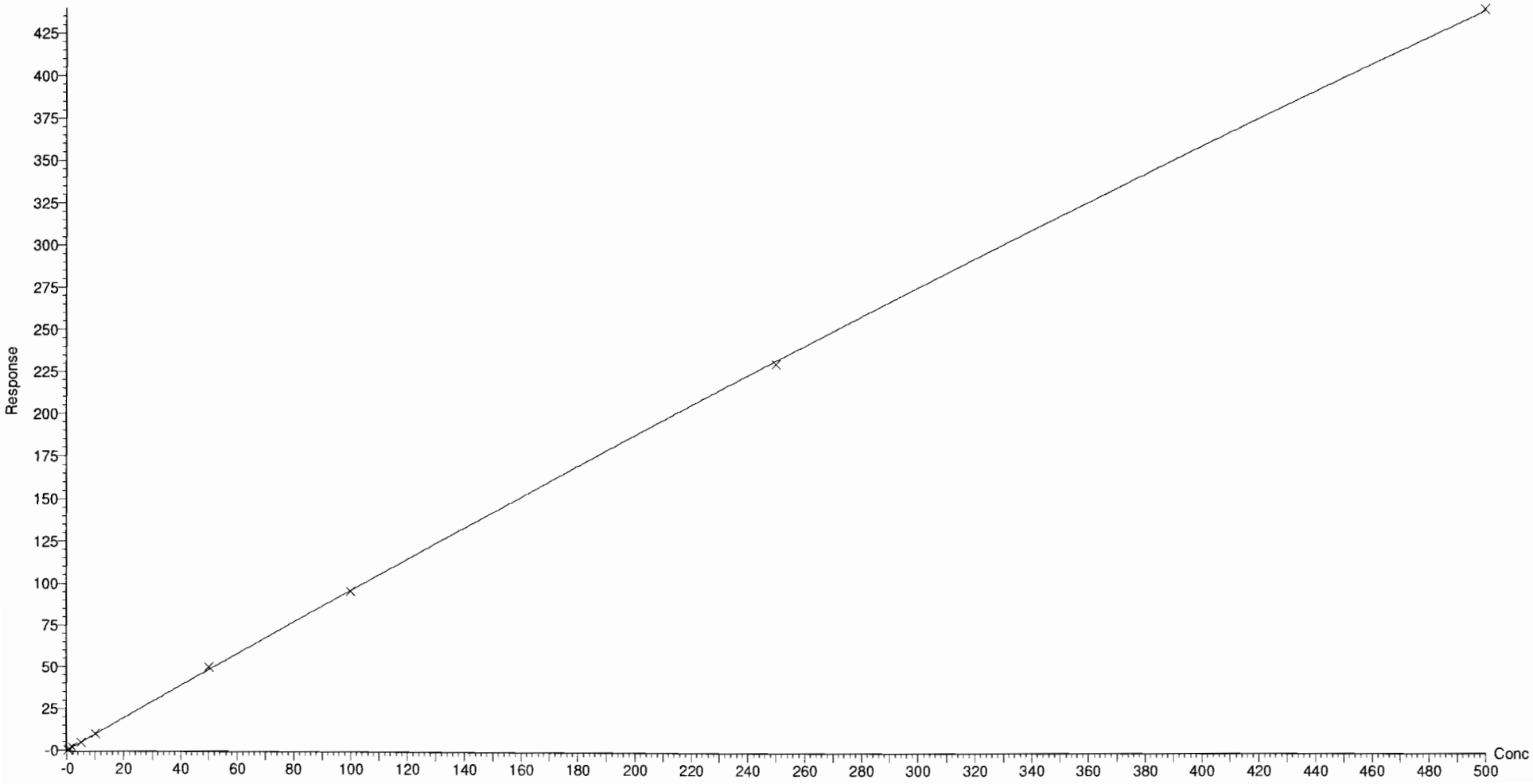
Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999949
Calibration curve: -0.00331787 * x^2 + 1.11739 * x + -0.0126645
Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

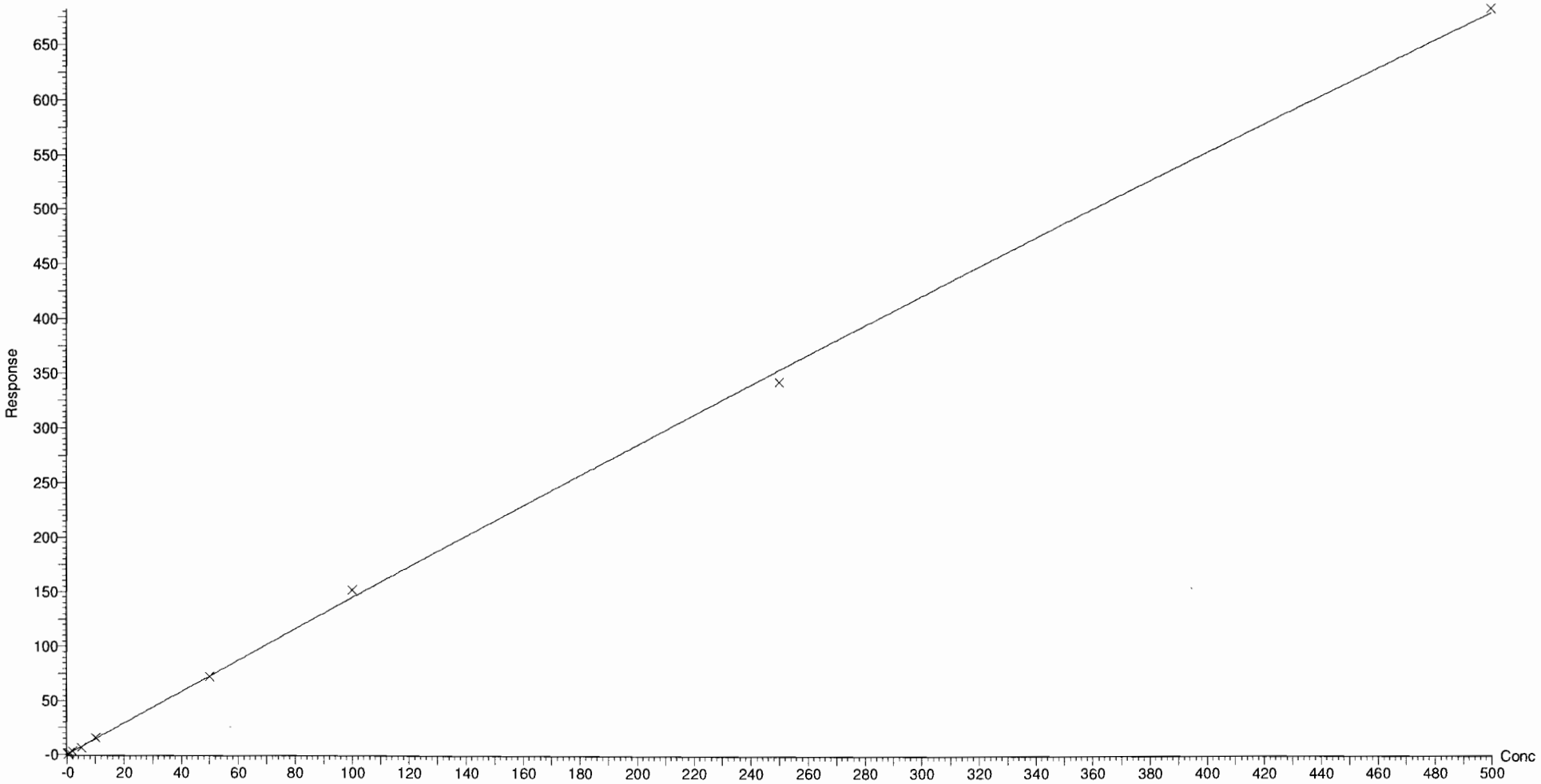
Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999902
Calibration curve: -0.000205953 * x^2 + 0.980486 * x + 0.00865741
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

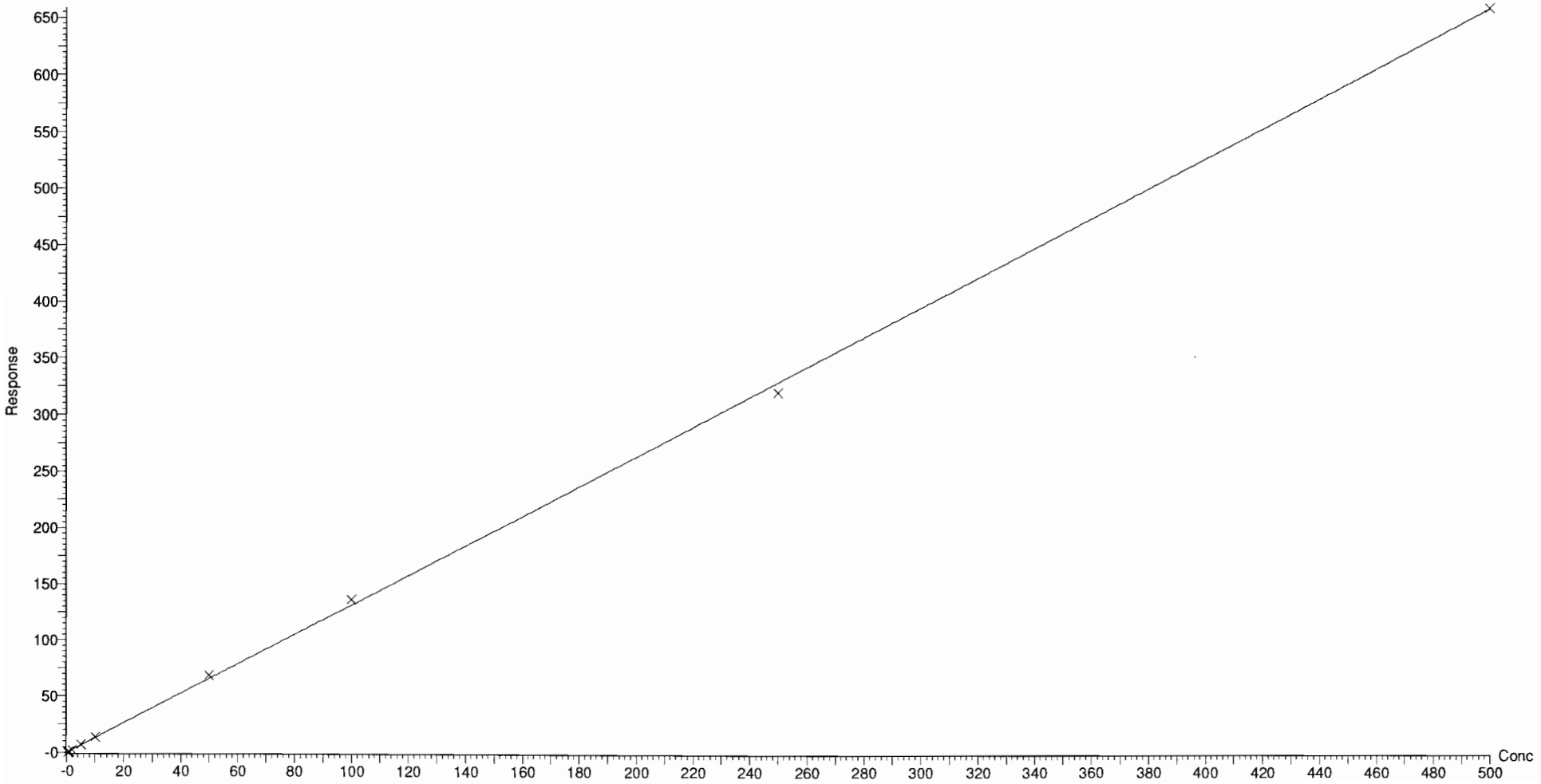
Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999285
Calibration curve: -0.000230863 * x^2 + 1.47225 * x + -0.0226728
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

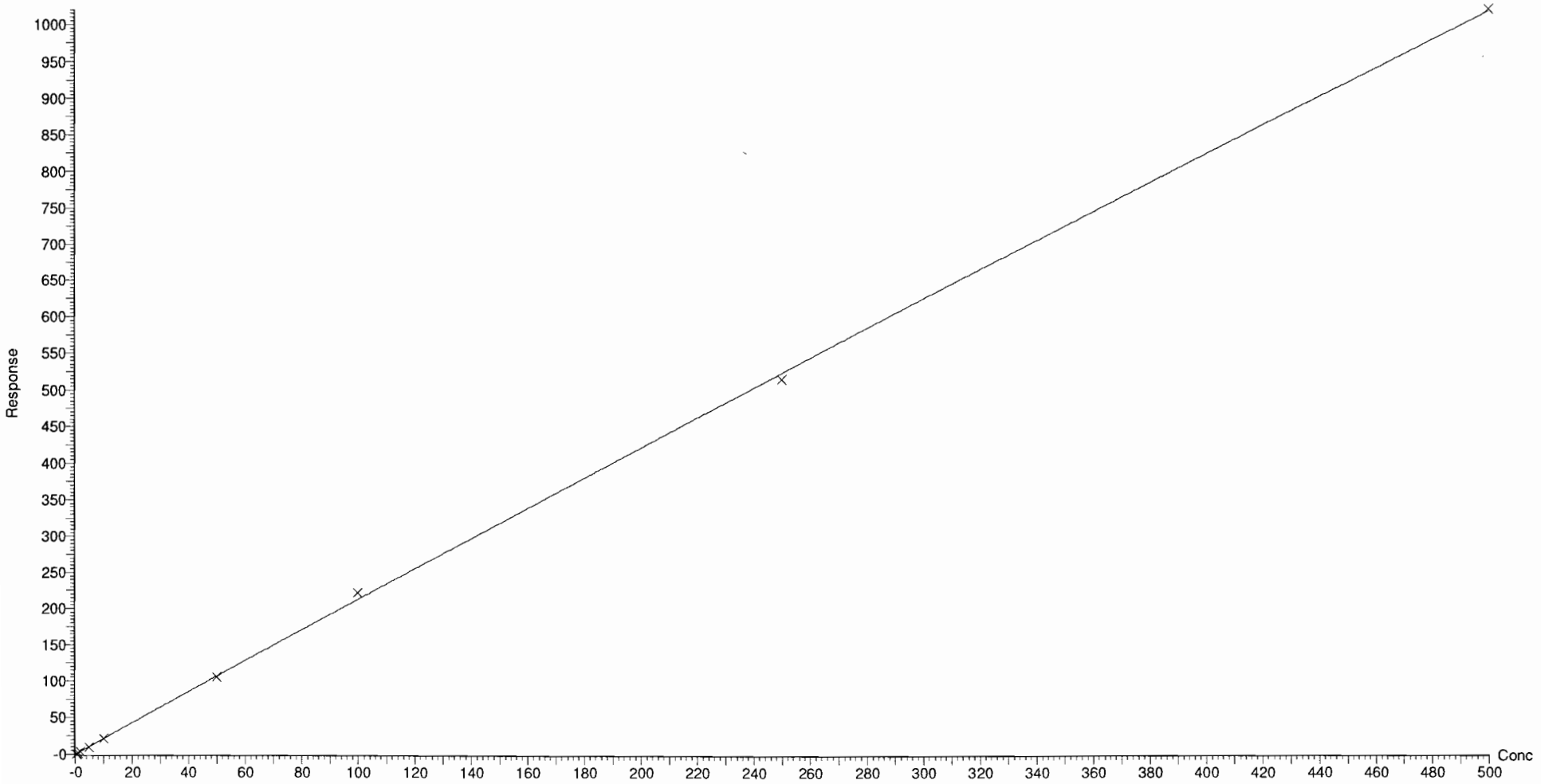
Compound name: PFHpA
Correlation coefficient: r = 0.999752, r^2 = 0.999504
Calibration curve: 1.31637 * x + 0.0808582
Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

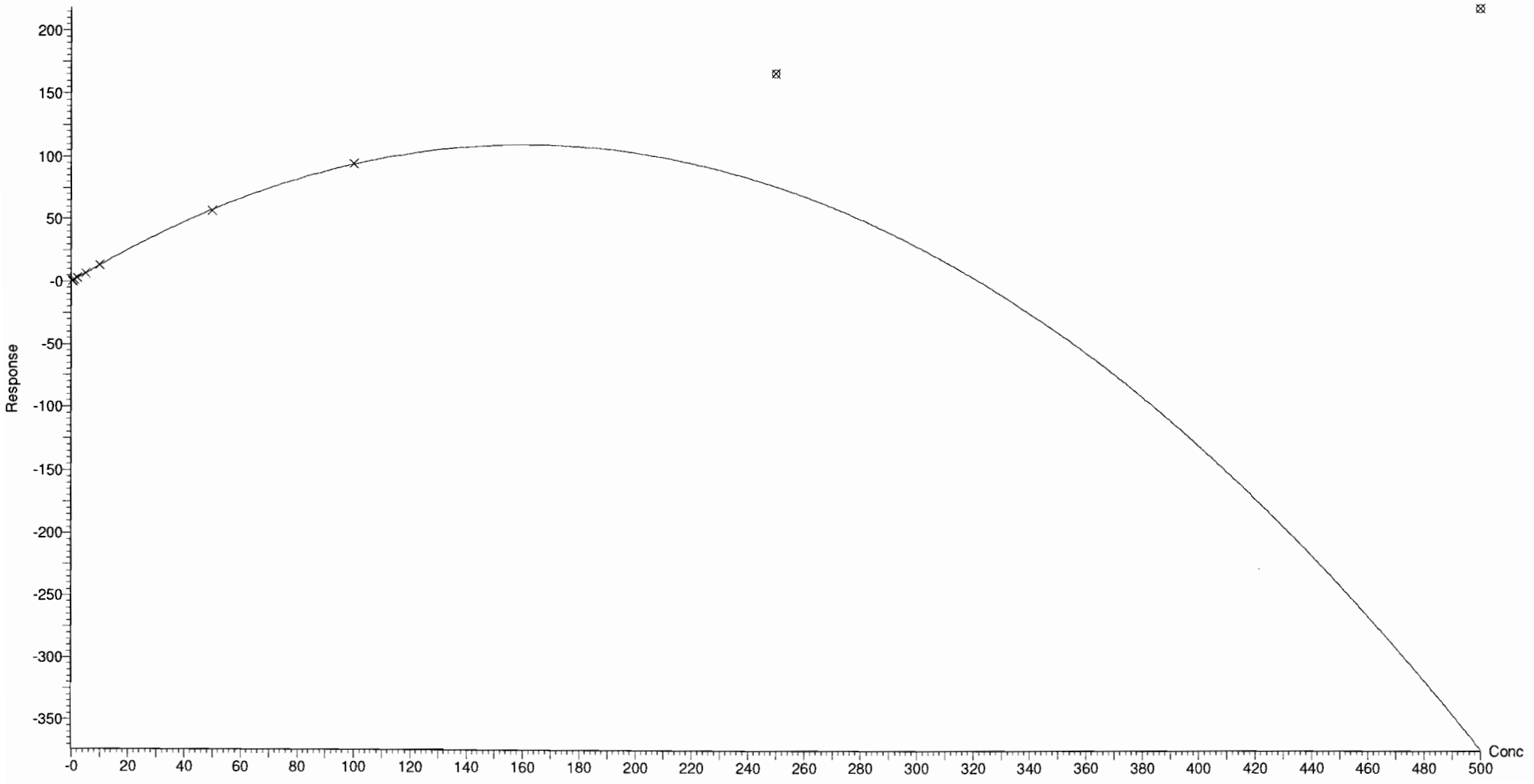
Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999578
Calibration curve: -0.000245324 * x^2 + 2.15839 * x + -0.0780056
Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

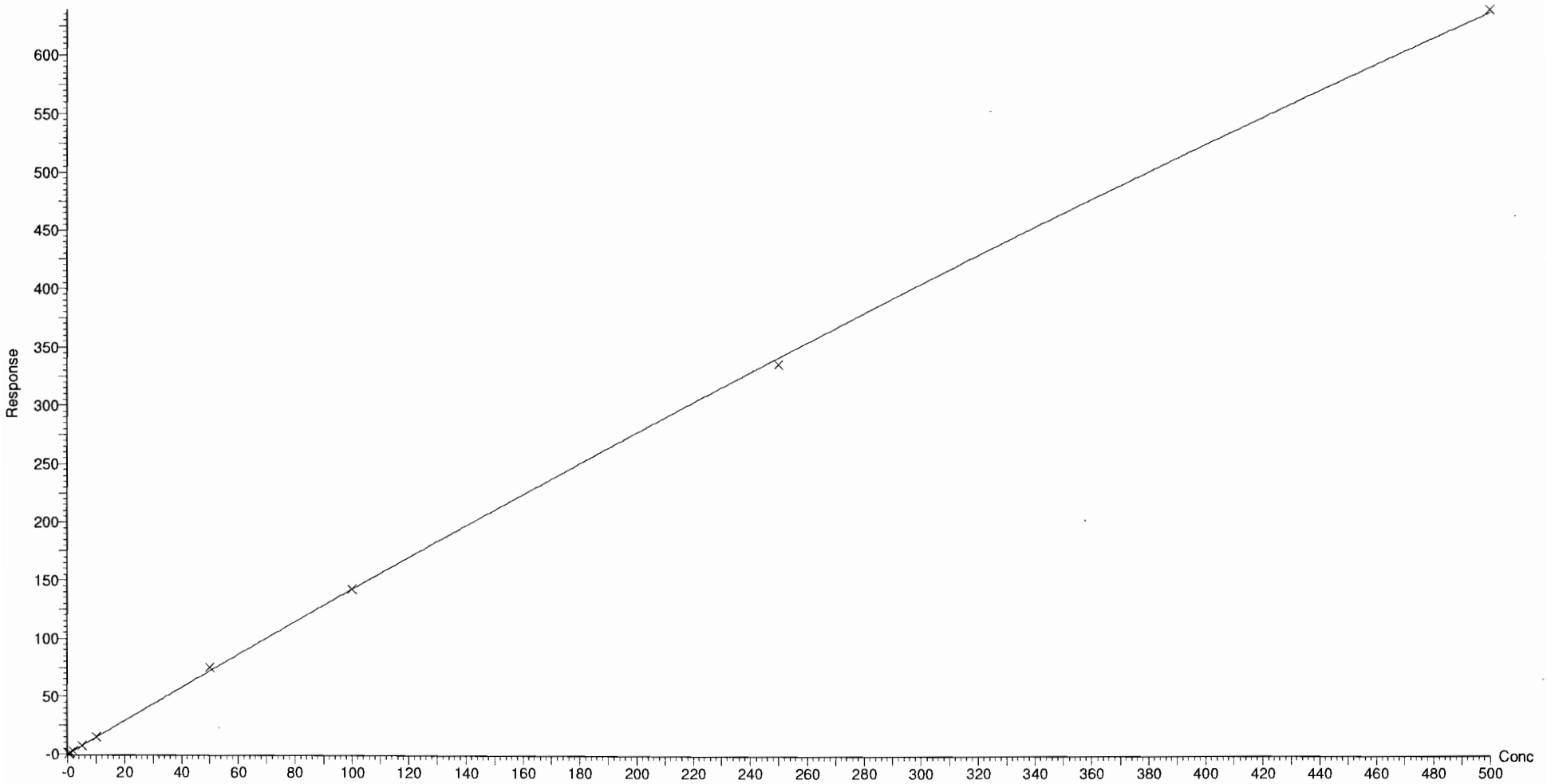
Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999660
Calibration curve: -0.00421918 * x^2 + 1.36329 * x + 0.0538838
Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

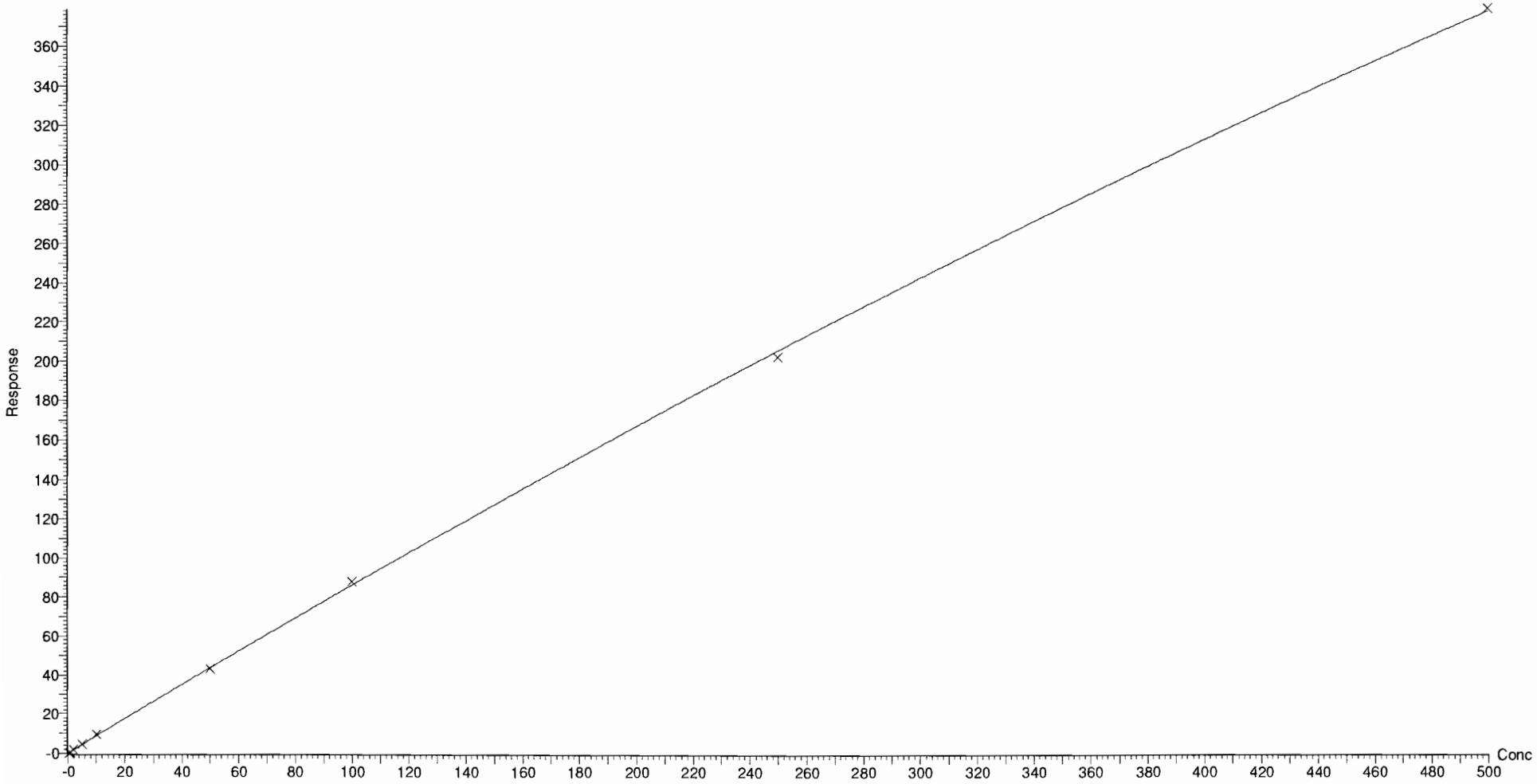
Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999788
Calibration curve: -0.000378013 * x^2 + 1.46194 * x + 0.0514405
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

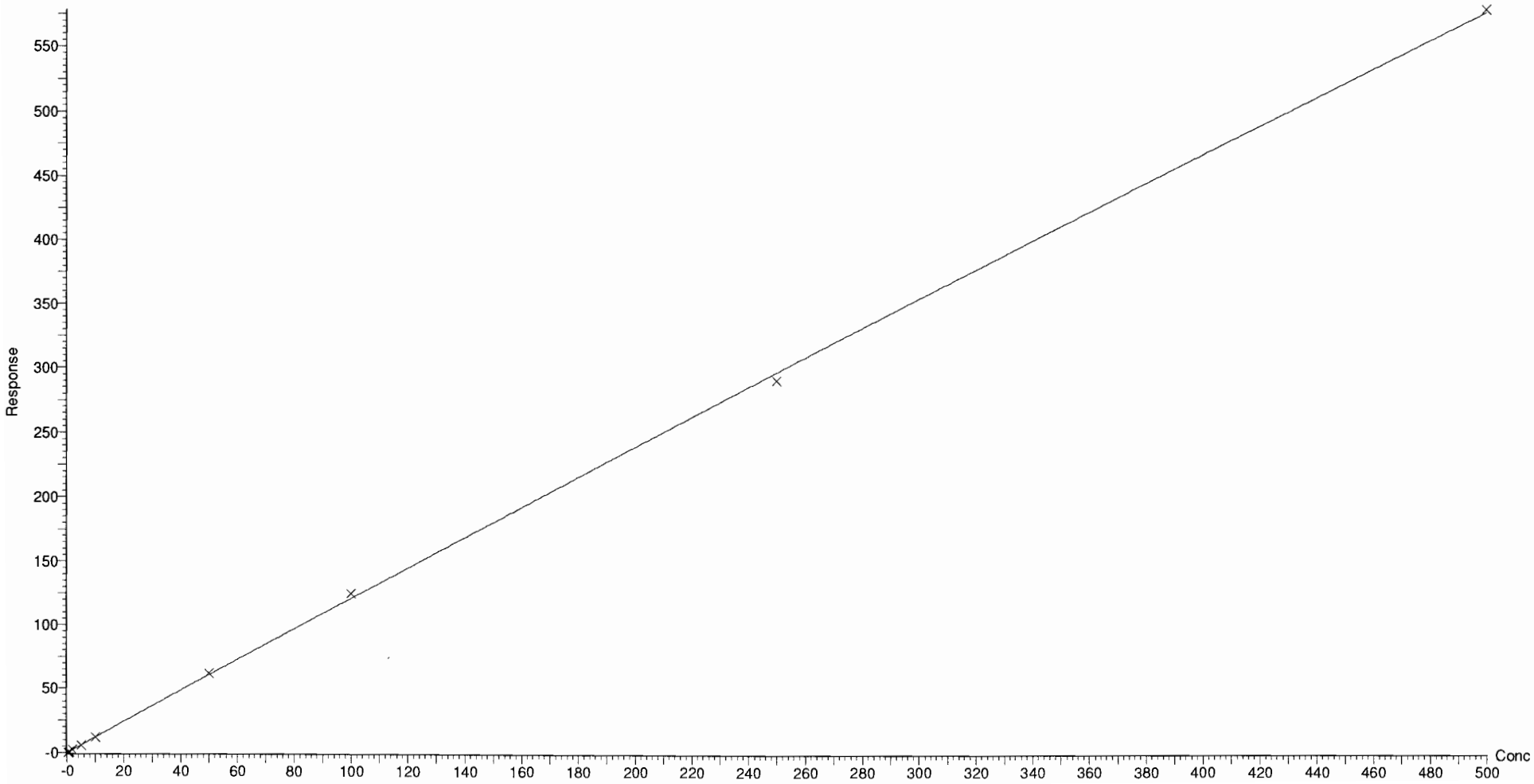
Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999733
Calibration curve: -0.000269422 * x^2 + 0.88954 * x + -0.0270283
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

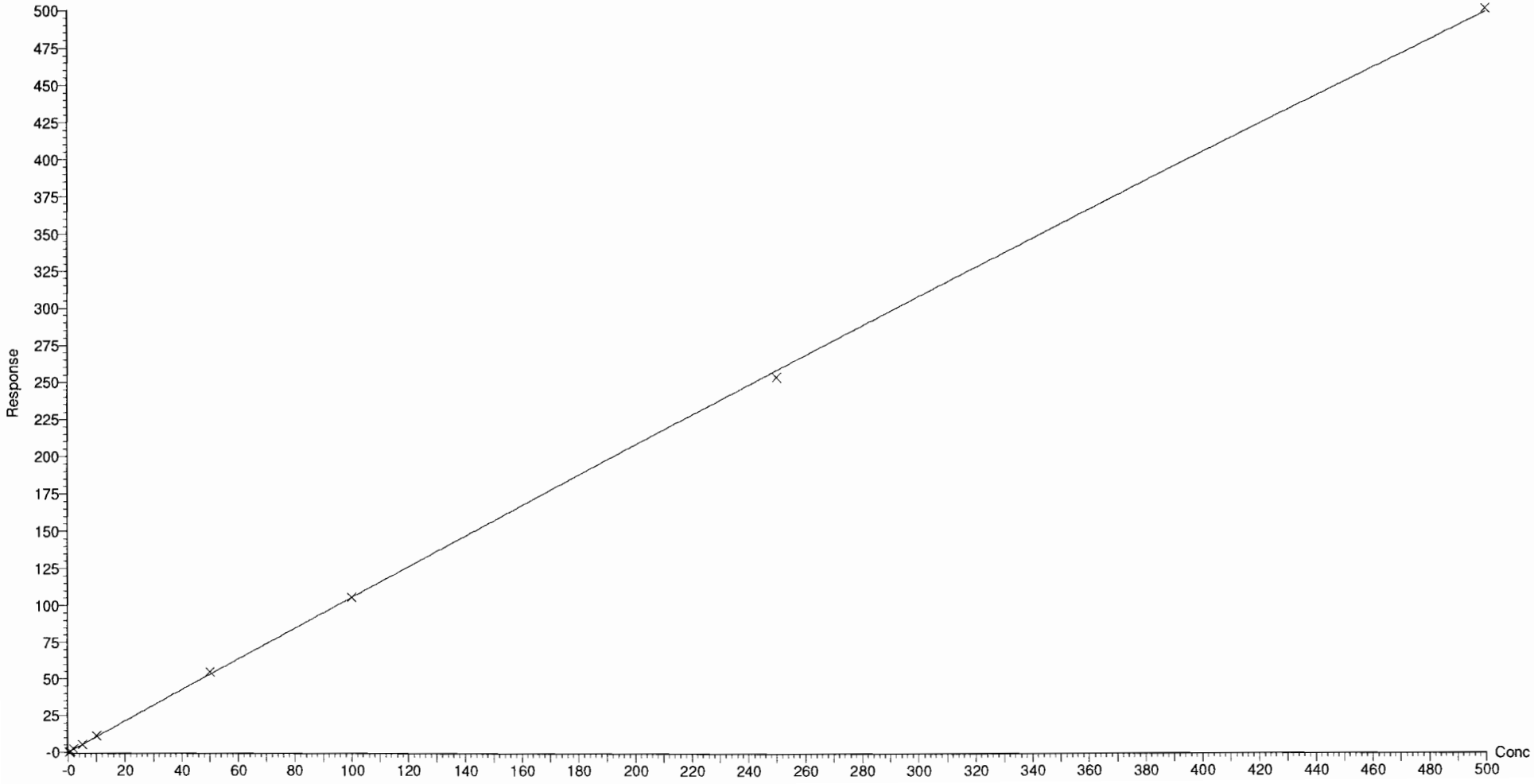
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999730
Calibration curve: -0.000146988 * x^2 + 1.22558 * x + -0.0623249
Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999746
Calibration curve: -0.000147193 * x^2 + 1.06988 * x + 0.0577565
Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

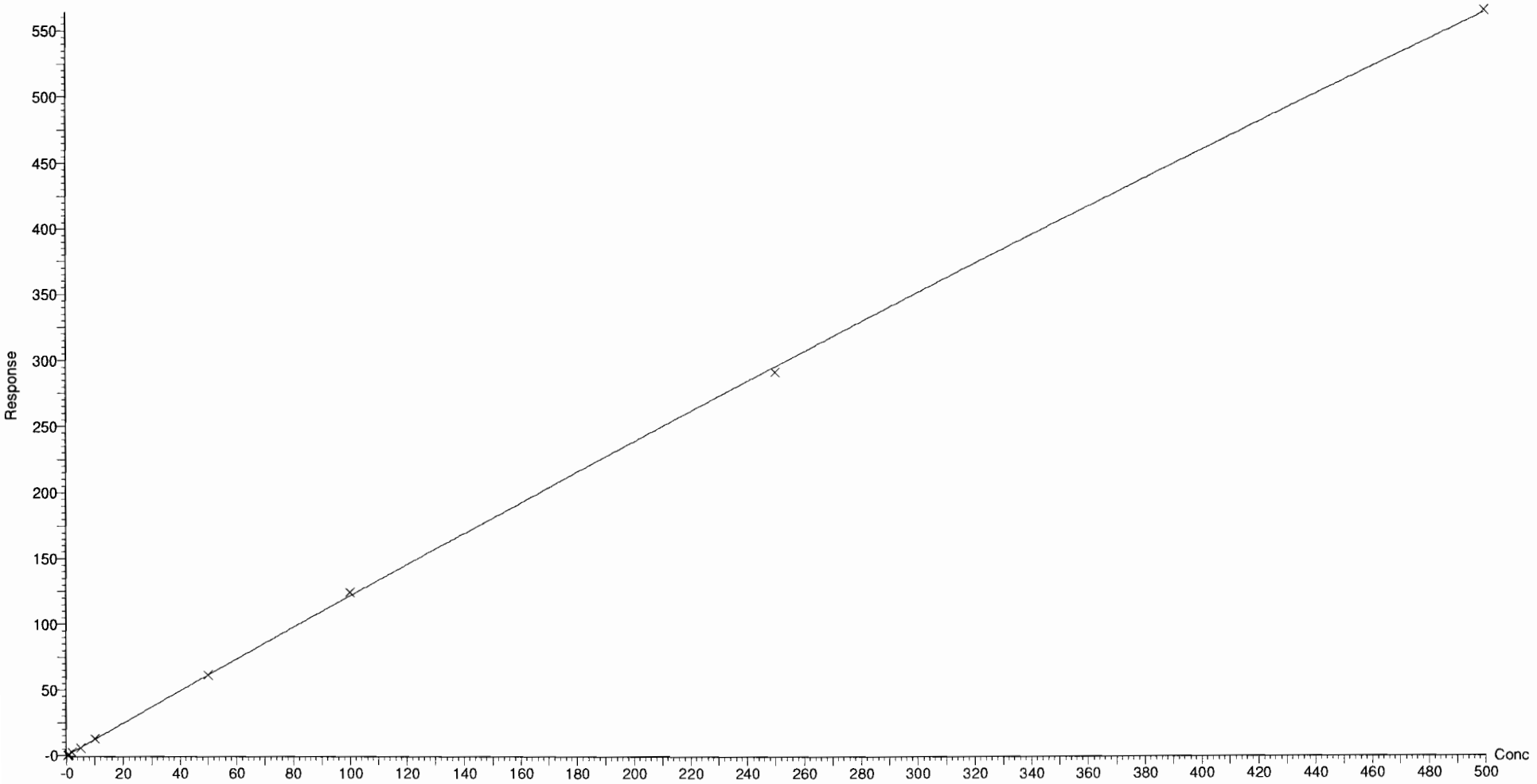
Compound name: L-PFOS
Correlation coefficient: r = 0.999697, r^2 = 0.999395
Calibration curve: 1.0525 * x + 0.00293563
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

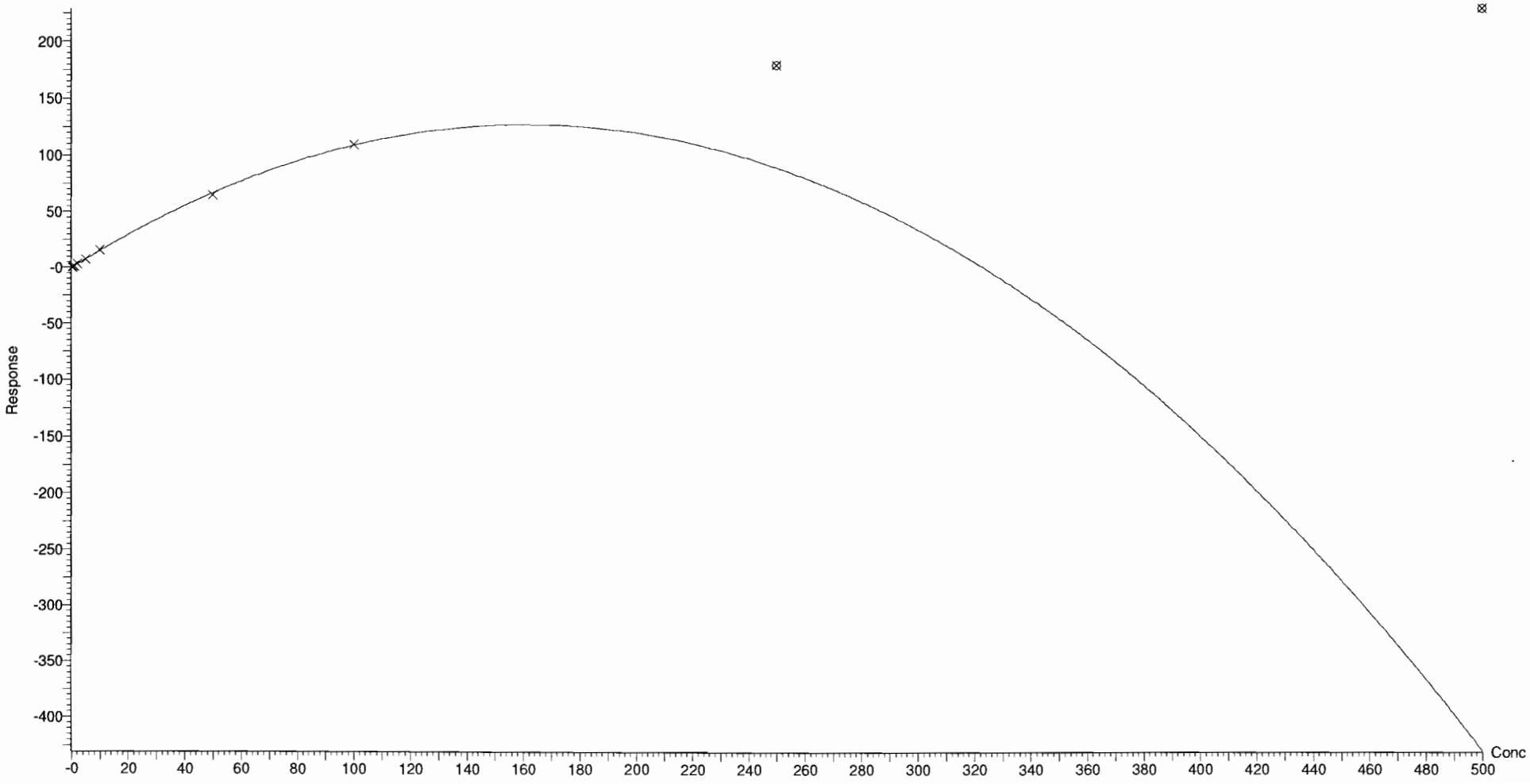
Compound name: PFDA
Coefficient of Determination: R^2 = 0.999831
Calibration curve: -0.000231433 * x^2 + 1.24031 * x + -0.0250627
Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

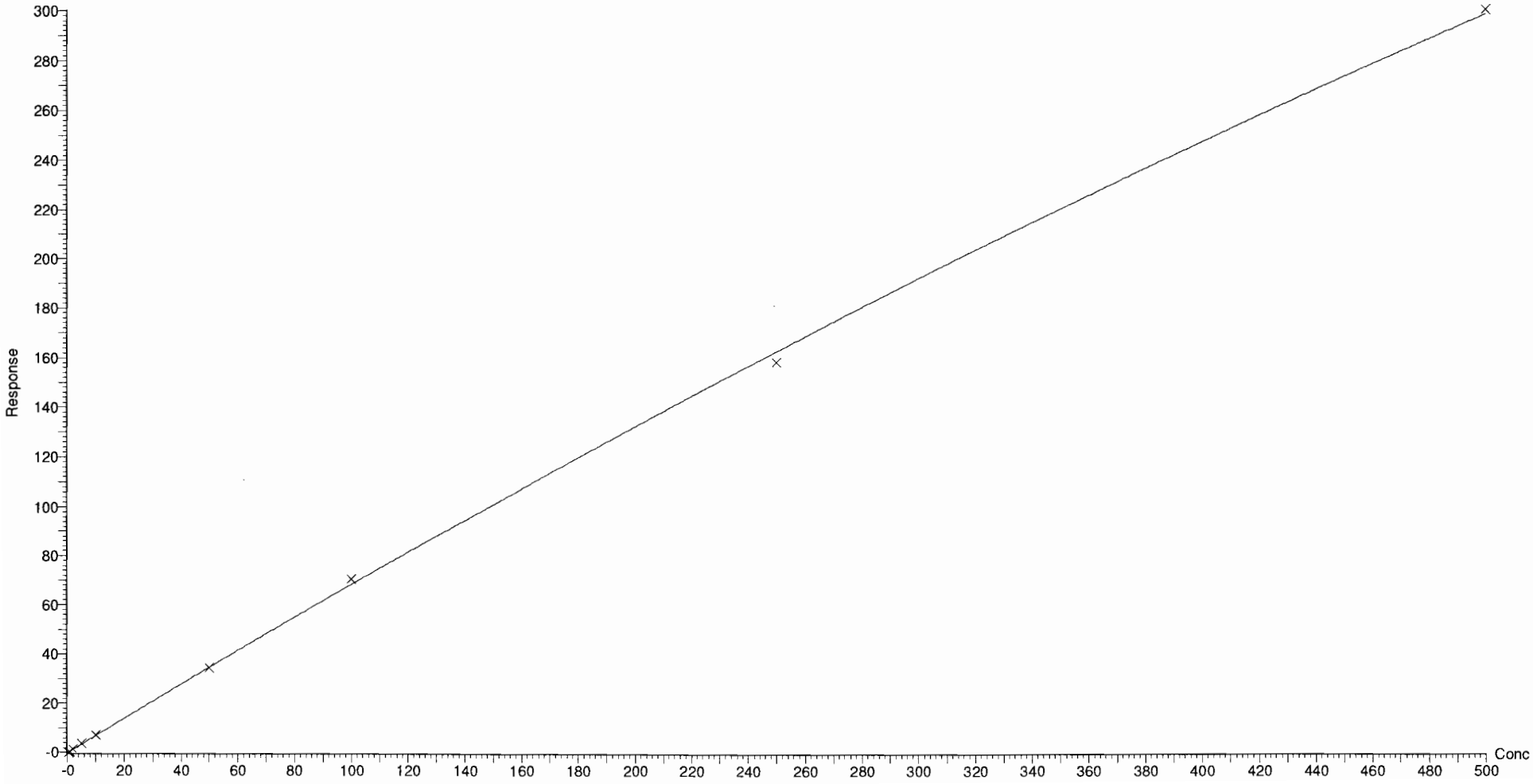
Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999350
Calibration curve: -0.00486929 * x^2 + 1.57536 * x + 0.00453743
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

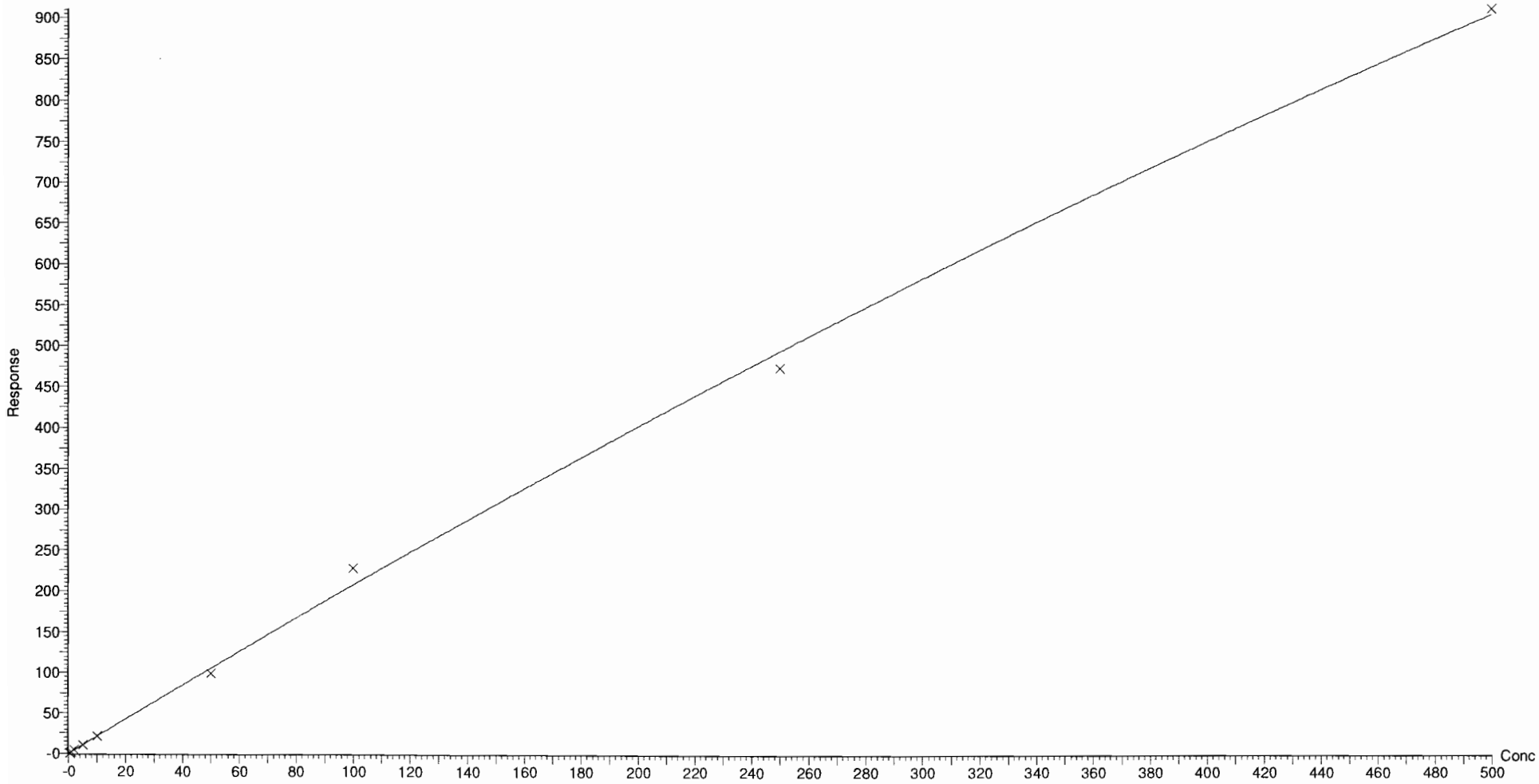
Compound name: PFNS
Coefficient of Determination: R^2 = 0.999502
Calibration curve: -0.00021817 * x^2 + 0.706595 * x + -0.104495
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.997852
Calibration curve: -0.000676442 * x^2 + 2.14579 * x + -0.130314
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

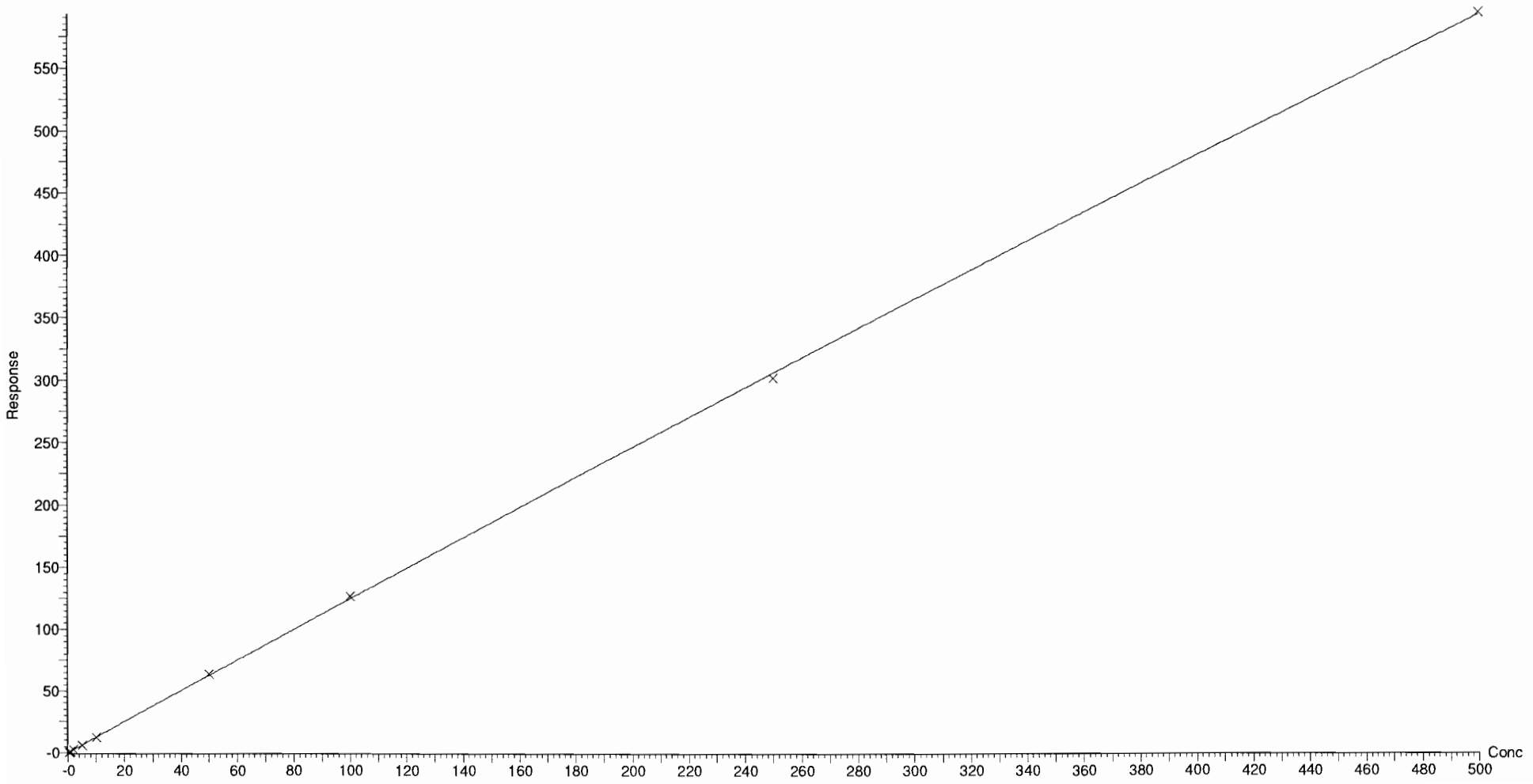


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:02:48 Pacific Standard Time

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999846
Calibration curve: -0.000162872 * x^2 + 1.26431 * x + -0.0171617
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



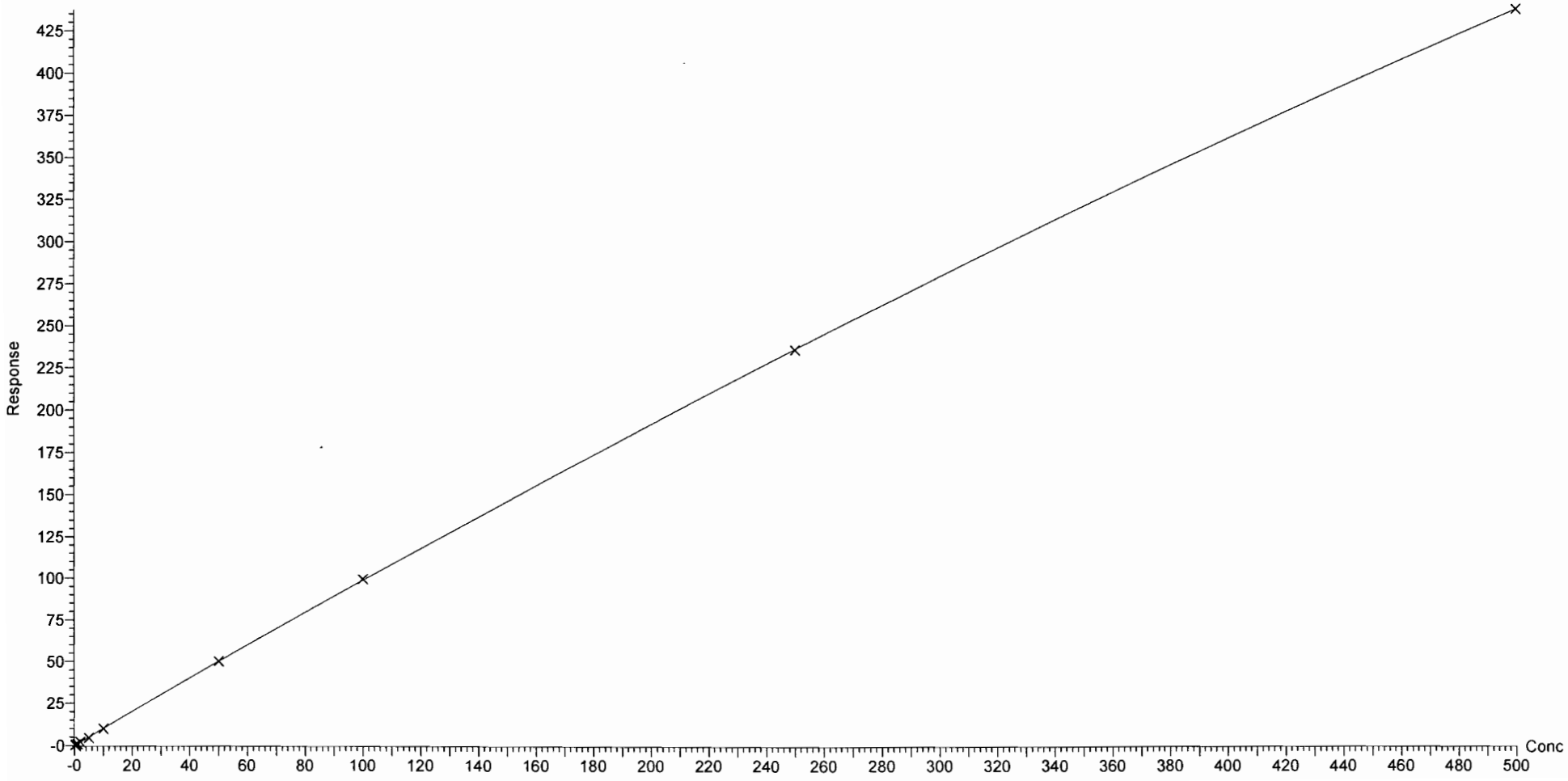
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999910
Calibration curve: -0.000285043 * x^2 + 1.01699 * x + 0.00259841
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

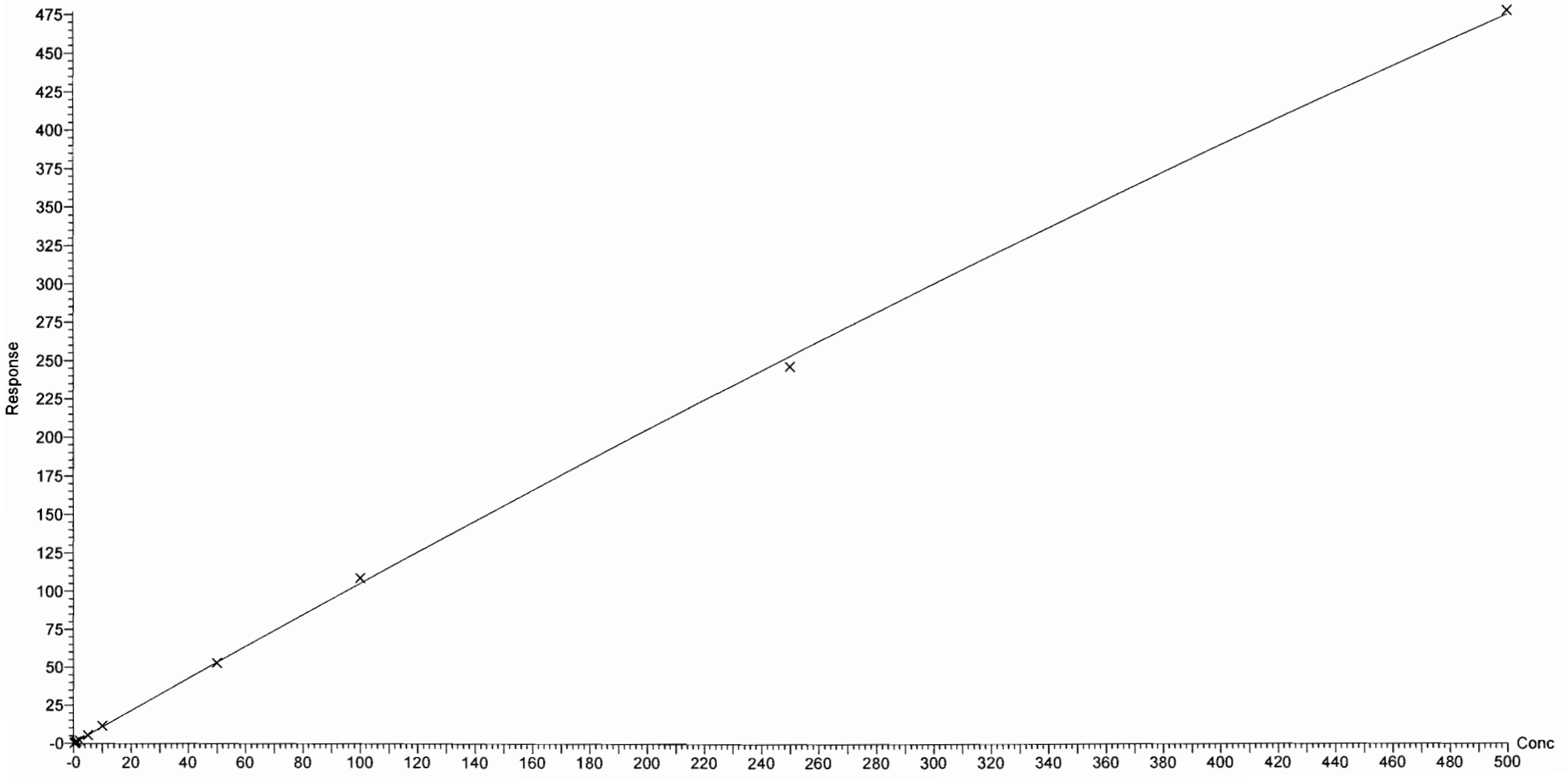


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

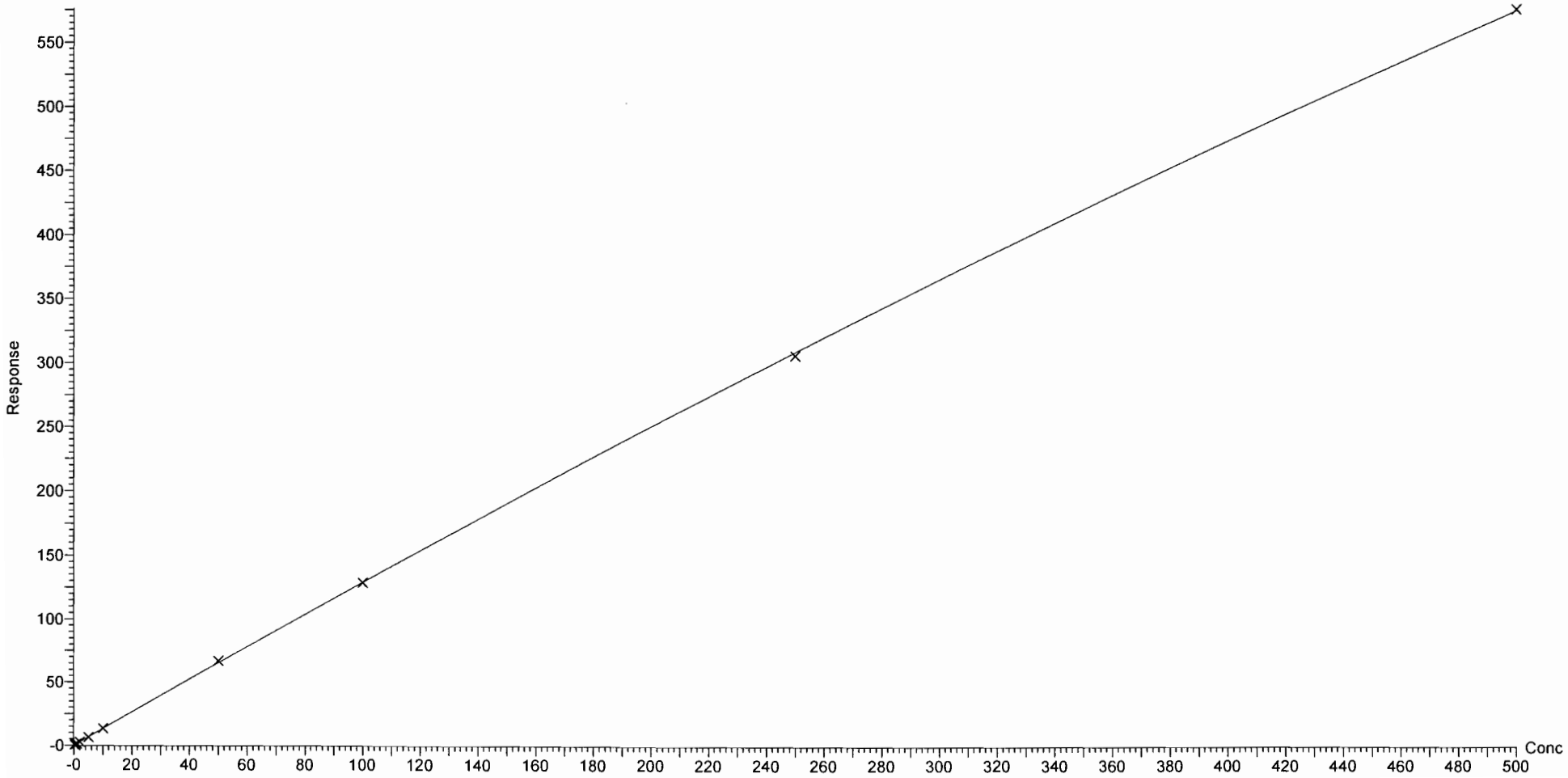
Compound name: PFDS
Coefficient of Determination: R^2 = 0.999564
Calibration curve: -0.00025762 * x^2 + 1.07743 * x + -0.0595269
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

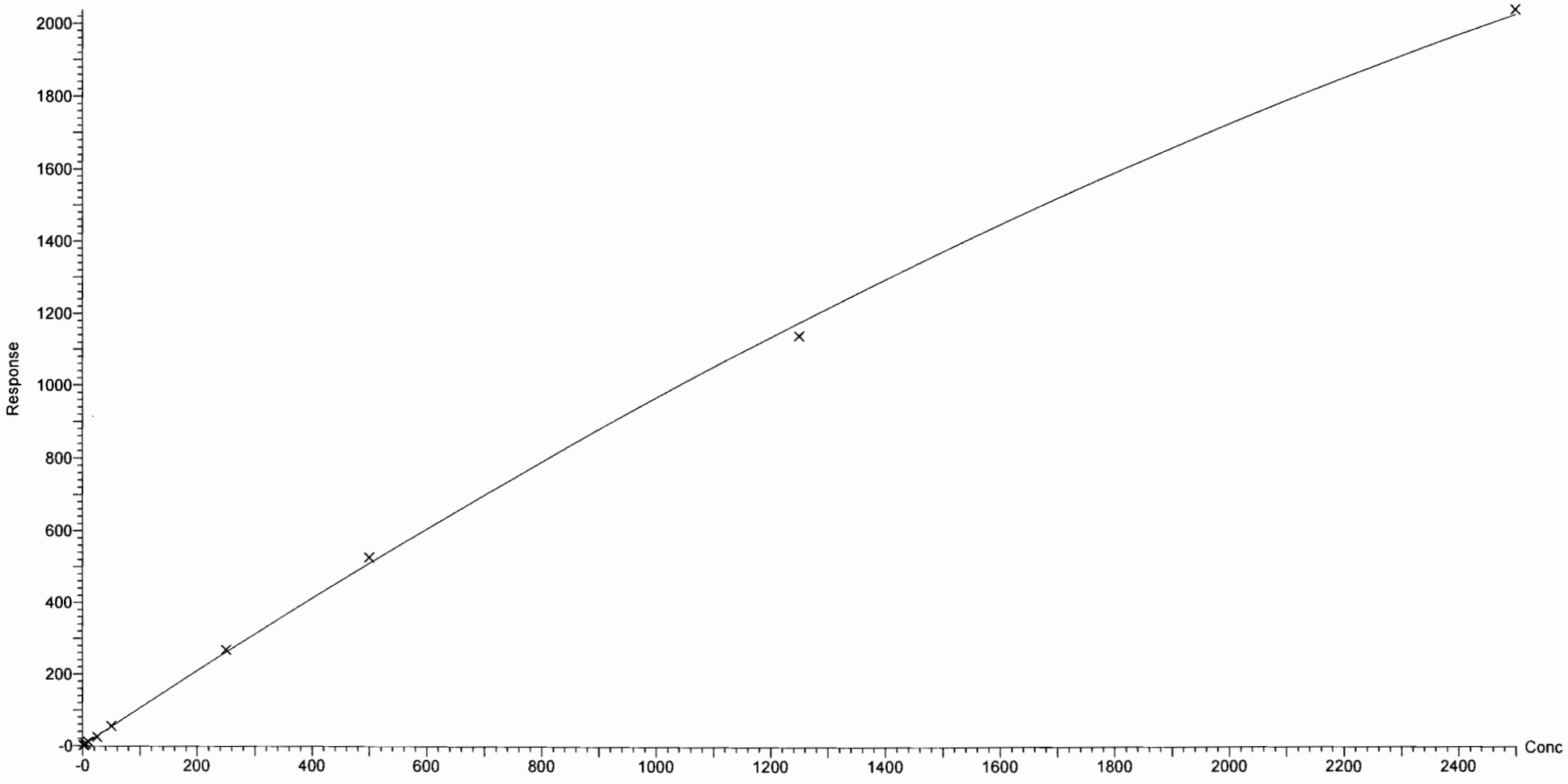
Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999915
Calibration curve: -0.000347708 * x^2 + 1.32325 * x + -0.0167654
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

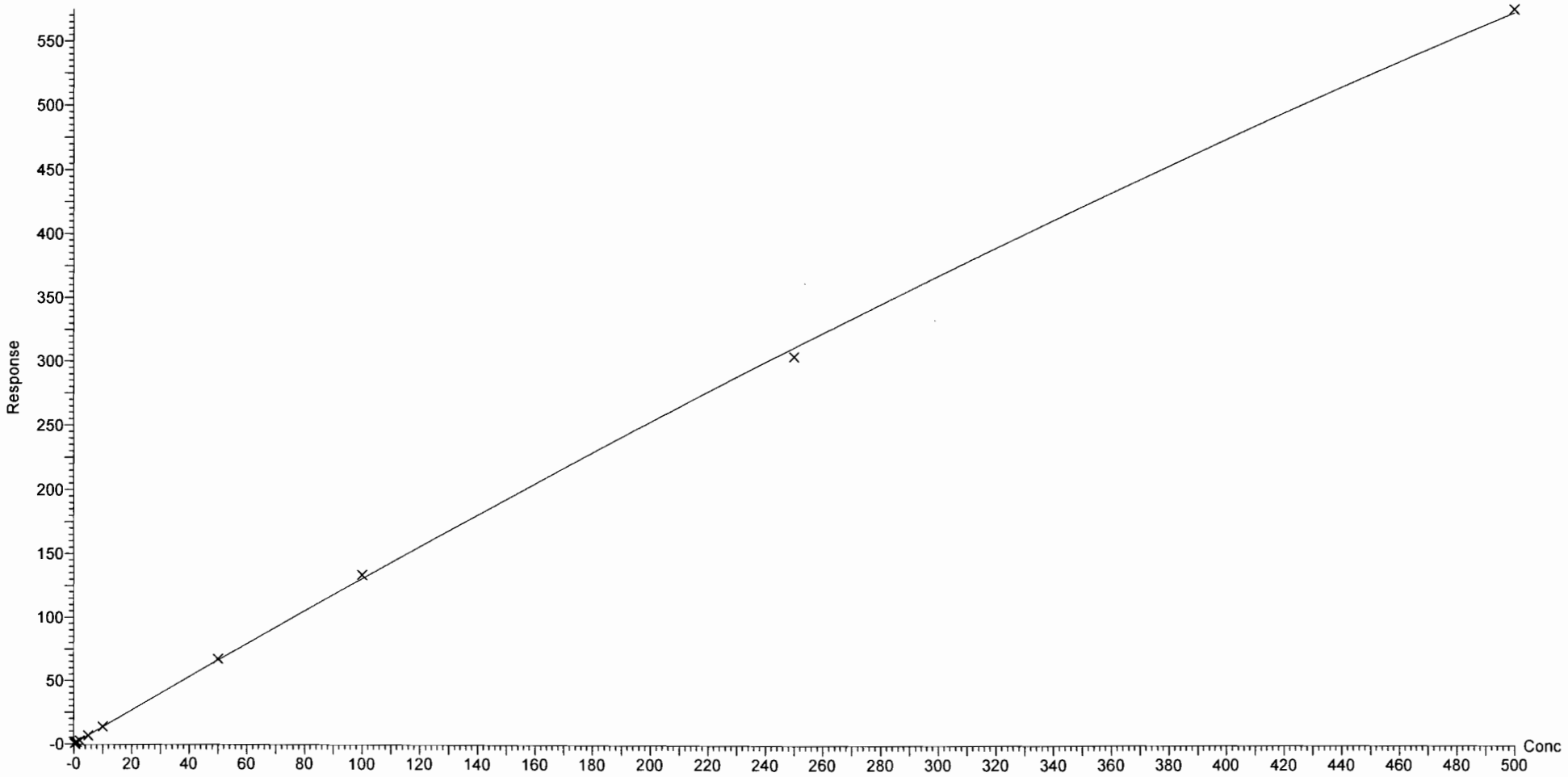
Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999390
Calibration curve: -0.00010549 * x^2 + 1.07251 * x + -0.108505
Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

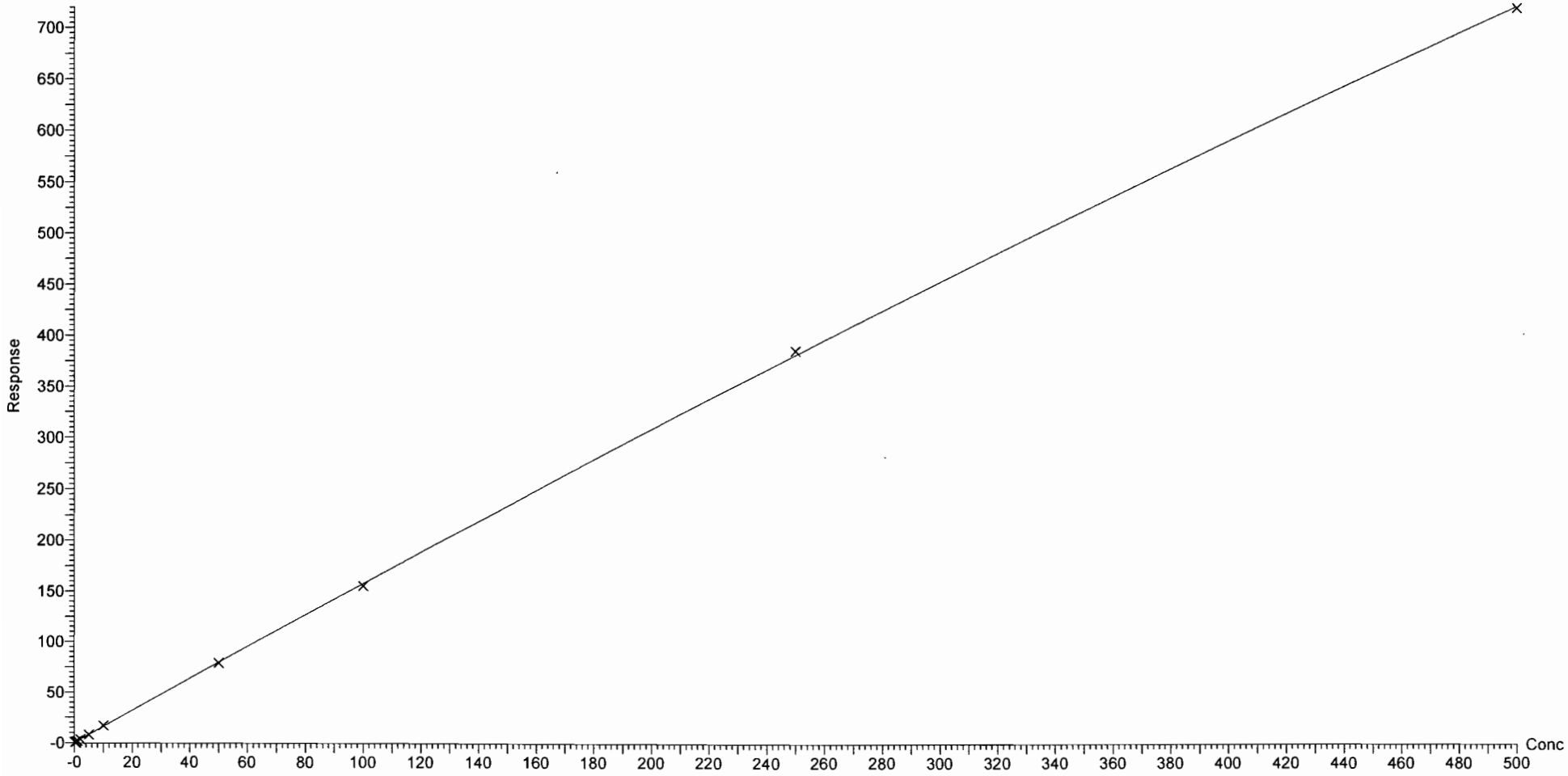
Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999740
Calibration curve: -0.000406642 * x^2 + 1.3473 * x + 0.00505024
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

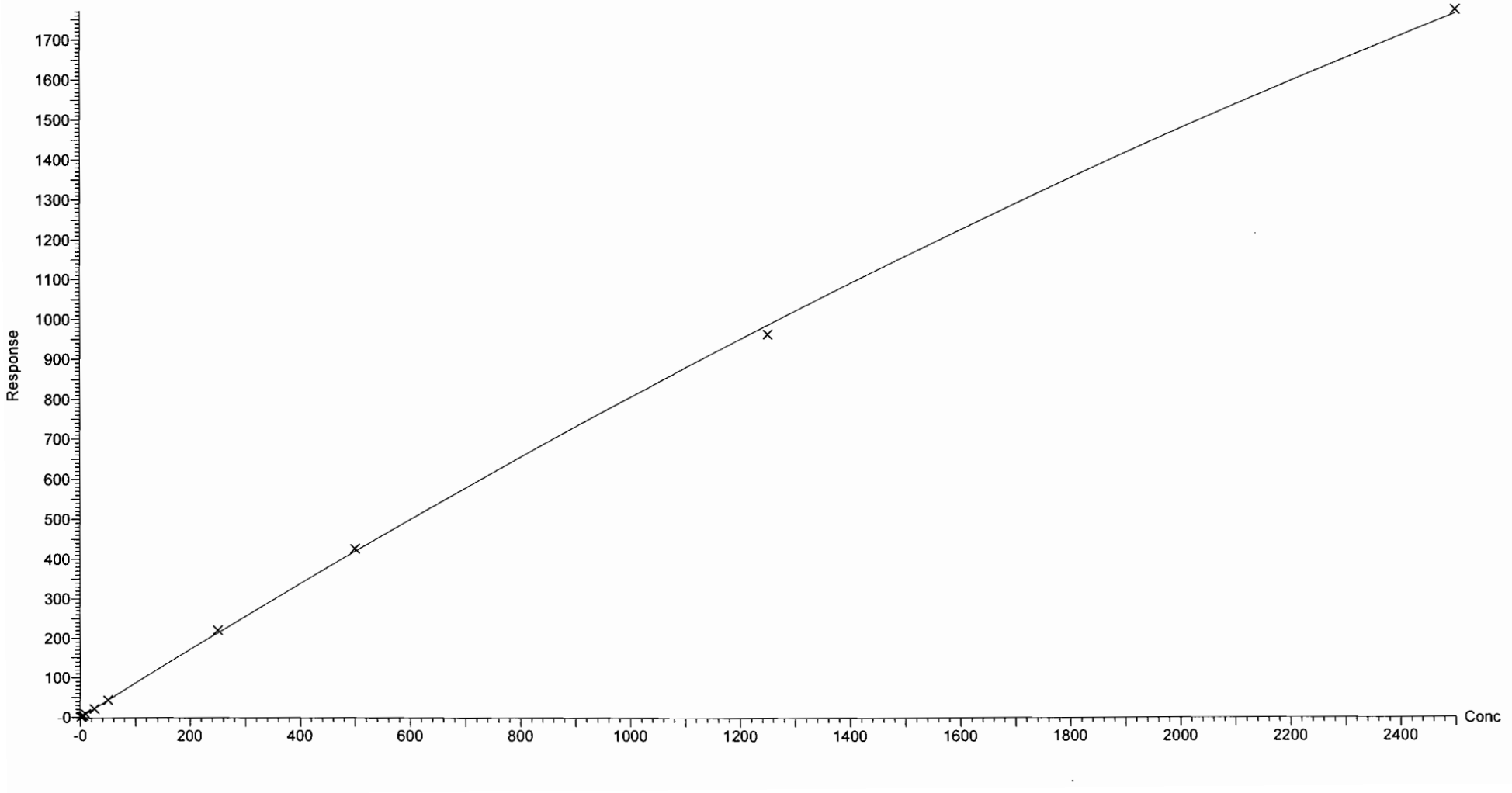
Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999880
Calibration curve: -0.000339863 * x^2 + 1.61037 * x + 0.0106903
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

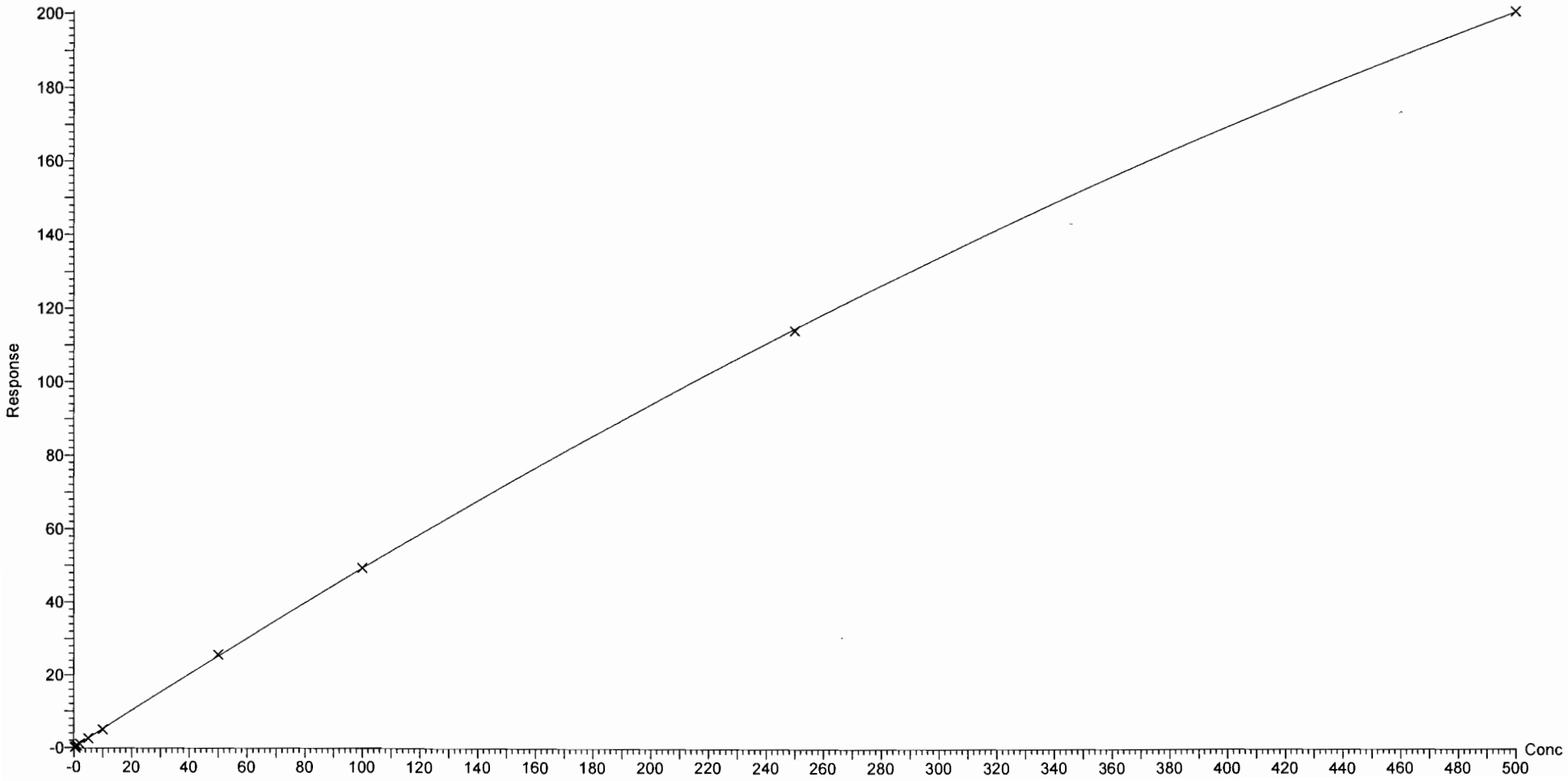
Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999701
Calibration curve: -6.74187e-005 * x^2 + 0.873431 * x + -0.157096
Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999954
Calibration curve: -0.000230365 * x^2 + 0.516071 * x + 0.0214432
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

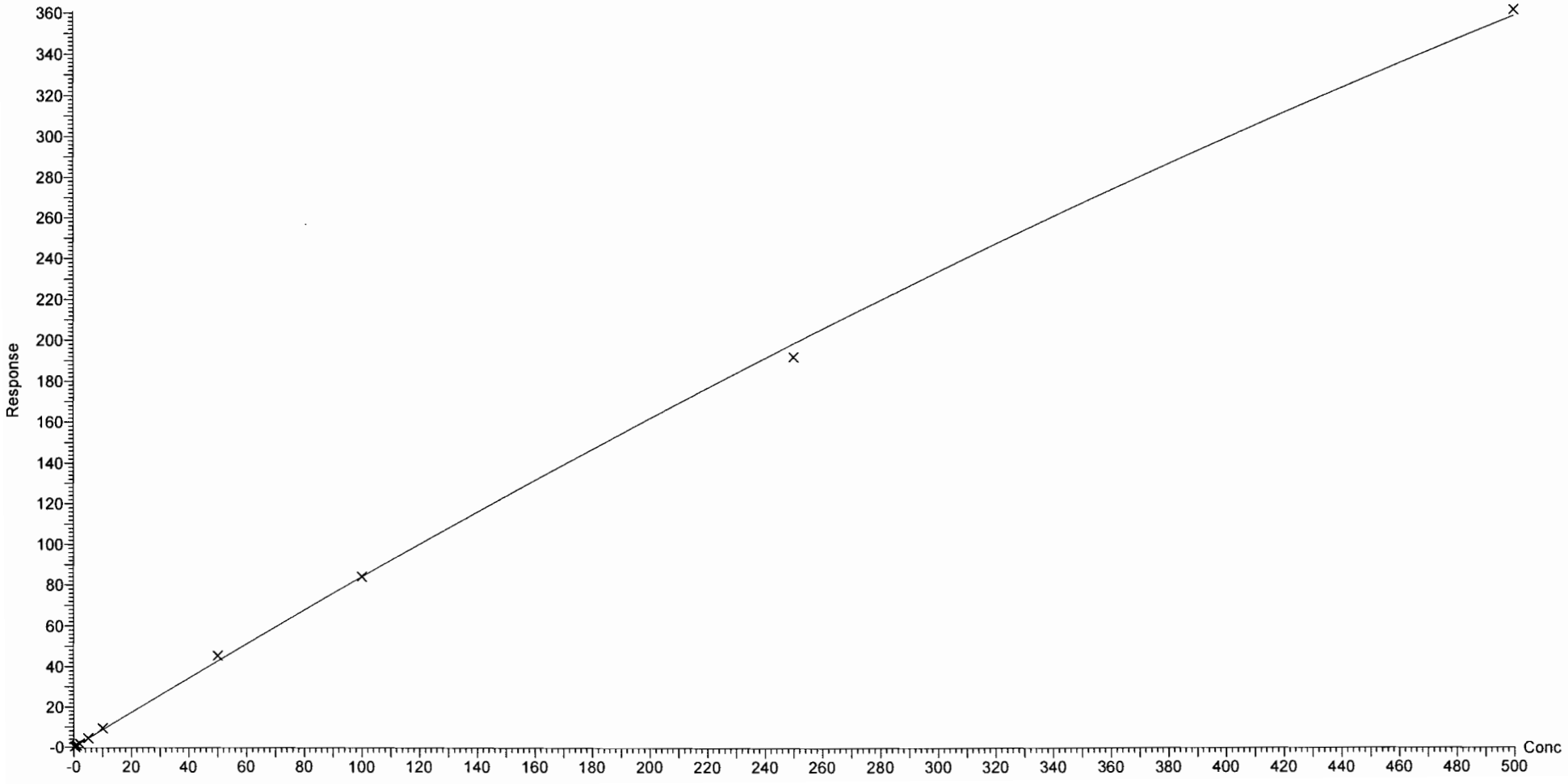


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

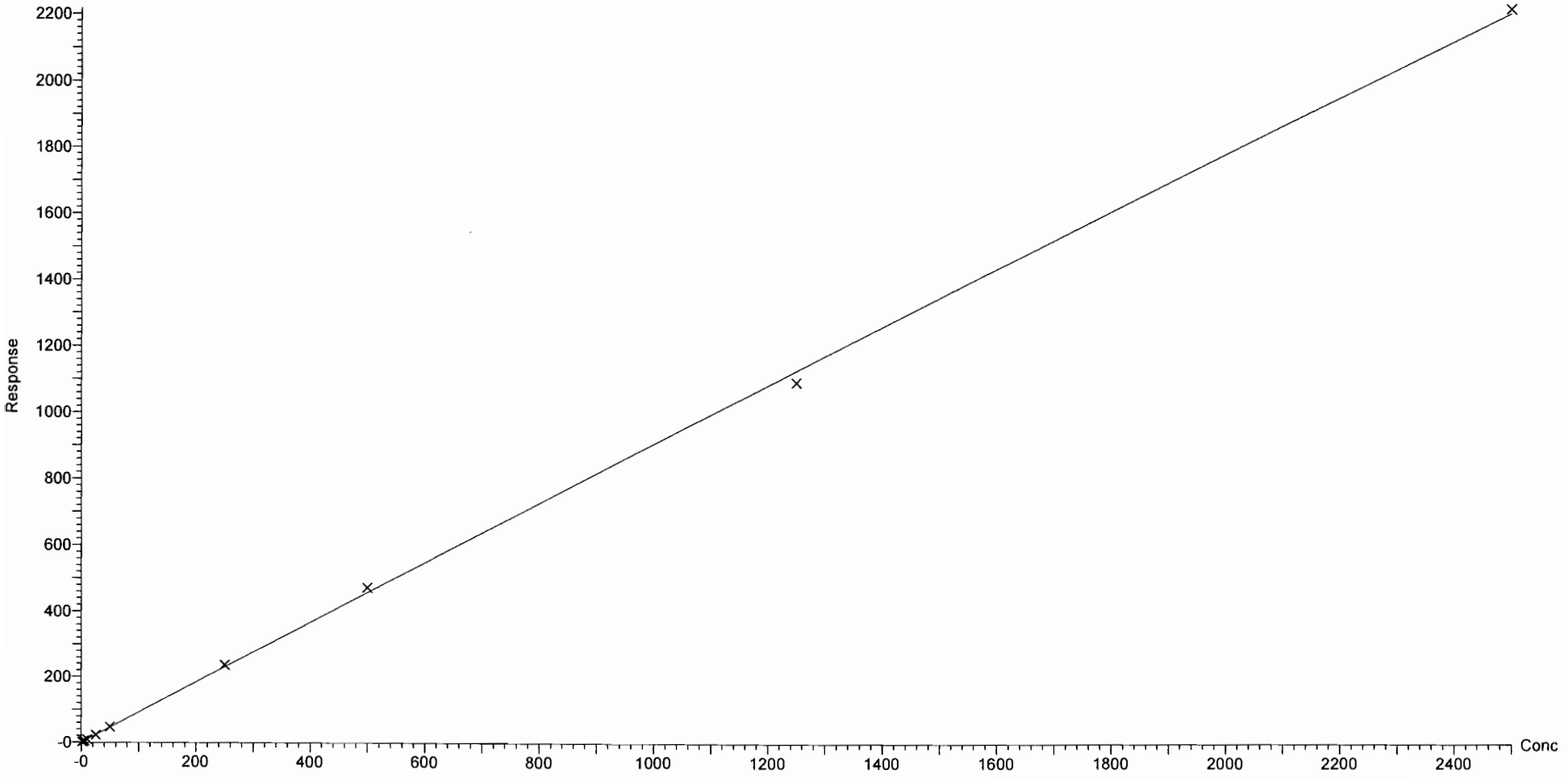
Compound name: PFODA
Coefficient of Determination: R^2 = 0.999244
Calibration curve: -0.000313067 * x^2 + 0.872352 * x + 0.0186819
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

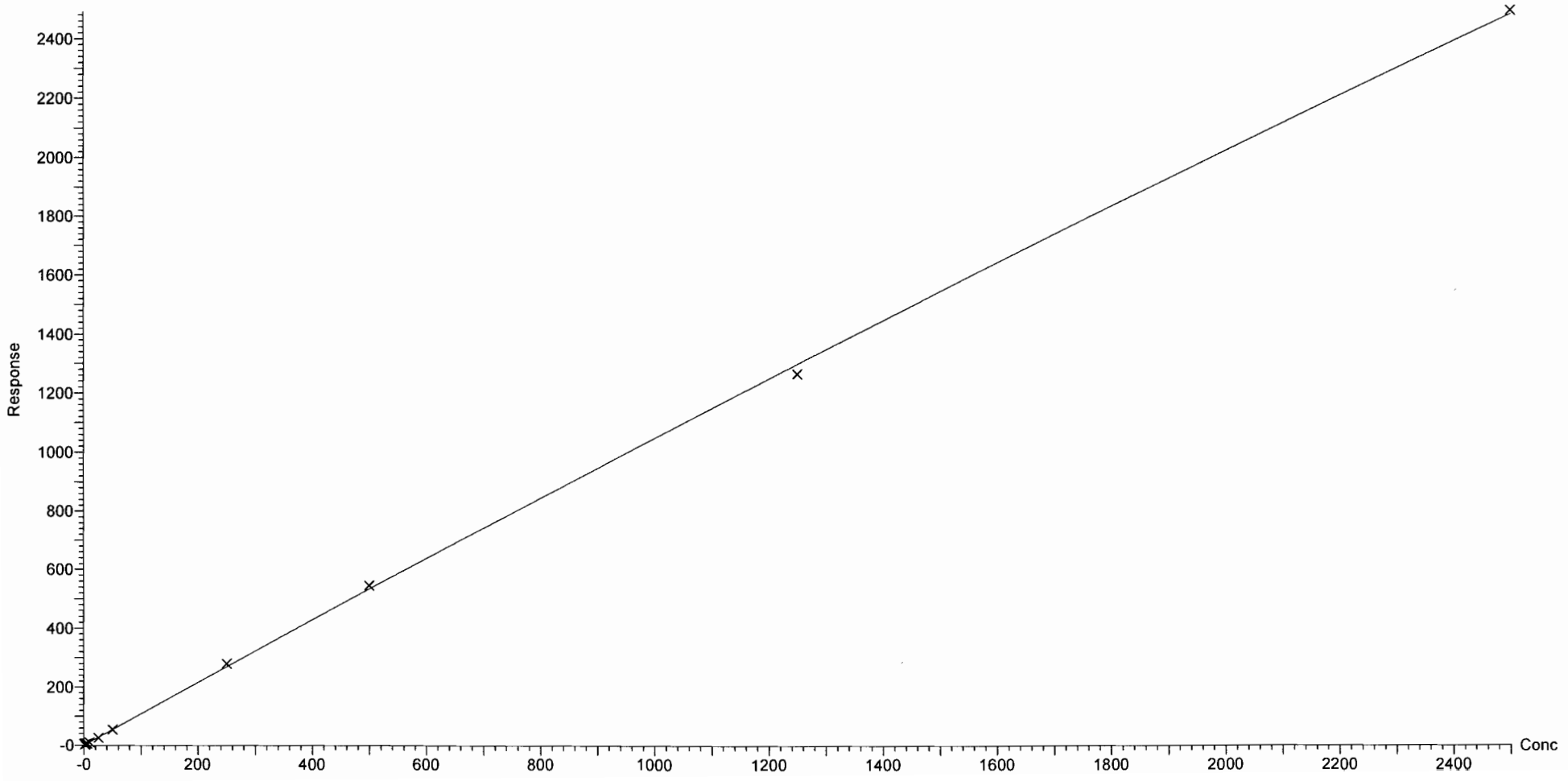
Compound name: N-MeFOSE
Coefficient of Determination: R^2 = 0.999504
Calibration curve: -1.65942e-005 * x^2 + 0.922354 * x + -0.0629456
Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 15:03:22 Pacific Standard Time

Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.999621
Calibration curve: -3.7557e-005 * x^2 + 1.08551 * x + 0.00269404
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



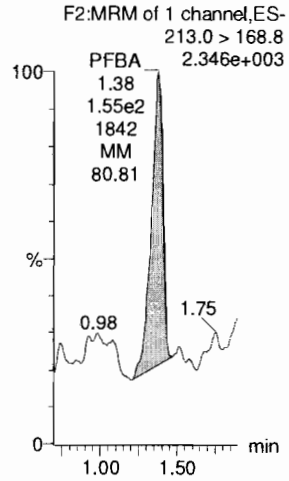
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

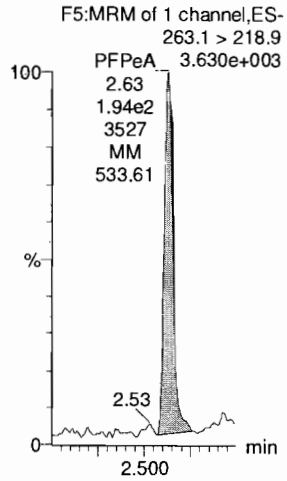
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

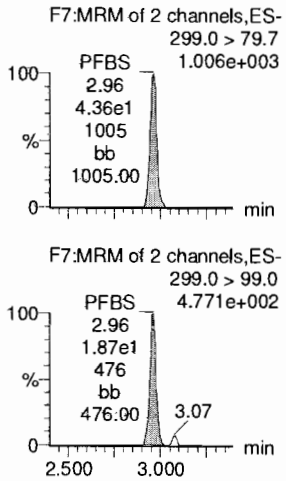
PFBA



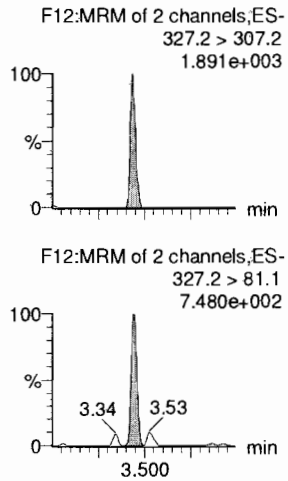
PFPeA



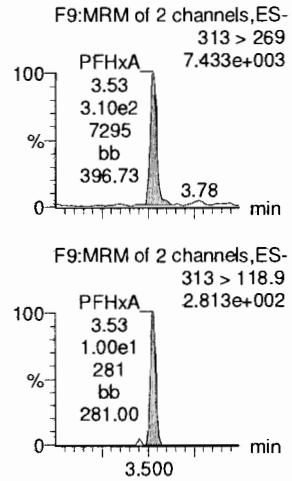
PFBS



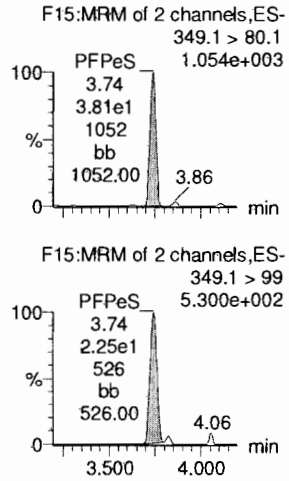
4:2 FTS



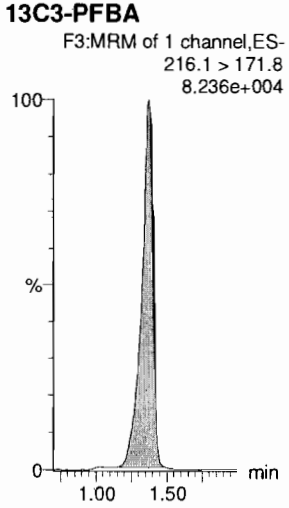
PFHxA



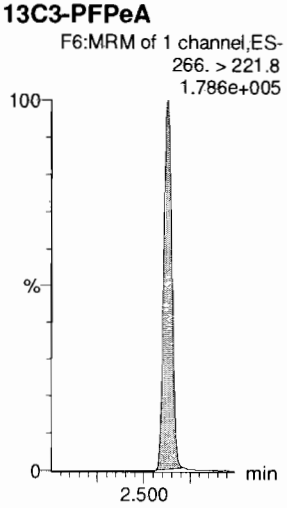
PFPeS



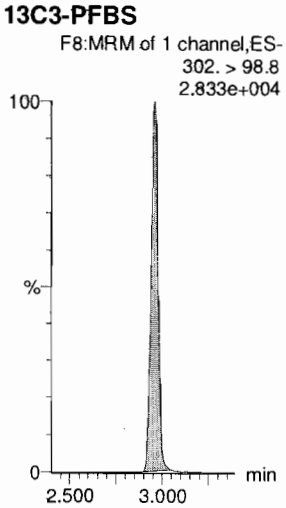
13C3-PFBA



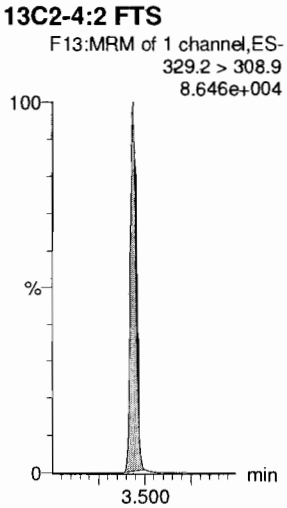
13C3-PFPeA



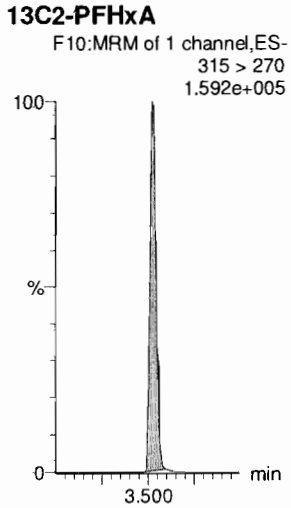
13C3-PFBS



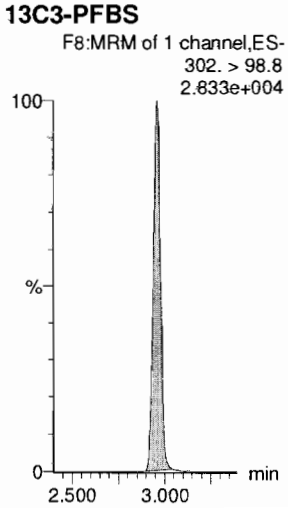
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

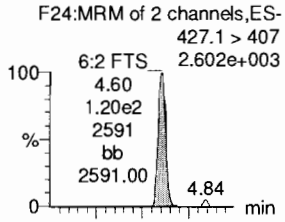


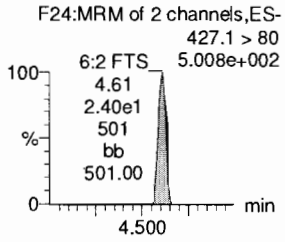
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

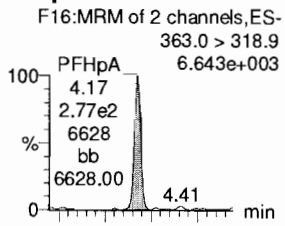
Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

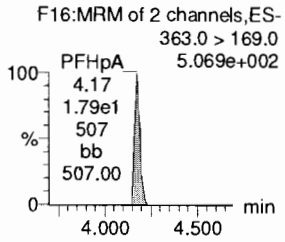
6:2 FTS



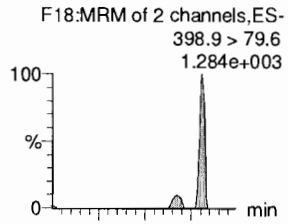


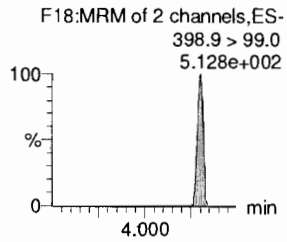
PFHpA



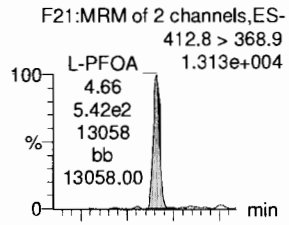


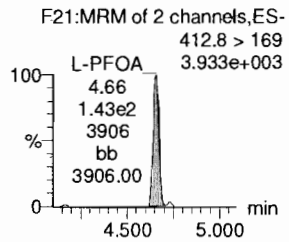
L-PFHxS



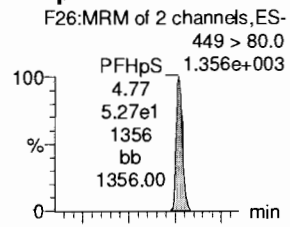


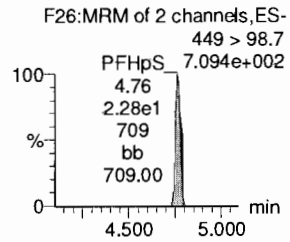
L-PFOA



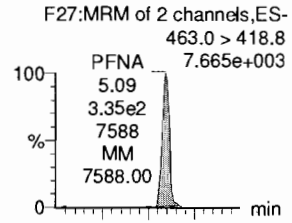


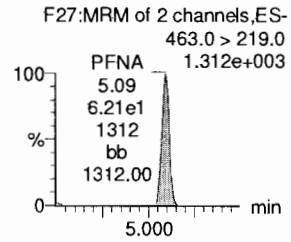
PFHpS



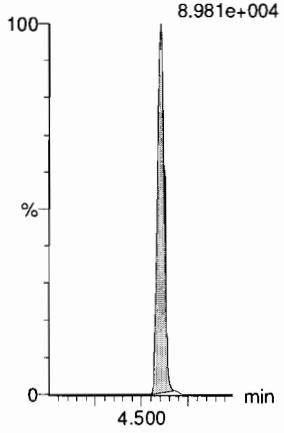


PFNA

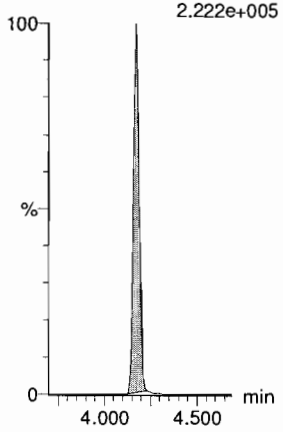




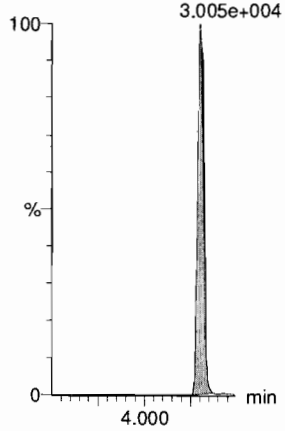
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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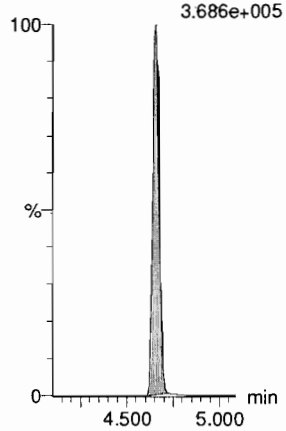
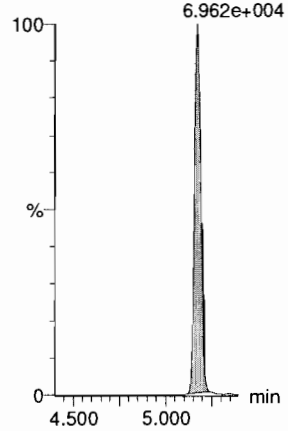
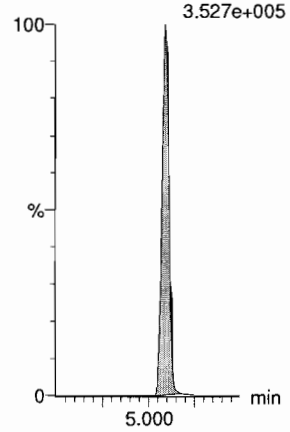


13C8-PFOS



13C5-PFNA



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Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

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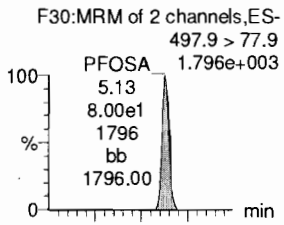

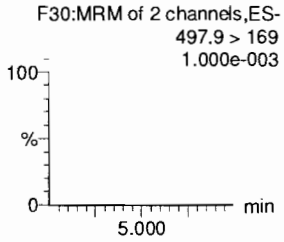

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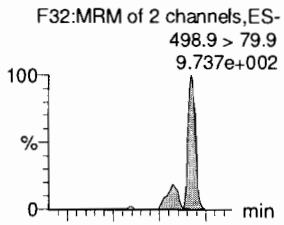

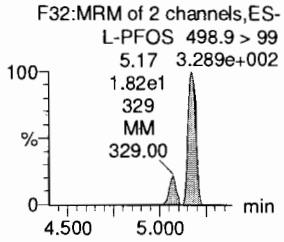

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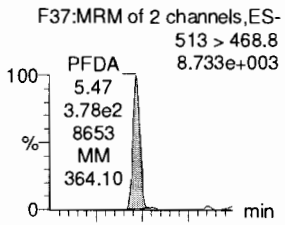
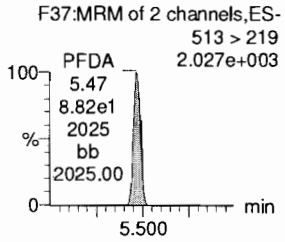
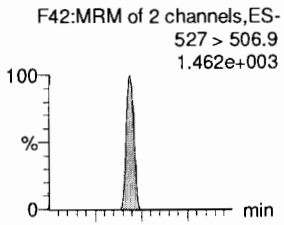
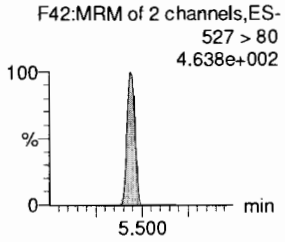




8:2 FTS





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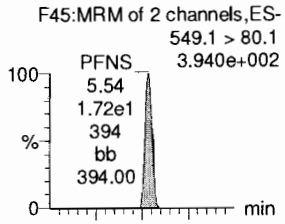

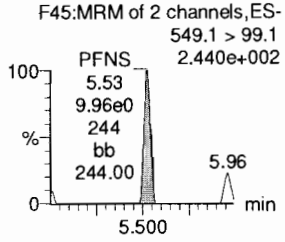

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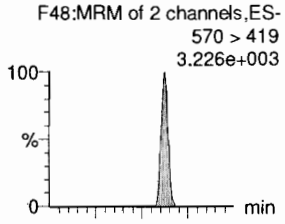
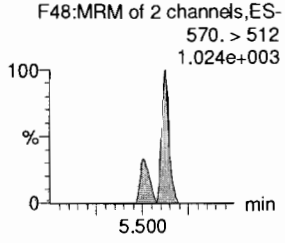
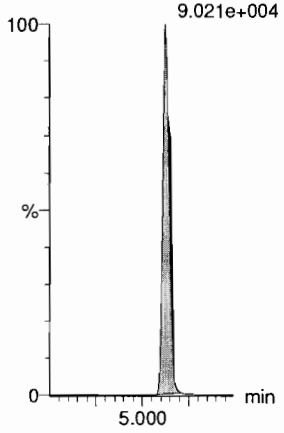
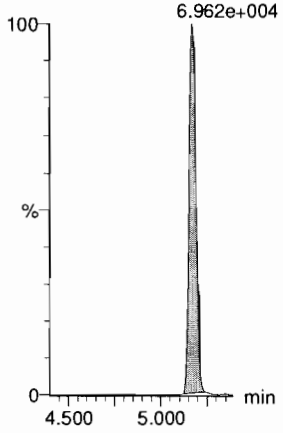




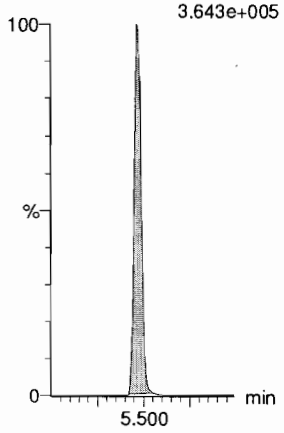
13C8-PFOSA



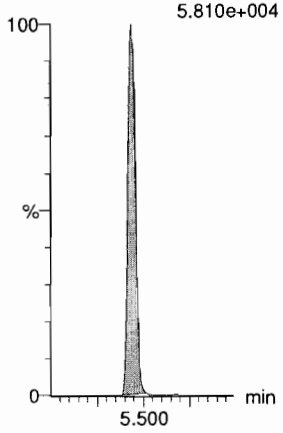
13C8-PFOS



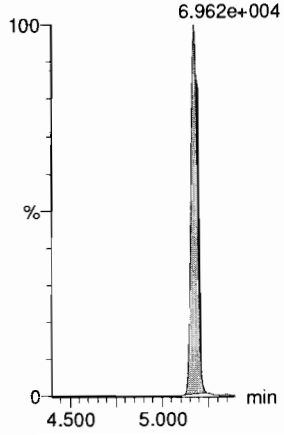
13C2-PFDA



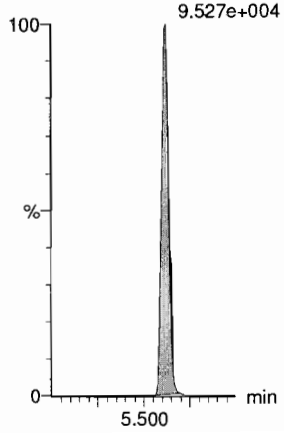
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA



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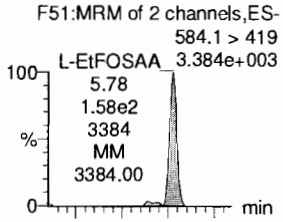
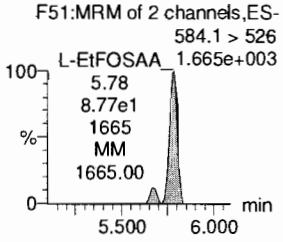
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

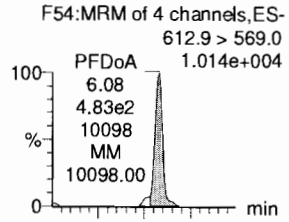
Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

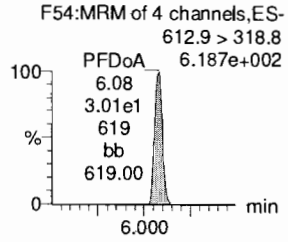
L-EtFOSAA





PFDoA





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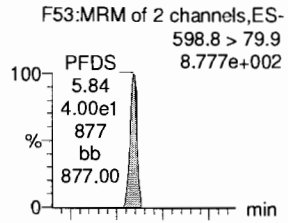

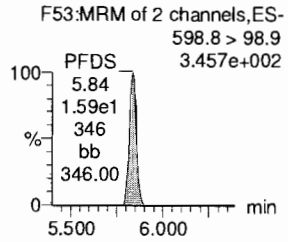

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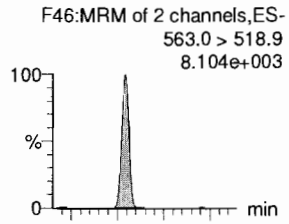

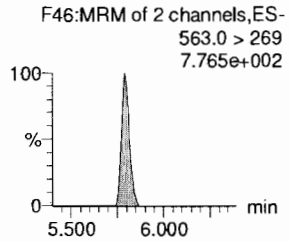

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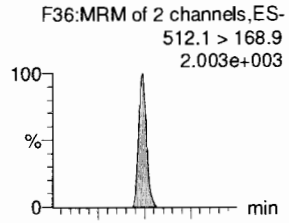
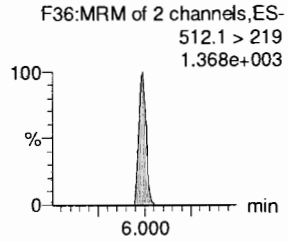
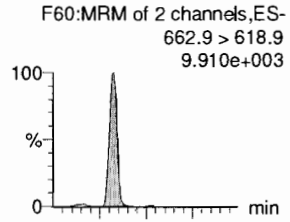
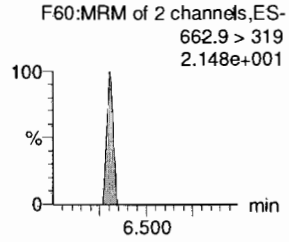


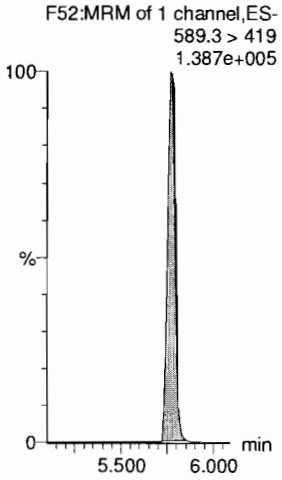


PFTrDA

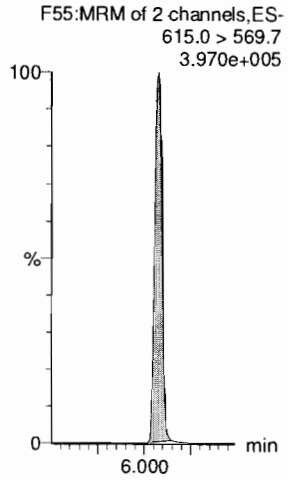




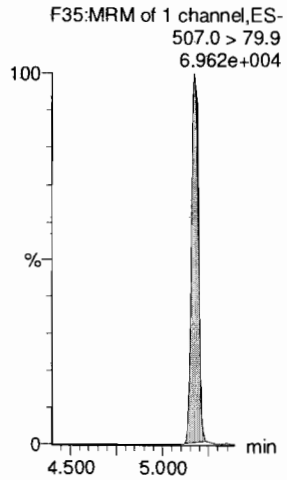
d5-N-EtFOSAA



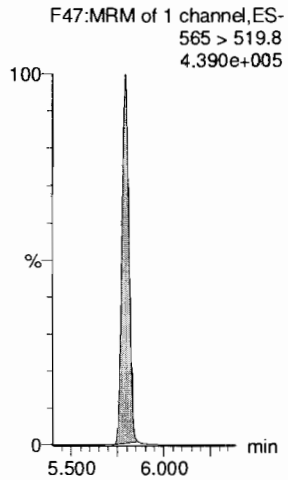
13C2-PFDoA



13C8-PFOS



13C2-PFUdA



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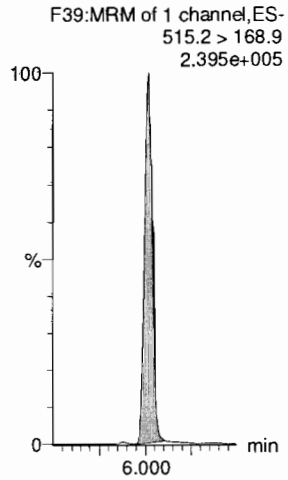

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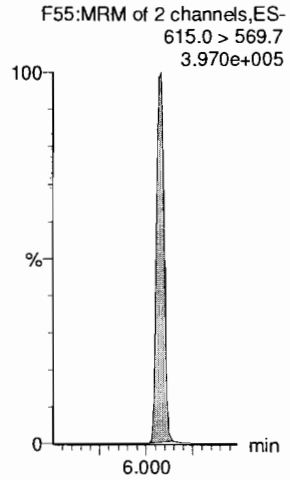

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Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

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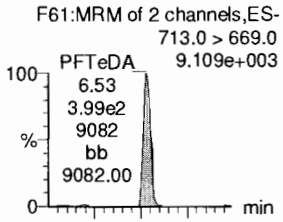

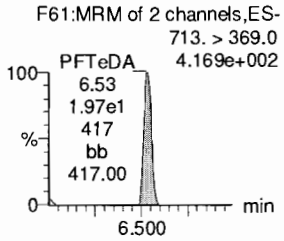

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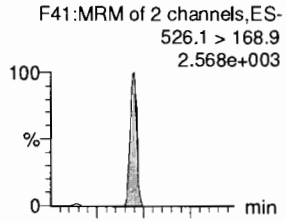

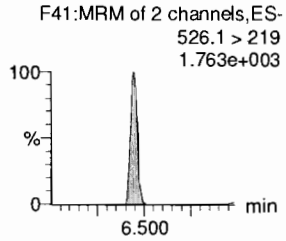

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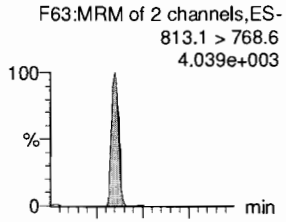

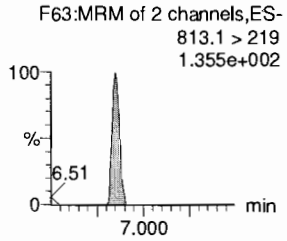

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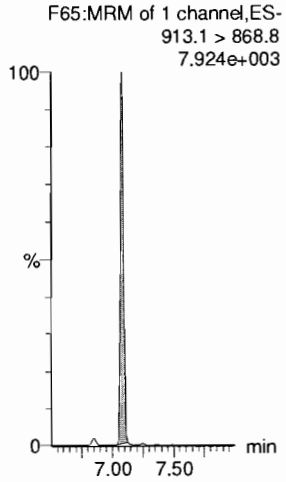
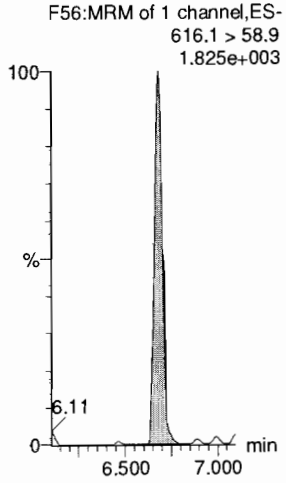
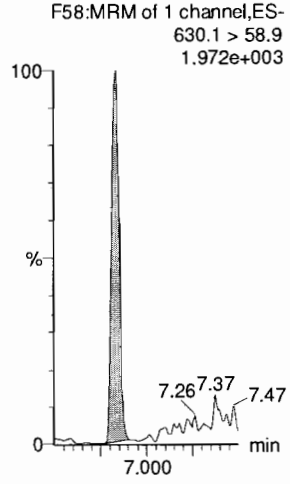


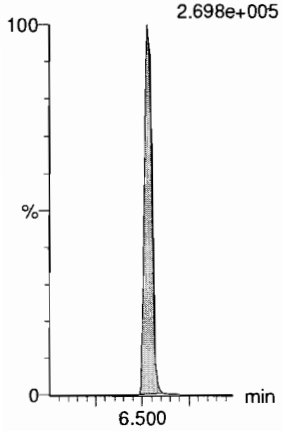
N-MeFOSE



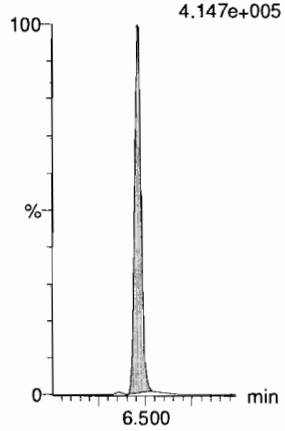
N-EtFOSE



13C2-PFTeDA



d5-N-ETFOSA



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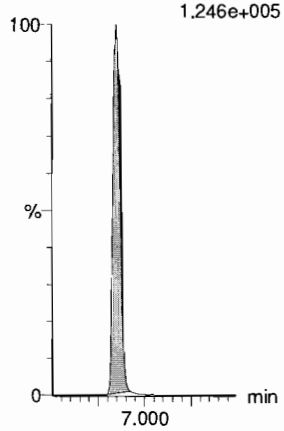
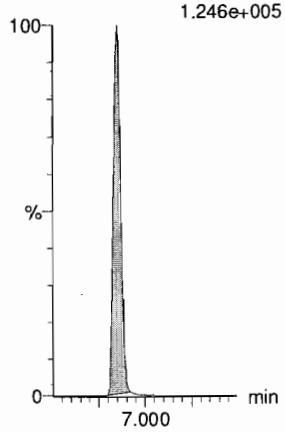
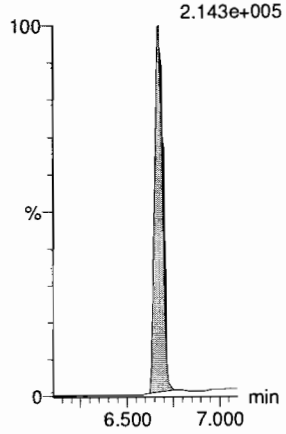


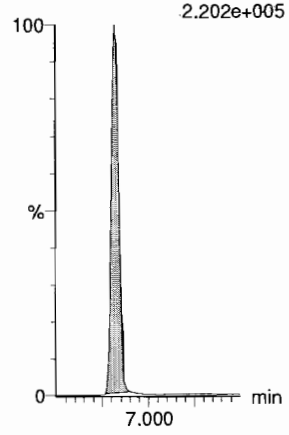
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_3, Date: 04-Dec-2018, Time: 11:55:12, ID: ST181204M1-1 PFC CS-2 18K3001, Description: PFC CS-2 18K3001

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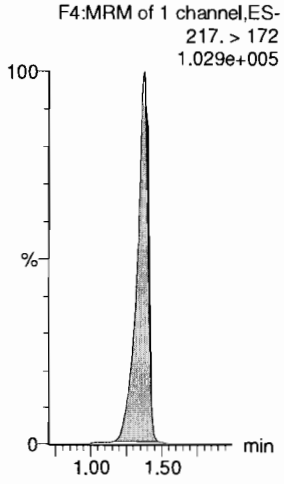

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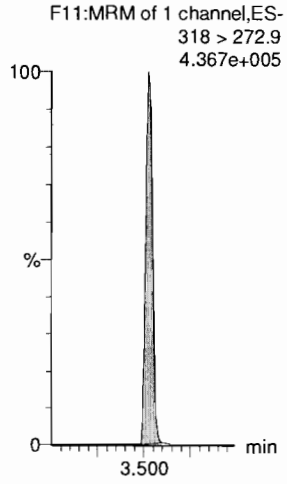
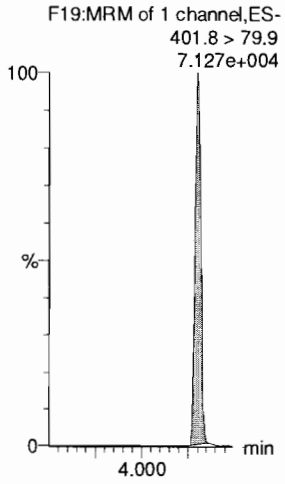
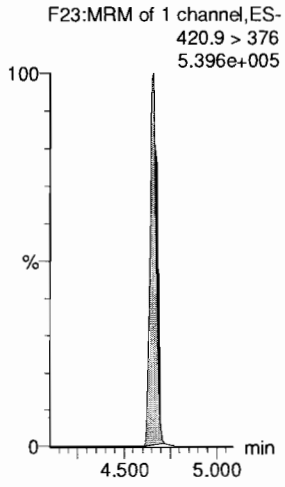


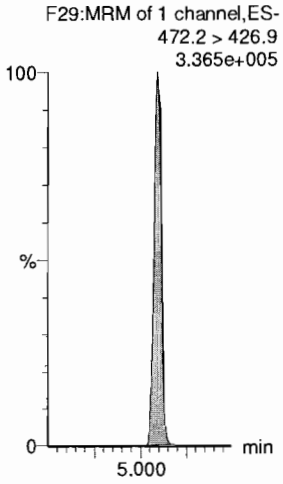
13C3-PFHxS



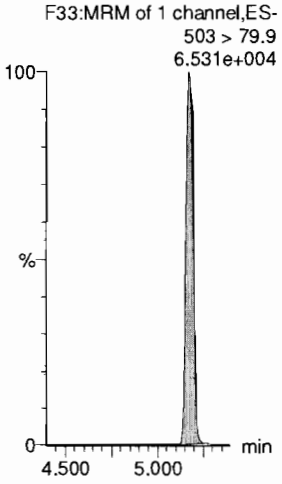
13C8-PFOA



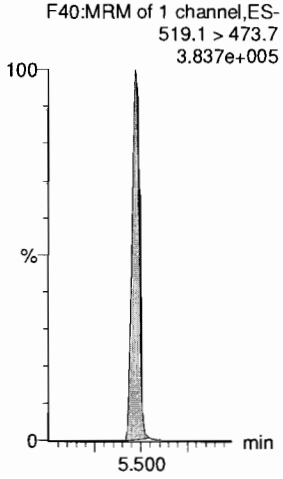
13C9-PFNA



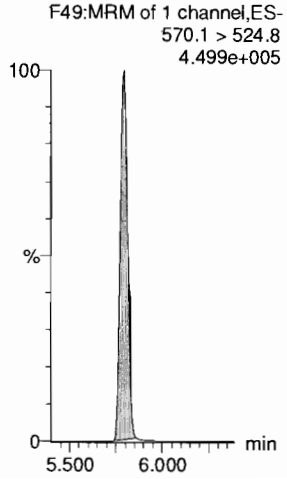
13C4-PFOS



13C6-PFDA



13C7-PFUdA

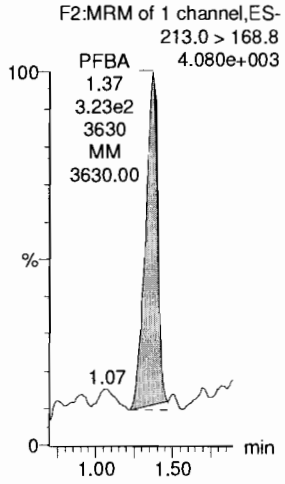


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

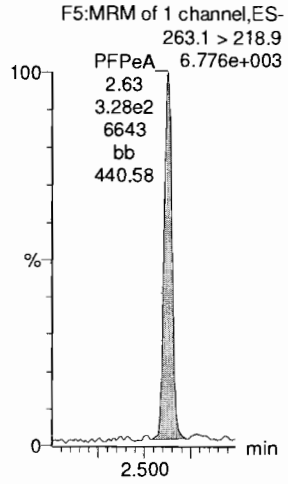
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_4, Date: 04-Dec-2018, Time: 12:05:51, ID: ST181204M1-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

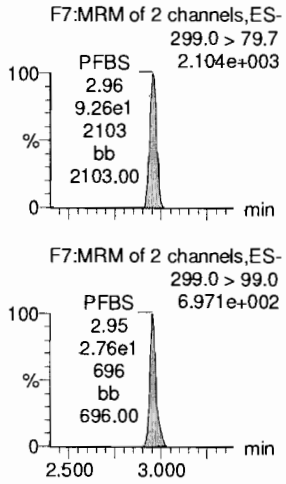
PFBA



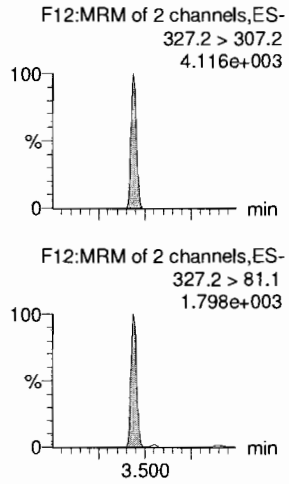
PFPeA



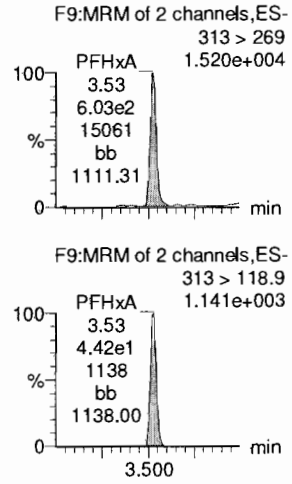
PFBS



4:2 FTS



PFHxA



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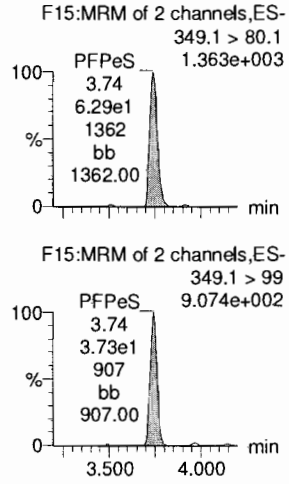
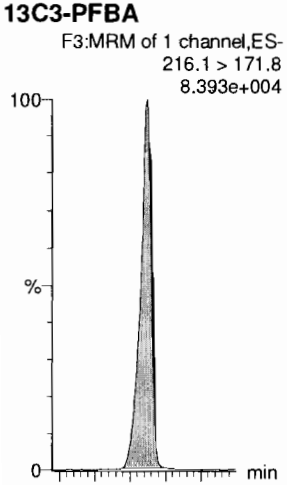
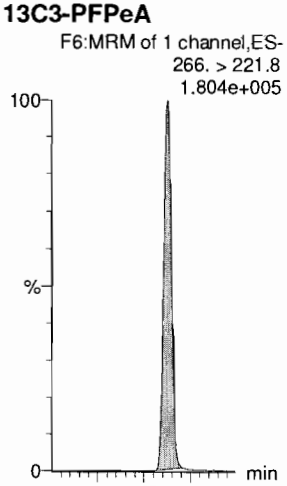


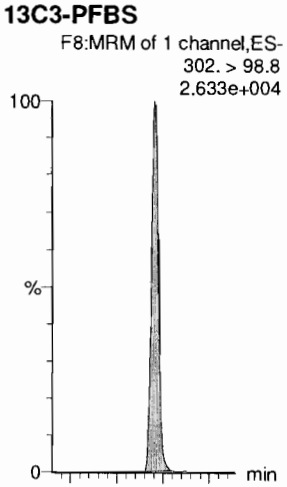
13C3-PFBA



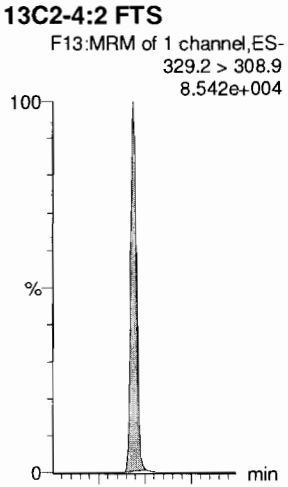
13C3-PFPeA



13C3-PFBS



13C2-4:2 FTS



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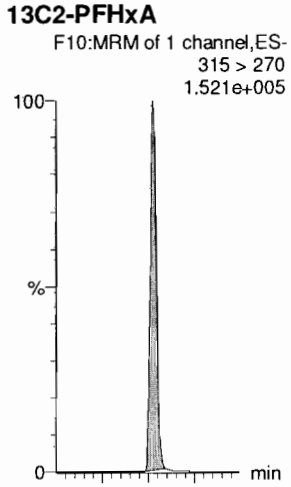
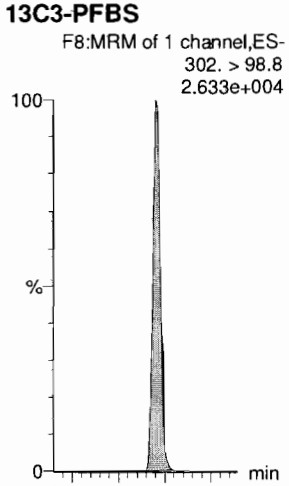


13C3-PFBS

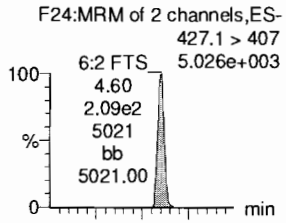


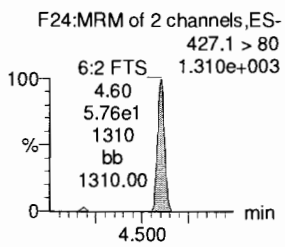
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

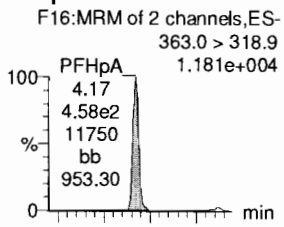
Name: 181204M1_4, Date: 04-Dec-2018, Time: 12:05:51, ID: ST181204M1-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

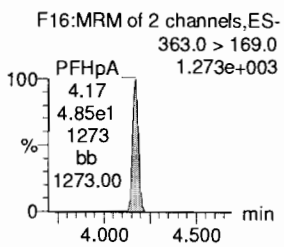
6:2 FTS



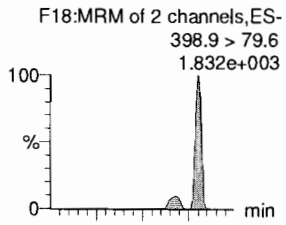


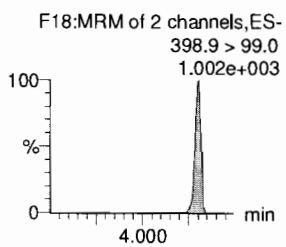
PFHpA



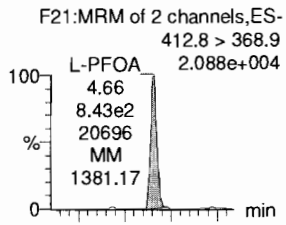


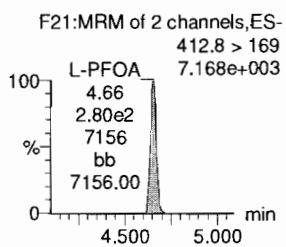
L-PFHxS



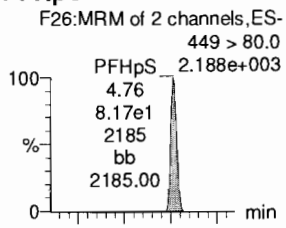


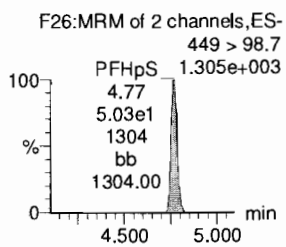
L-PFOA



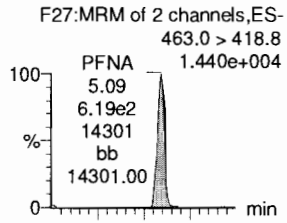


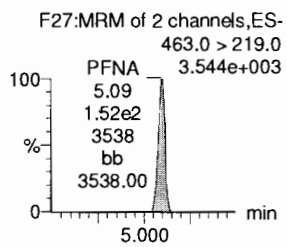
PFHpS



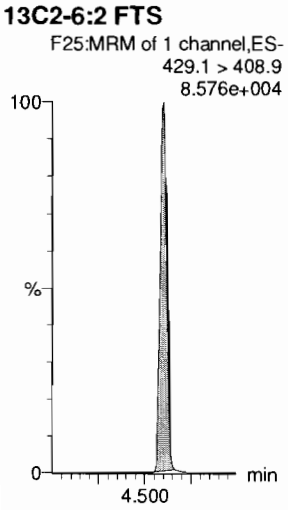


PFNA

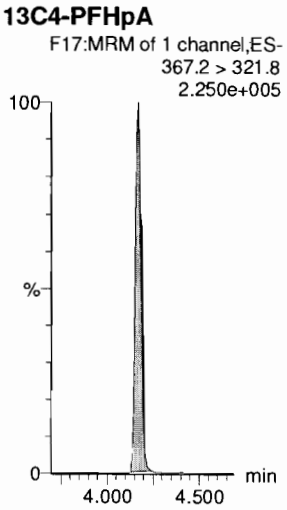




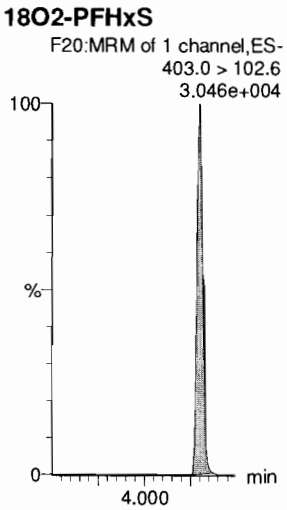
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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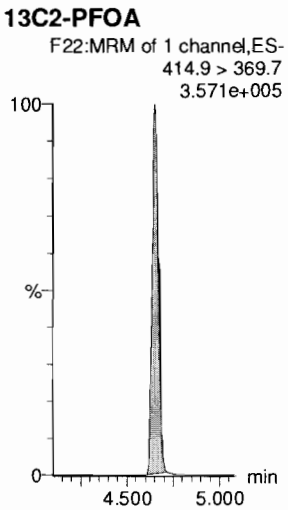
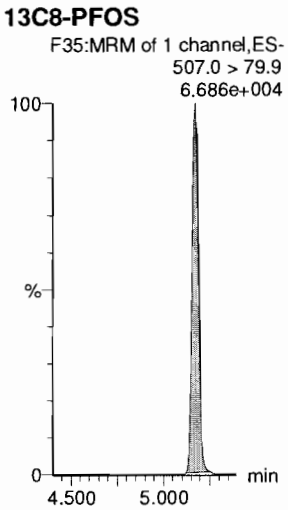
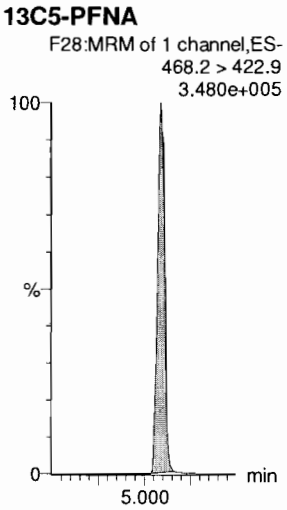


13C8-PFOS



13C5-PFNA

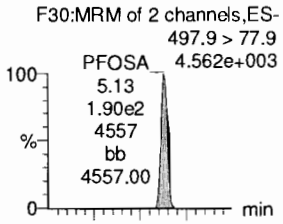


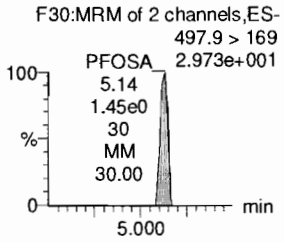
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

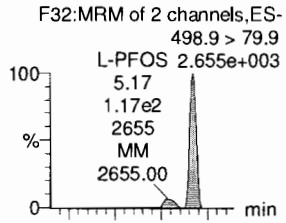
Name: 181204M1_4, Date: 04-Dec-2018, Time: 12:05:51, ID: ST181204M1-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

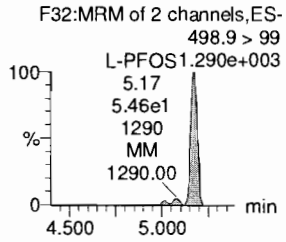
PFOSA



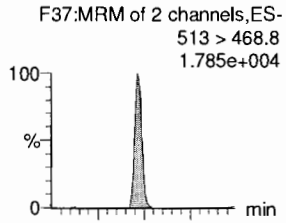


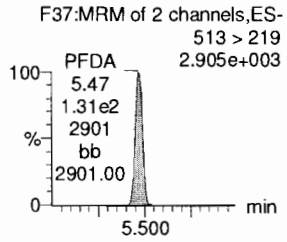
L-PFOS



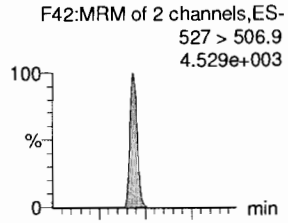


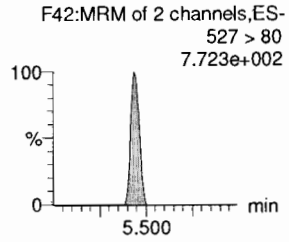
PFDA





8:2 FTS





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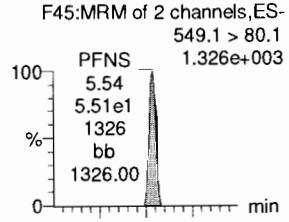
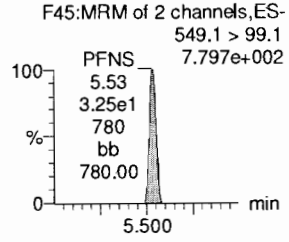
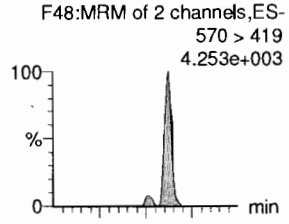
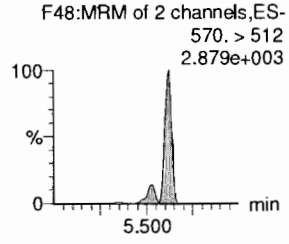


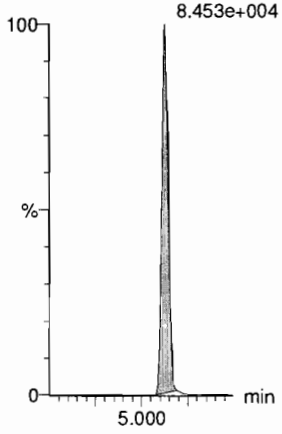


L-MeFOSAA

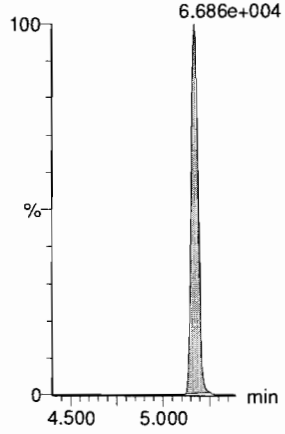




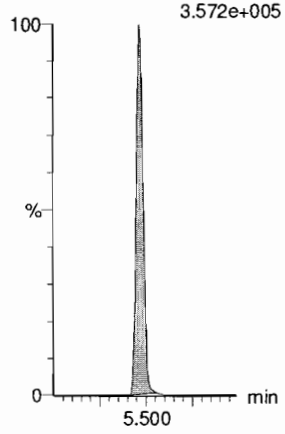
13C8-PFOSA



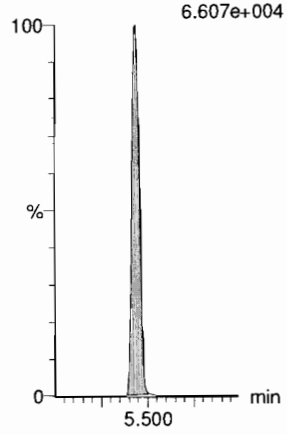
13C8-PFOS



13C2-PFDA



13C2-8:2 FTS



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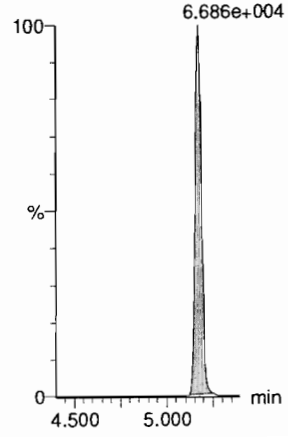
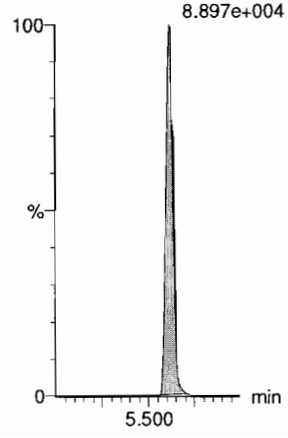


d3-N-MeFOSAA

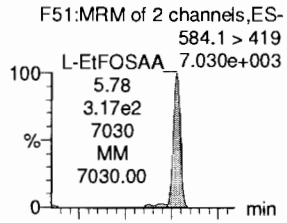


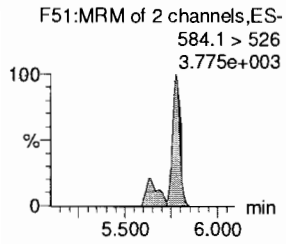
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

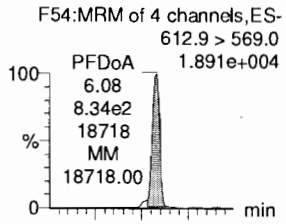
Name: 181204M1_4, Date: 04-Dec-2018, Time: 12:05:51, ID: ST181204M1-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

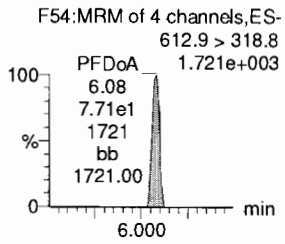
L-EtFOSAA





PFDoA





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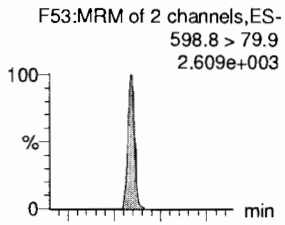
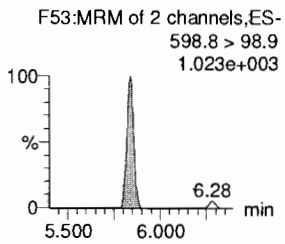
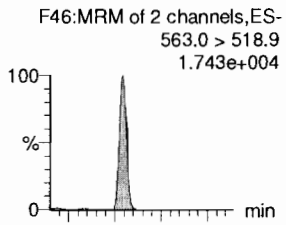
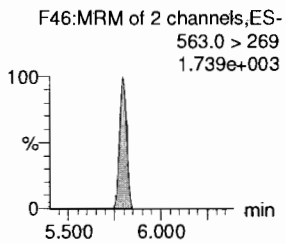


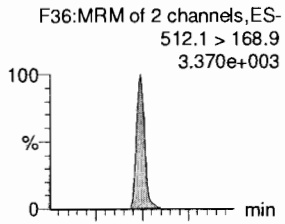


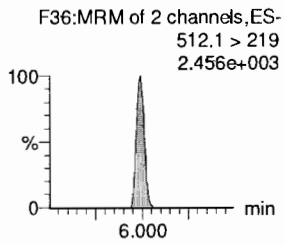
PFUdA





N-MeFOSA





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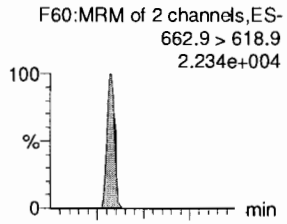
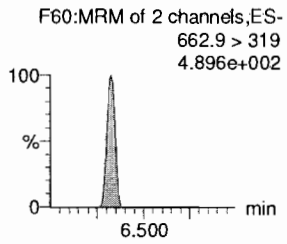
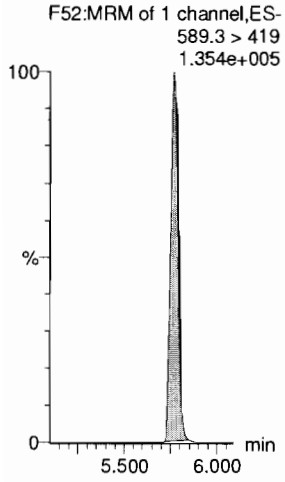
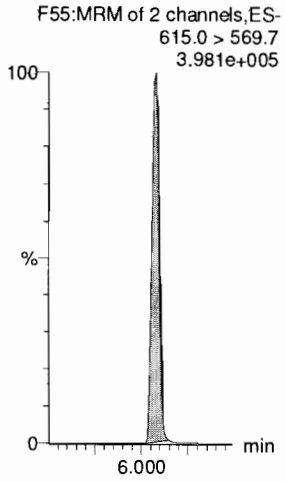




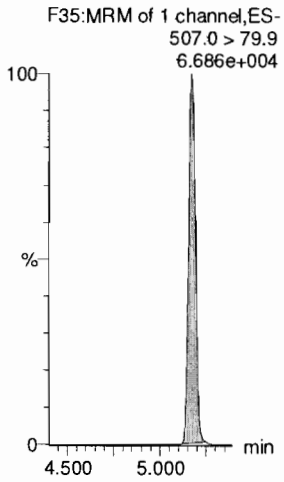
d5-N-EtFOSAA



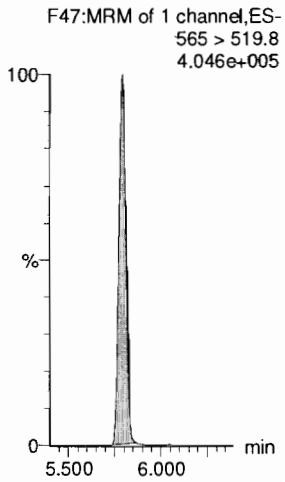
13C2-PFDoA



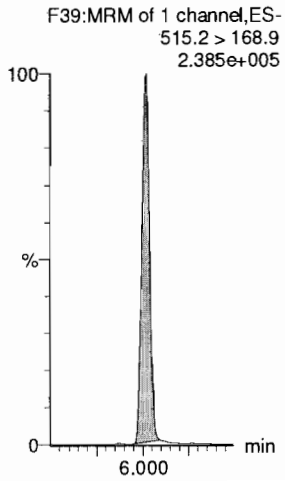
13C8-PFOS



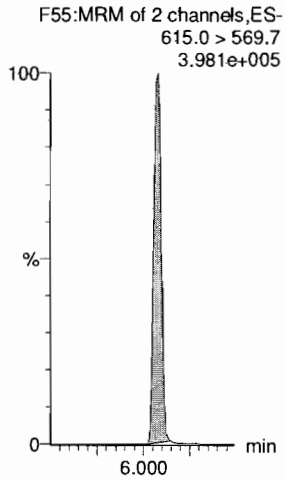
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

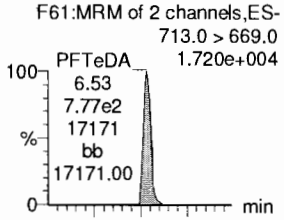


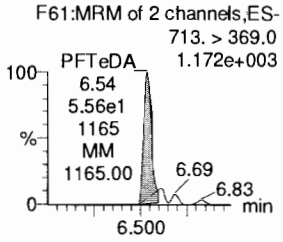
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_4, Date: 04-Dec-2018, Time: 12:05:51, ID: ST181204M1-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

PFTeDA





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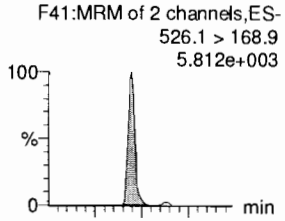
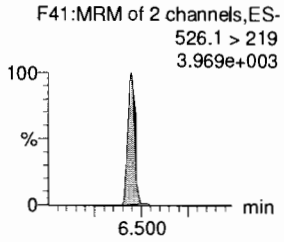
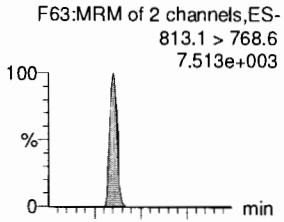
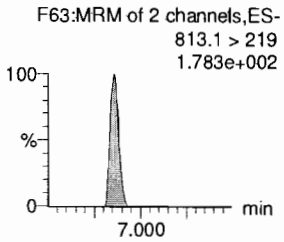


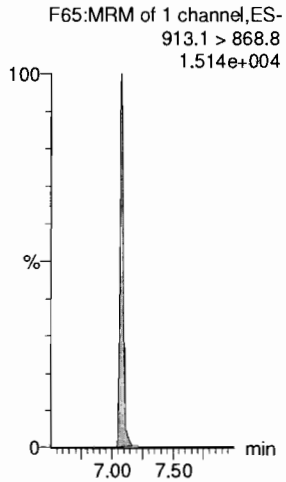


PFHxDA

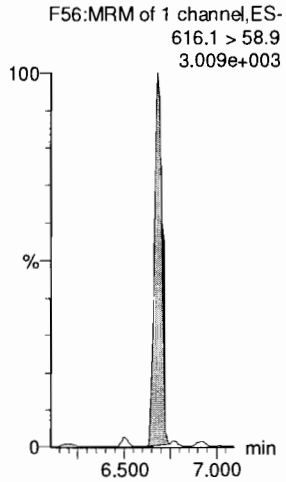




PFODA



N-MeFOSE



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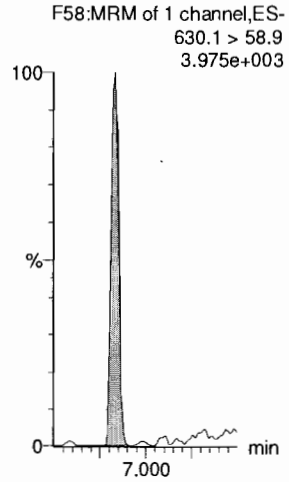
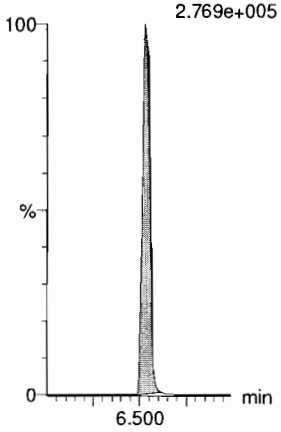
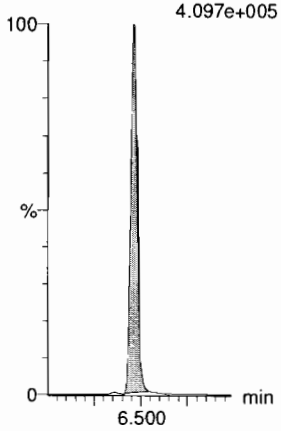


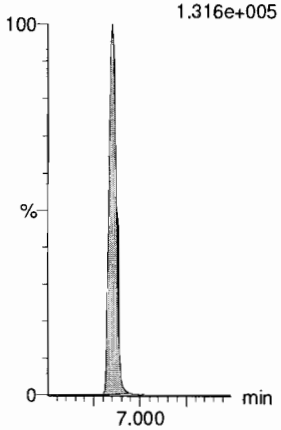
13C2-PFTeDA



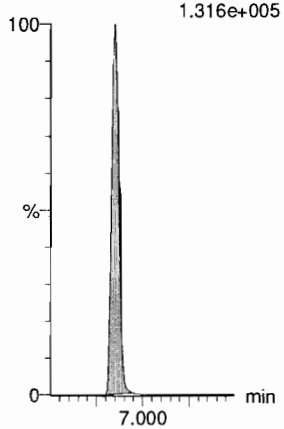
d5-N-ETFOSA



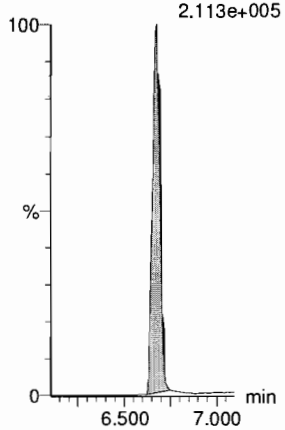
13C2-PFHxDA



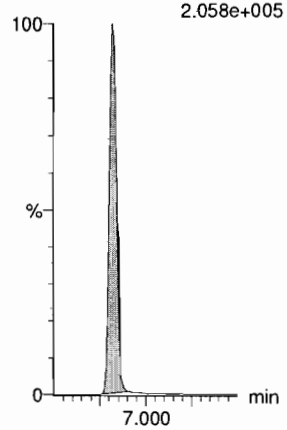
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

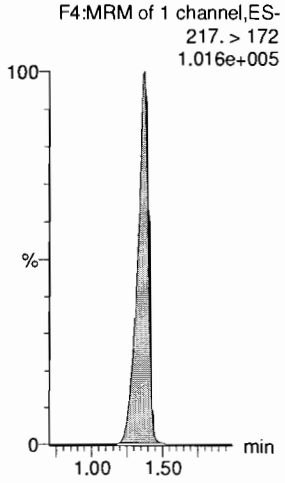


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

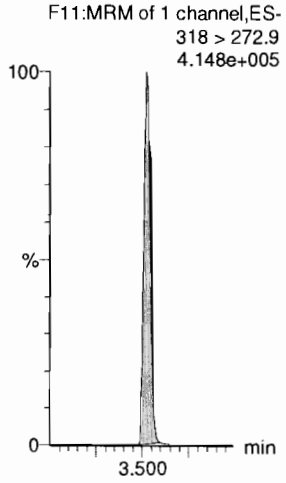
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_4, Date: 04-Dec-2018, Time: 12:05:51, ID: ST181204M1-2 PFC CS-1 18K3002, Description: PFC CS-1 18K3002

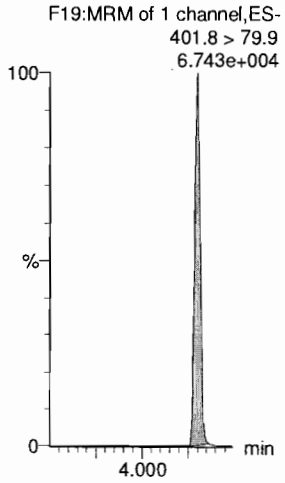
13C4-PFBA



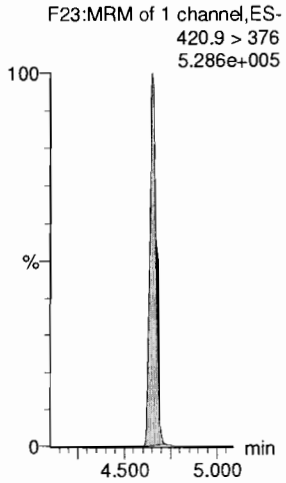
13C5-PFHxA



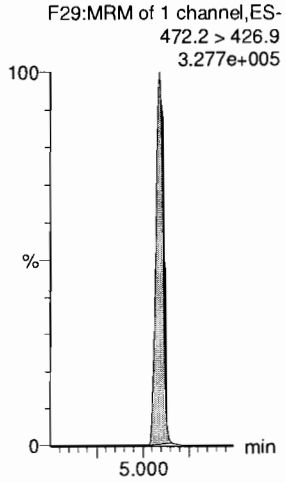
13C3-PFHxS



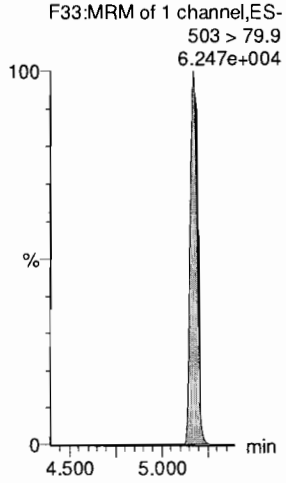
13C8-PFOA



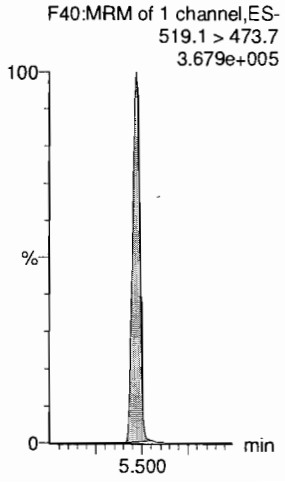
13C9-PFNA



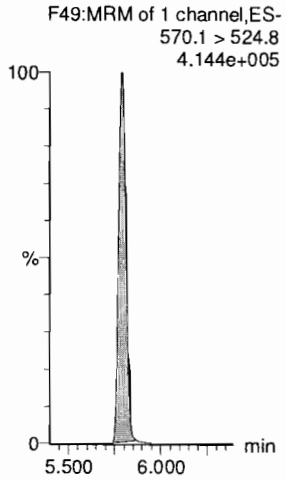
13C4-PFOS



13C6-PFDA



13C7-PFUdA

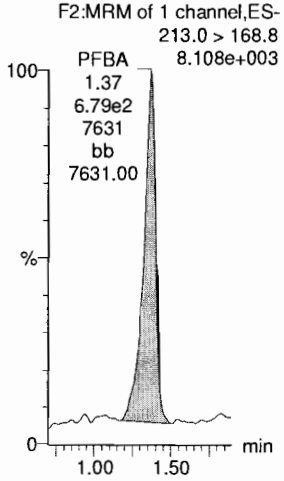


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_5, Date: 04-Dec-2018, Time: 12:16:24, ID: ST181204M1-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

PFBA



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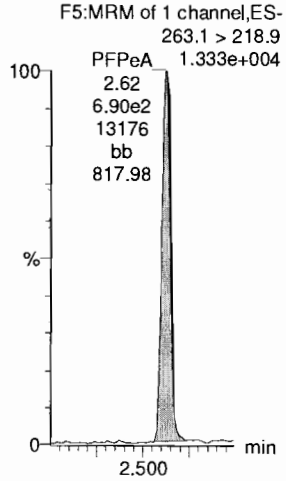
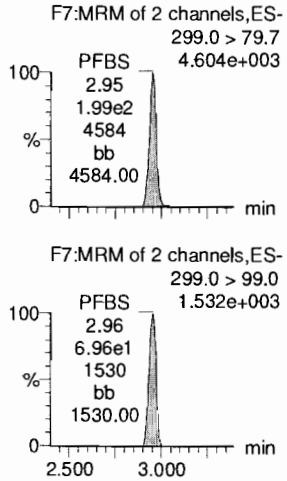
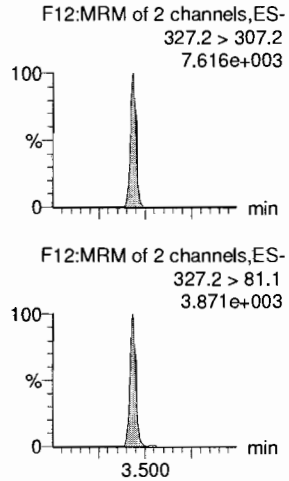


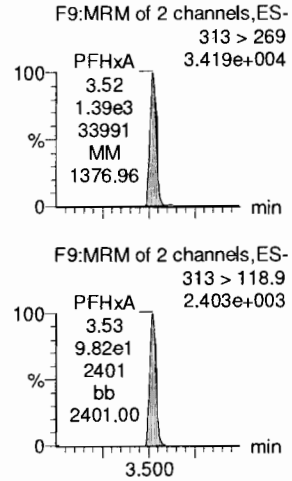
PFBS



4:2 FTS



PFHxA



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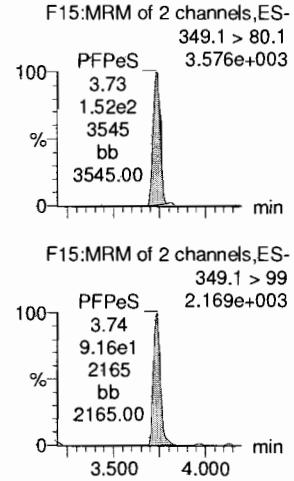
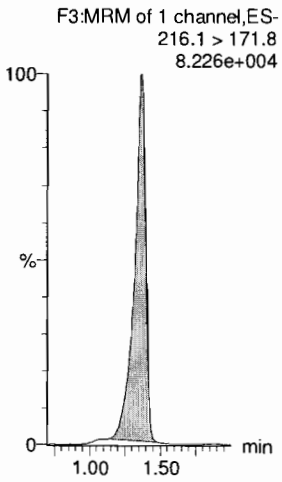


13C3-PFBA



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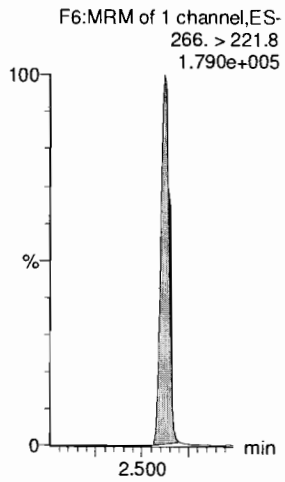

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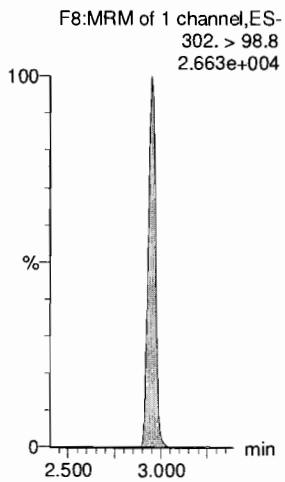
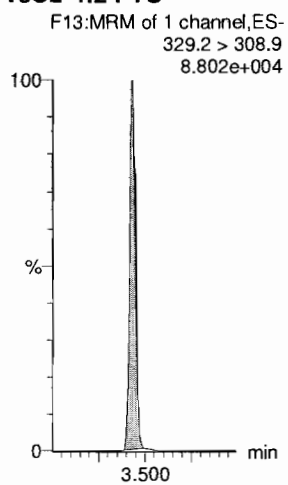


13C2-4:2 FTS



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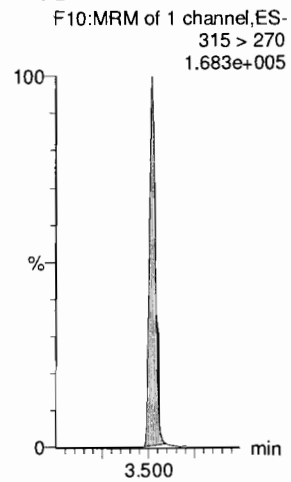

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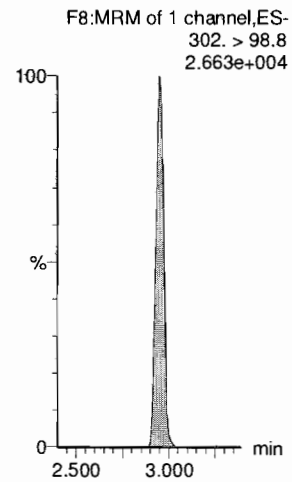

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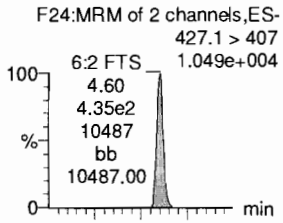
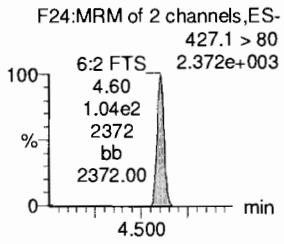
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

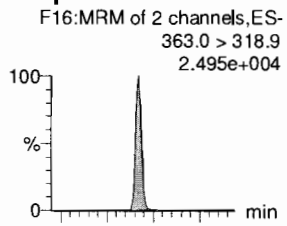
Name: 181204M1_5, Date: 04-Dec-2018, Time: 12:16:24, ID: ST181204M1-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

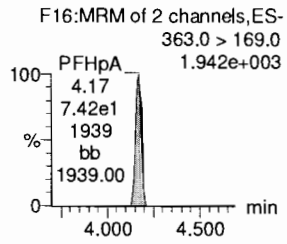
6:2 FTS





PFHpA





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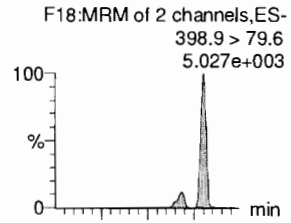
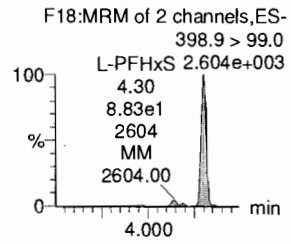
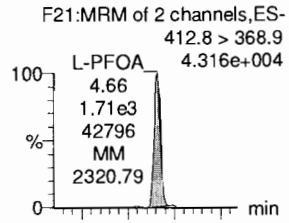
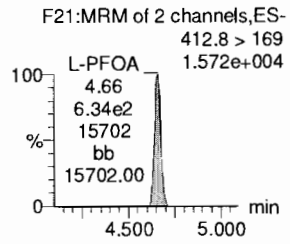




L-PFOA





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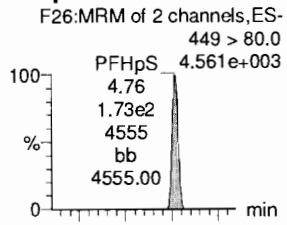

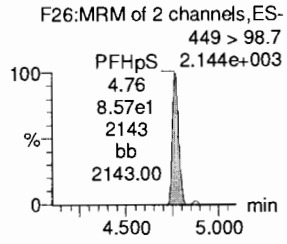

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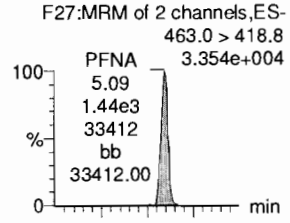
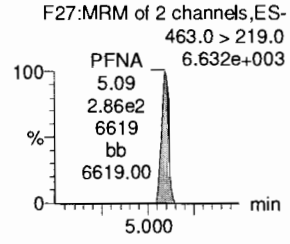
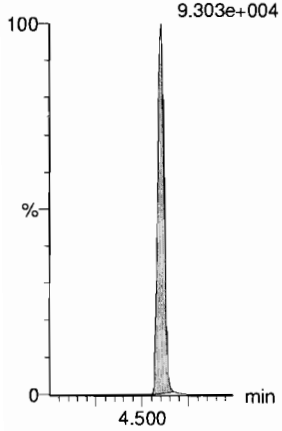
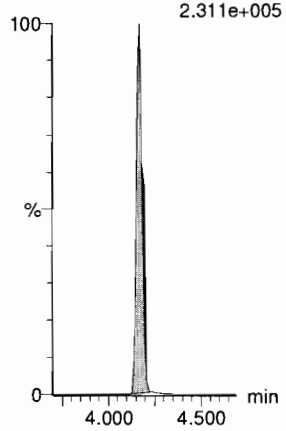




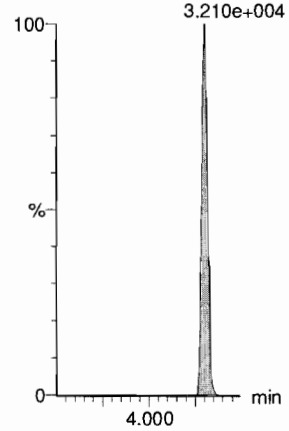
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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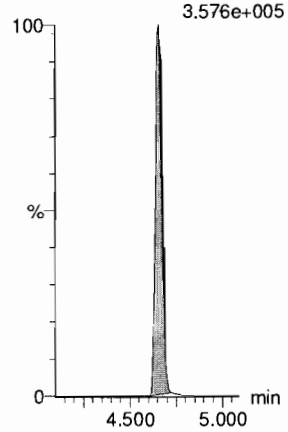
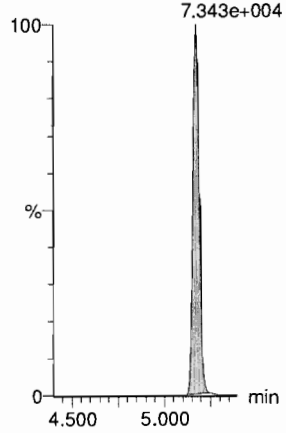


13C8-PFOS



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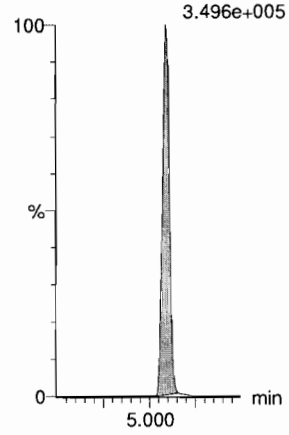

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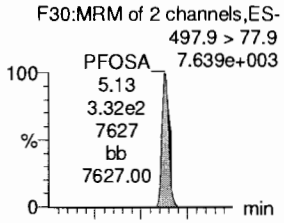
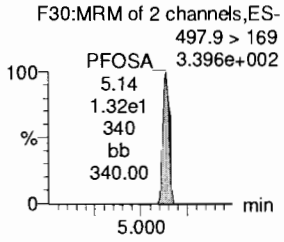
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_5, Date: 04-Dec-2018, Time: 12:16:24, ID: ST181204M1-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

PFOSA





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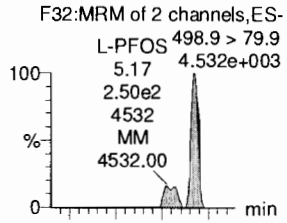

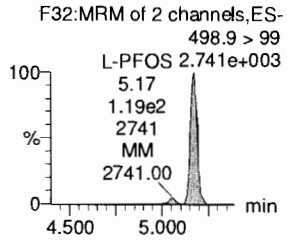

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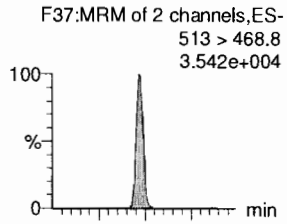
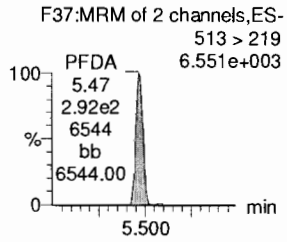
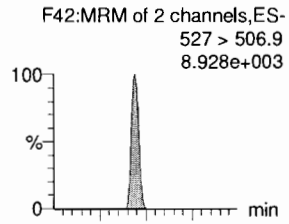
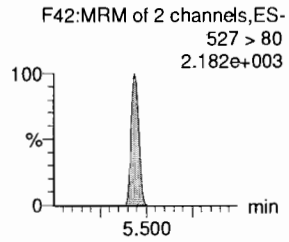




8:2 FTS





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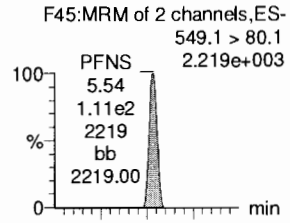

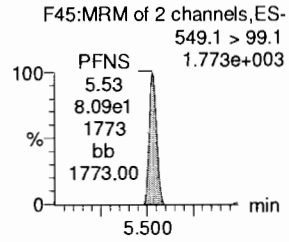

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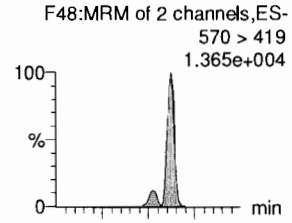
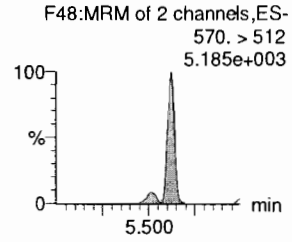
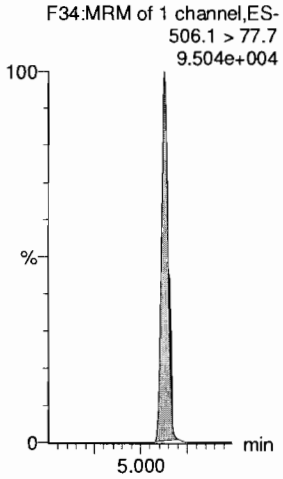




13C8-PFOSA



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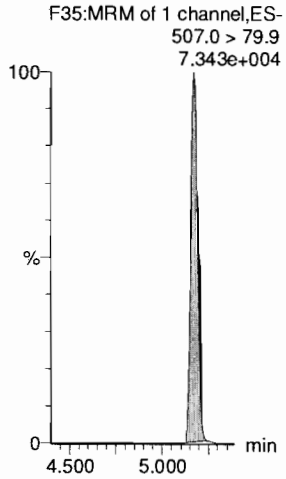

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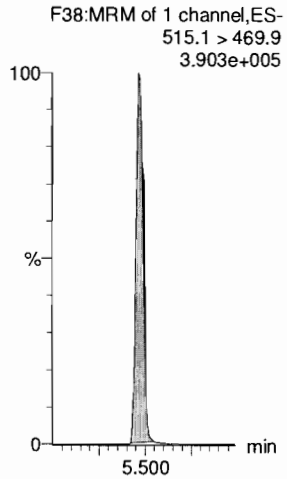
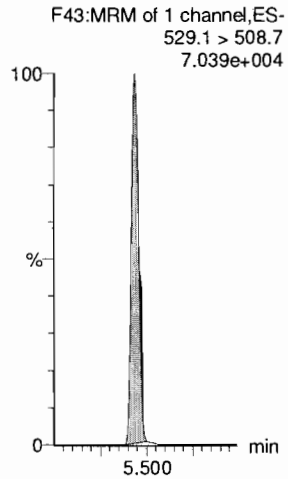


13C2-8:2 FTS



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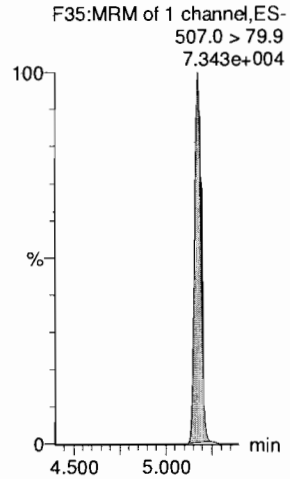
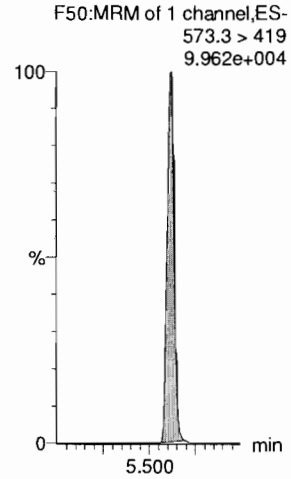


d3-N-MeFOSAA

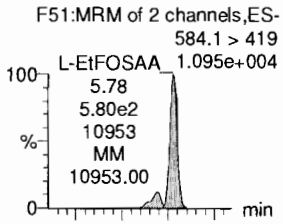


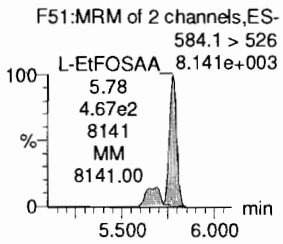
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_5, Date: 04-Dec-2018, Time: 12:16:24, ID: ST181204M1-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

L-EtFOSAA





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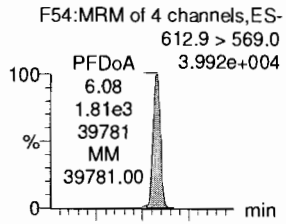
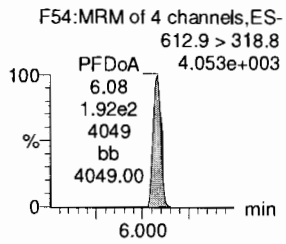
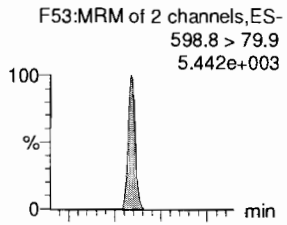
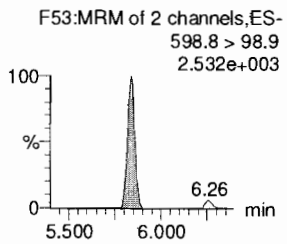




PFDS





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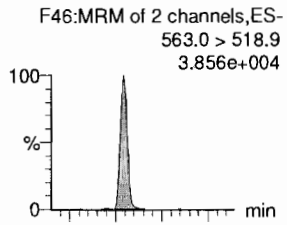

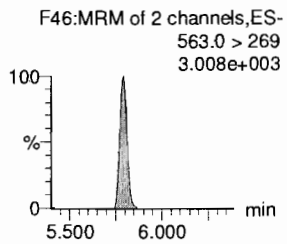

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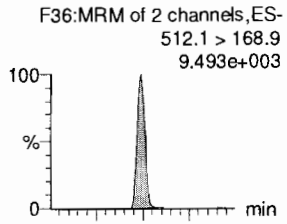
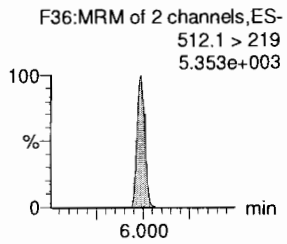
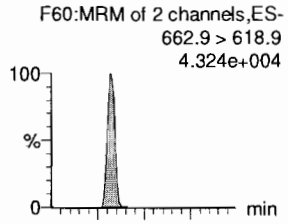
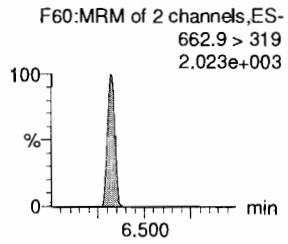


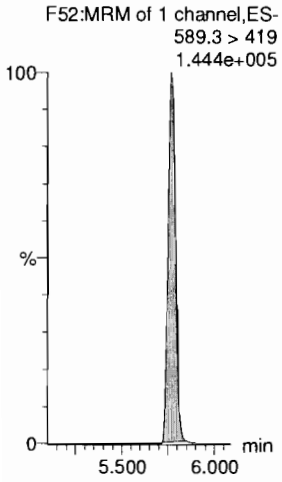


PFTrDA

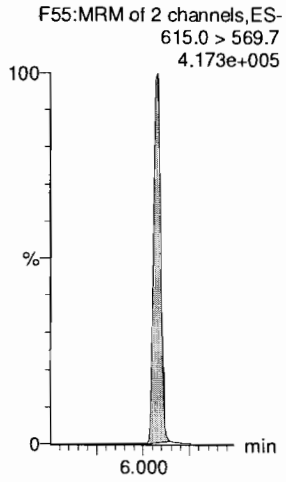




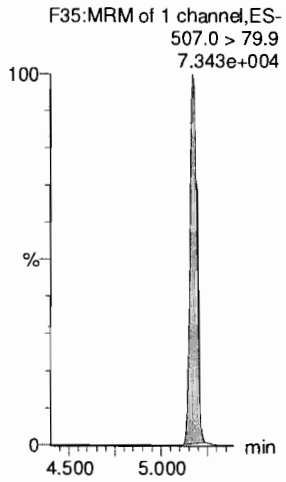
d5-N-EtFOSAA



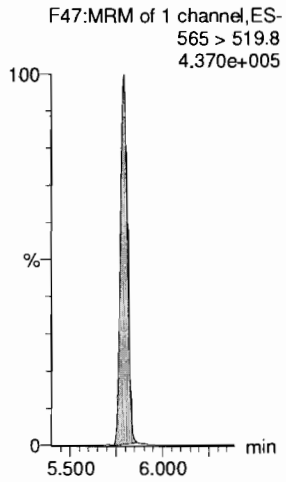
13C2-PFDoA



13C8-PFOS



13C2-PFUdA



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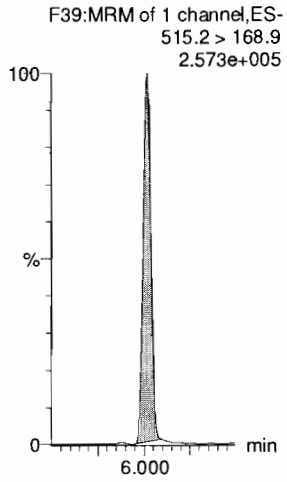

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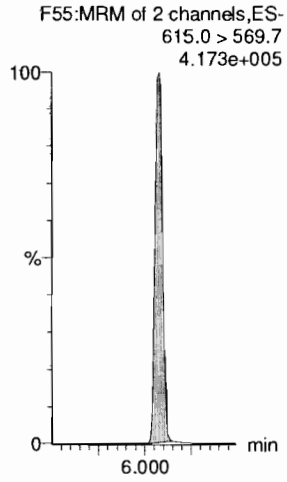
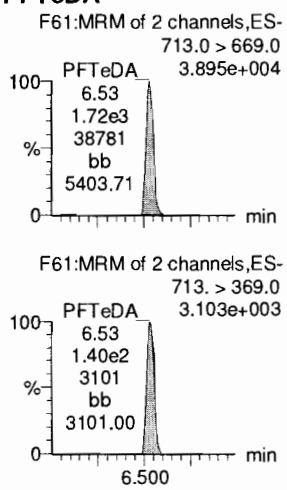


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_5, Date: 04-Dec-2018, Time: 12:16:24, ID: ST181204M1-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

PFTeDA



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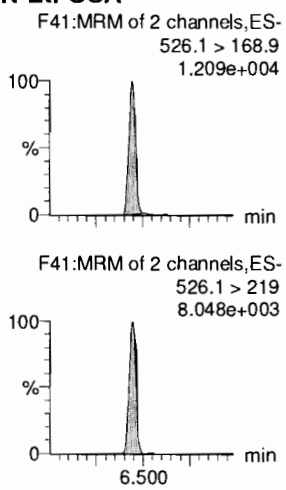
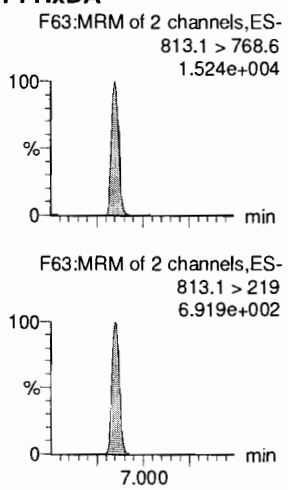
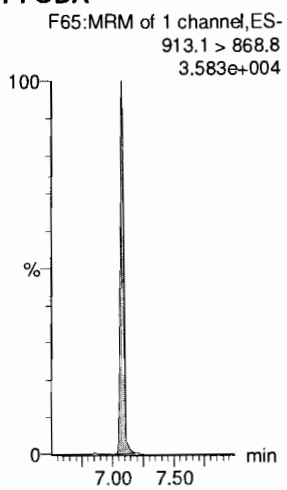


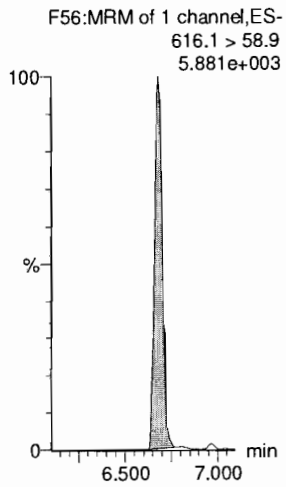
PFHxDA



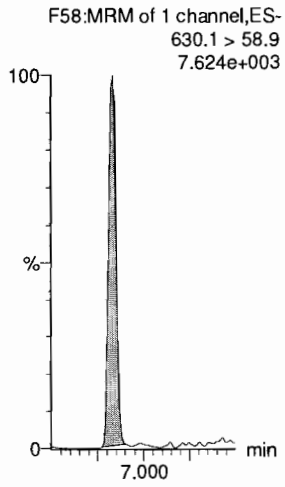
PFODA



N-MeFOSE



N-EtFOSE



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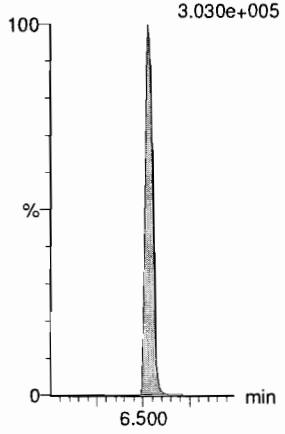
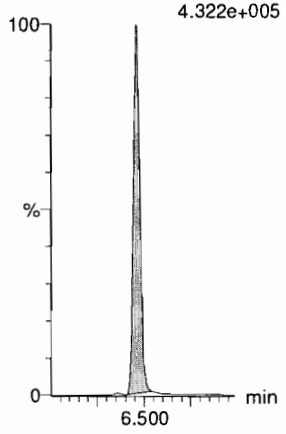


d5-N-ETFOSA



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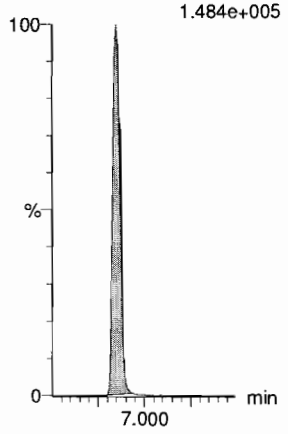

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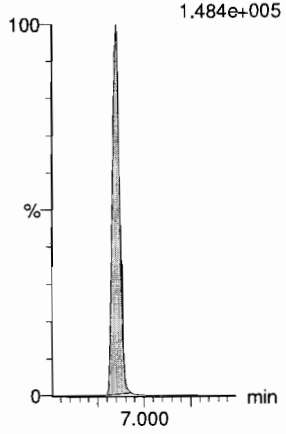
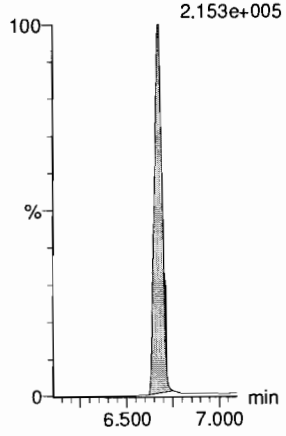
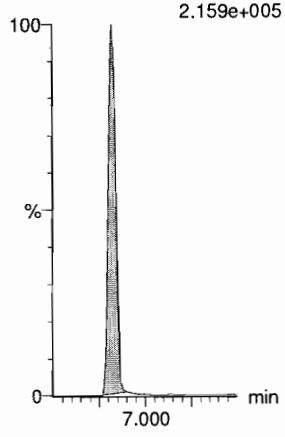


d7-N-MeFOSE



d9-N-EtFOSE



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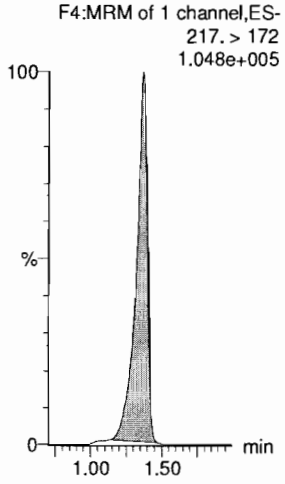
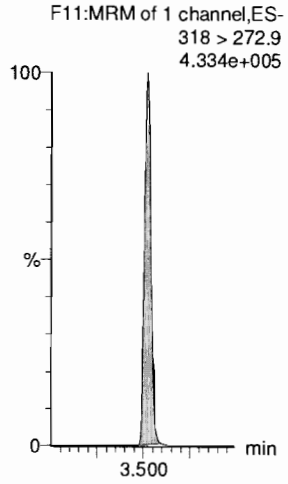
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_5, Date: 04-Dec-2018, Time: 12:16:24, ID: ST181204M1-3 PFC CS0 18K3003, Description: PFC CS0 18K3003

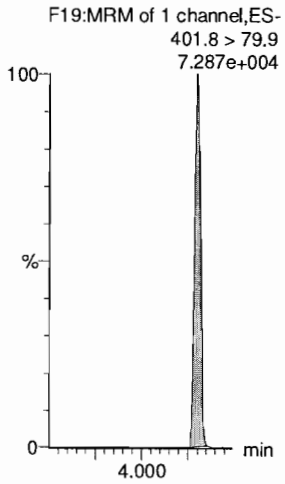
13C4-PFBA



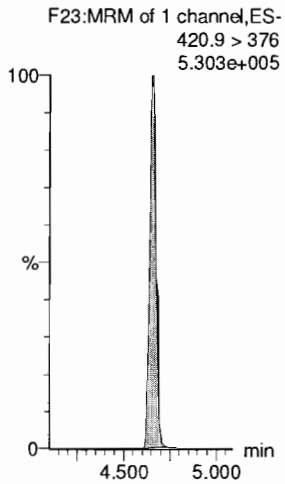
13C5-PFHxA



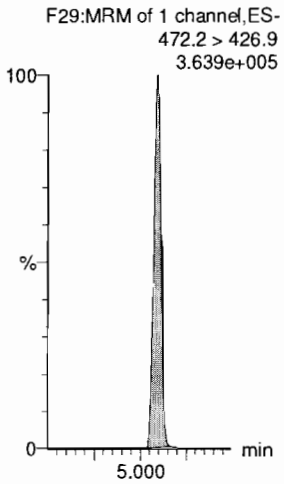
13C3-PFHxS



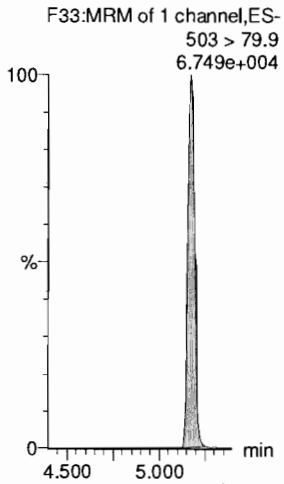
13C8-PFOA



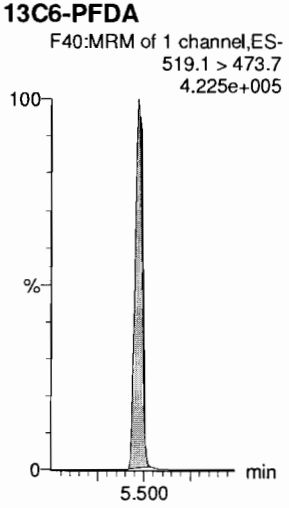
13C9-PFNA



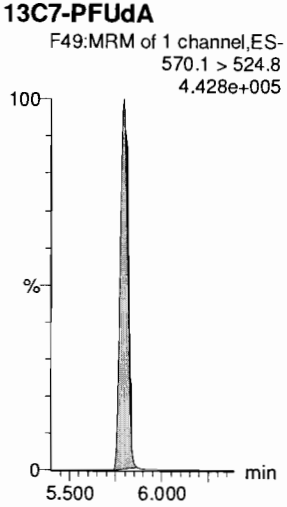
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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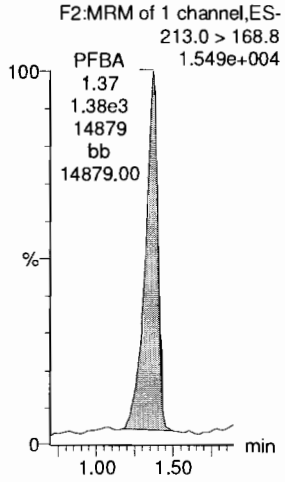
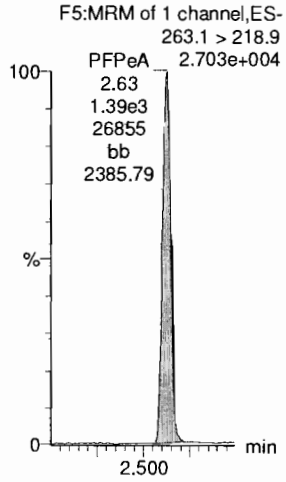
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_6, Date: 04-Dec-2018, Time: 12:27:03, ID: ST181204M1-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

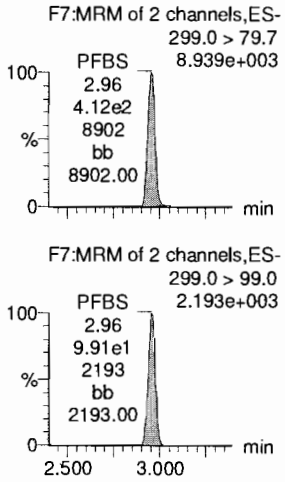
PFBA



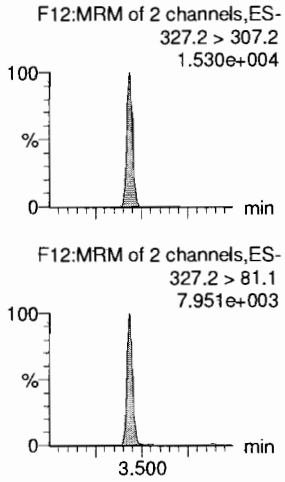
PFPeA



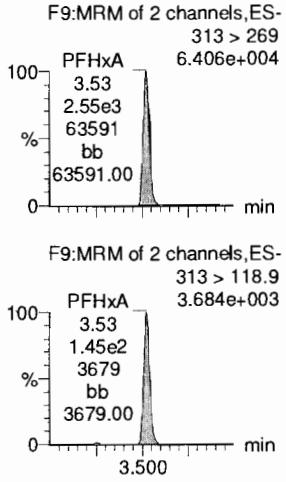
PFBS



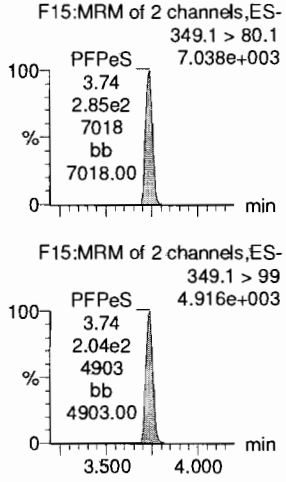
4:2 FTS



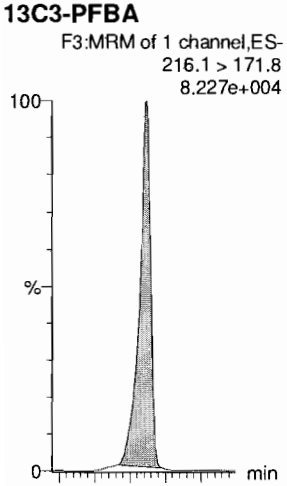
PFHxA



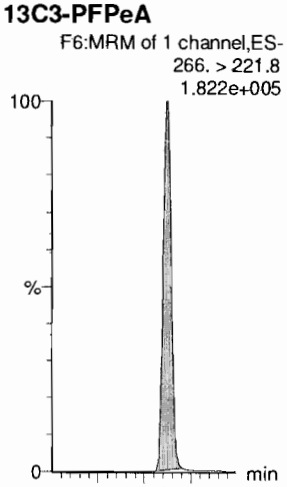
PFPeS



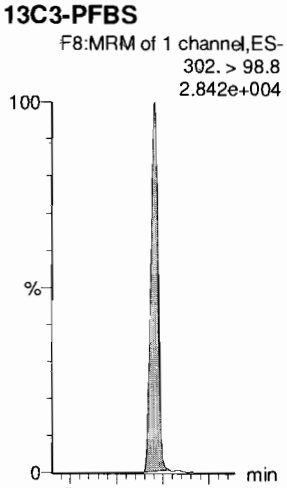
13C3-PFBA



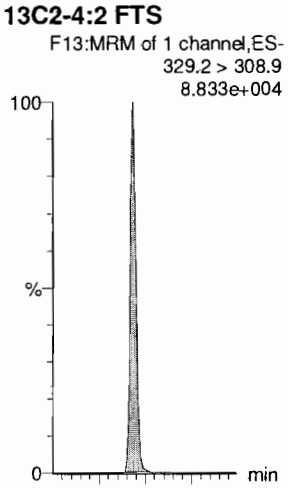
13C3-PFPeA



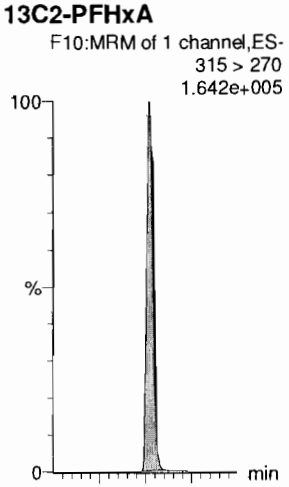
13C3-PFBS



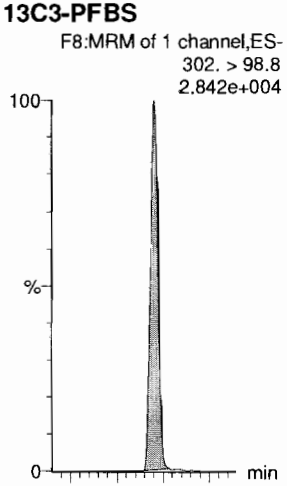
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

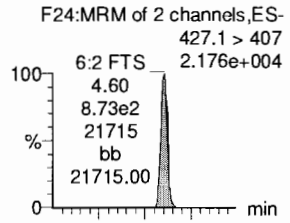


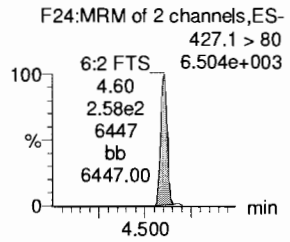
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

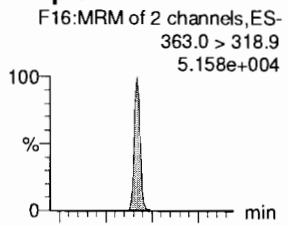
Name: 181204M1_6, Date: 04-Dec-2018, Time: 12:27:03, ID: ST181204M1-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

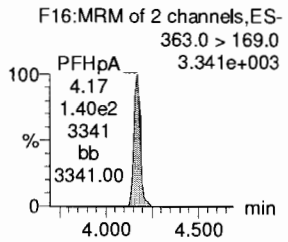
6:2 FTS



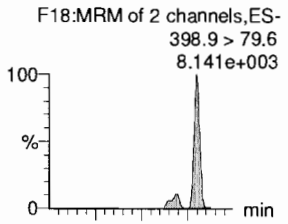


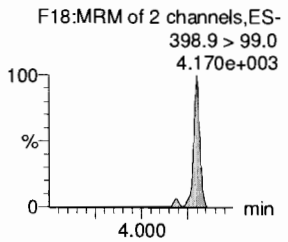
PFHpA





L-PFHxS





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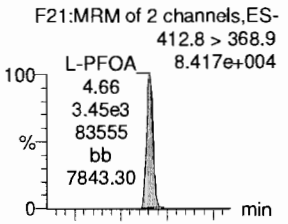

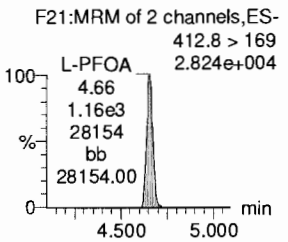

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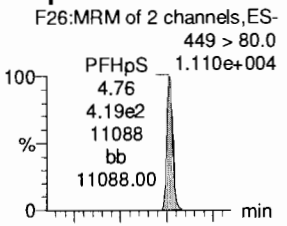

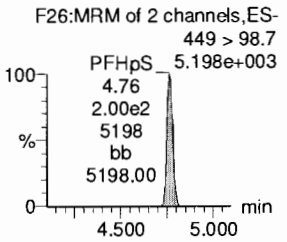

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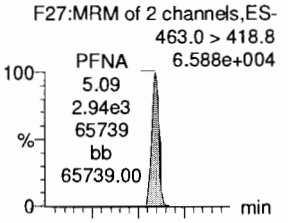
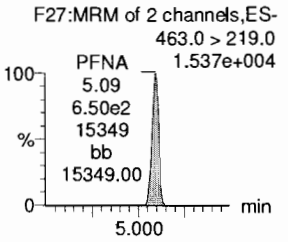
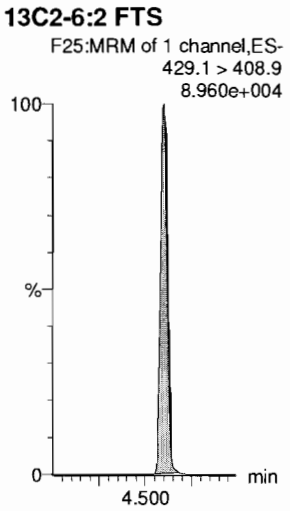
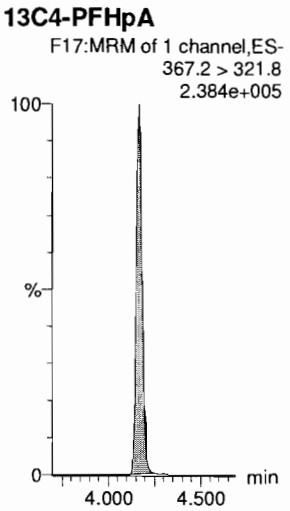




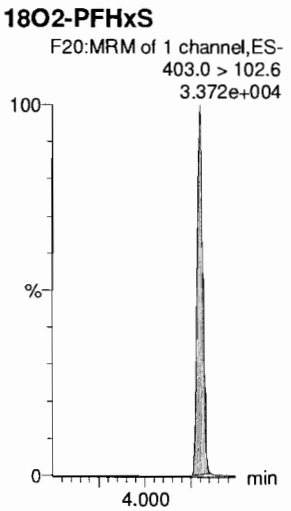
13C2-6:2 FTS



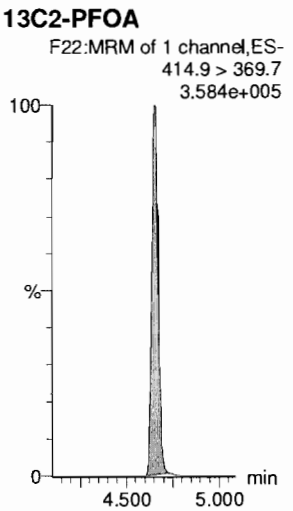
13C4-PFHpA



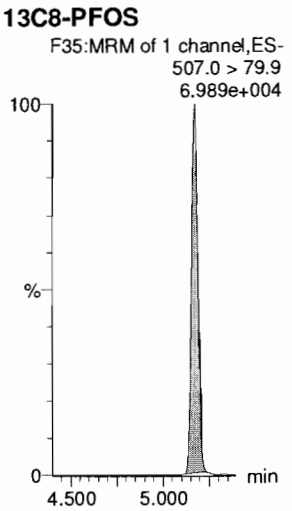
18O2-PFHxS



13C2-PFOA



13C8-PFOS



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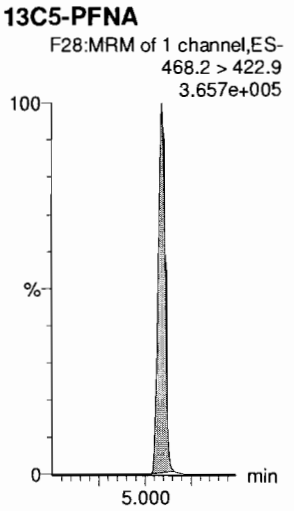

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Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_6, Date: 04-Dec-2018, Time: 12:27:03, ID: ST181204M1-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

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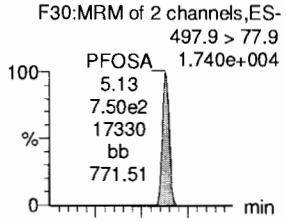

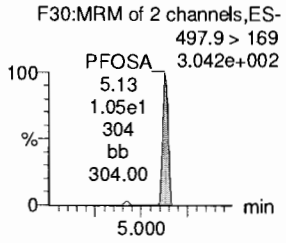

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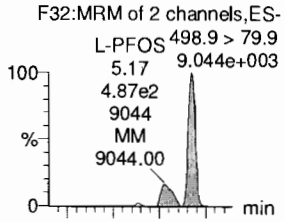

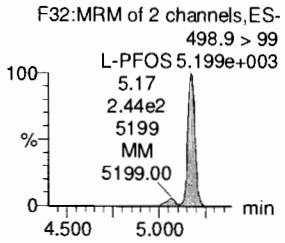

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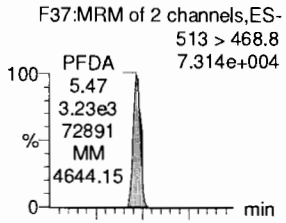

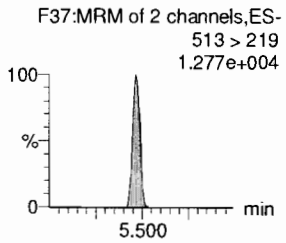

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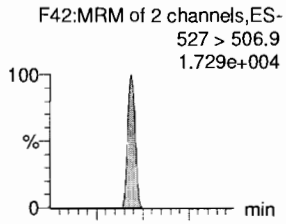

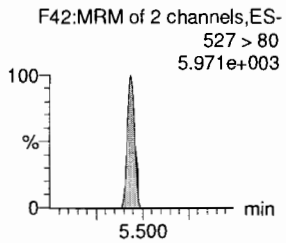

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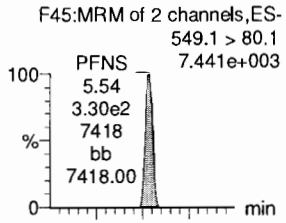

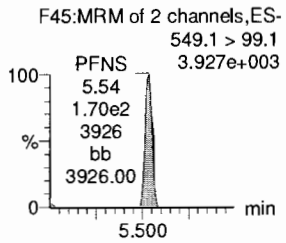

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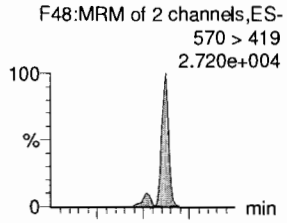

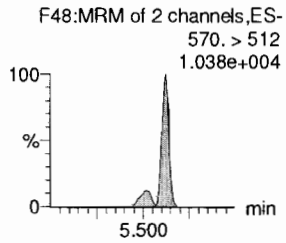

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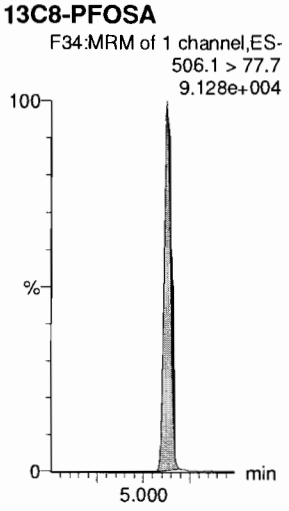

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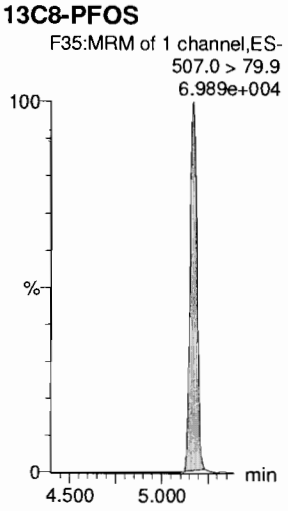

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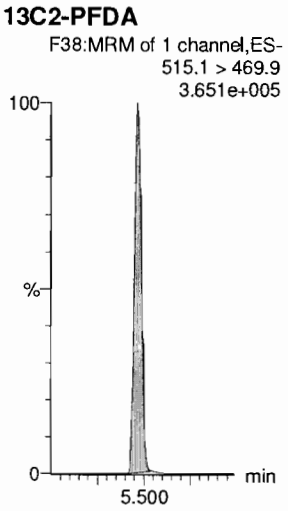
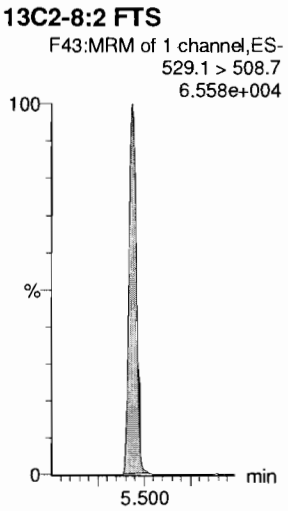


13C2-8:2 FTS



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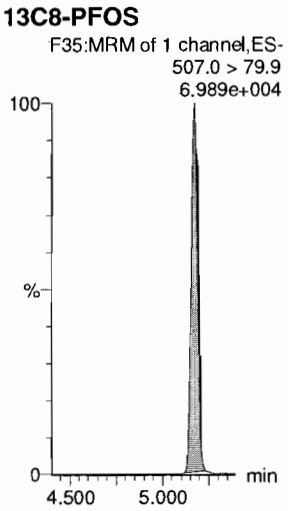
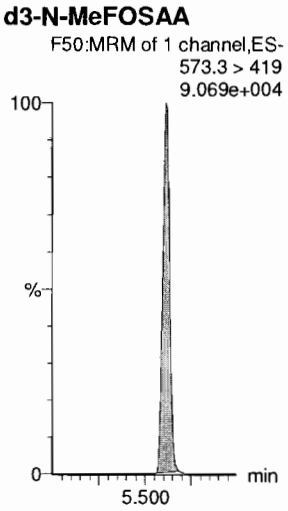


d3-N-MeFOSAA



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Name: 181204M1_6, Date: 04-Dec-2018, Time: 12:27:03, ID: ST181204M1-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

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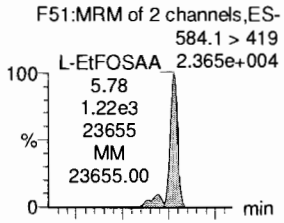

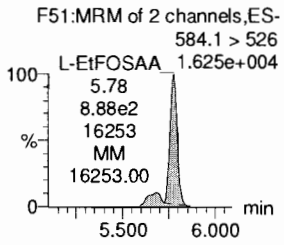

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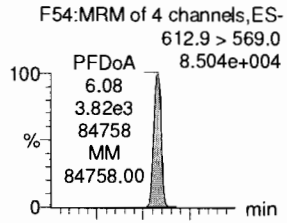

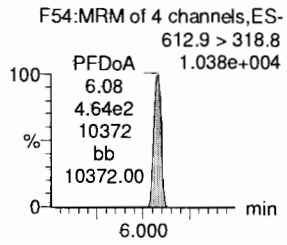

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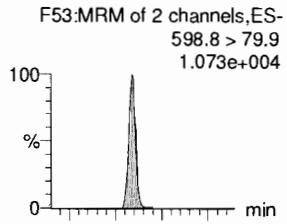

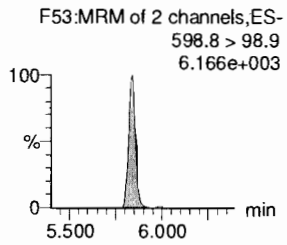

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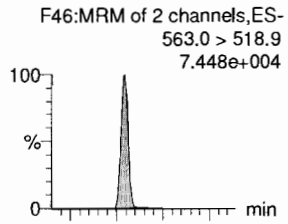

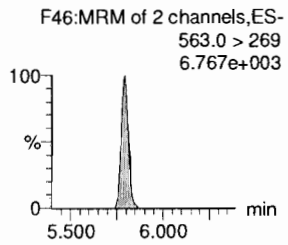

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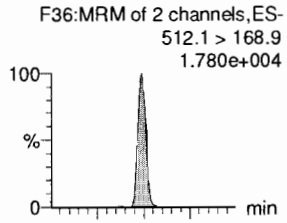

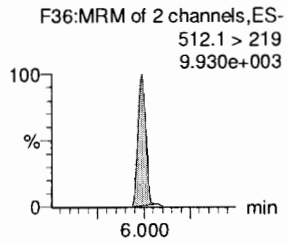

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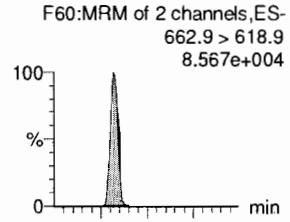
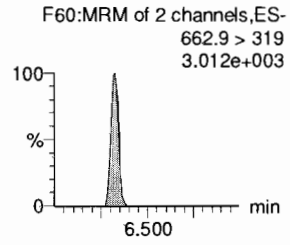
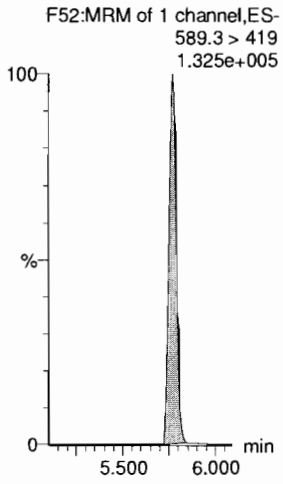




d5-N-EtFOSAA



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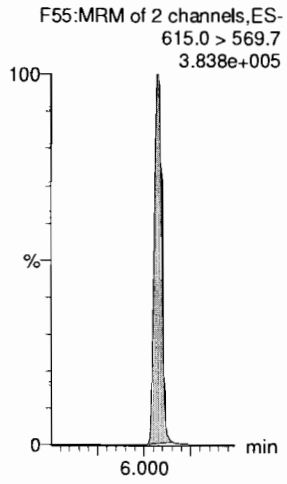

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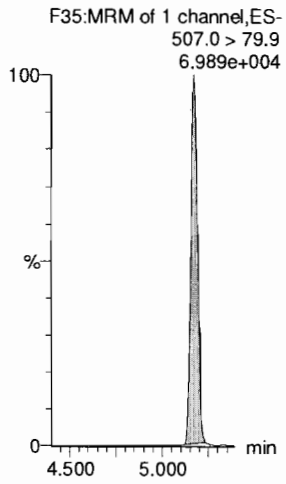

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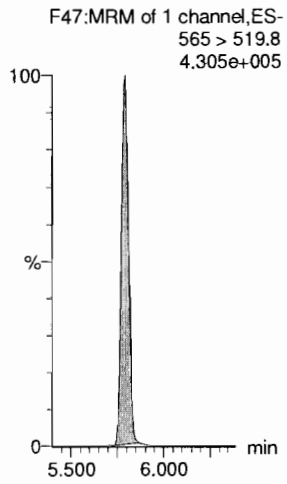

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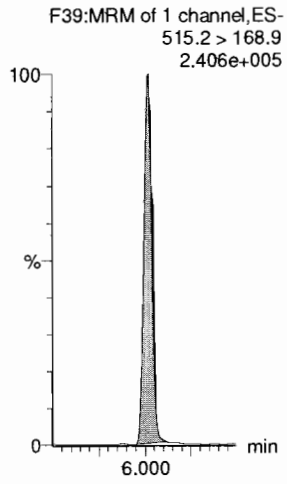

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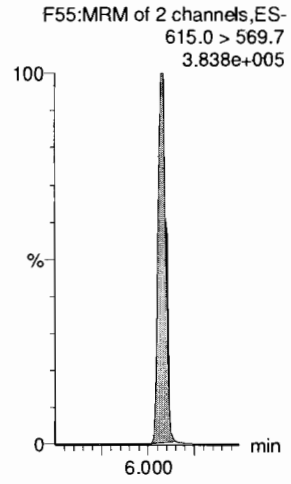

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Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

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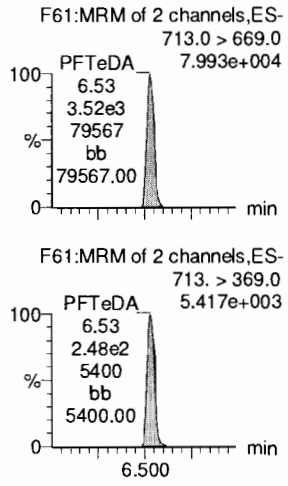

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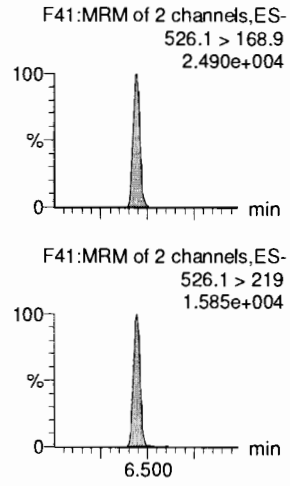

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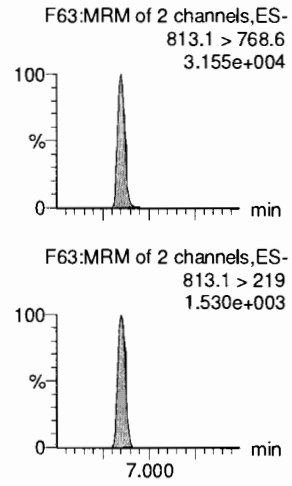

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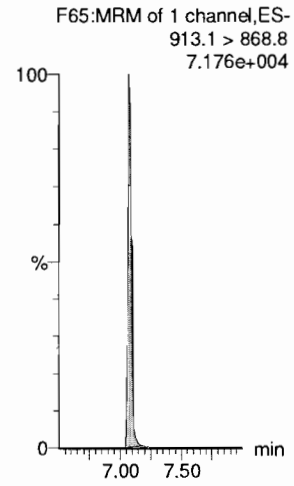
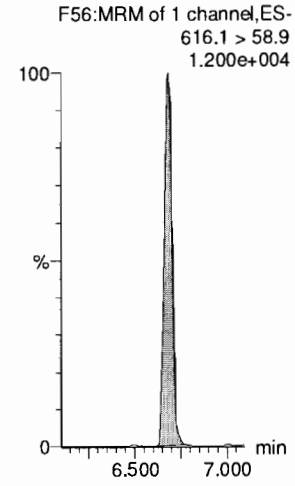
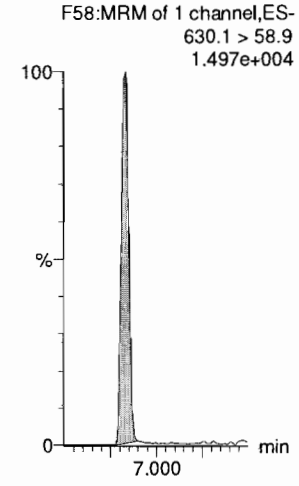


N-MeFOSE



N-EtFOSE



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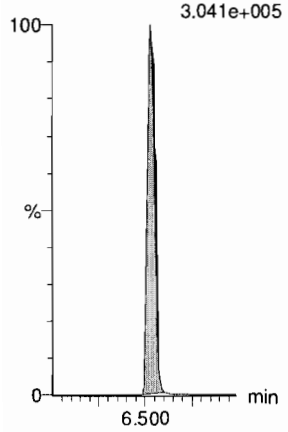
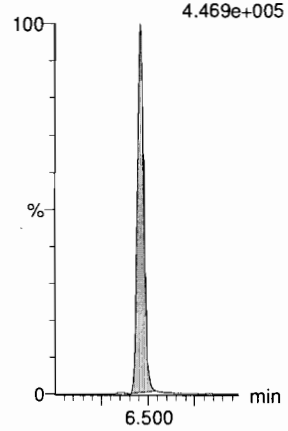


d5-N-ETFOSA



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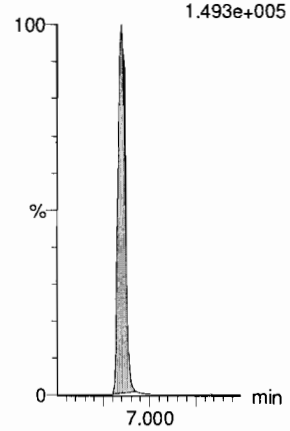

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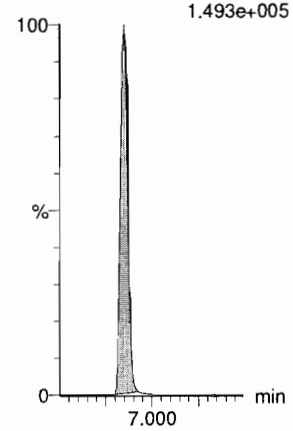
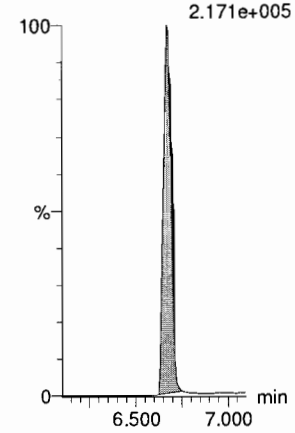
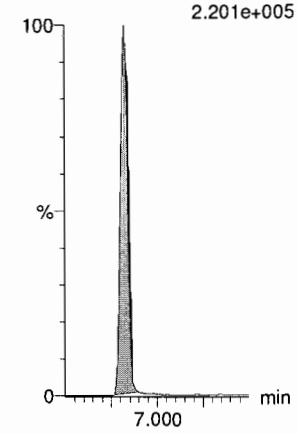


d7-N-MeFOSE



d9-N-EtFOSE

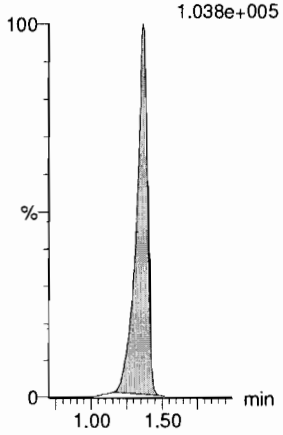


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

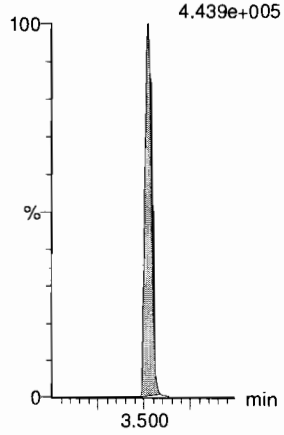
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_6, Date: 04-Dec-2018, Time: 12:27:03, ID: ST181204M1-4 PFC CS1 18K3004, Description: PFC CS1 18K3004

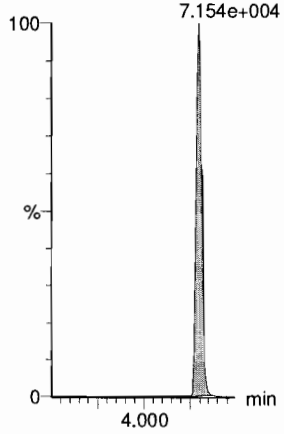
13C4-PFBA



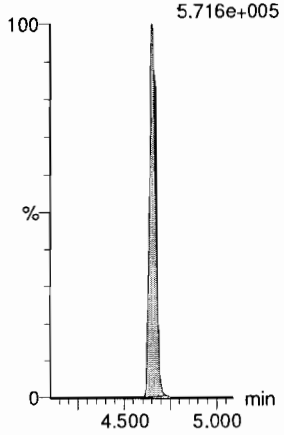
13C5-PFHxA



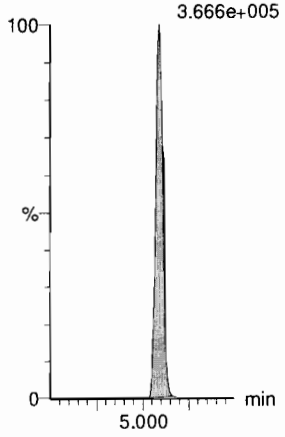
13C3-PFHxS



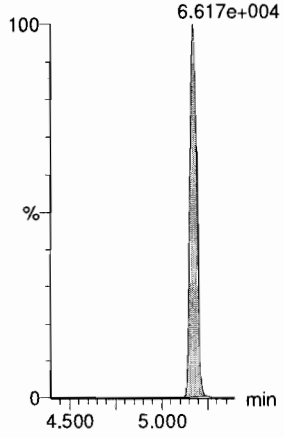
13C8-PFOA



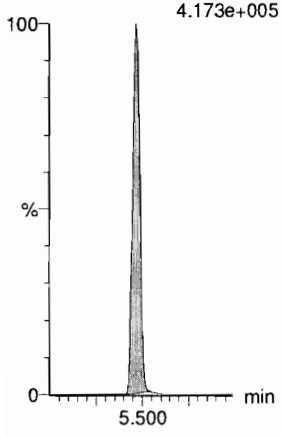
13C9-PFNA



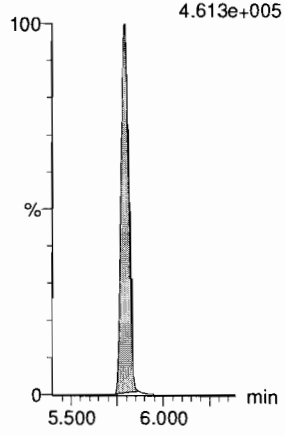
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_7, Date: 04-Dec-2018, Time: 12:37:35, ID: ST181204M1-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

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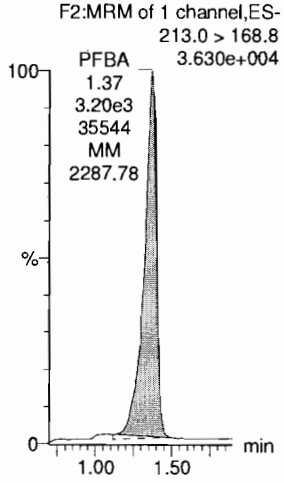

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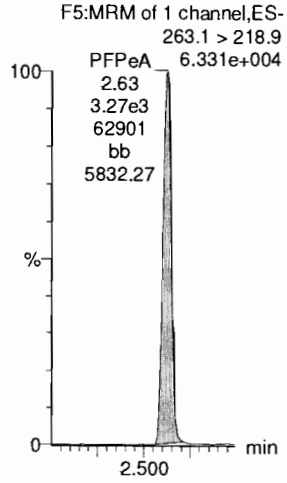
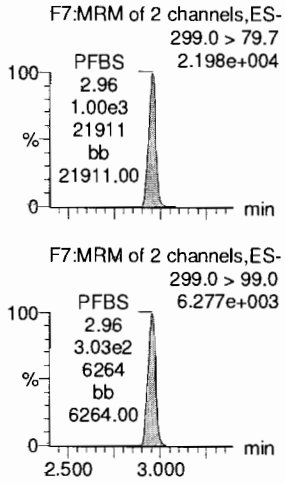
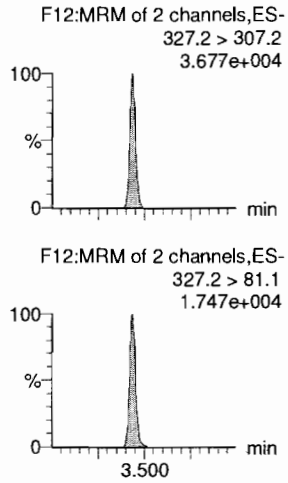


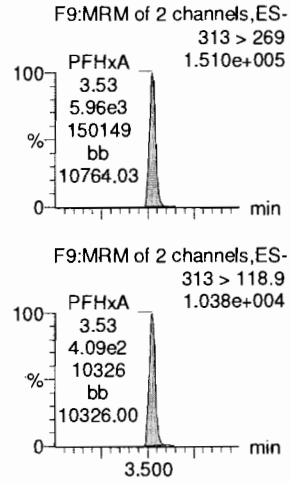
PFBS



4:2 FTS



PFHxA



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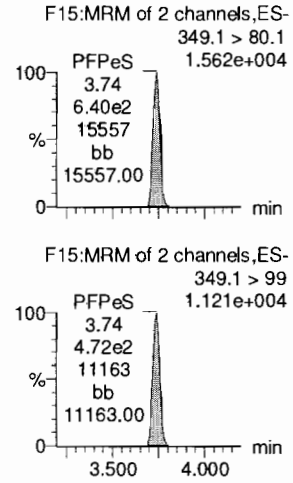
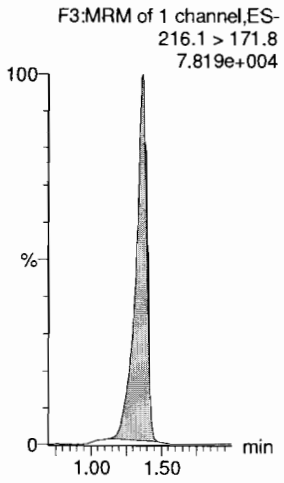
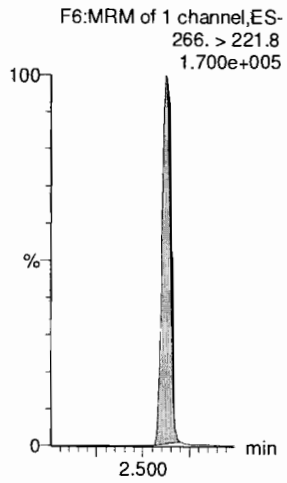


13C3-PFBA



13C3-PFPeA



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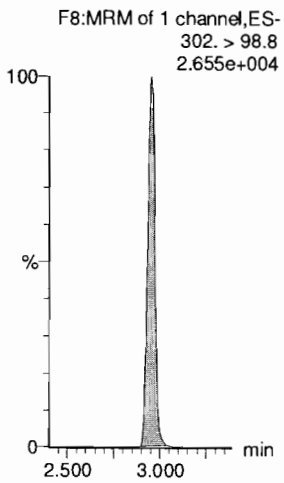
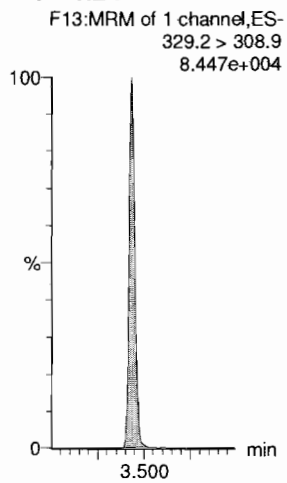


13C2-4:2 FTS



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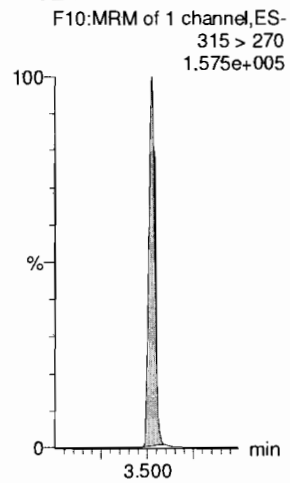

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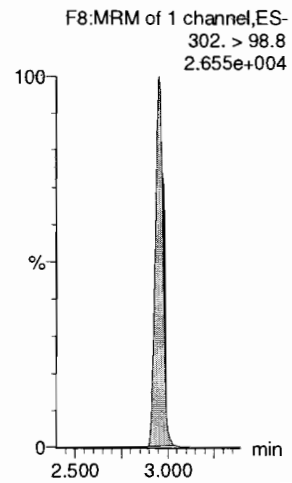
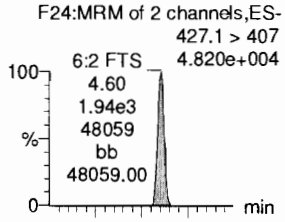


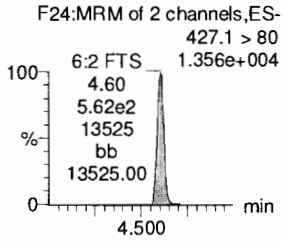
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

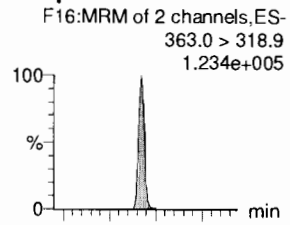
Name: 181204M1_7, Date: 04-Dec-2018, Time: 12:37:35, ID: ST181204M1-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

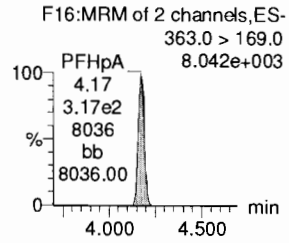
6:2 FTS



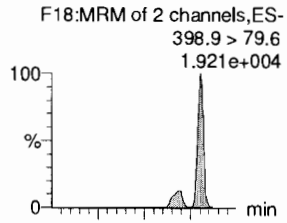


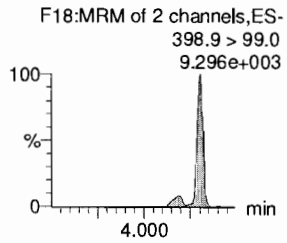
PFHpA



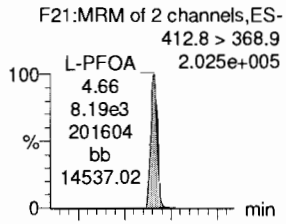


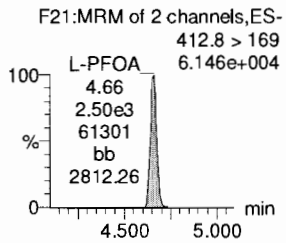
L-PFHxS





L-PFOA





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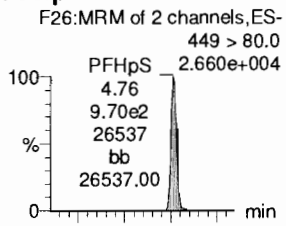
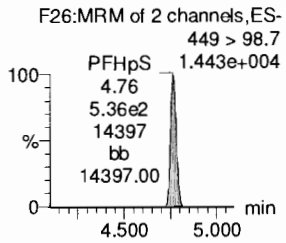
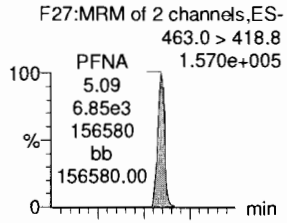
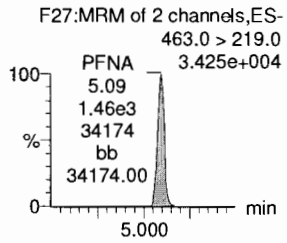




PFNA





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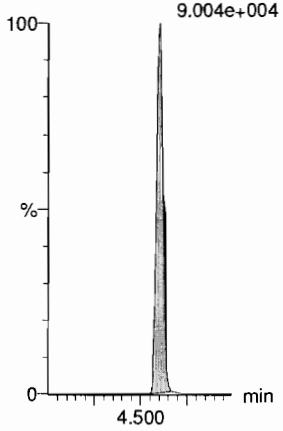
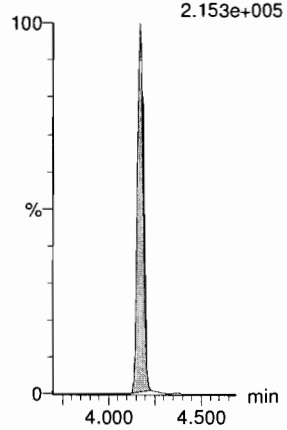
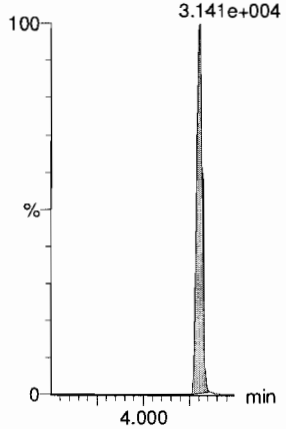


13C4-PFHpA



18O2-PFHxS



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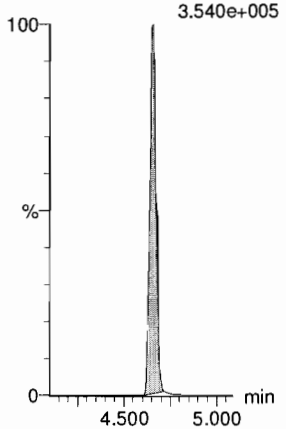
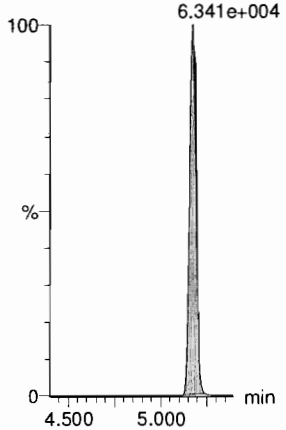
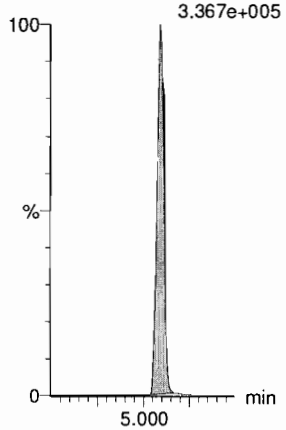


13C8-PFOS



13C5-PFNA

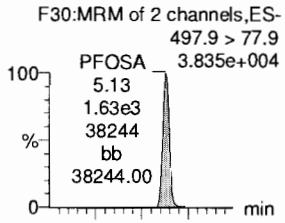


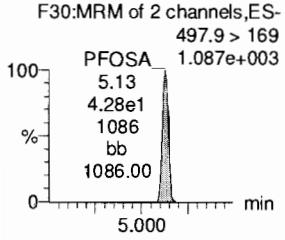
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

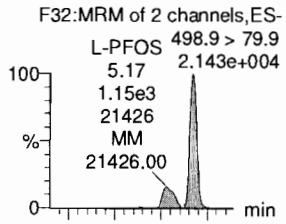
Name: 181204M1_7, Date: 04-Dec-2018, Time: 12:37:35, ID: ST181204M1-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

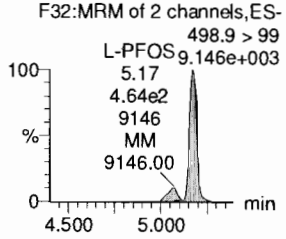
PFOSA



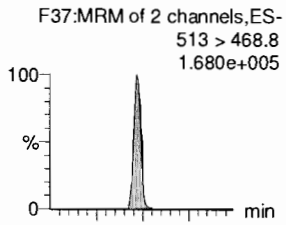


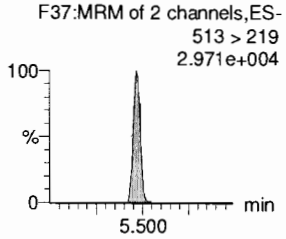
L-PFOS



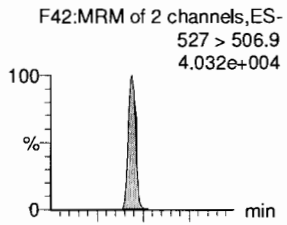


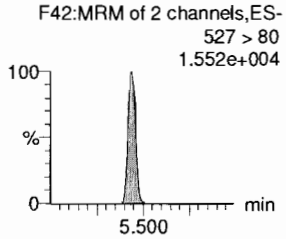
PFDA





8:2 FTS





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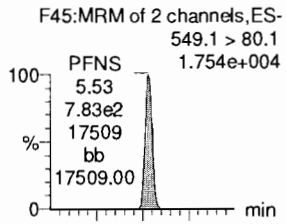
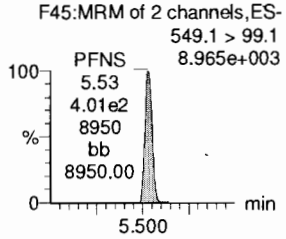
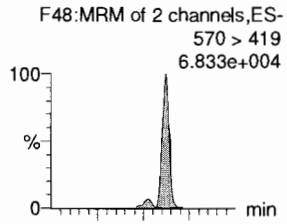
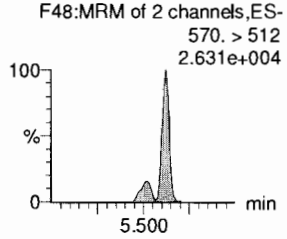


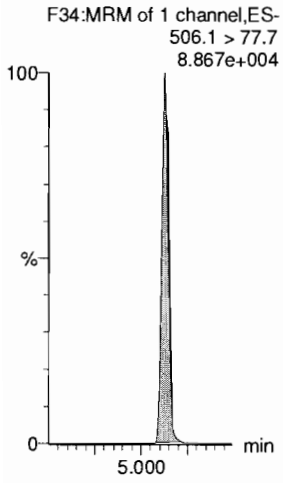


L-MeFOSAA





13C8-PFOSA



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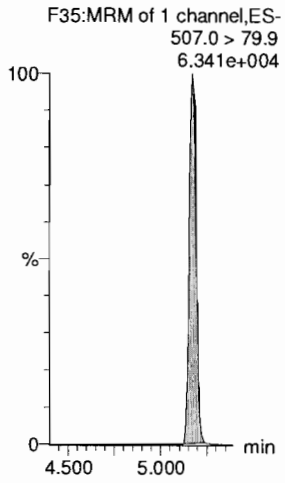
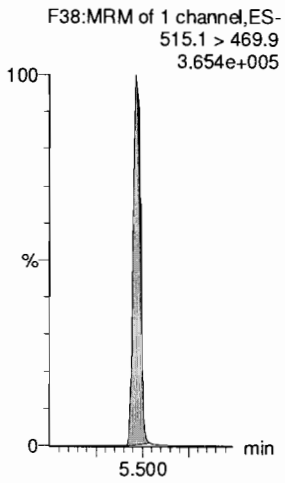
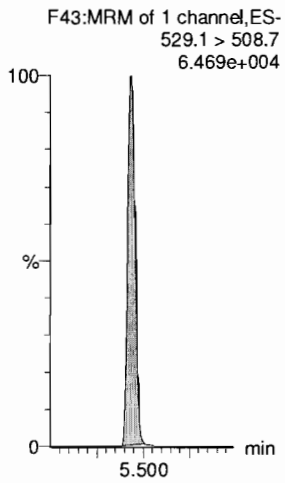


13C2-PFDA



13C2-8:2 FTS



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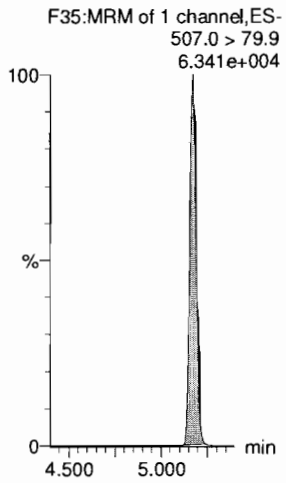
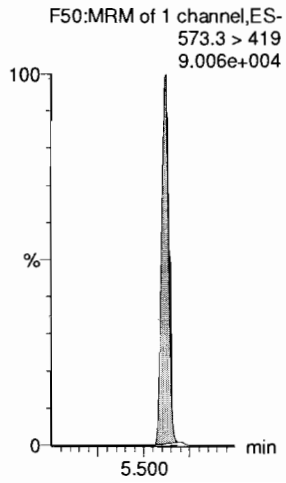


d3-N-MeFOSAA



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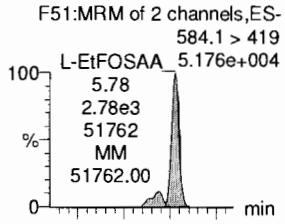
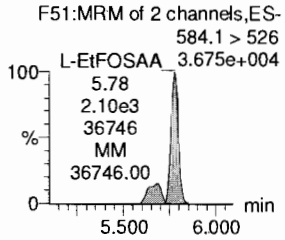
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

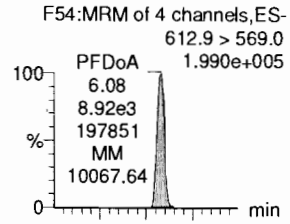
Name: 181204M1_7, Date: 04-Dec-2018, Time: 12:37:35, ID: ST181204M1-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

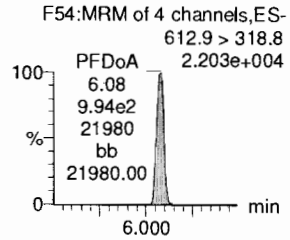
L-EtFOSAA





PFDoA





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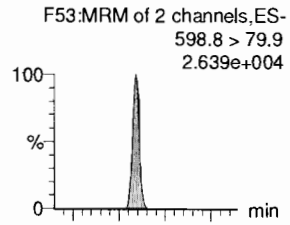

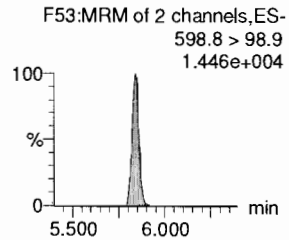

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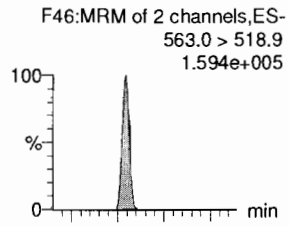

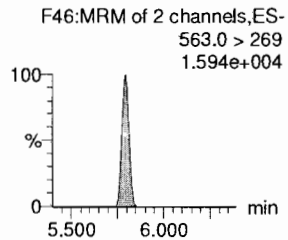

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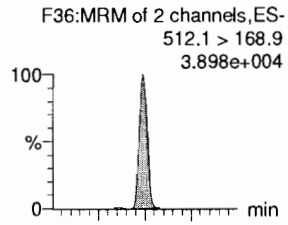

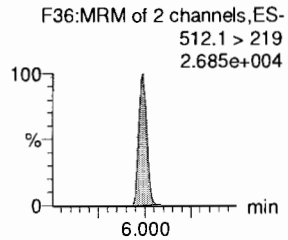

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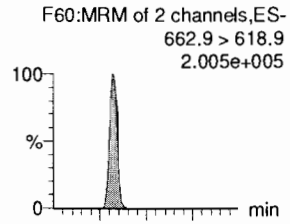
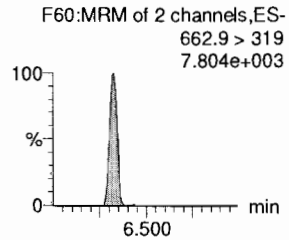
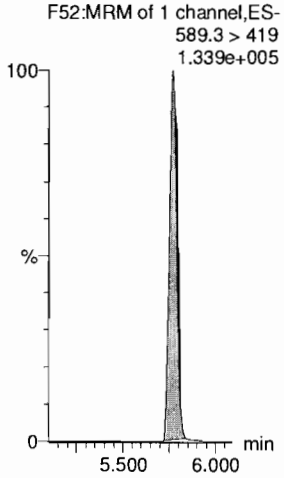
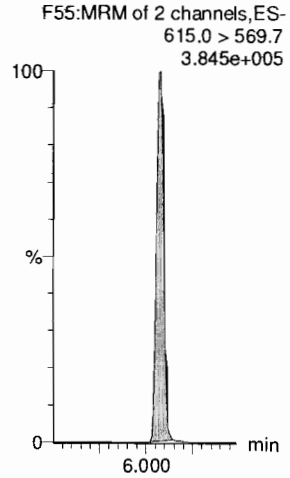




d5-N-EtFOSAA



13C2-PFDoA



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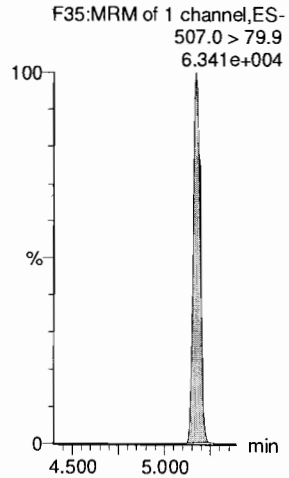
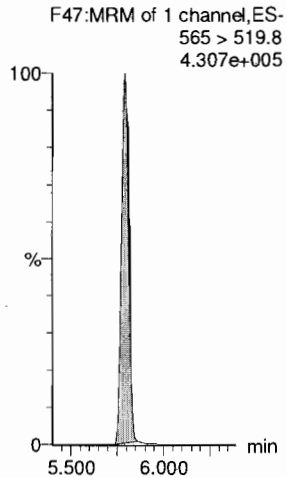


13C2-PFUdA



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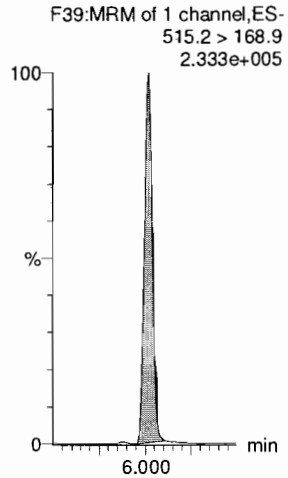

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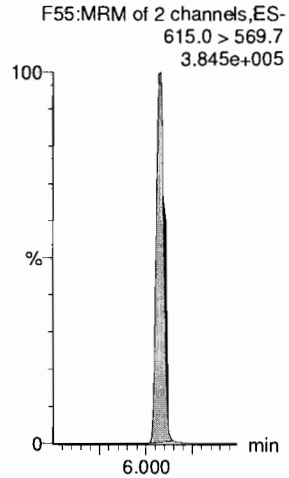

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Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_7, Date: 04-Dec-2018, Time: 12:37:35, ID: ST181204M1-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

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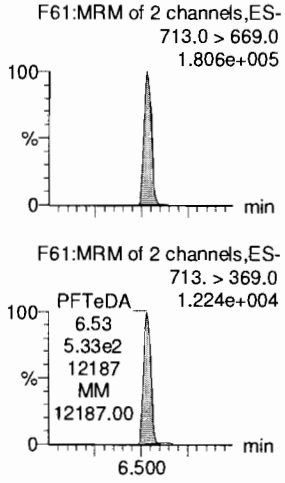

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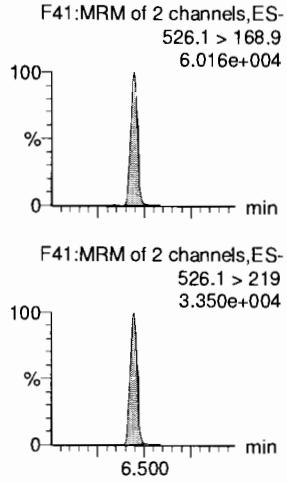
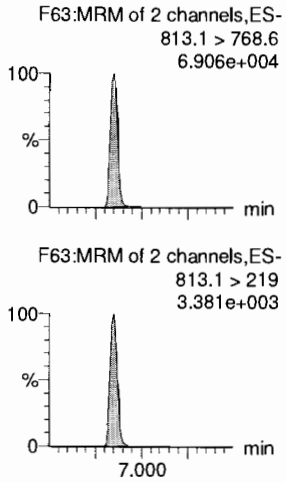


PFHxDA



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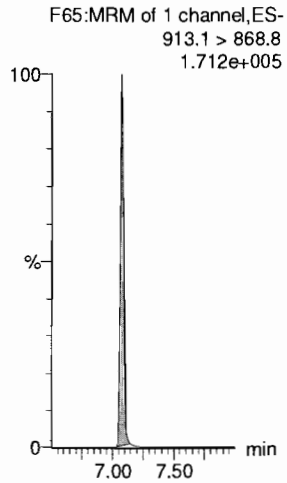

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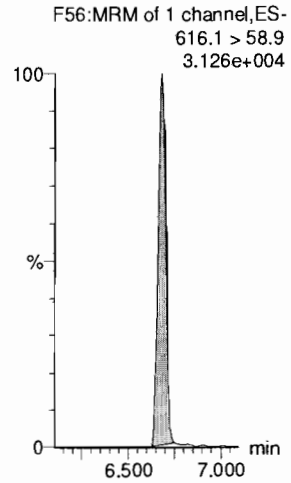

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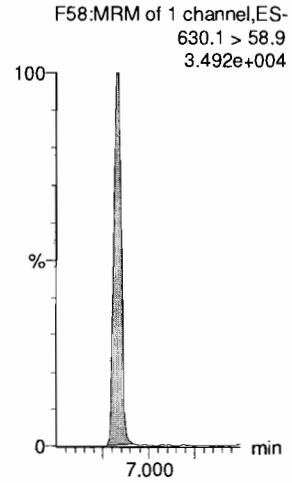

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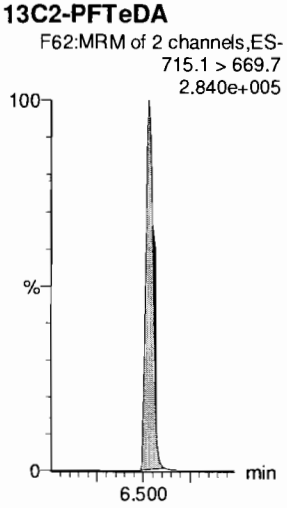
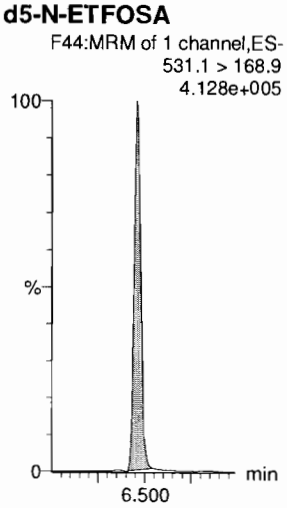


d5-N-ETFOSA



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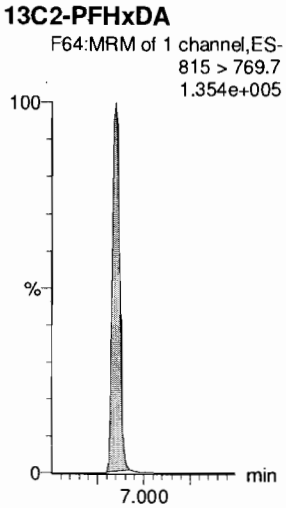

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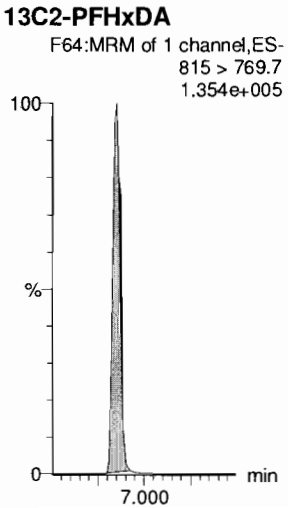

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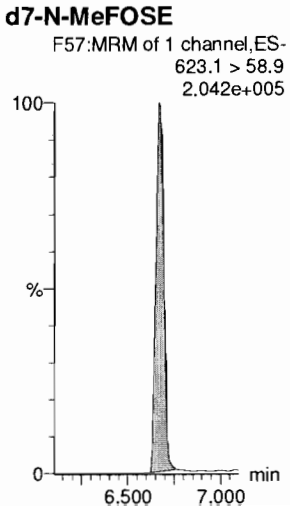

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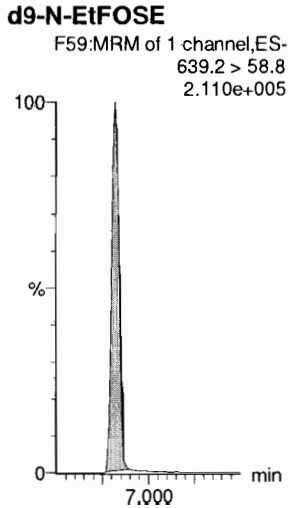

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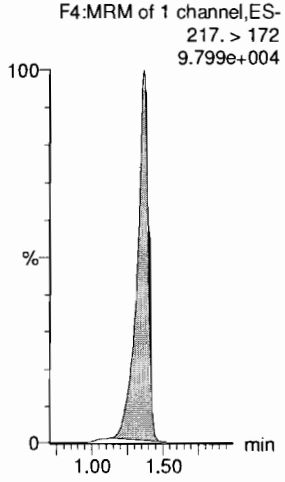
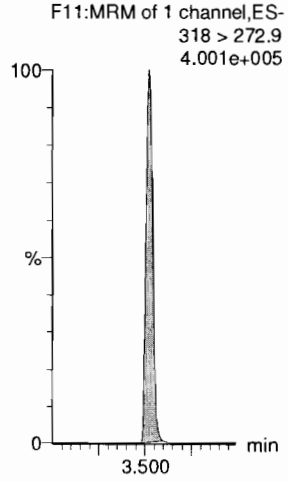
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_7, Date: 04-Dec-2018, Time: 12:37:35, ID: ST181204M1-5 PFC CS2 18K3005, Description: PFC CS2 18K3005

13C4-PFBA



13C5-PFHxA



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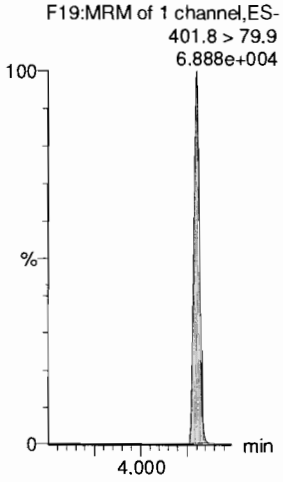

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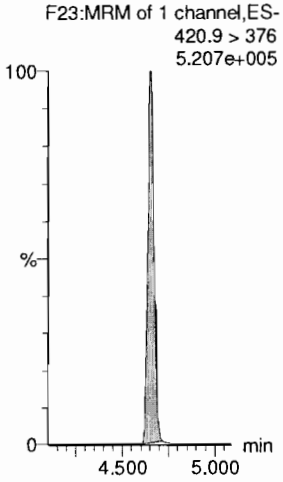

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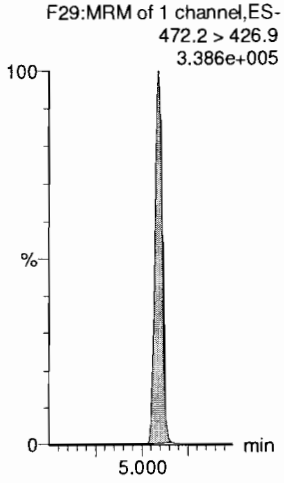
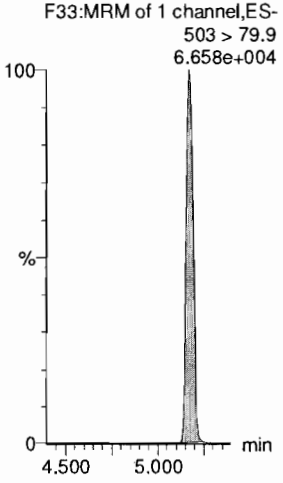


13C4-PFOS



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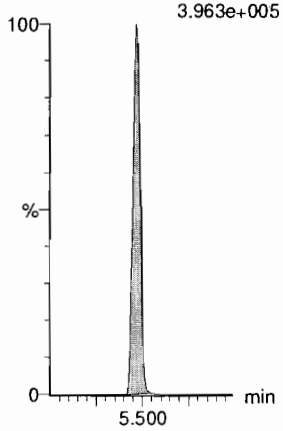
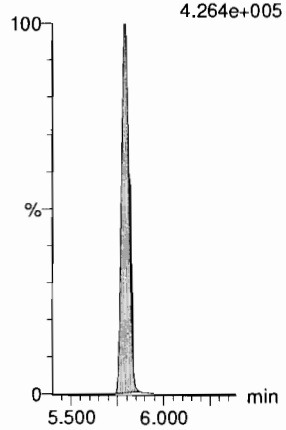


13C7-PFUdA

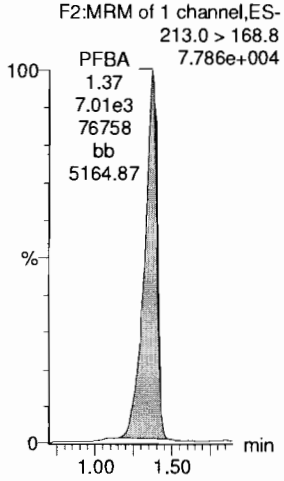


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

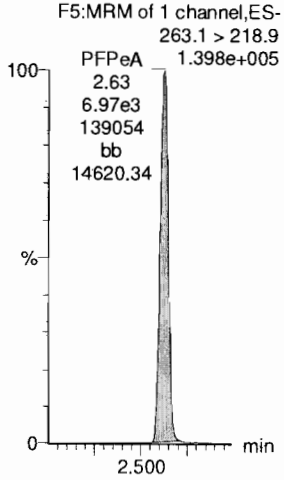
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

PFBA



PFPeA



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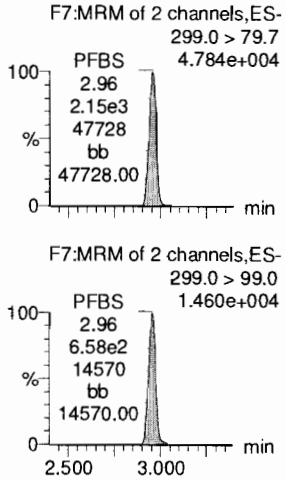
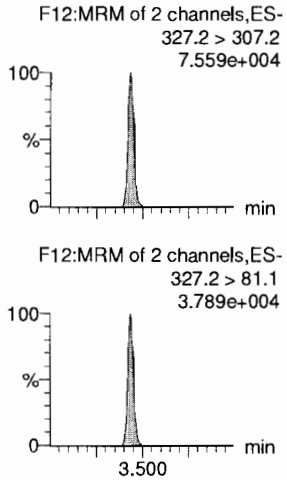
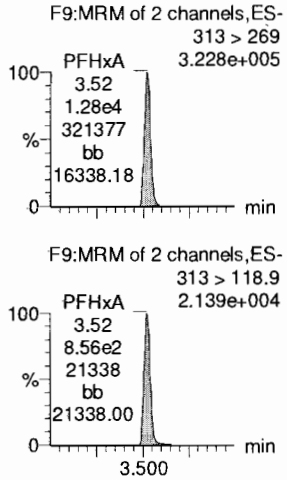


4:2 FTS



PFHxA



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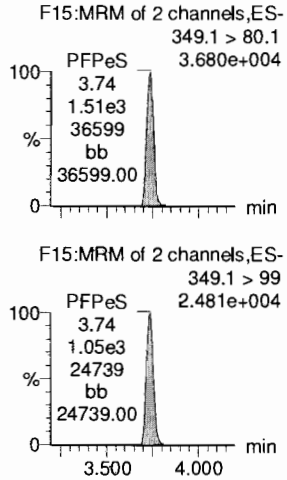

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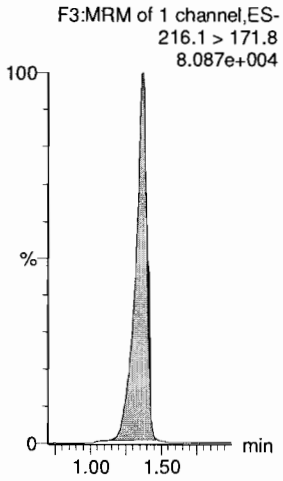
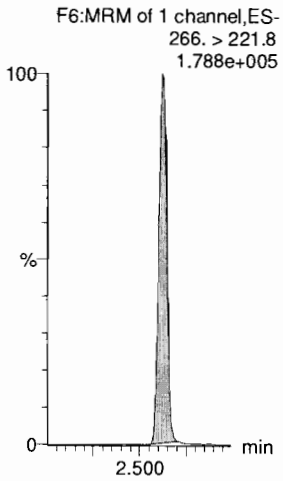
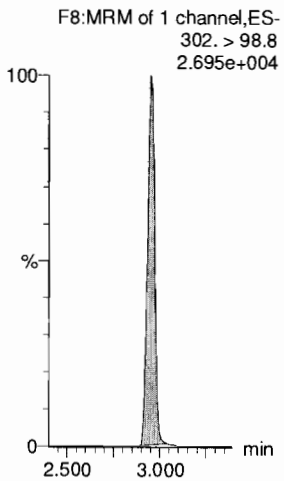


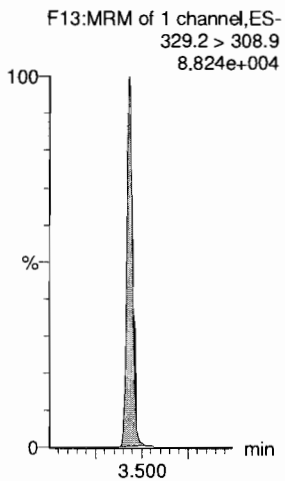
13C3-PFPeA



13C3-PFBS



13C2-4:2 FTS



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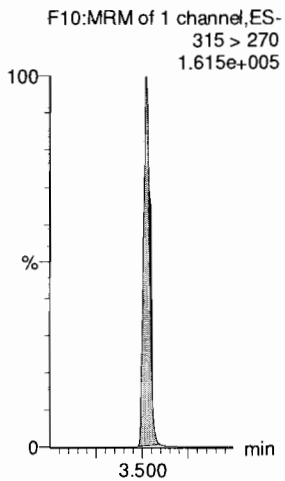

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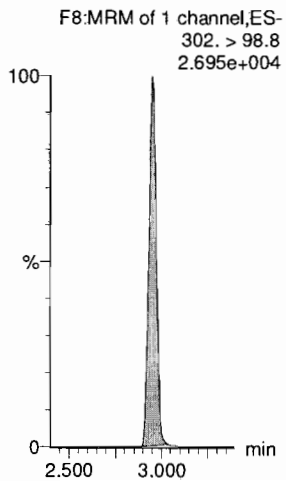

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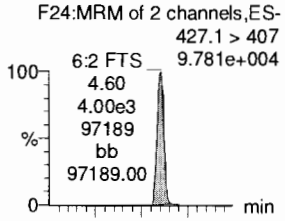
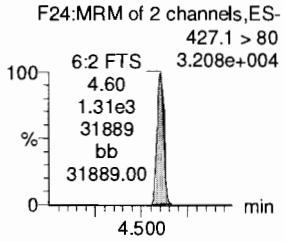
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

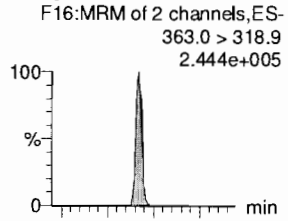
Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

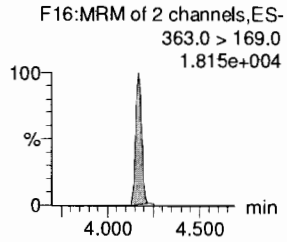
6:2 FTS





PFHpA





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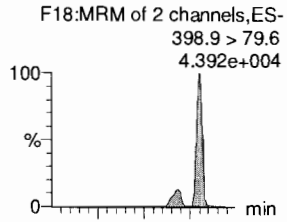

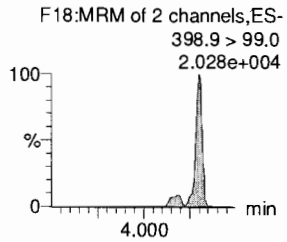

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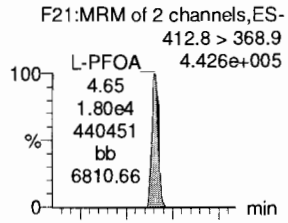

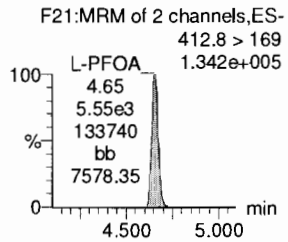

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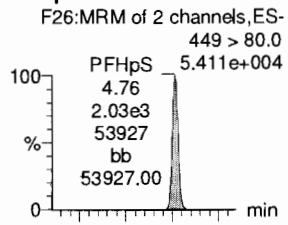

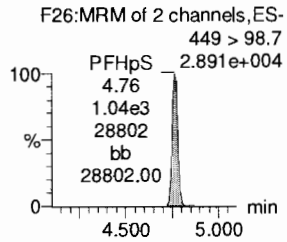

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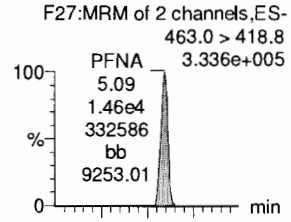
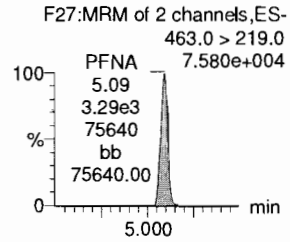
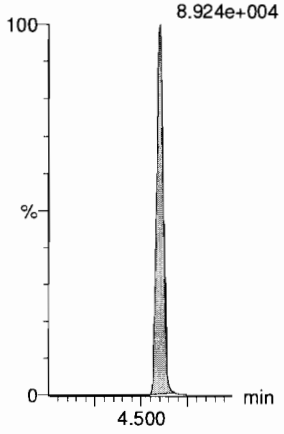




13C2-6:2 FTS



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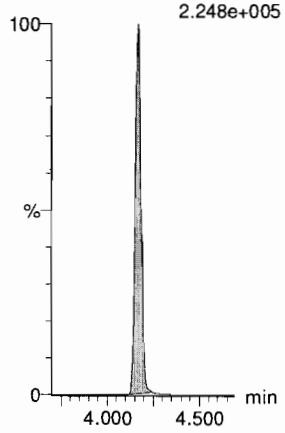
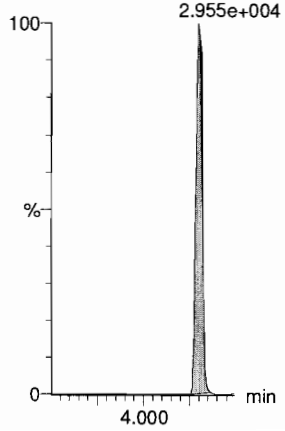


18O2-PFHxS



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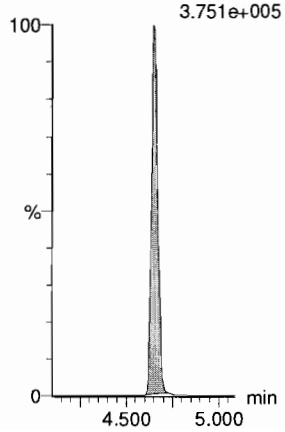
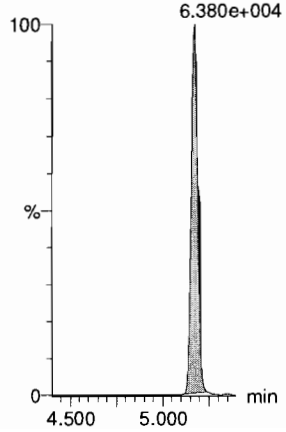
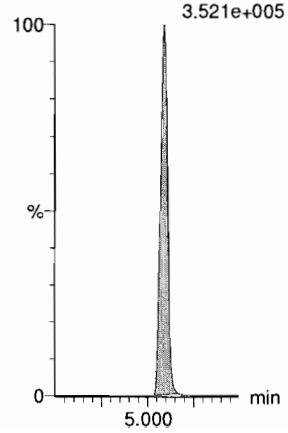


13C8-PFOS



13C5-PFNA



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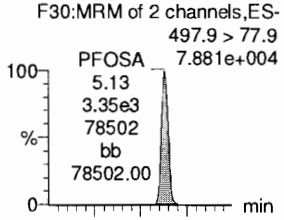
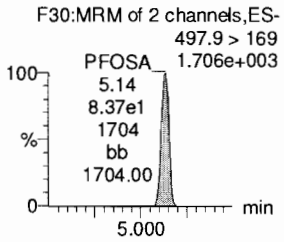
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

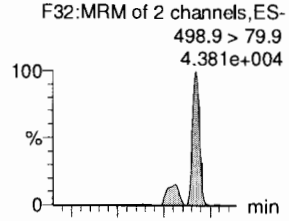
Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

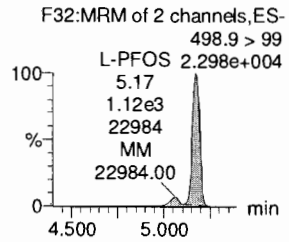
PFOSA





L-PFOS





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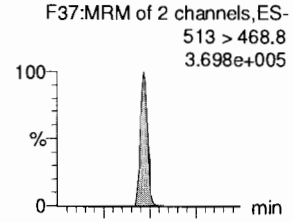
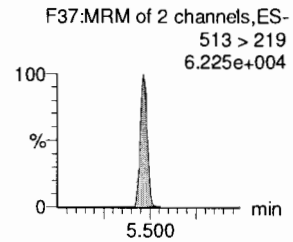
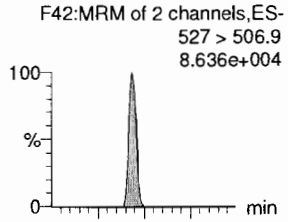
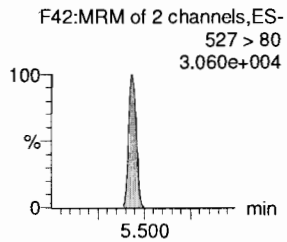




8:2 FTS





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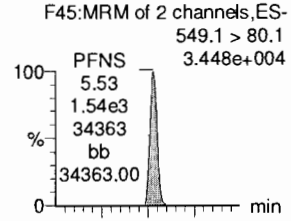

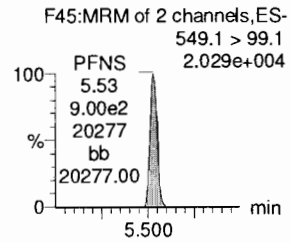

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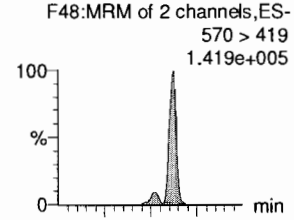
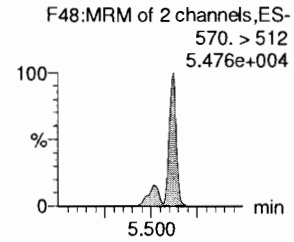
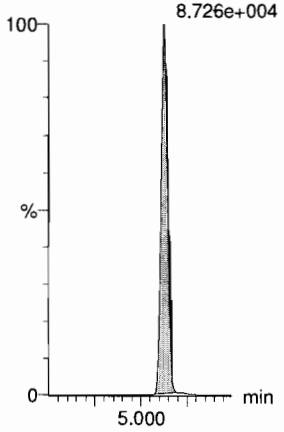




13C8-PFOSA



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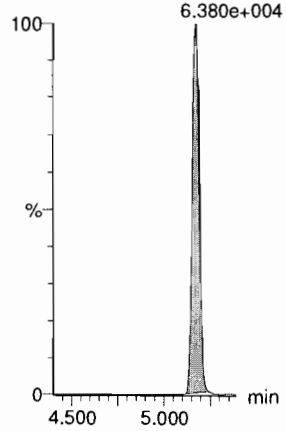

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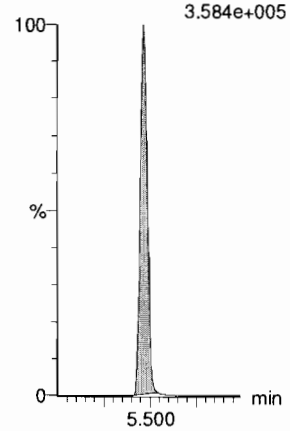
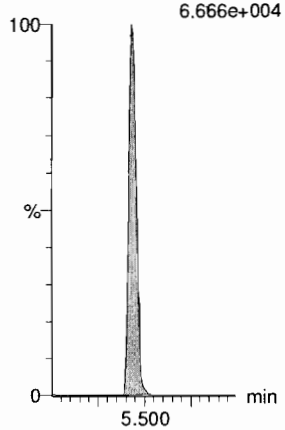


13C2-8:2 FTS



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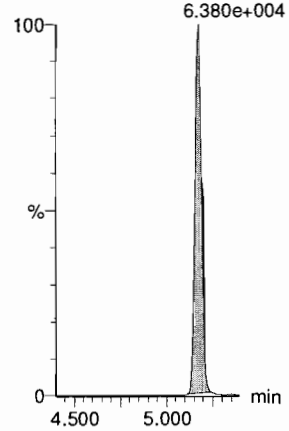
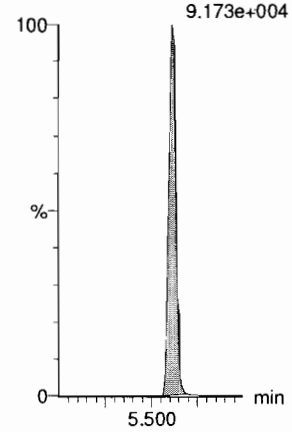


d3-N-MeFOSAA



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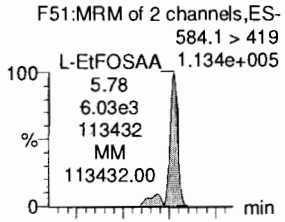
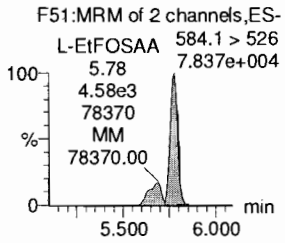
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

L-EtFOSAA





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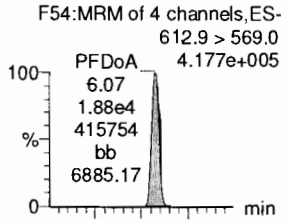

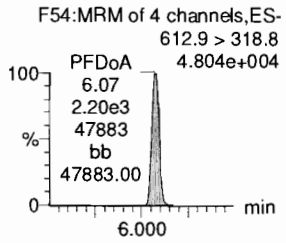

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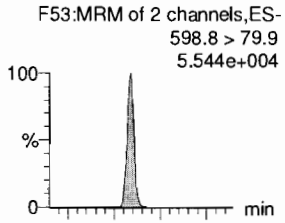

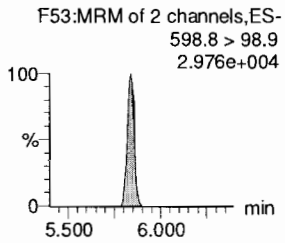

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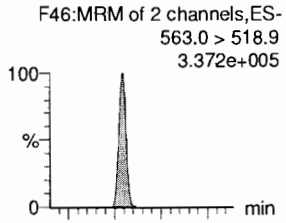
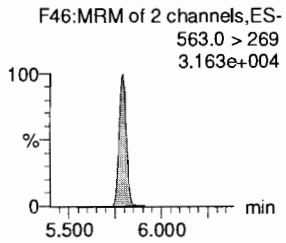
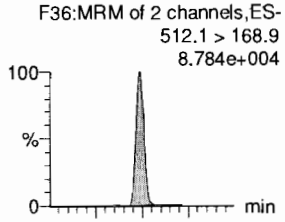
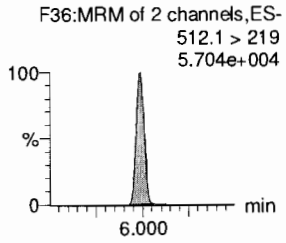




N-MeFOSA





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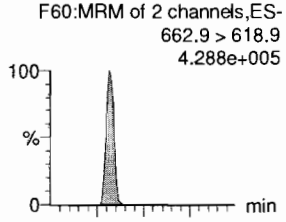
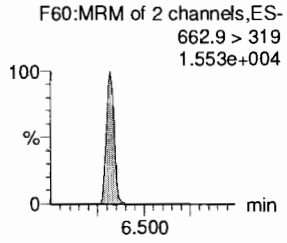
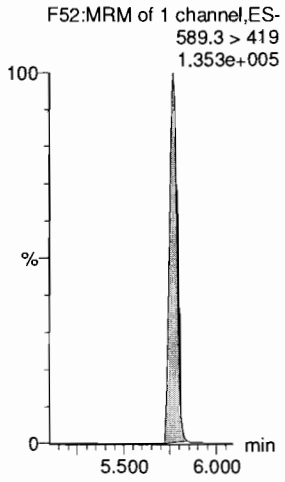
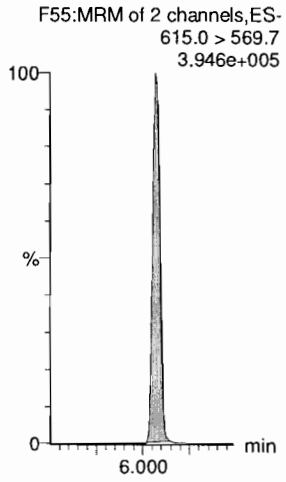




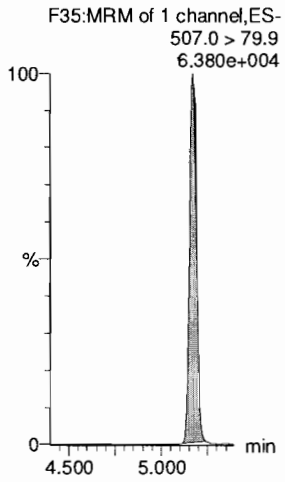
d5-N-EtFOSAA



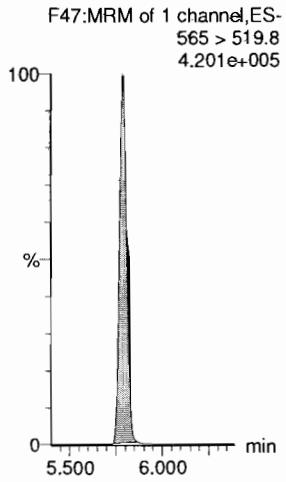
13C2-PFDoA



13C8-PFOS



13C2-PFUdA



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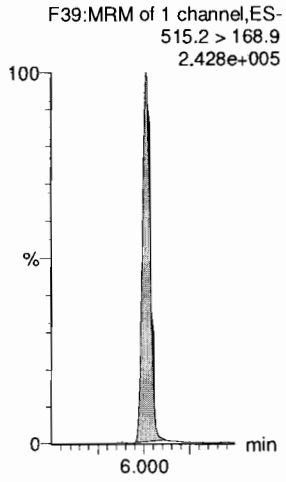

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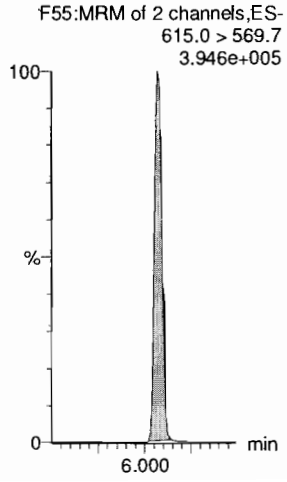
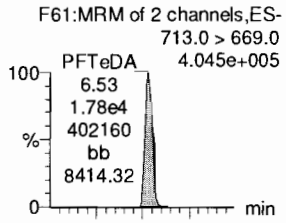


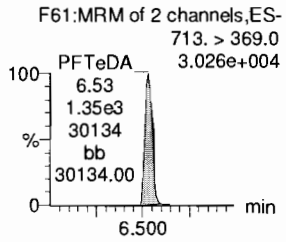
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

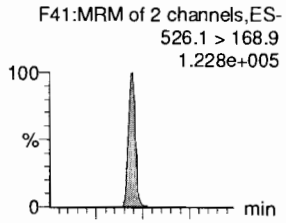
Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

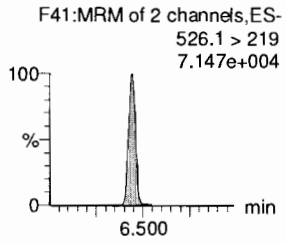
PFTeDA





N-EtFOSA





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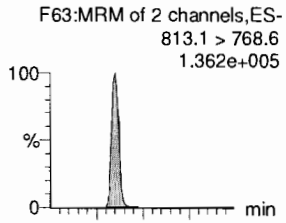
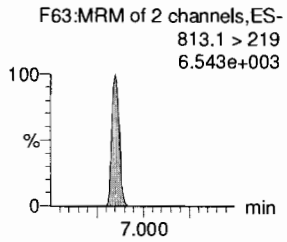
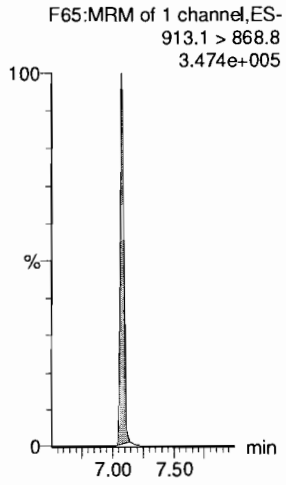
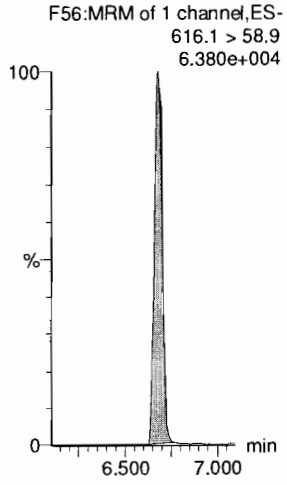




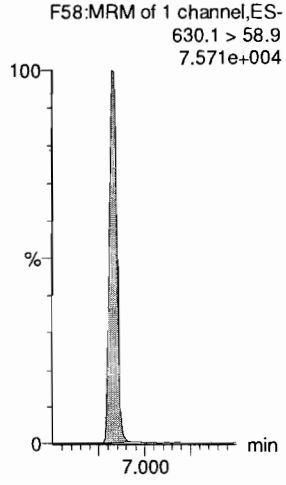
PFODA



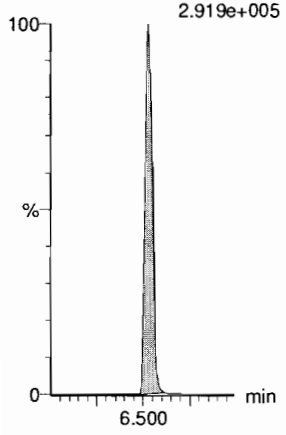
N-MeFOSE



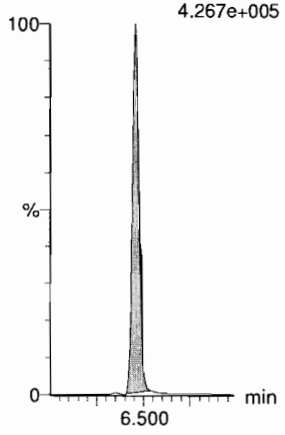
N-EtFOSE



13C2-PFTeDA



d5-N-ETFOSA



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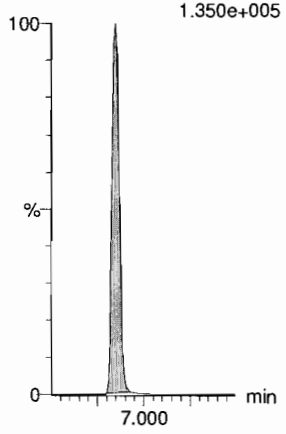

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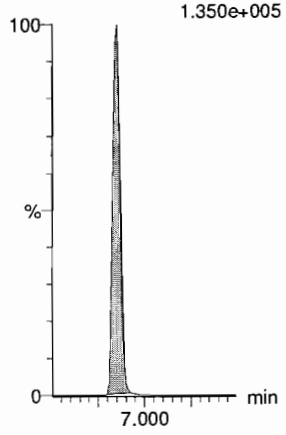
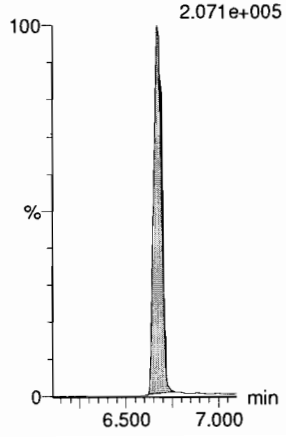
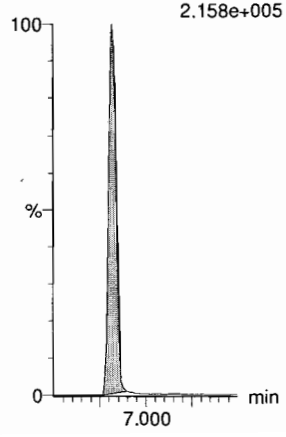


d7-N-MeFOSE



d9-N-EtFOSE

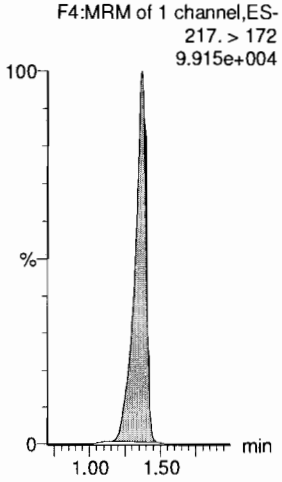


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

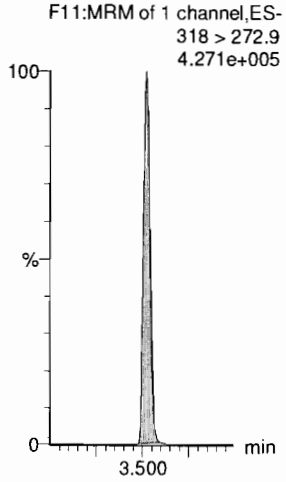
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_8, Date: 04-Dec-2018, Time: 12:48:14, ID: ST181204M1-6 PFC CS3 18K3006, Description: PFC CS3 18K3006

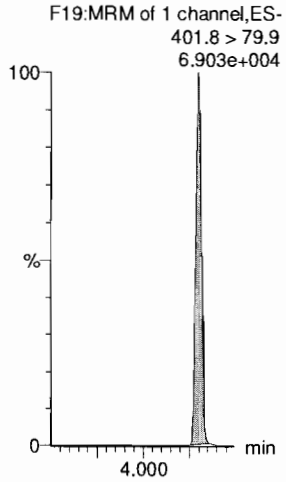
13C4-PFBA



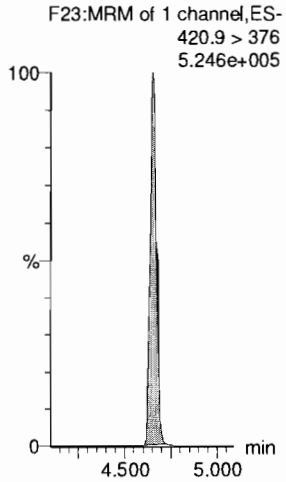
13C5-PFHxA



13C3-PFHxS



13C8-PFOA



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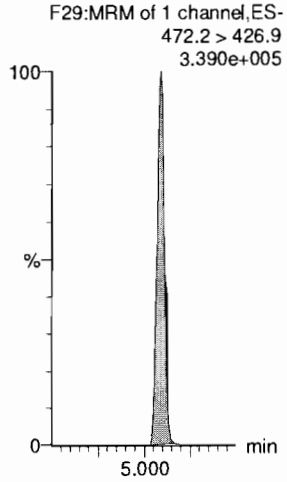
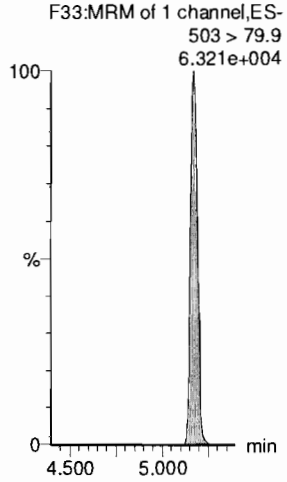
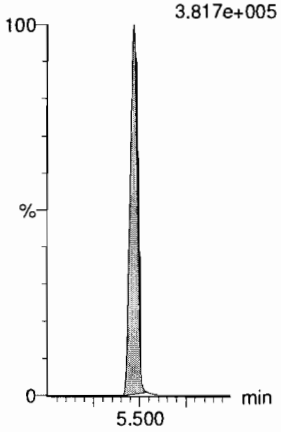


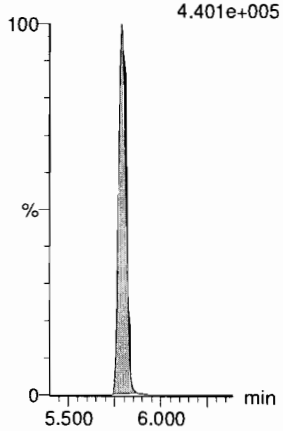
13C4-PFOS



13C6-PFDA



13C7-PFUdA

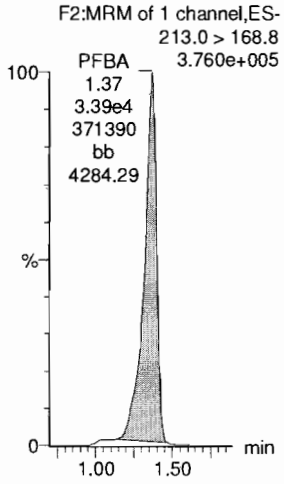


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

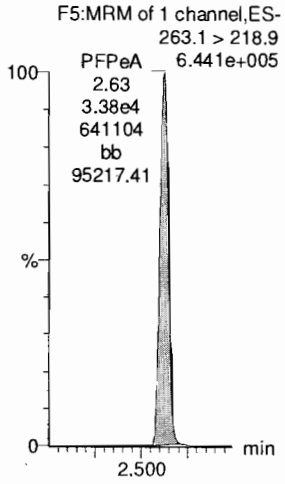
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_9, Date: 04-Dec-2018, Time: 12:58:46, ID: ST181204M1-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

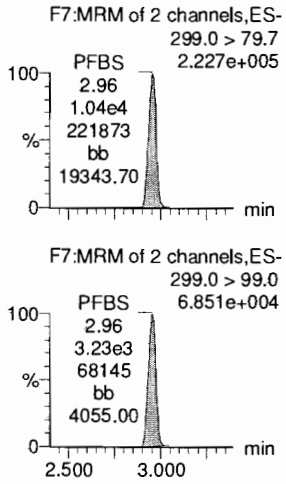
PFBA



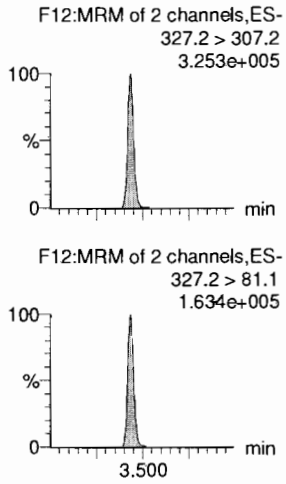
PFPeA



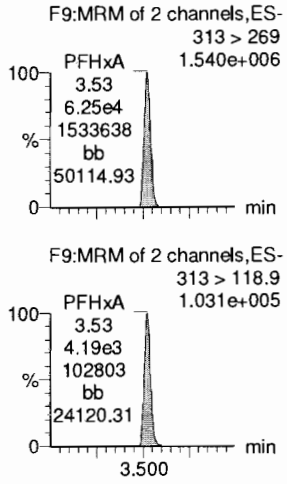
PFBS



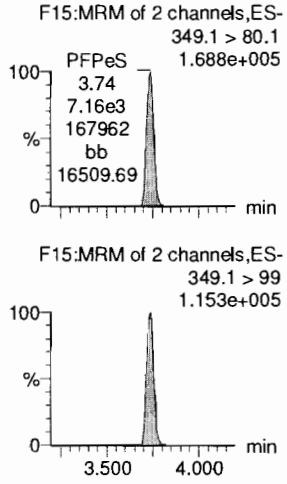
4:2 FTS



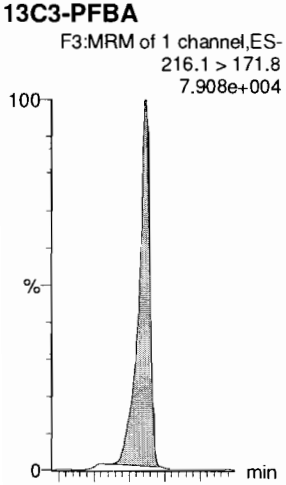
PFHxA



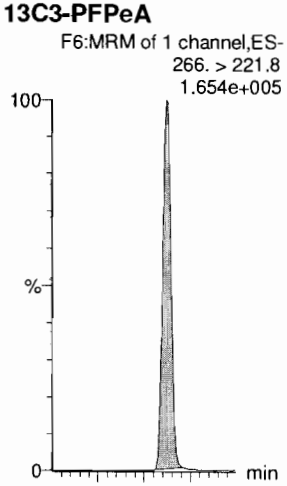
PFPeS



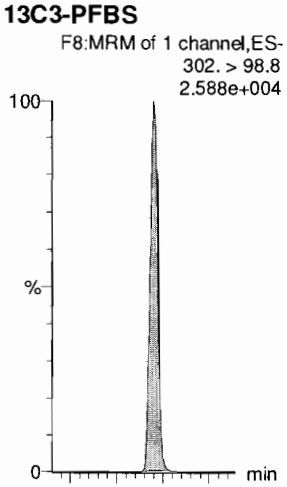
13C3-PFBA



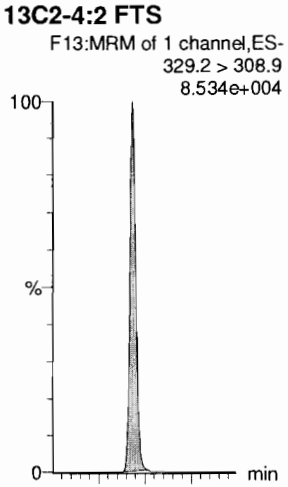
13C3-PFPeA



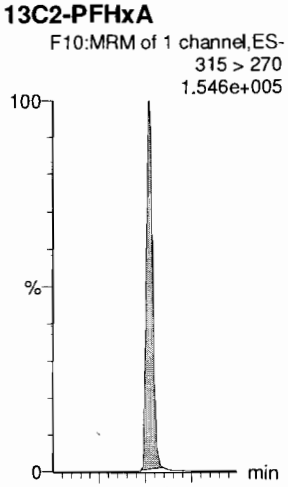
13C3-PFBS



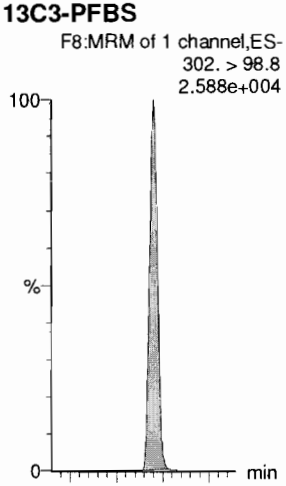
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

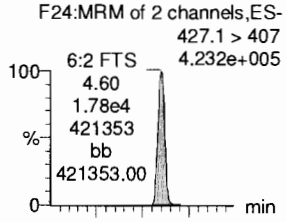


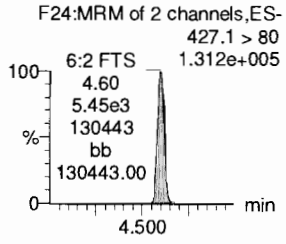
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

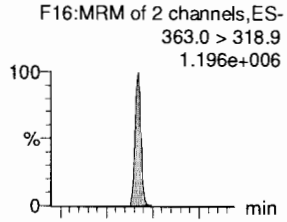
Name: 181204M1_9, Date: 04-Dec-2018, Time: 12:58:46, ID: ST181204M1-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

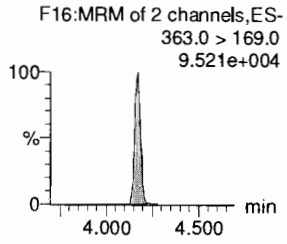
6:2 FTS



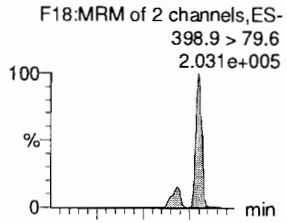


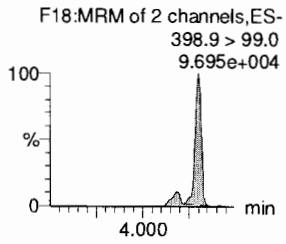
PFHpA



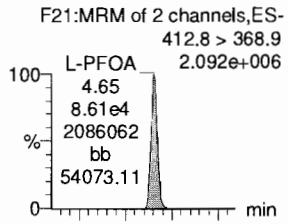


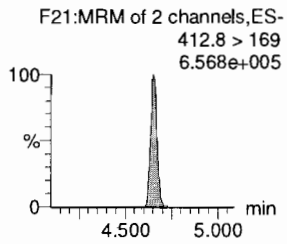
L-PFHxS





L-PFOA





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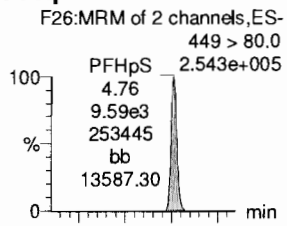

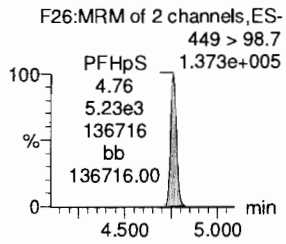

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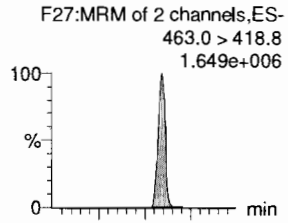
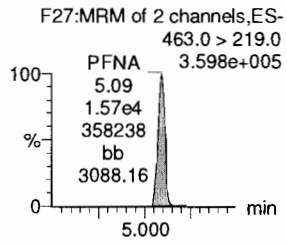
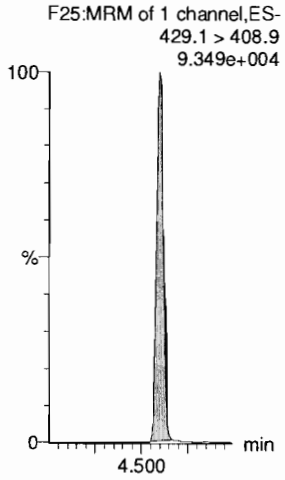
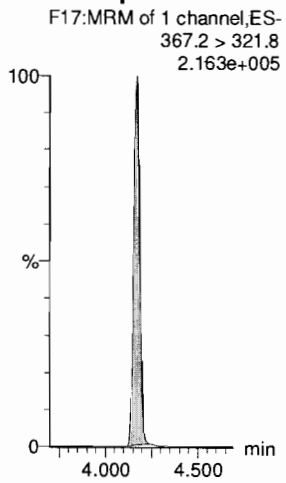




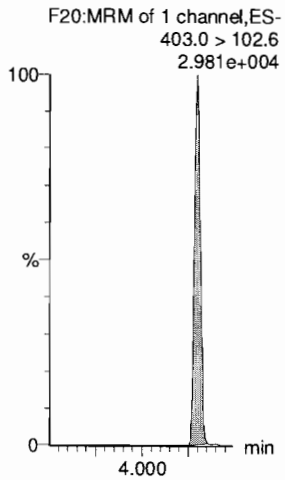
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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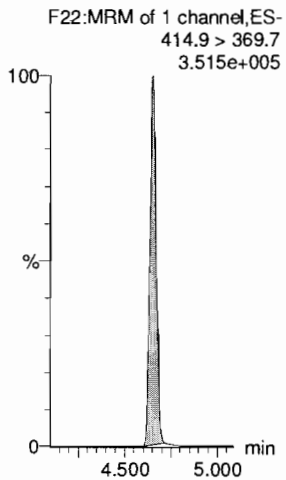
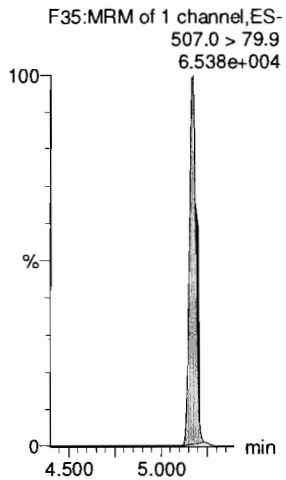
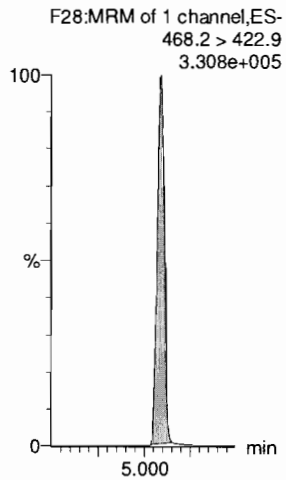


13C8-PFOS



13C5-PFNA



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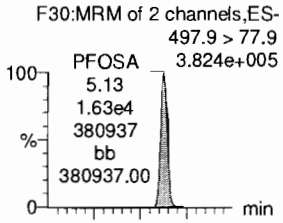
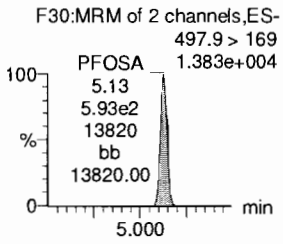
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_9, Date: 04-Dec-2018, Time: 12:58:46, ID: ST181204M1-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

PFOSA





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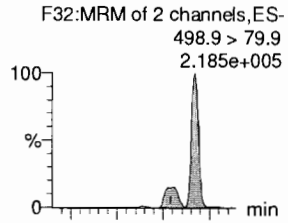

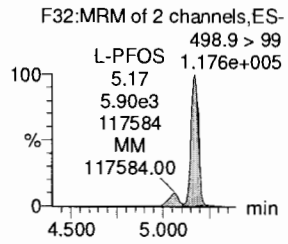

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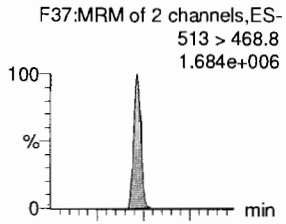

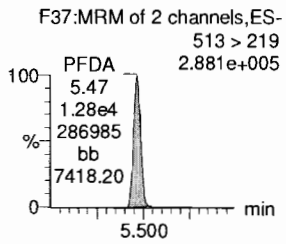

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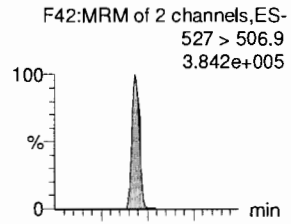

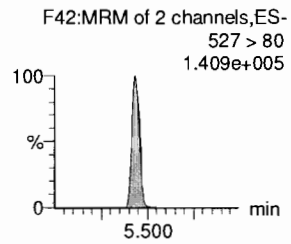

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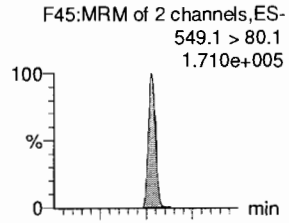

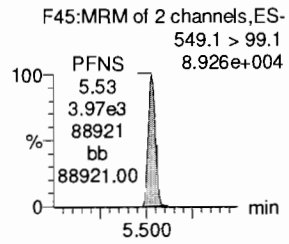

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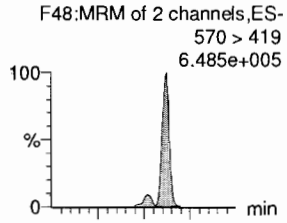
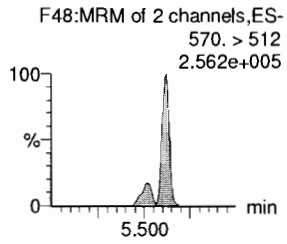
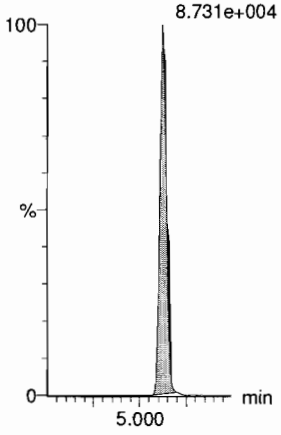




13C8-PFOSA



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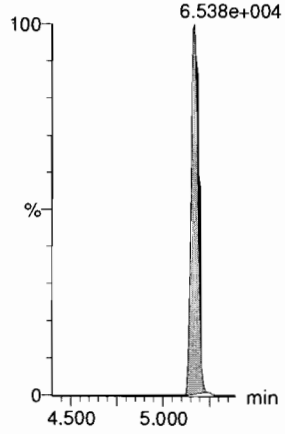

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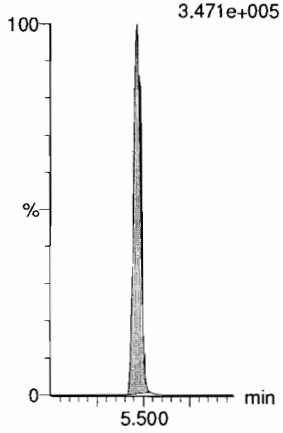
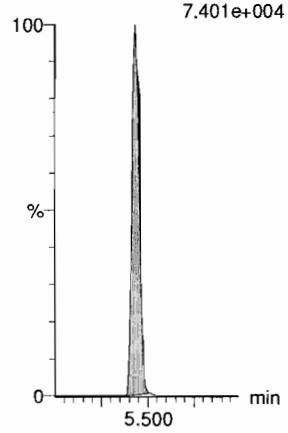


13C2-8:2 FTS



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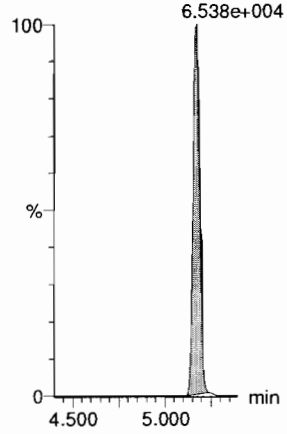
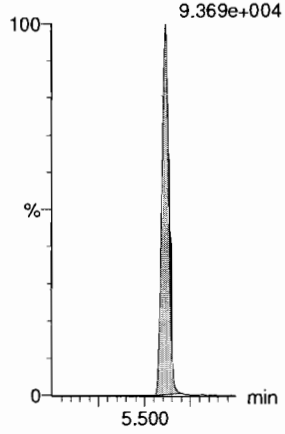


d3-N-MeFOSAA



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Name: 181204M1_9, Date: 04-Dec-2018, Time: 12:58:46, ID: ST181204M1-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

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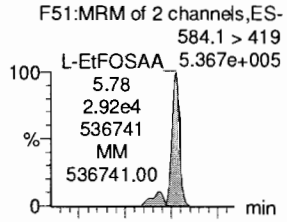

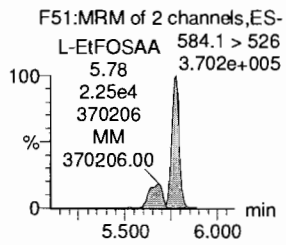

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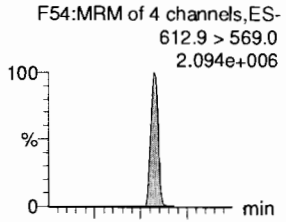

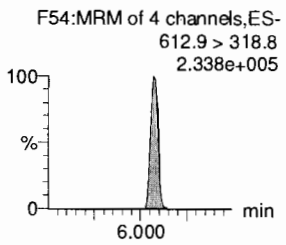

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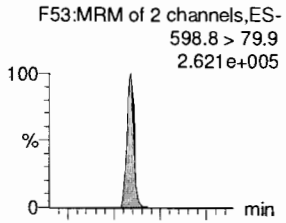

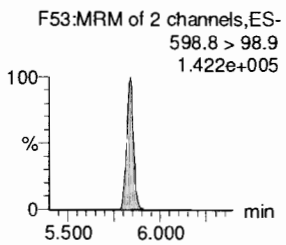

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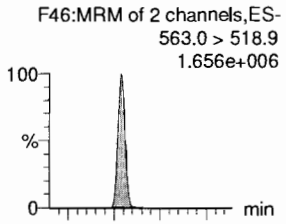
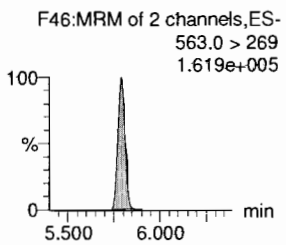
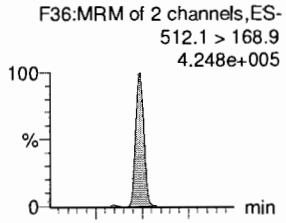
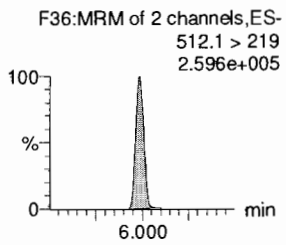




N-MeFOSA





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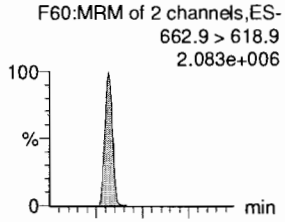
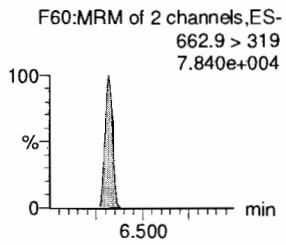
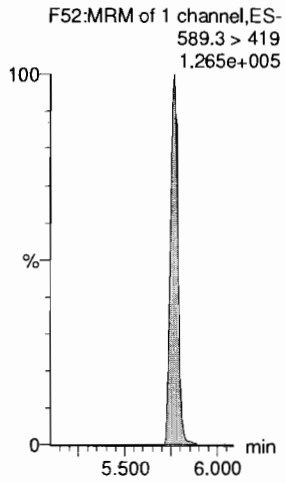
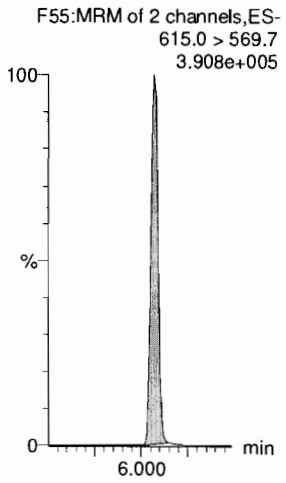




d5-N-EtFOSAA



13C2-PFDoA



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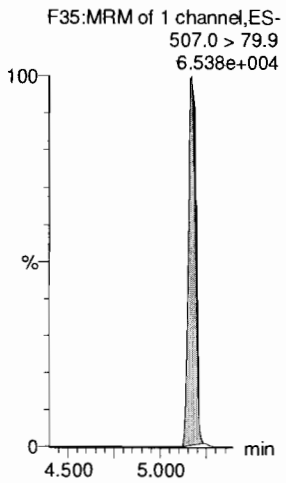
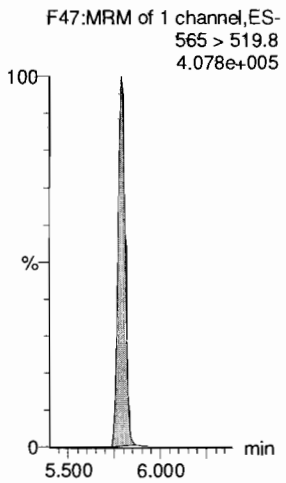
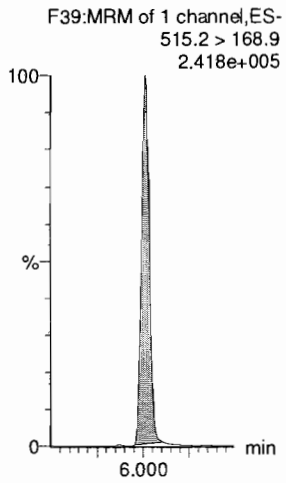


13C2-PFUdA



d3-N-MeFOSA



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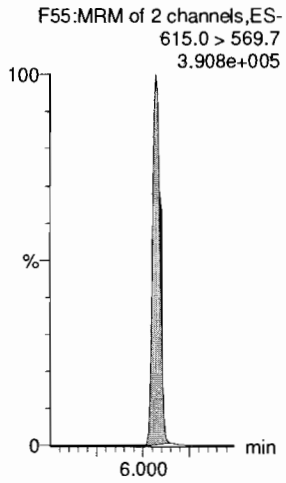

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Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_9, Date: 04-Dec-2018, Time: 12:58:46, ID: ST181204M1-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

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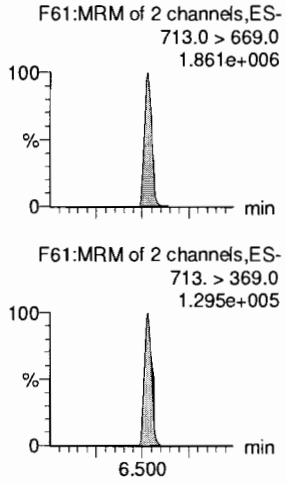

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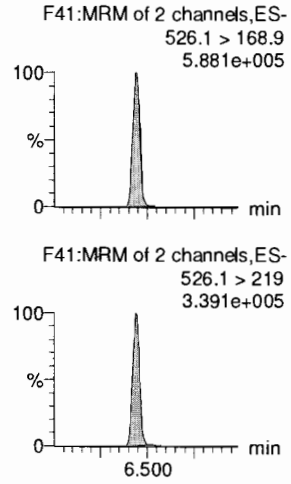

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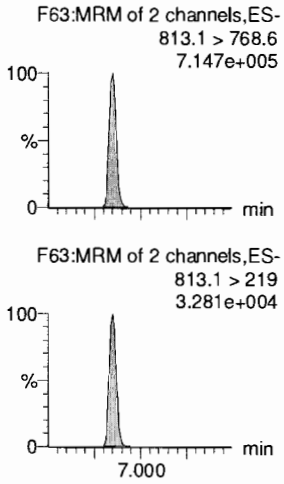
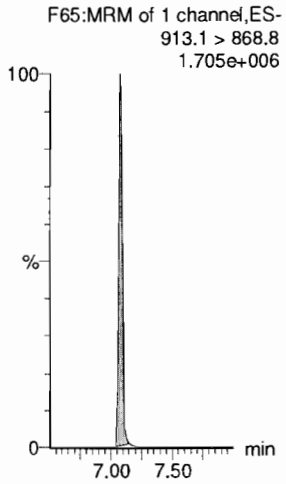
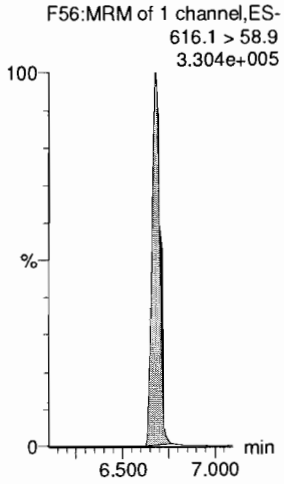


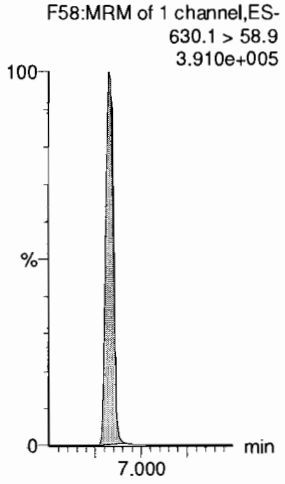
PFODA



N-MeFOSE



N-EtFOSE



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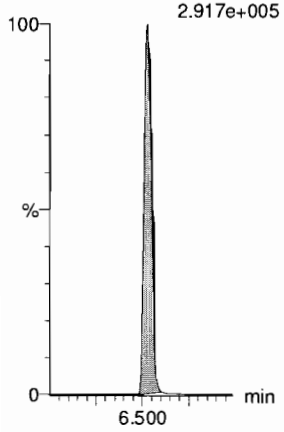
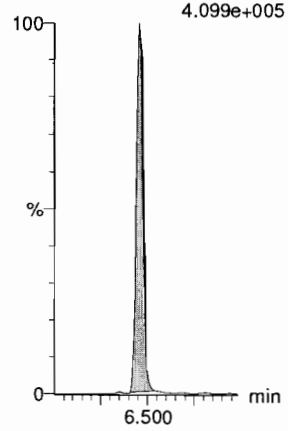


d5-N-ETFOSA



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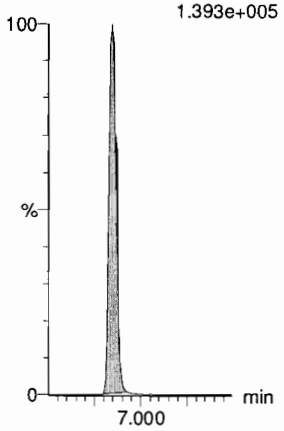
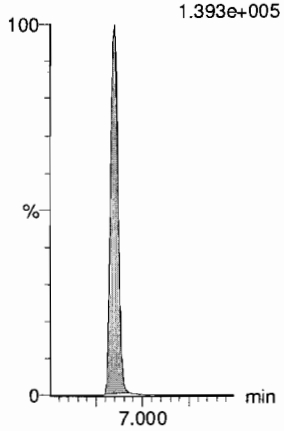
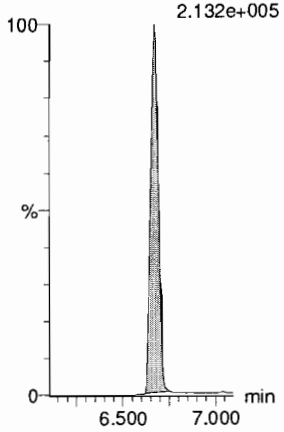


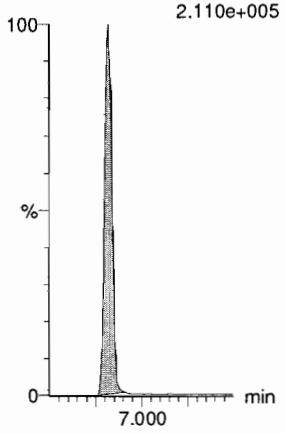
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

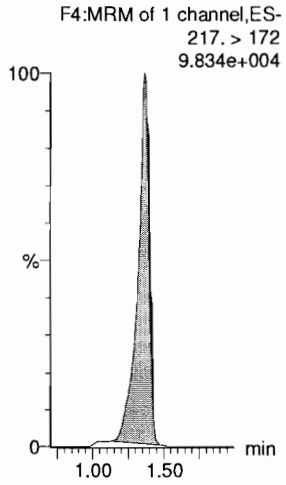


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

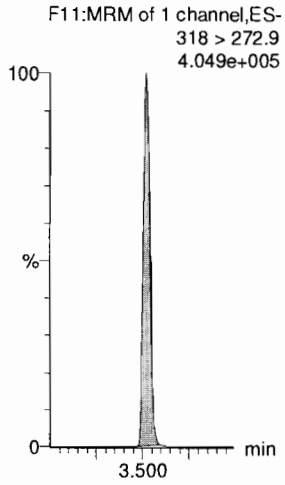
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_9, Date: 04-Dec-2018, Time: 12:58:46, ID: ST181204M1-7 PFC CS4 18K3007, Description: PFC CS4 18K3007

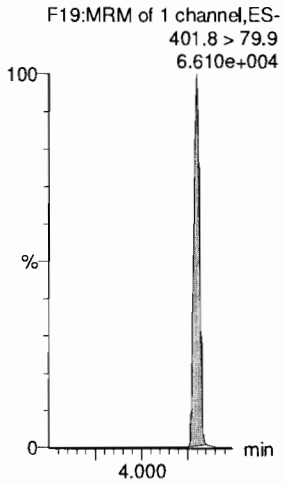
13C4-PFBA



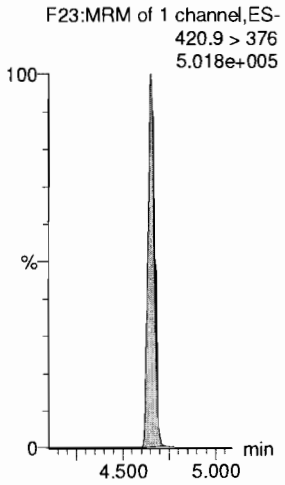
13C5-PFHxA



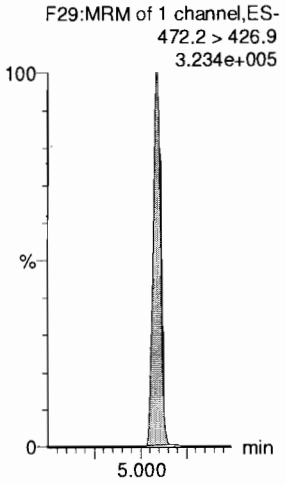
13C3-PFHxS



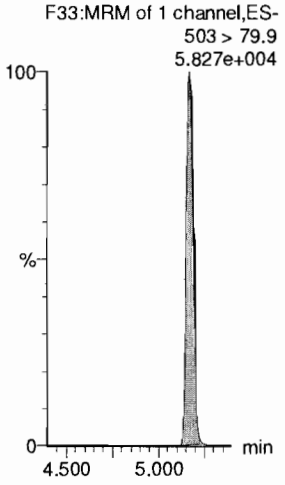
13C8-PFOA



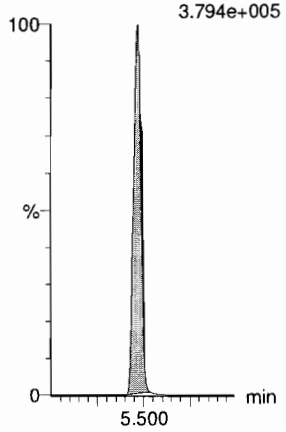
13C9-PFNA



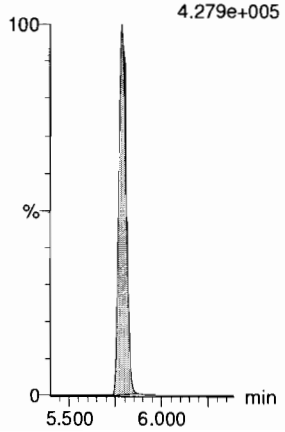
13C4-PFOS



13C6-PFDA



13C7-PFUdA

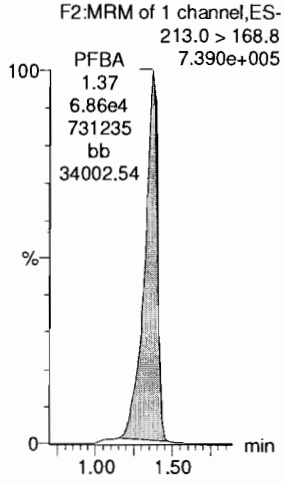


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

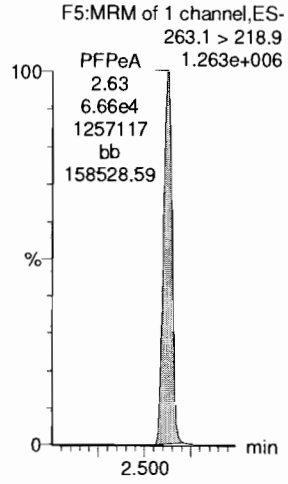
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_10, Date: 04-Dec-2018, Time: 13:09:24, ID: ST181204M1-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

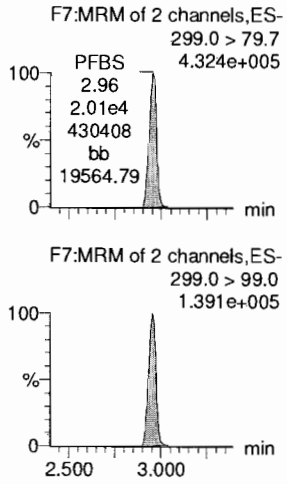
PFBA



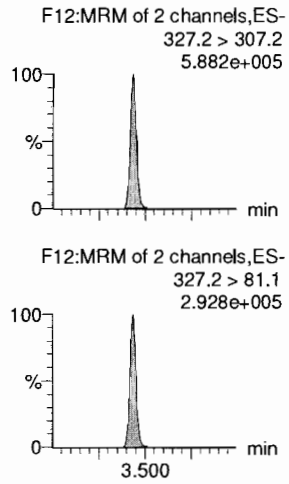
PFPeA



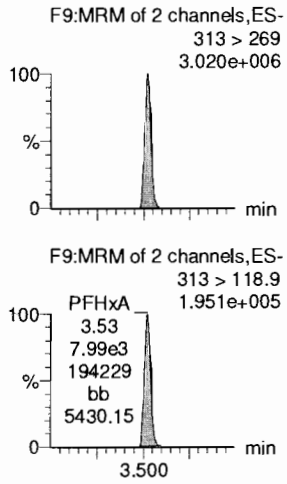
PFBS



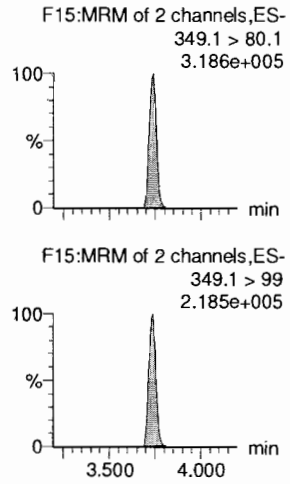
4:2 FTS



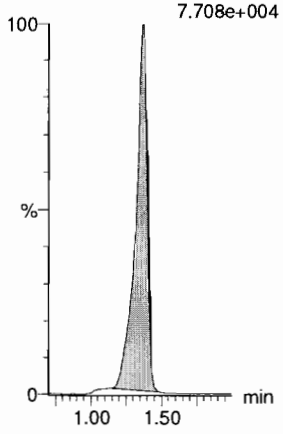
PFHxA



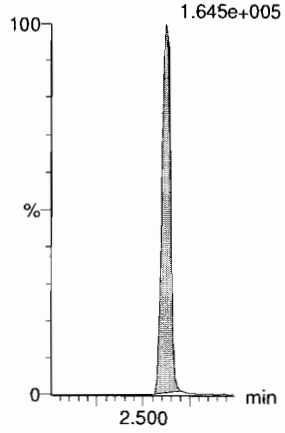
PFPeS



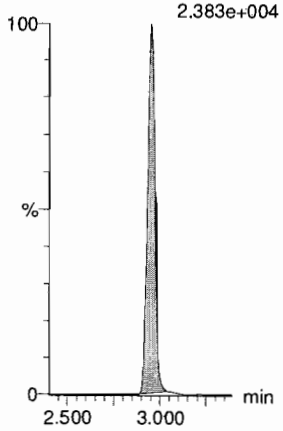
13C3-PFBA



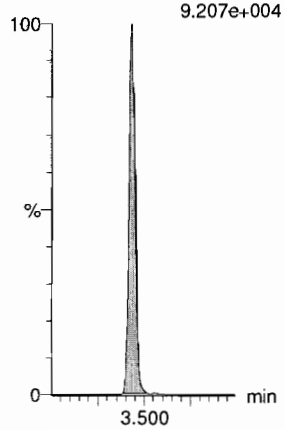
13C3-PFPeA



13C3-PFBS



13C2-4:2 FTS



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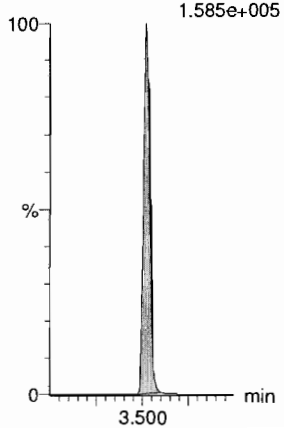
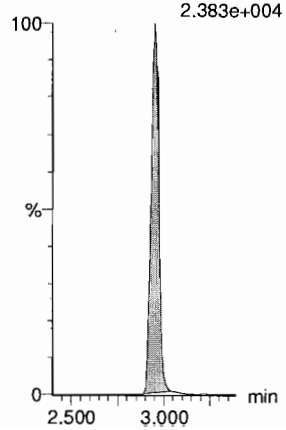


13C3-PFBS

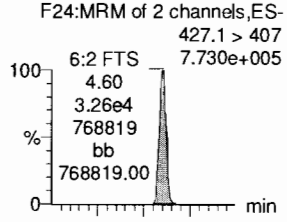


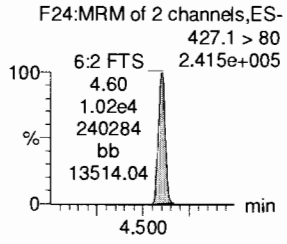
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

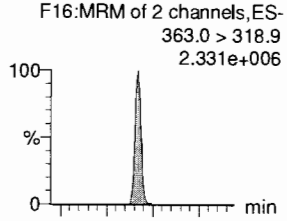
Name: 181204M1_10, Date: 04-Dec-2018, Time: 13:09:24, ID: ST181204M1-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

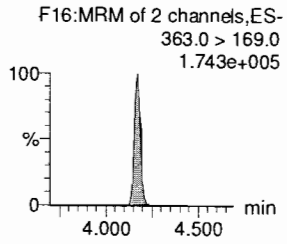
6:2 FTS



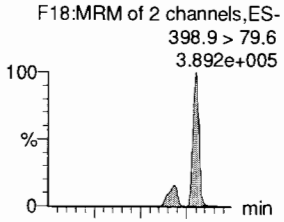


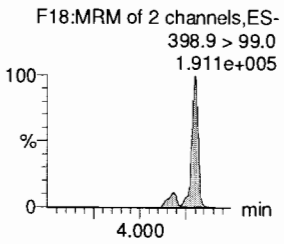
PFHpA



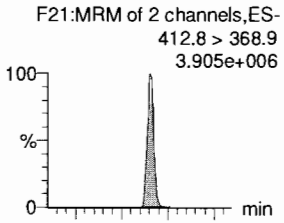


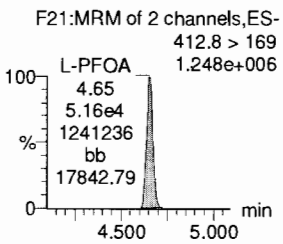
L-PFHxS



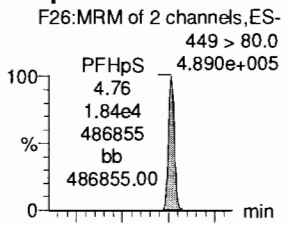


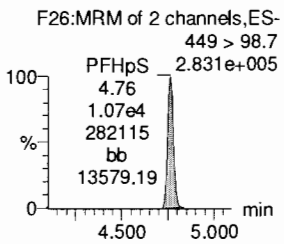
L-PFOA



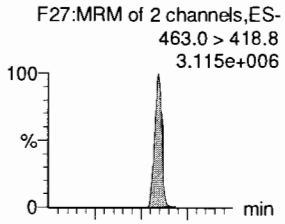


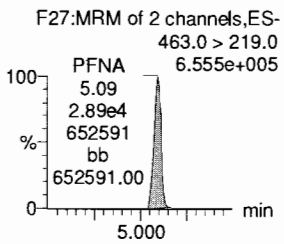
PFHpS



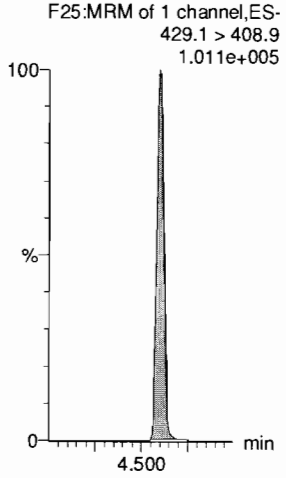


PFNA

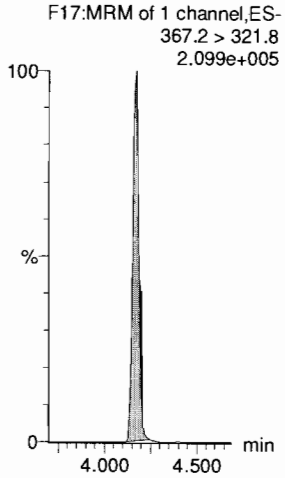




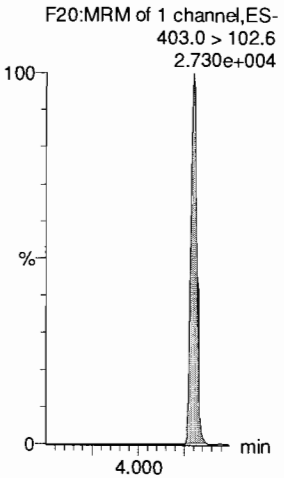
13C2-6:2 FTS



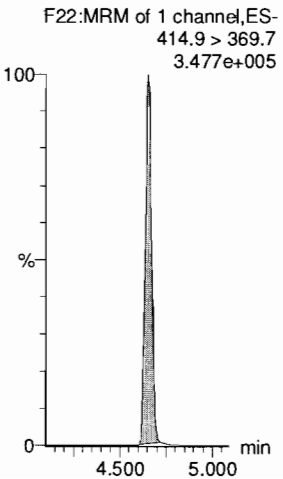
13C4-PFHpA



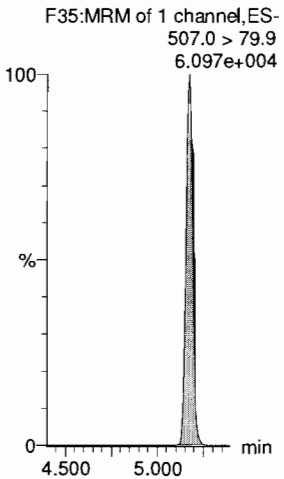
18O2-PFHxS



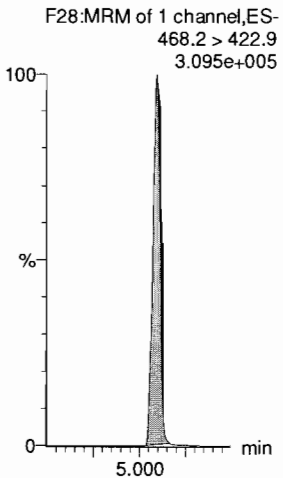
13C2-PFOA



13C8-PFOS



13C5-PFNA

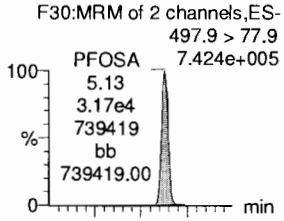


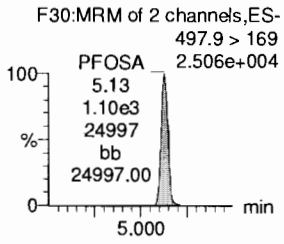
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

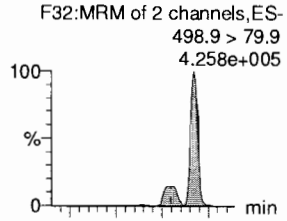
Name: 181204M1_10, Date: 04-Dec-2018, Time: 13:09:24, ID: ST181204M1-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

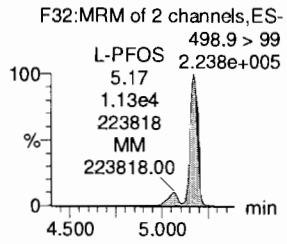
PFOSA



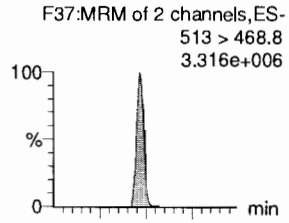


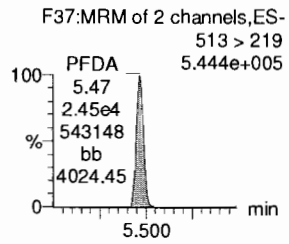
L-PFOS



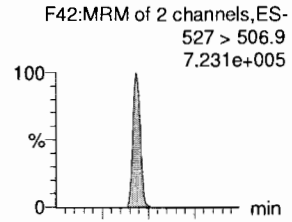


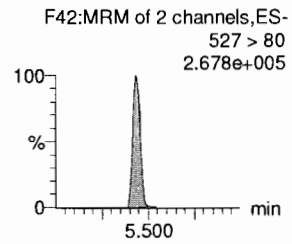
PFDA



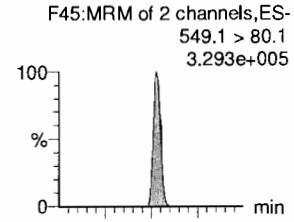


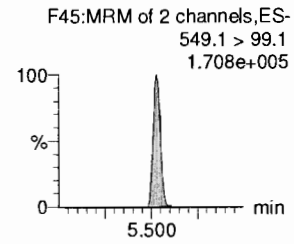
8:2 FTS



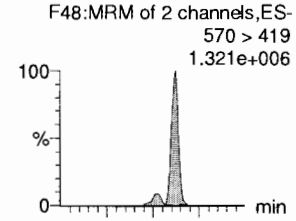


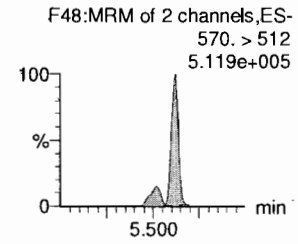
PFNS



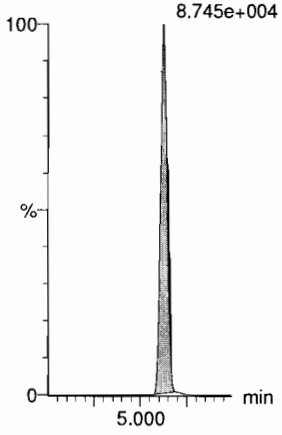


L-MeFOSAA





13C8-PFOSA



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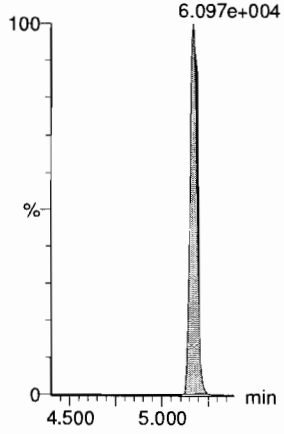

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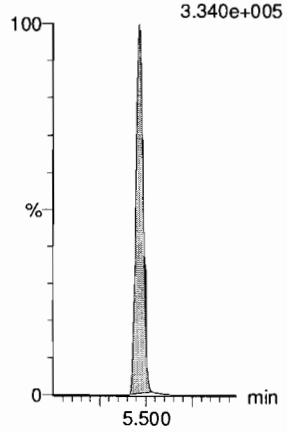
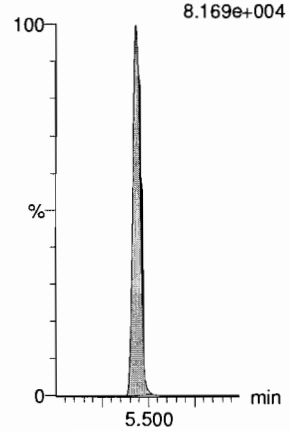


13C2-8:2 FTS



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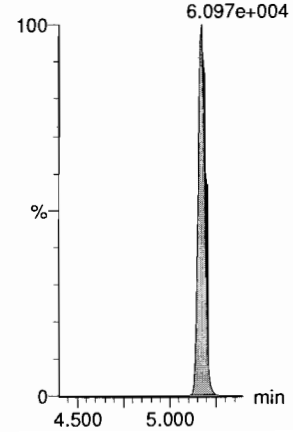
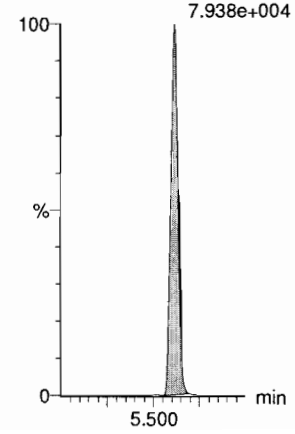


d3-N-MeFOSAA



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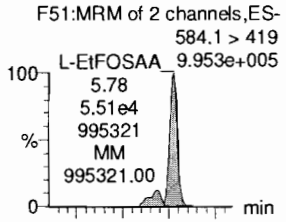
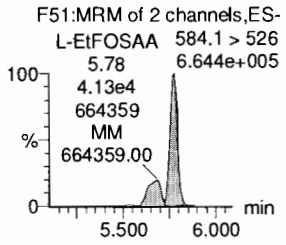
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

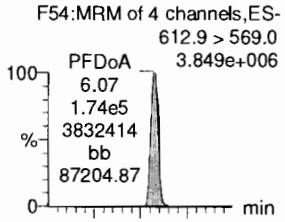
Name: 181204M1_10, Date: 04-Dec-2018, Time: 13:09:24, ID: ST181204M1-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

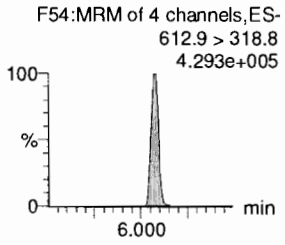
L-EtFOSAA





PFDoA





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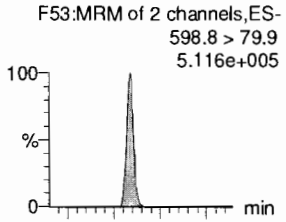

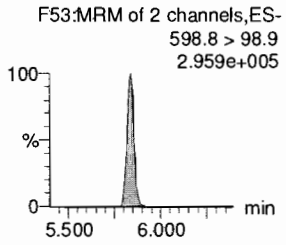

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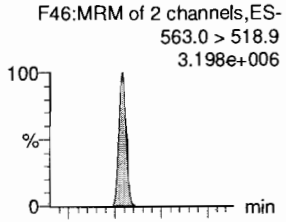

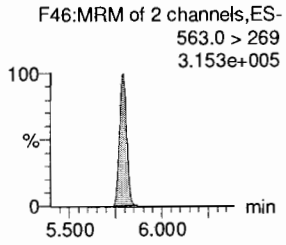

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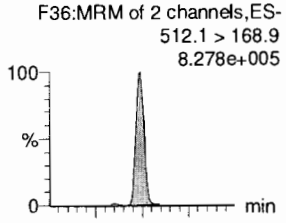

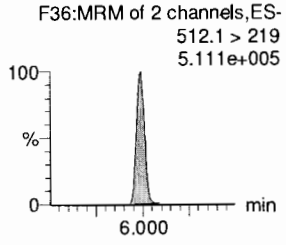

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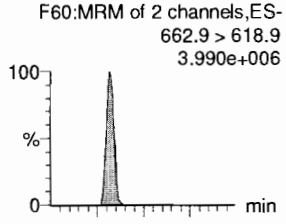
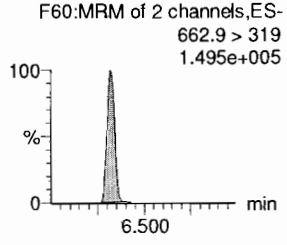
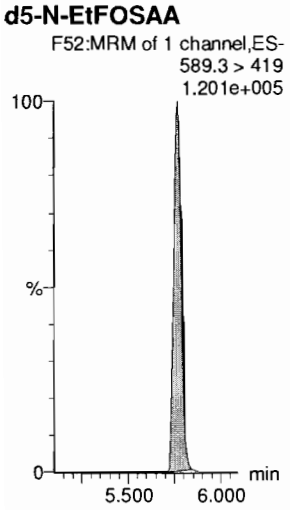




d5-N-EtFOSAA



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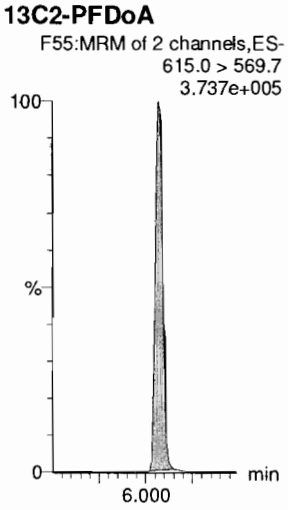

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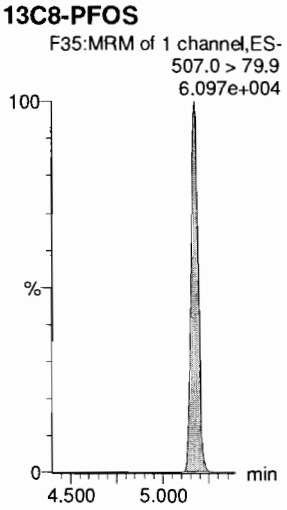

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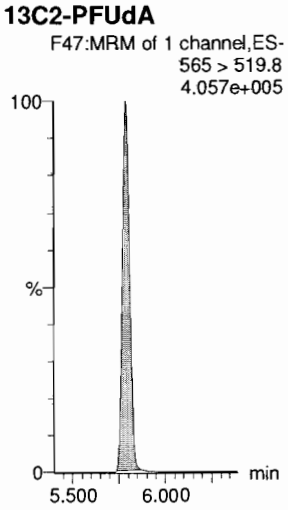

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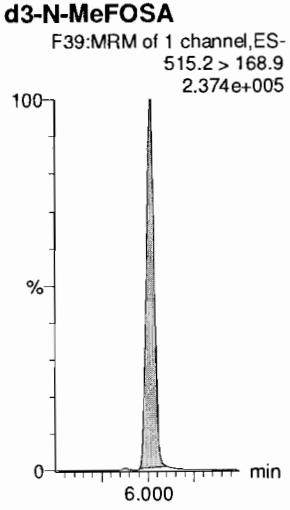

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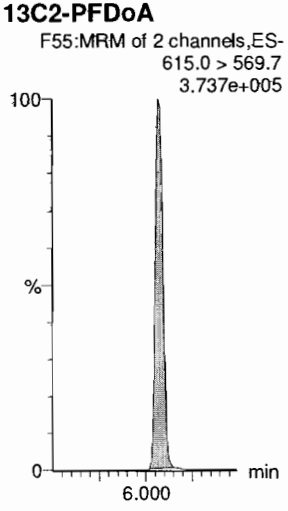

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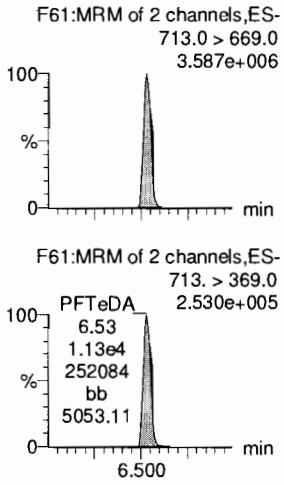
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_10, Date: 04-Dec-2018, Time: 13:09:24, ID: ST181204M1-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

PFTeDA



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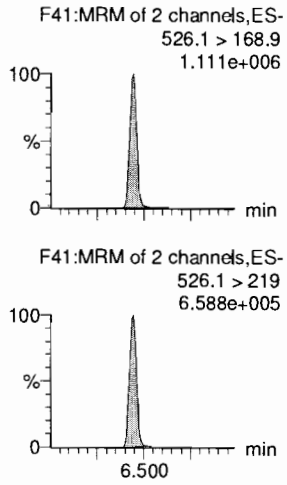

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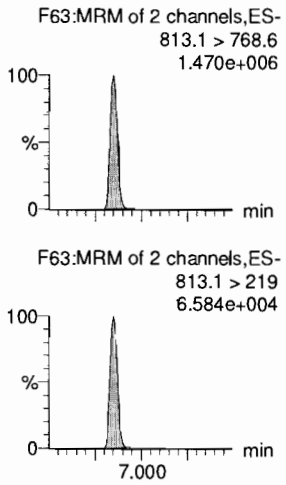

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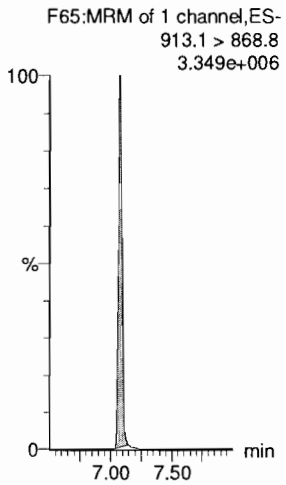

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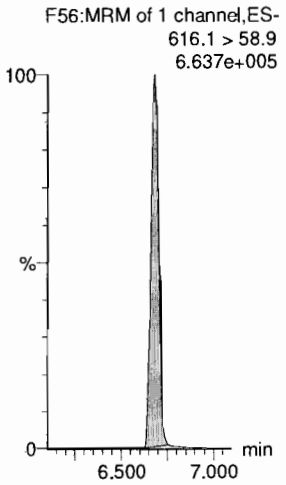

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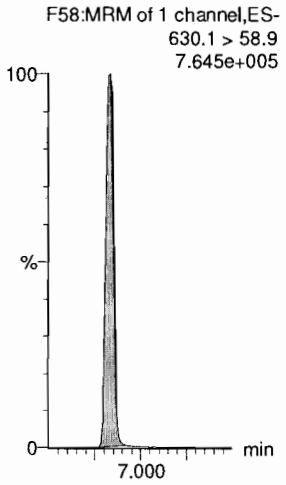

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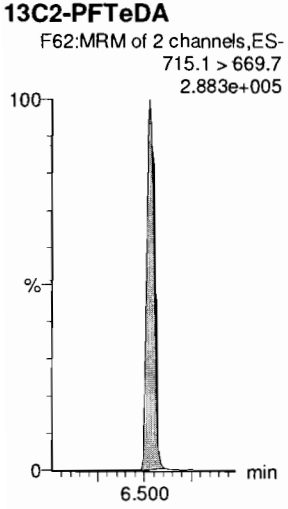
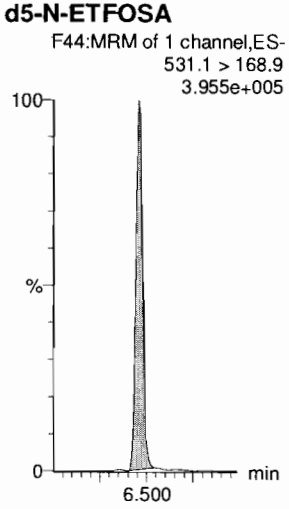


d5-N-ETFOSA



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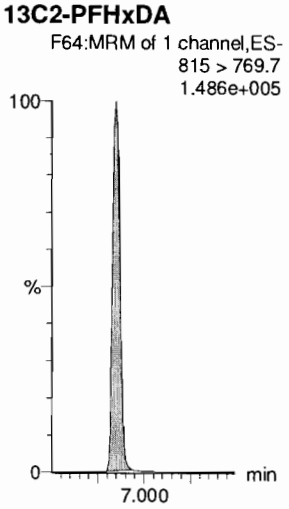

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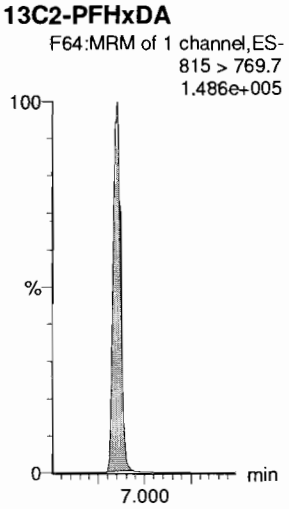
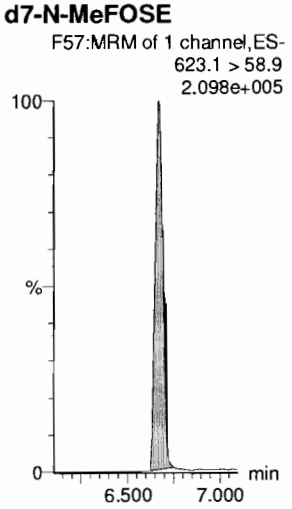
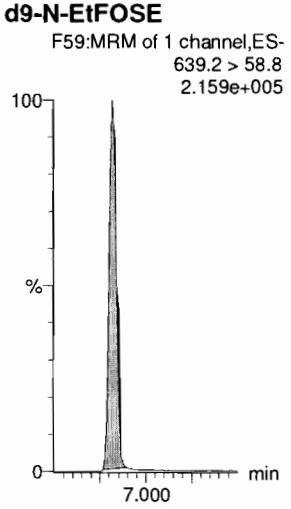


d7-N-MeFOSE



d9-N-EtFOSE



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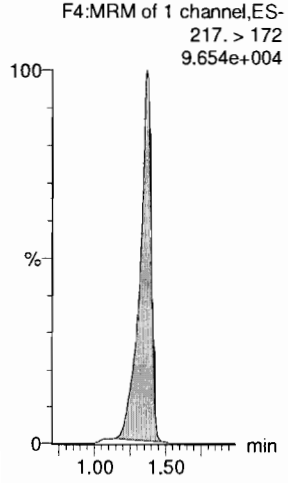
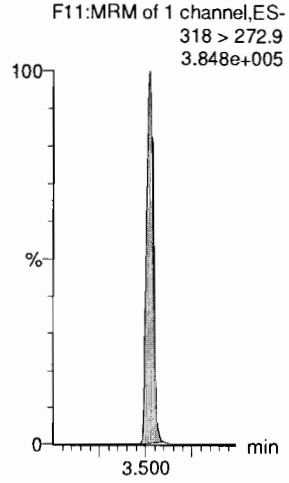
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_10, Date: 04-Dec-2018, Time: 13:09:24, ID: ST181204M1-8 PFC CS5 18K3008, Description: PFC CS5 18K3008

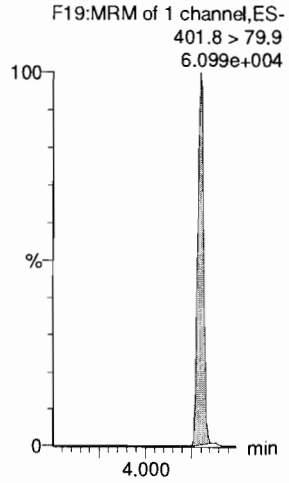
13C4-PFBA



13C5-PFHxA



13C3-PFHxS



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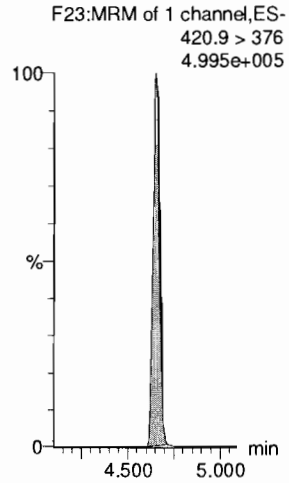

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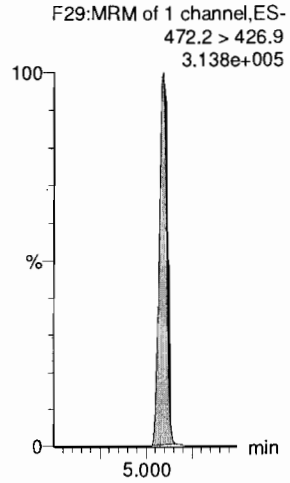
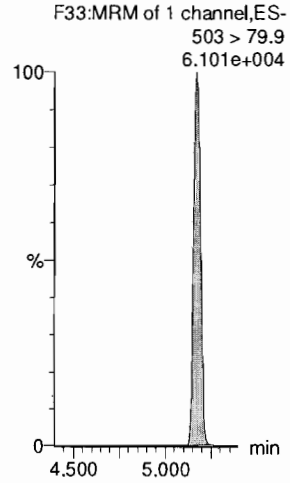


13C4-PFOS



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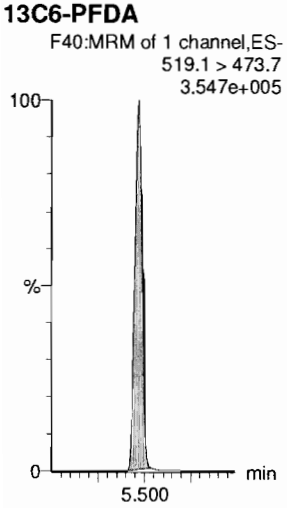
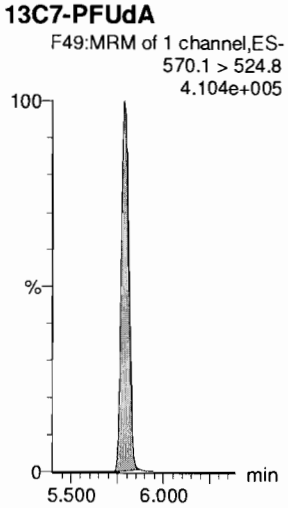


13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

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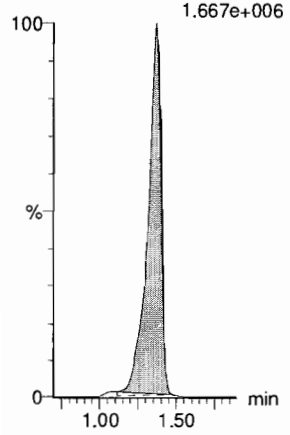
Name: 181204M1_11, Date: 04-Dec-2018, Time: 13:20:03, ID: ST181204M1-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

PFBA



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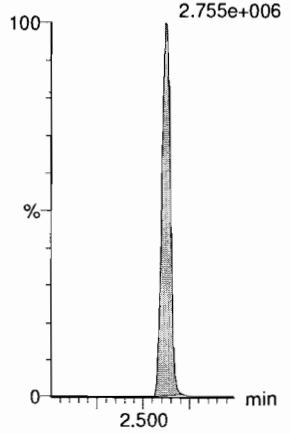

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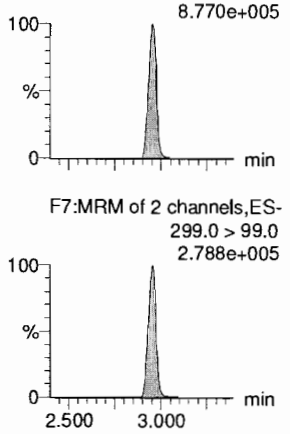
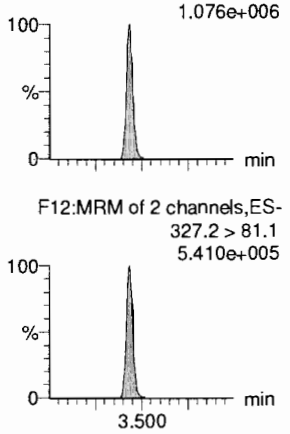


4:2 FTS



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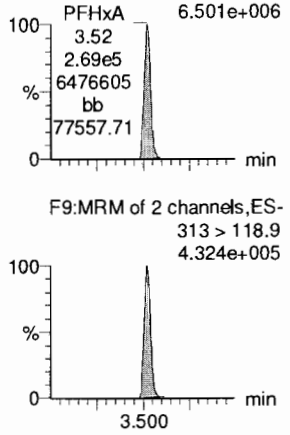

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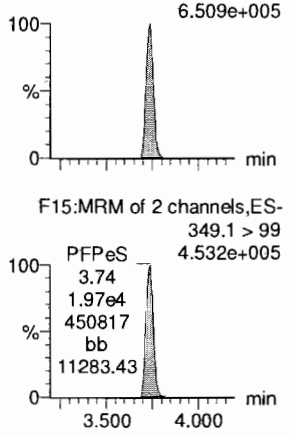

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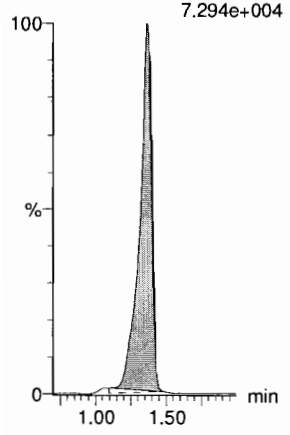
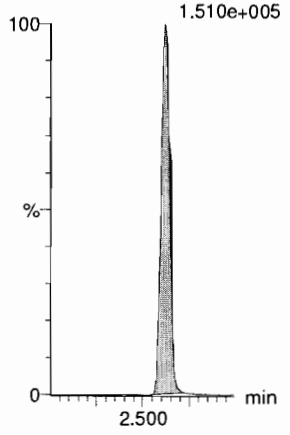


13C3-PFPeA



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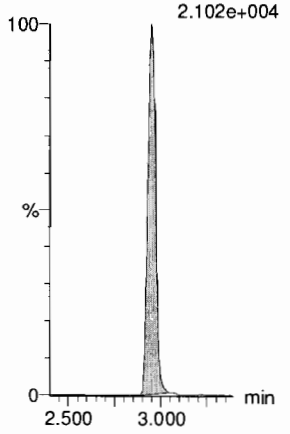
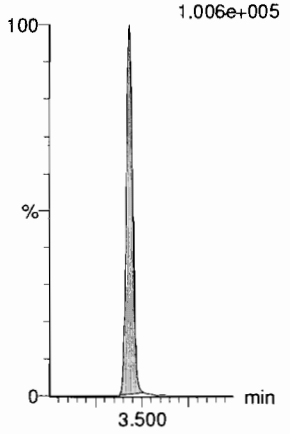


13C2-4:2 FTS



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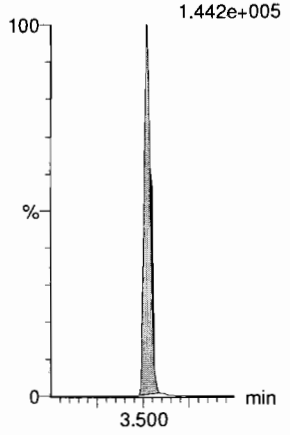

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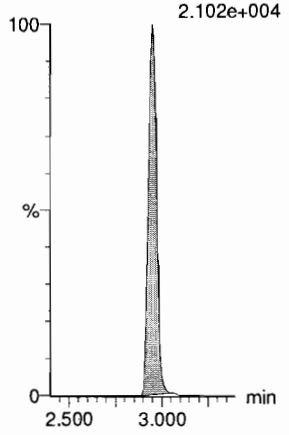

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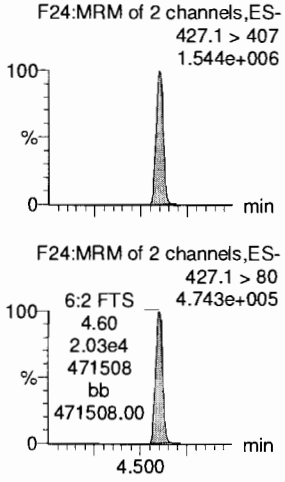
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_11, Date: 04-Dec-2018, Time: 13:20:03, ID: ST181204M1-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

6:2 FTS



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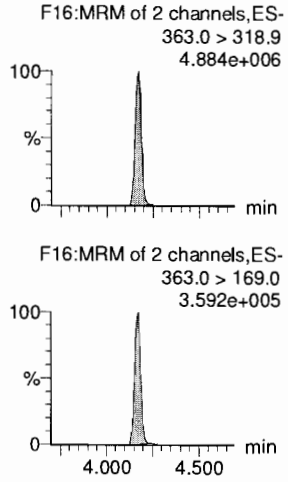

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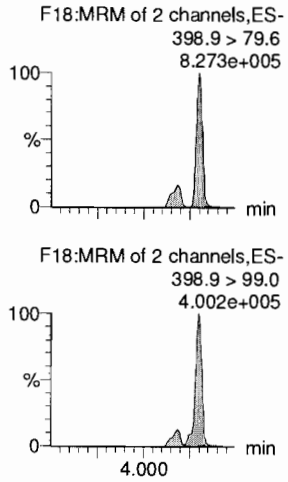

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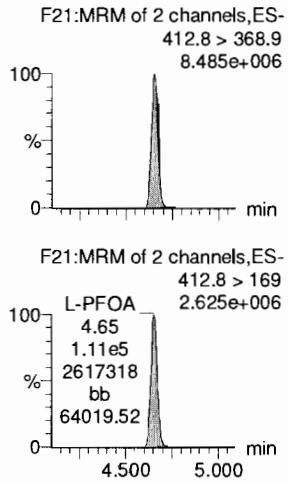

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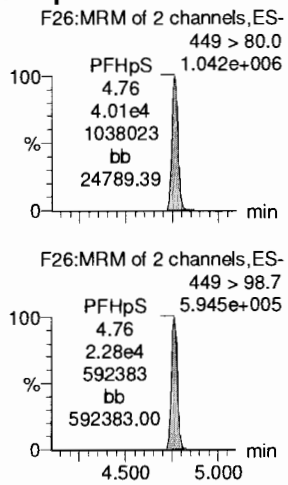

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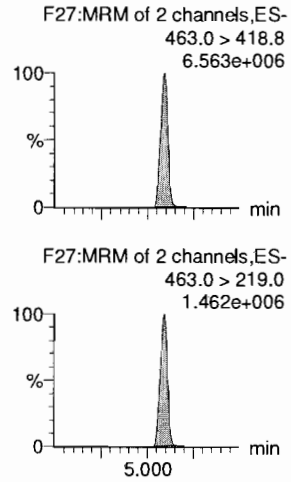
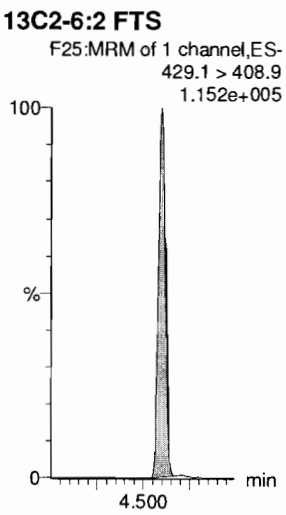


13C2-6:2 FTS



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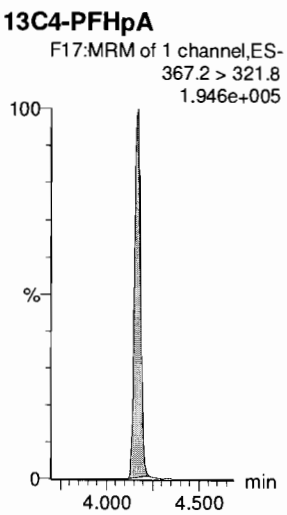
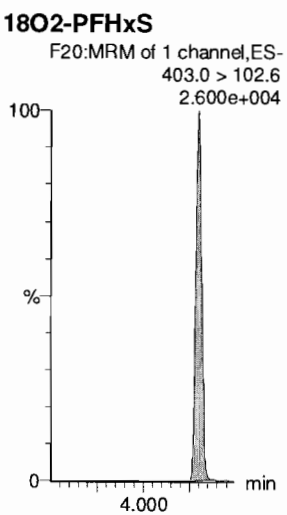


18O2-PFHxS



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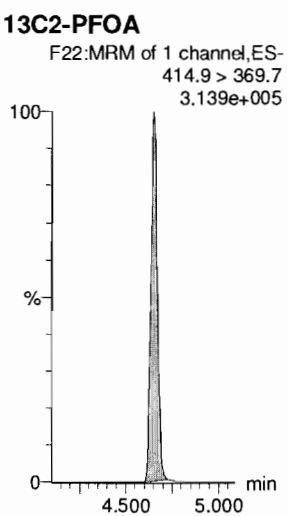
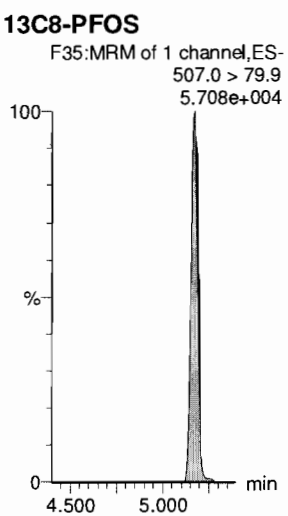


13C8-PFOS



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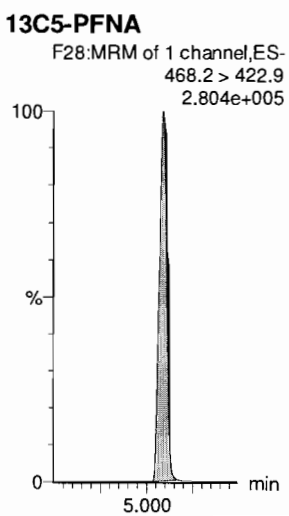

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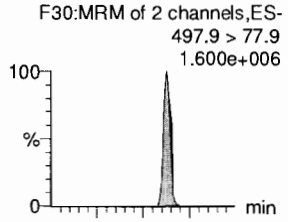
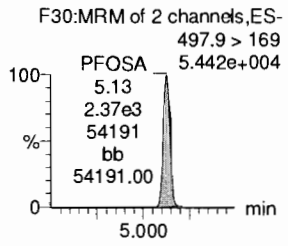
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

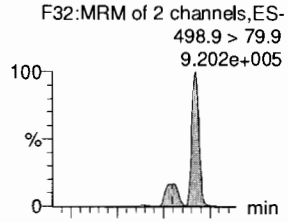
Name: 181204M1_11, Date: 04-Dec-2018, Time: 13:20:03, ID: ST181204M1-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

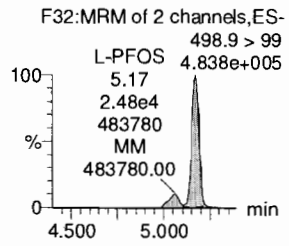
PFOSA





L-PFOS





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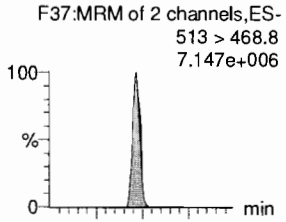
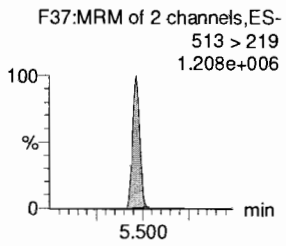
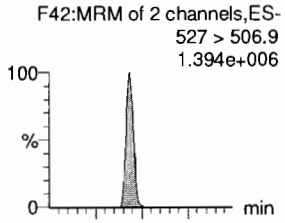
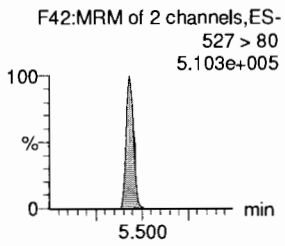




8:2 FTS





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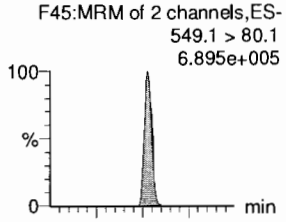

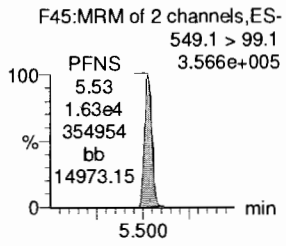

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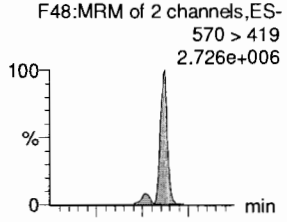
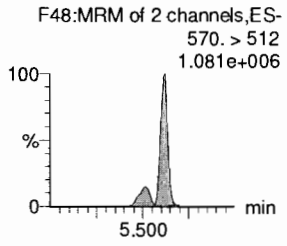
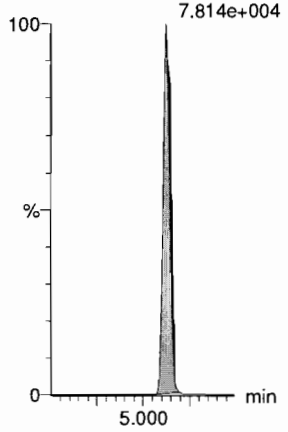
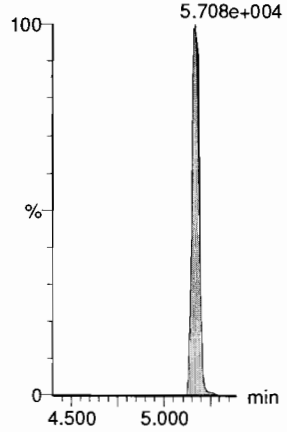




13C8-PFOSA



13C8-PFOS



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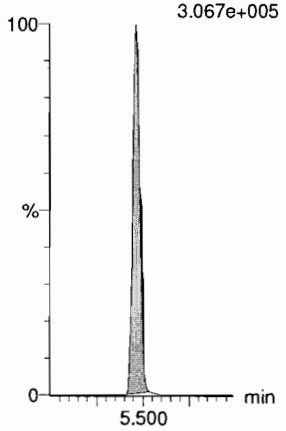
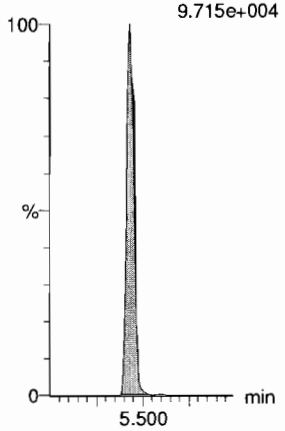


13C2-8:2 FTS



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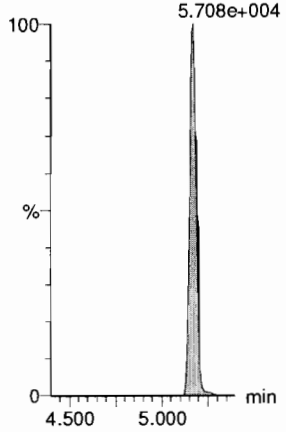
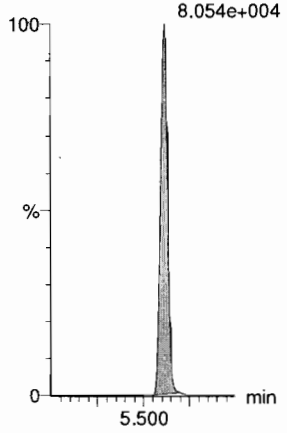


d3-N-MeFOSAA



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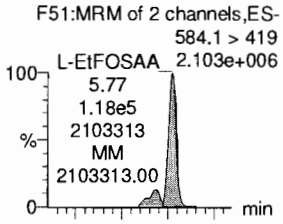
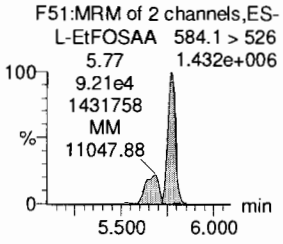
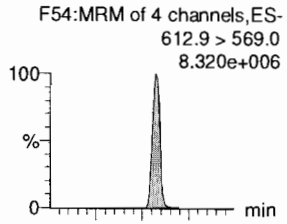
Name: 181204M1_11, Date: 04-Dec-2018, Time: 13:20:03, ID: ST181204M1-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

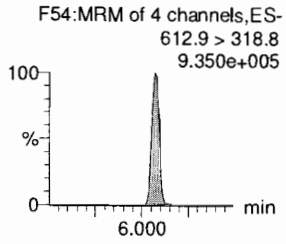
L-EtFOSAA





PFDoA





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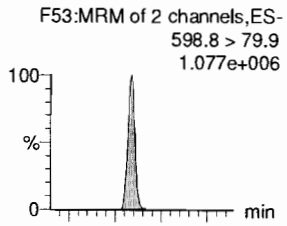

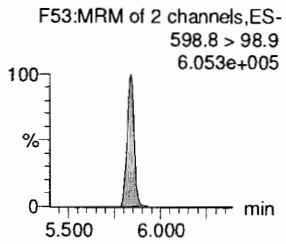

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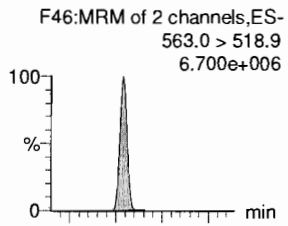
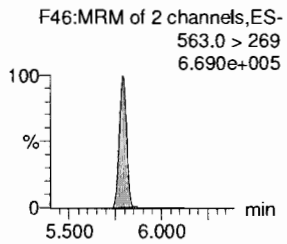
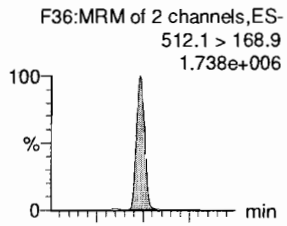
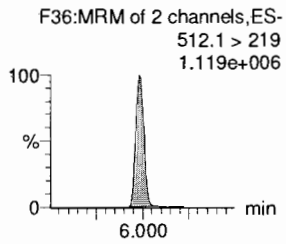




N-MeFOSA





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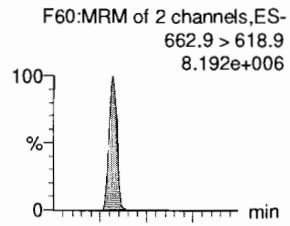
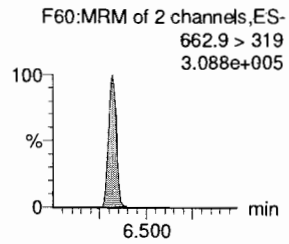
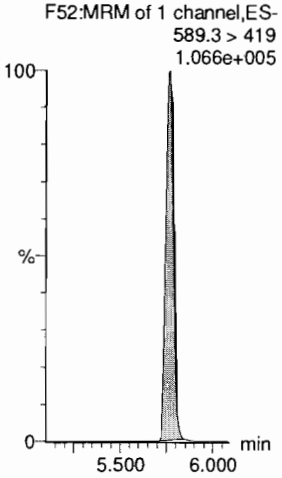




d5-N-EtFOSAA



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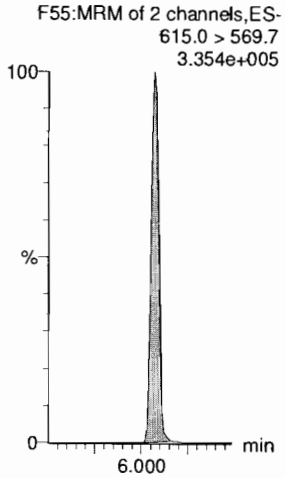
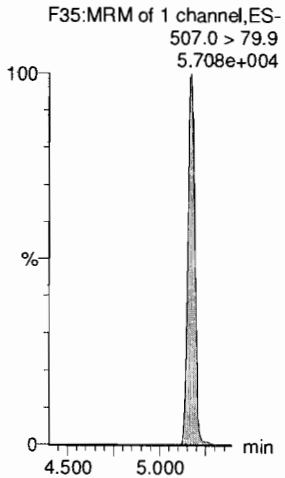
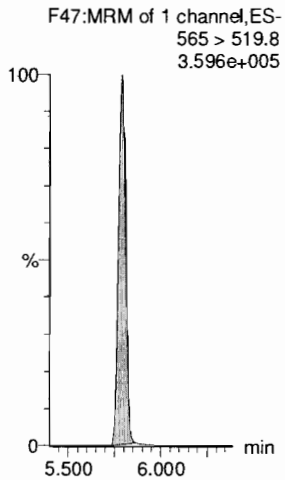


13C8-PFOS



13C2-PFUdA



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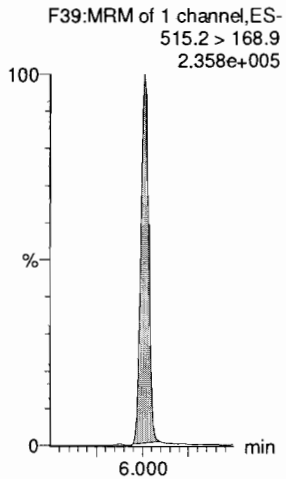
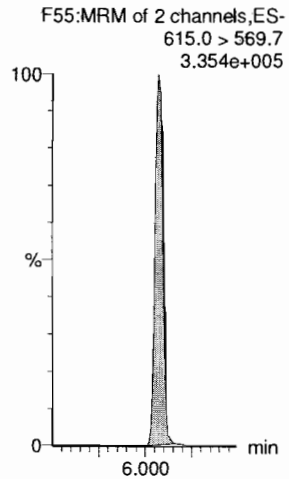


13C2-PFDoA

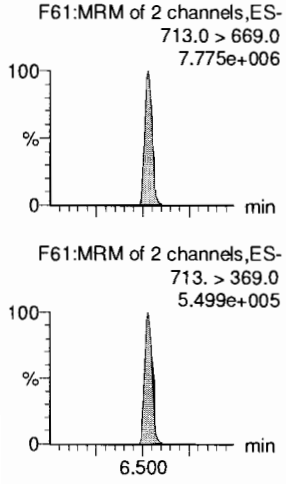


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

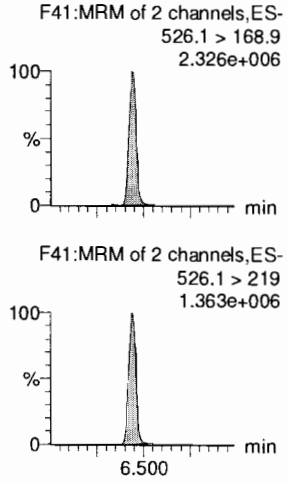
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_11, Date: 04-Dec-2018, Time: 13:20:03, ID: ST181204M1-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

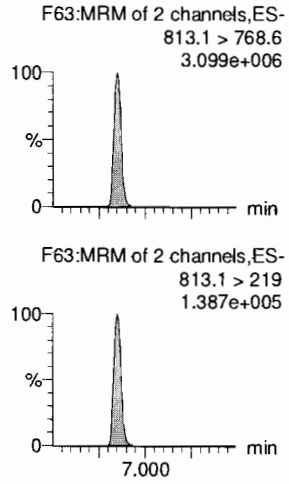
PFTeDA



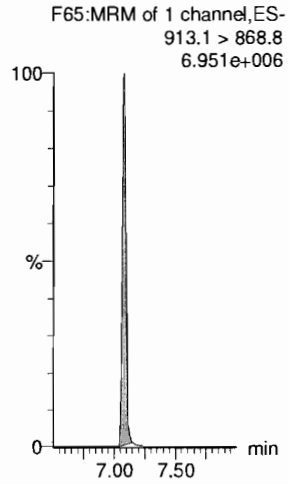
N-EtFOSA



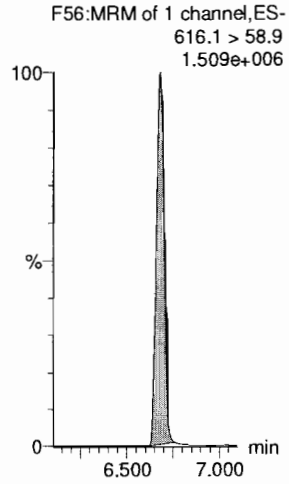
PFHxDA



PFODA



N-MeFOSE



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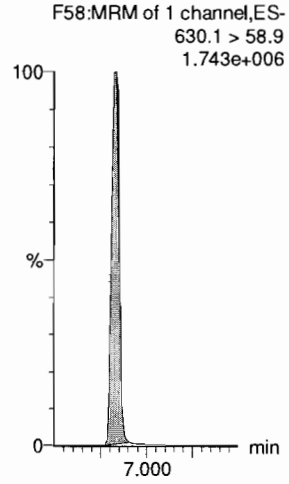
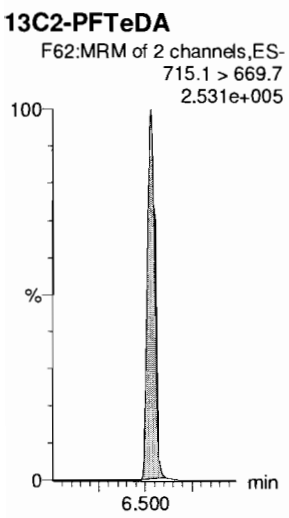
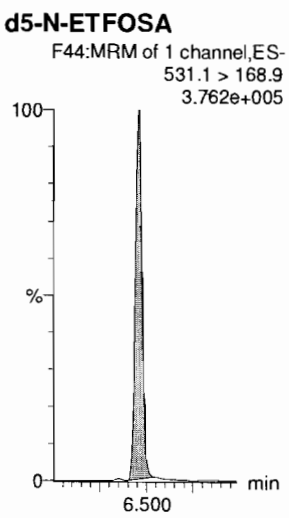


13C2-PFTeDA



d5-N-ETFOSA



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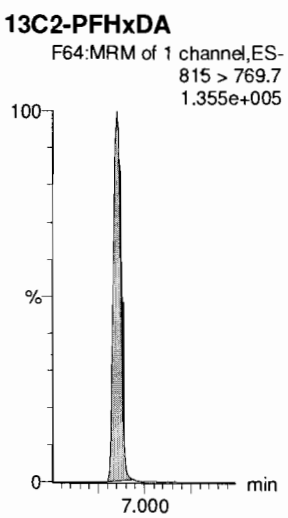

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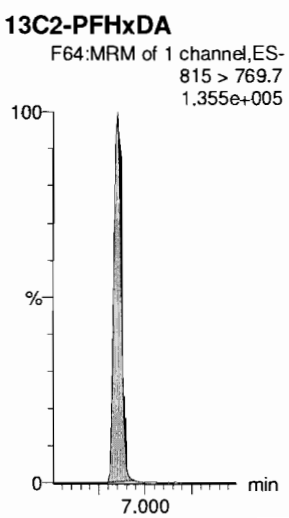
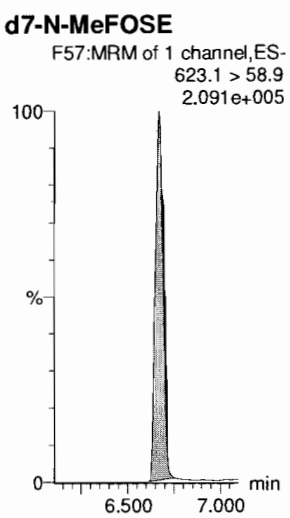
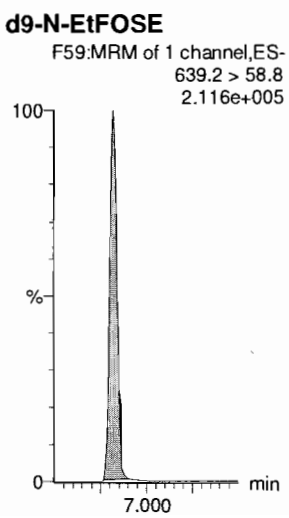


d7-N-MeFOSE



d9-N-EtFOSE

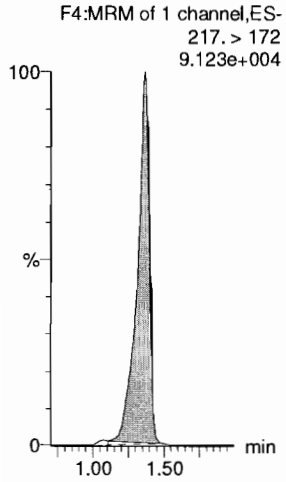


Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

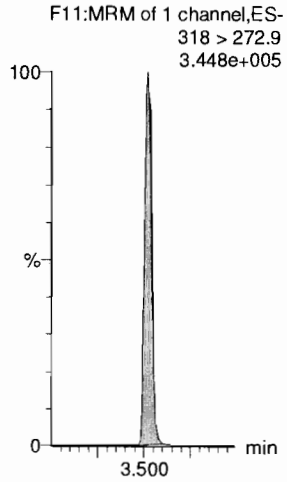
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_11, Date: 04-Dec-2018, Time: 13:20:03, ID: ST181204M1-9 PFC CS6 18K3009, Description: PFC CS6 18K3009

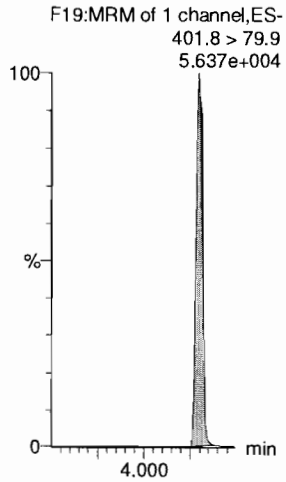
13C4-PFBA



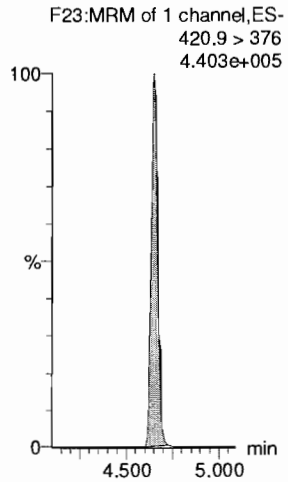
13C5-PFHxA



13C3-PFHxS



13C8-PFOA



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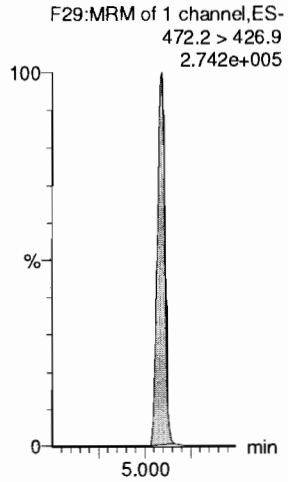
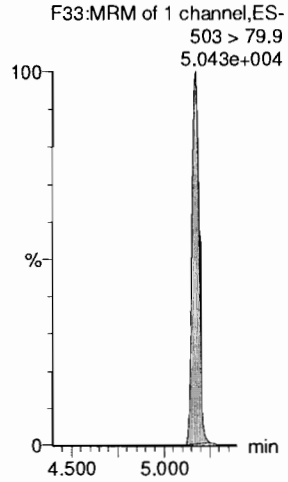
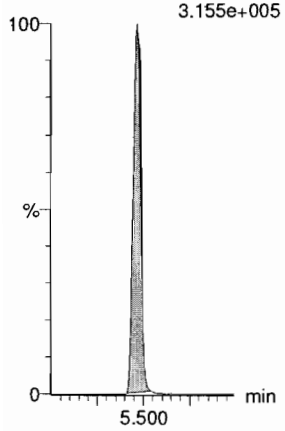


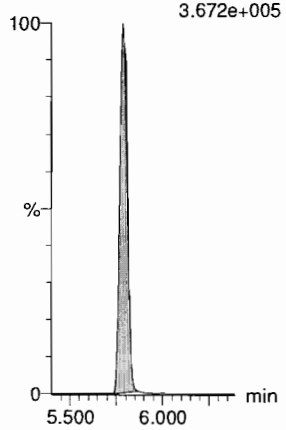
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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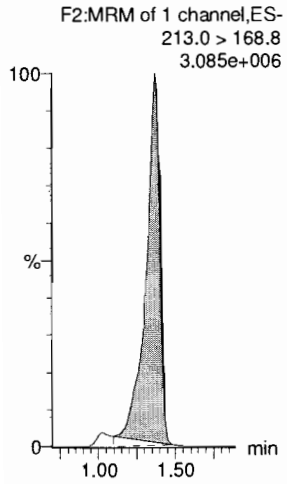
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_12, Date: 04-Dec-2018, Time: 13:30:57, ID: ST181204M1-10 PFC CS7 18K3010, Description: PFC CS7 18K3010

PFBA



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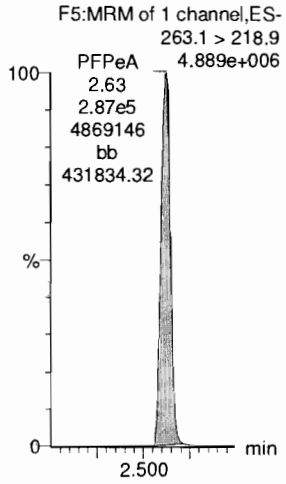

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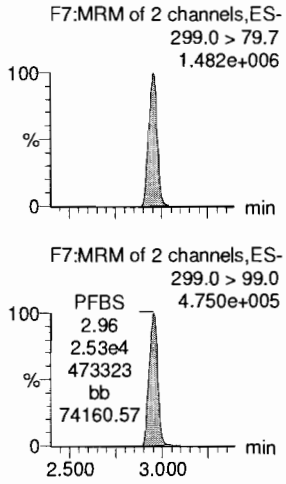
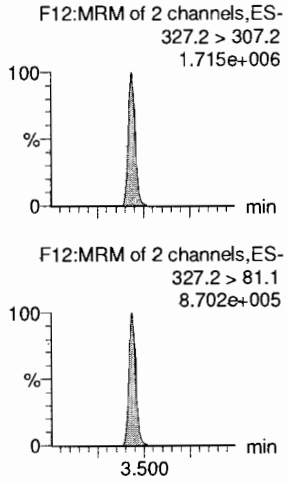
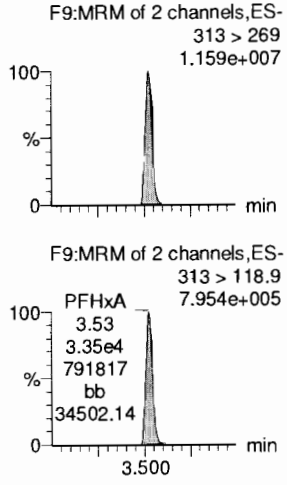


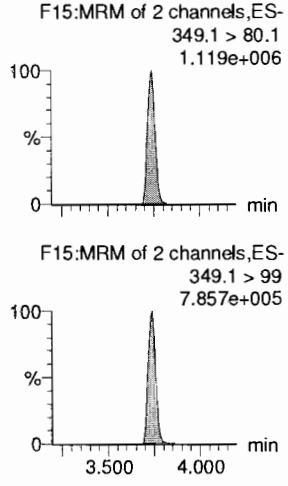
4:2 FTS



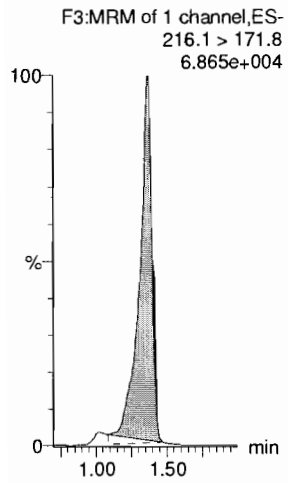
PFHxA



PFPeS



13C3-PFBA



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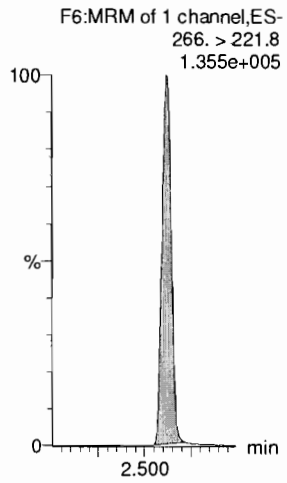
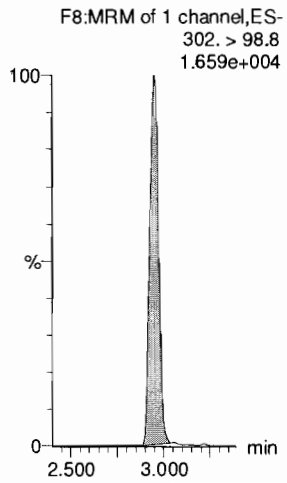
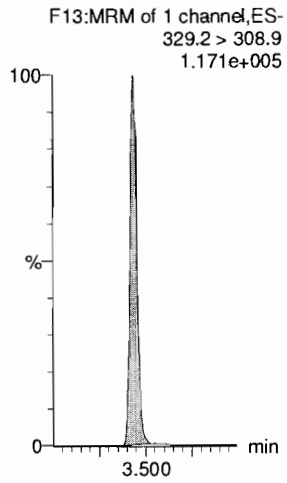


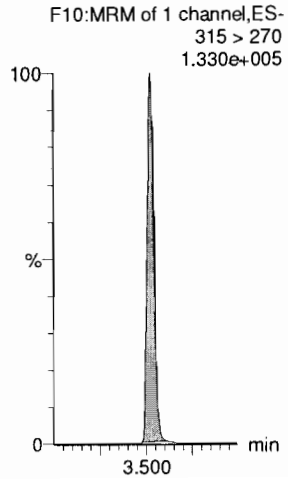
13C3-PFBS



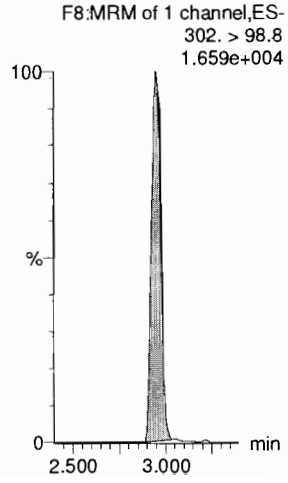
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

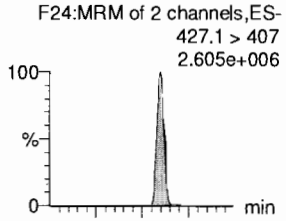


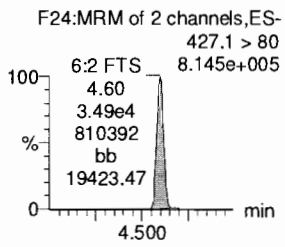
Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

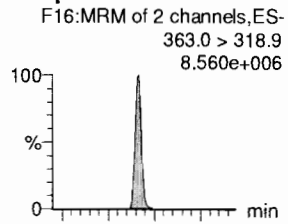
Name: 181204M1_12, Date: 04-Dec-2018, Time: 13:30:57, ID: ST181204M1-10 PFC CS7 18K3010, Description: PFC CS7 18K3010

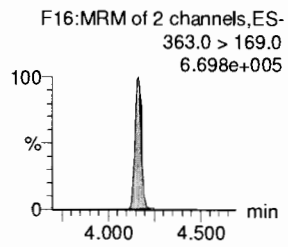
6:2 FTS



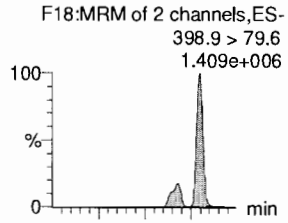


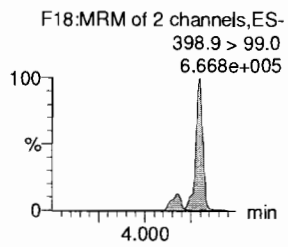
PFHpA



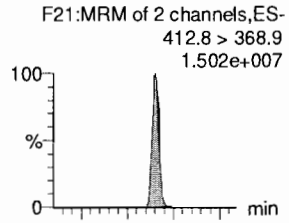


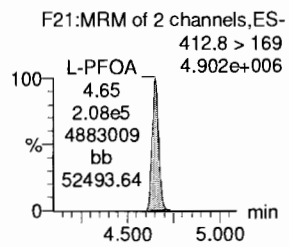
L-PFHxS



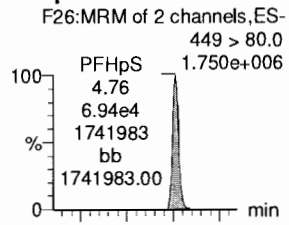


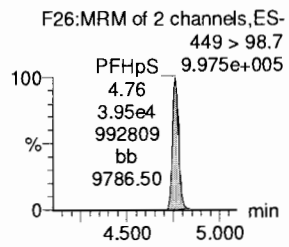
L-PFOA



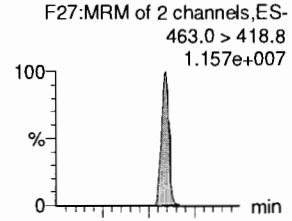


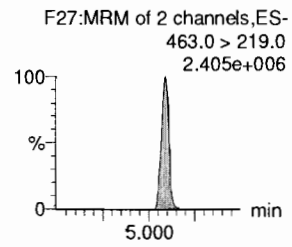
PFHpS



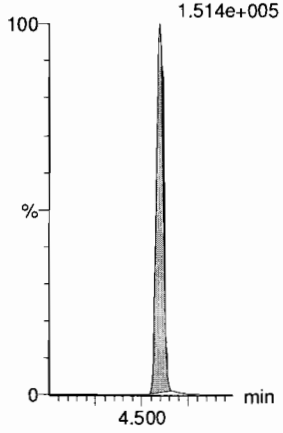


PFNA

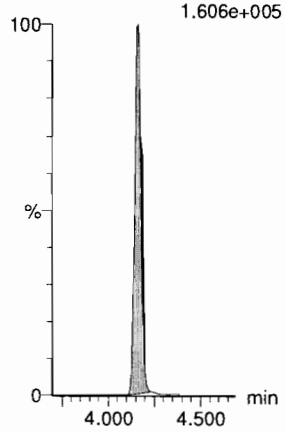




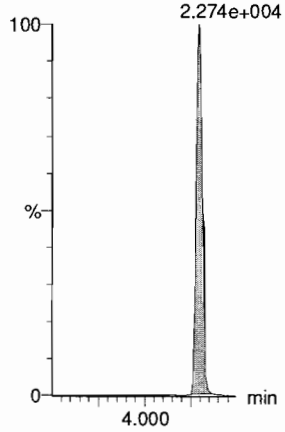
13C2-6:2 FTS



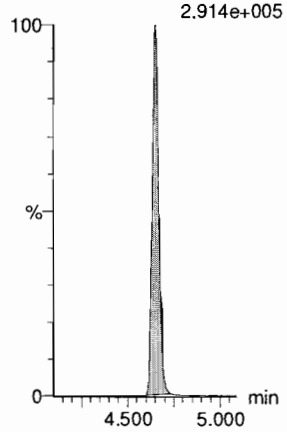
13C4-PFHpA



18O2-PFHxS



13C2-PFOA



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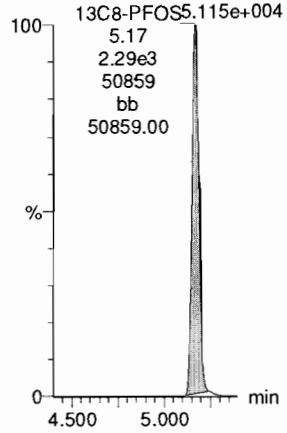
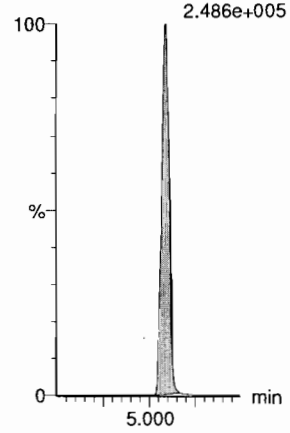


13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-CRV.qld

Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_12, Date: 04-Dec-2018, Time: 13:30:57, ID: ST181204M1-10 PFC CS7 18K3010, Description: PFC CS7 18K3010

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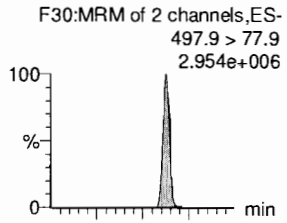
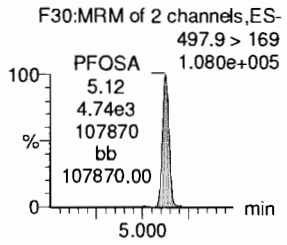
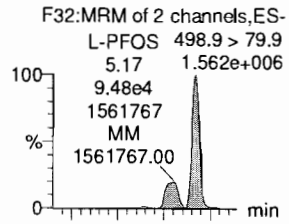
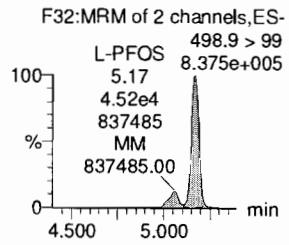


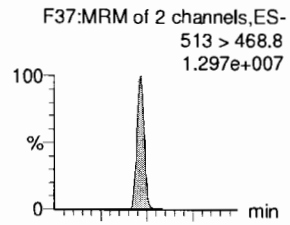


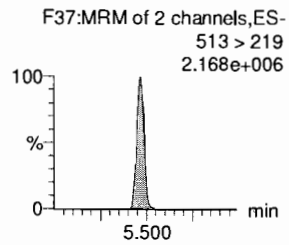
L-PFOS



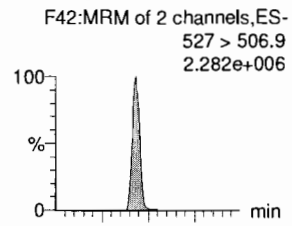


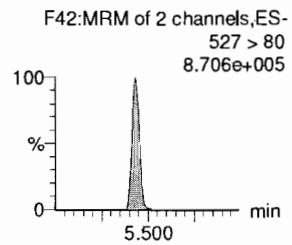
PFDA



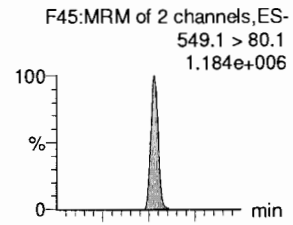


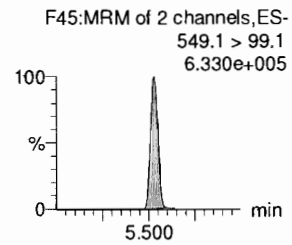
8:2 FTS



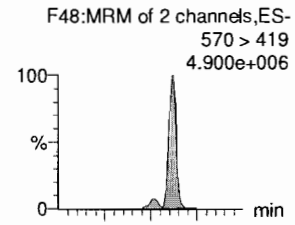


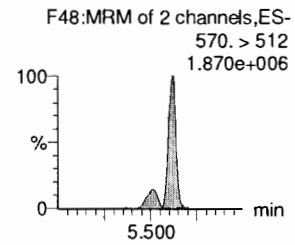
PFNS



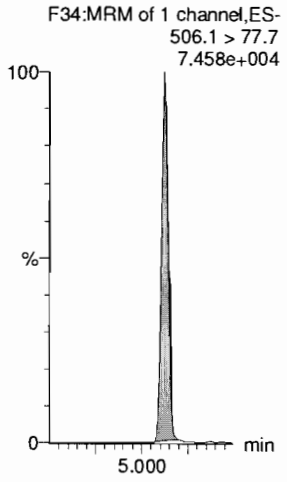


L-MeFOSAA

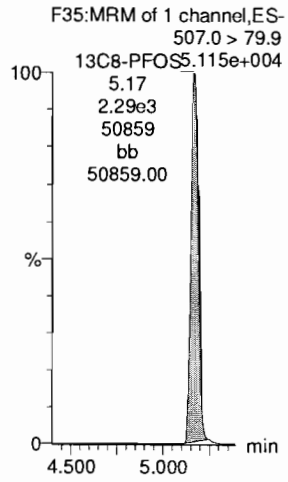




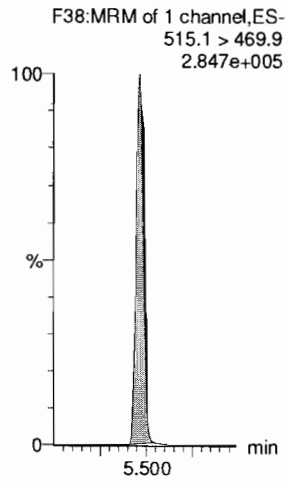
13C8-PFOSA



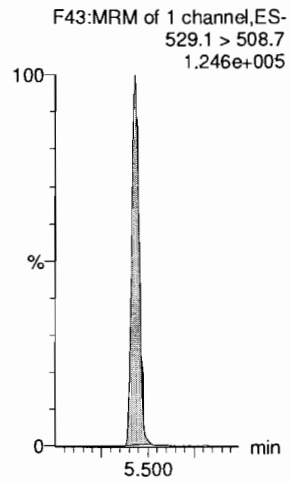
13C8-PFOS



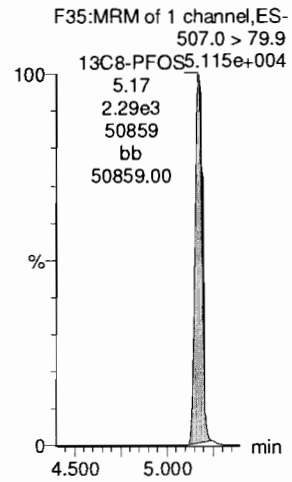
13C2-PFDA



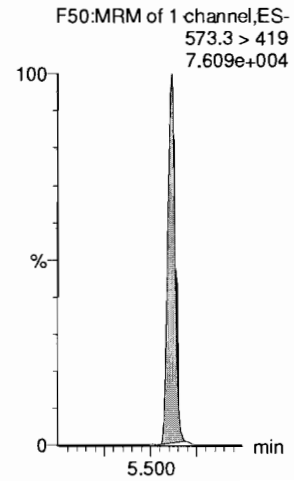
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA



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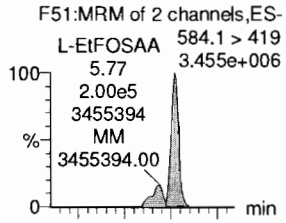
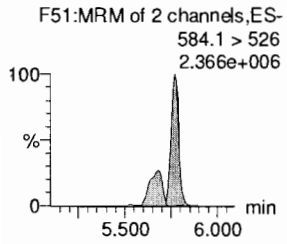
Last Altered: Tuesday, December 04, 2018 14:48:02 Pacific Standard Time
Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

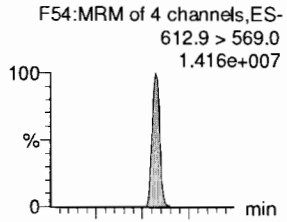
Name: 181204M1_12, Date: 04-Dec-2018, Time: 13:30:57, ID: ST181204M1-10 PFC CS7 18K3010, Description: PFC CS7 18K3010

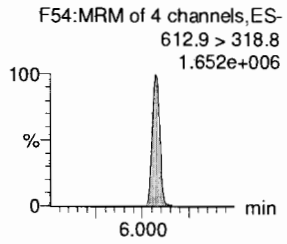
L-EtFOSAA





PFDoA





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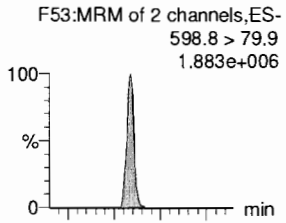

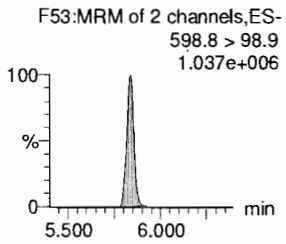

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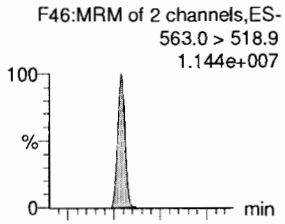

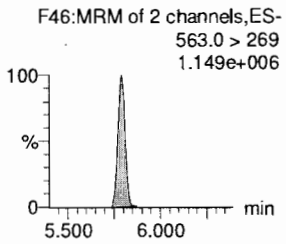

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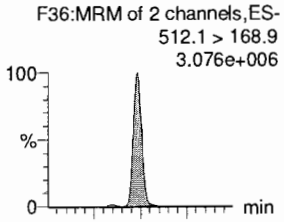

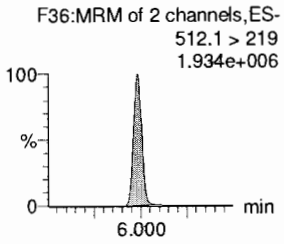

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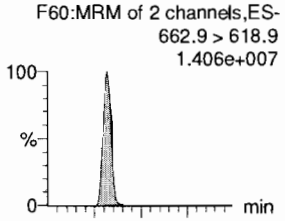
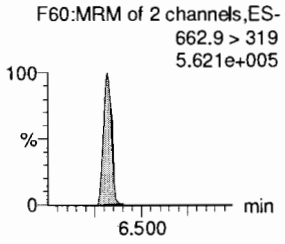
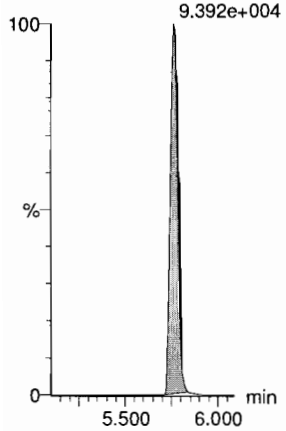




d5-N-EtFOSAA



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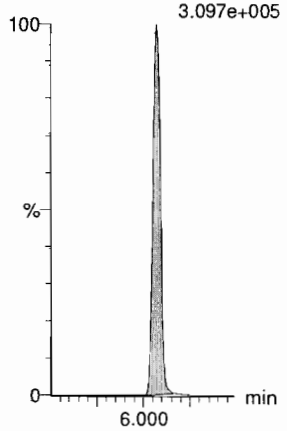

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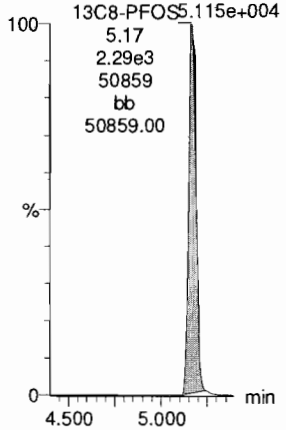
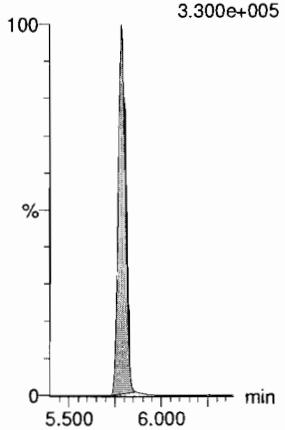


13C2-PFUdA



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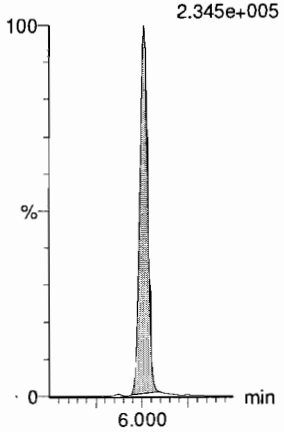

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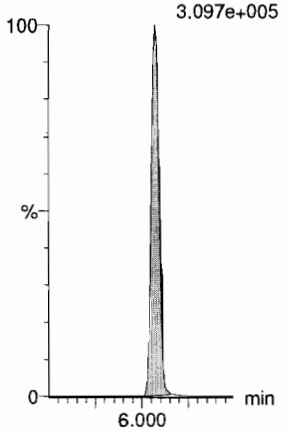

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Printed: Tuesday, December 04, 2018 14:48:56 Pacific Standard Time

Name: 181204M1_12, Date: 04-Dec-2018, Time: 13:30:57, ID: ST181204M1-10 PFC CS7 18K3010, Description: PFC CS7 18K3010

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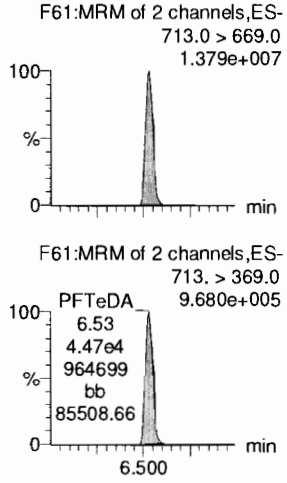

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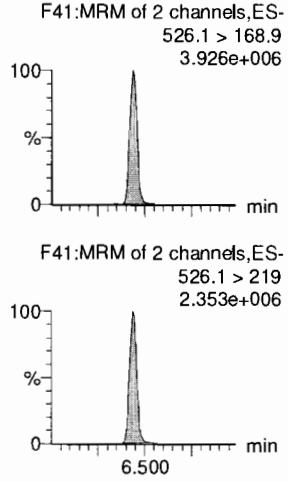
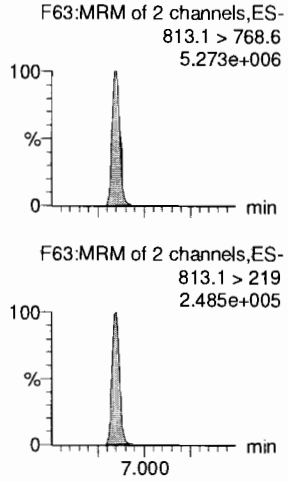
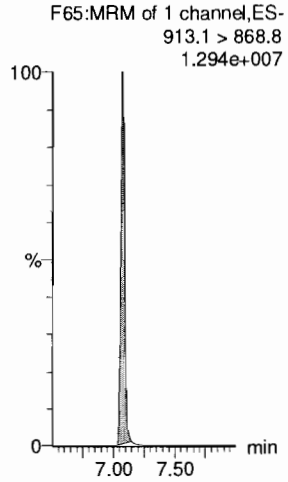


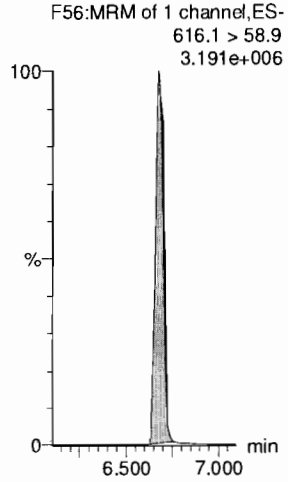
PFHxDA



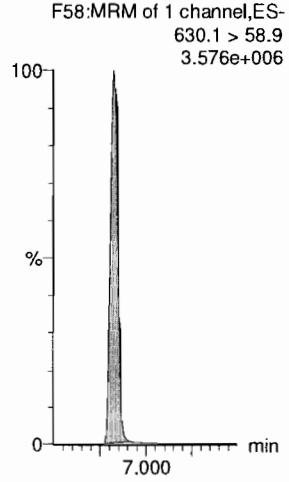
PFODA



N-MeFOSE



N-EtFOSE



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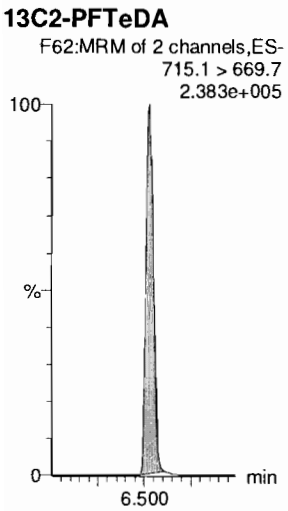
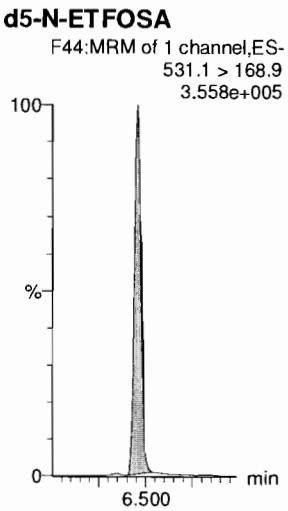


d5-N-ETFOSA



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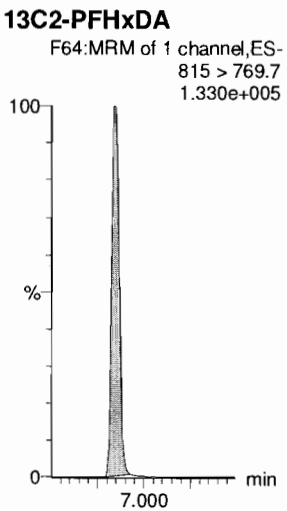

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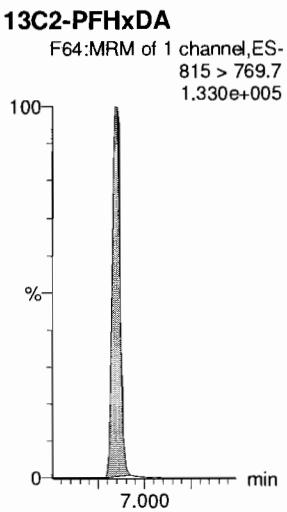
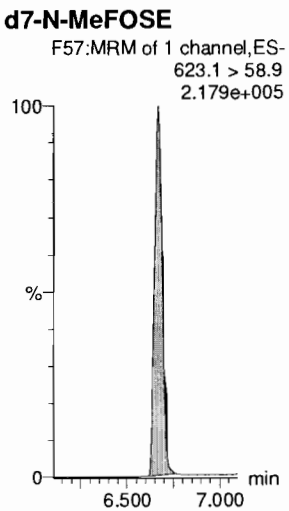
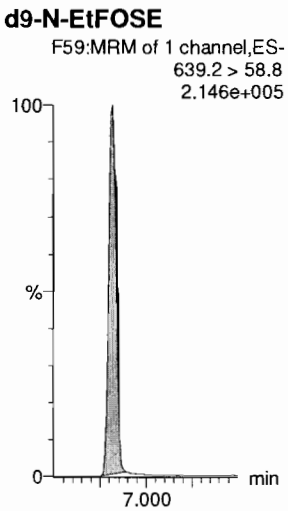


d7-N-MeFOSE



d9-N-EtFOSE



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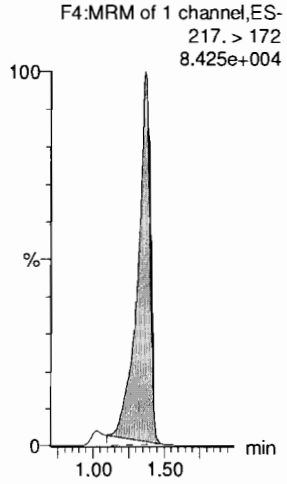
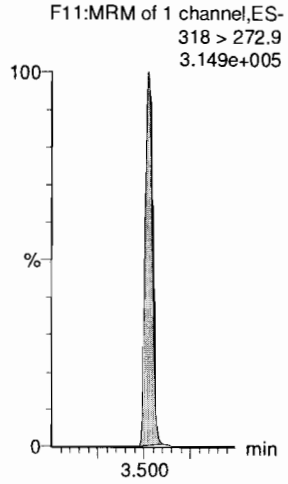
Name: 181204M1_12, Date: 04-Dec-2018, Time: 13:30:57, ID: ST181204M1-10 PFC CS7 18K3010, Description: PFC CS7 18K3010

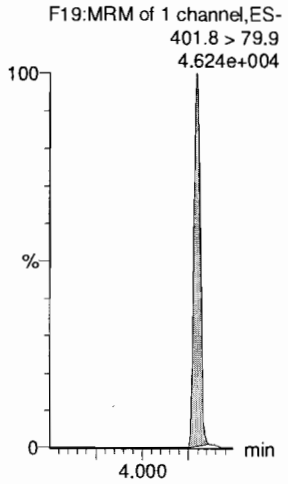
13C4-PFBA



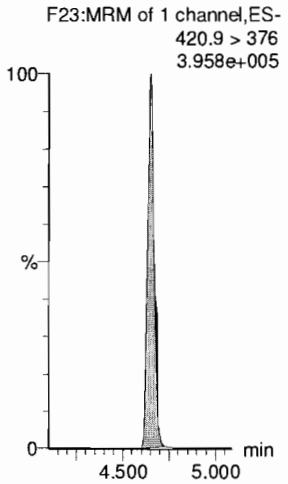
13C5-PFHxA



13C3-PFHxS



13C8-PFOA



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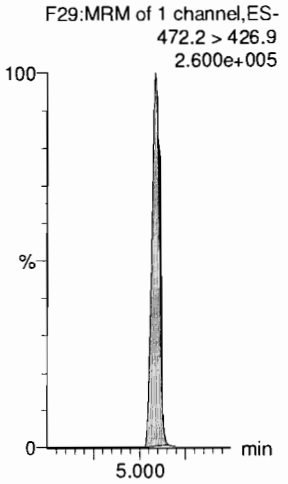
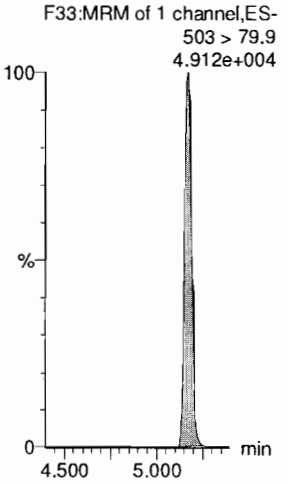
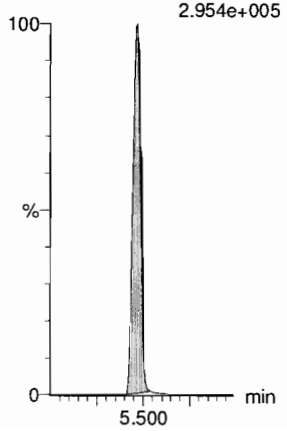


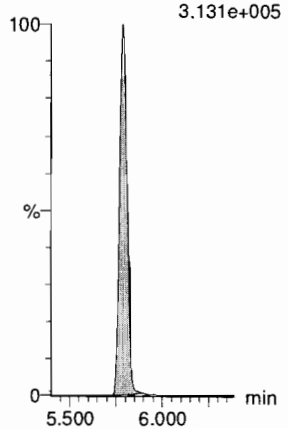
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-ICV.qld

Last Altered: Tuesday, December 04, 2018 14:59:27 Pacific Standard Time
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, MBF 12/04/18

Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	6026.334	7127.925	1.00	1.37	10.568	9.3	93.4	NO		
2	2	PFPeA	263.1 > 218.9	6154.808	8807.551	1.00	2.63	8.735	9.0	90.5	NO		
3	3	PFBS	299.0 > 79.7	1753.923	1219.688	1.00	2.96	17.975	8.4	84.4	NO	3.334	NO
4	4	4:2 FTS	327.2>307.2	2370.309	3211.259	1.00	3.44	9.227	8.5	84.8	NO	1.916	NO
5	5	PFHxA	313 > 269	11774.629	6456.156	1.00	3.52	9.119	9.3	93.1	NO	15.551	NO
6	6	PFPeS	349.1>80.1	1238.002	1219.688	1.00	3.74	12.688	8.6	86.5	NO	1.428	NO
7	36	13C3-PFBA	216.1 > 171.8	7127.925	8856.051	1.00	1.37	10.061	12.4	99.5	NO		
8	37	13C3-PFPeA	266. > 221.8	8807.551	17301.664	1.00	2.63	6.363	11.8	94.1	NO		
9	38	13C3-PFBS	302. > 98.8	1219.688	2476.073	1.00	2.95	6.157	12.3	98.6	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3211.259	2476.073	1.00	3.44	16.211	12.2	97.6	NO		
11	40	13C2-PFHxA	315 > 270	6456.156	17301.664	1.00	3.52	4.664	4.8	95.9	NO		
12	38	13C3-PFBS	302. > 98.8	1219.688	2476.073	1.00	2.95	6.157	12.3	98.6	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	3277.348	3570.273	1.00	4.60	11.474	8.6	86.1	NO	3.056	NO
15	7	PFHpA	363.0 > 318.9	8642.411	8729.733	1.00	4.17	12.375	9.3	93.4	NO	12.311	NO
16	8	L-PFHxS	398.9 > 79.6	1589.970	1108.328	1.00	4.30	17.932	8.4	83.5	NO	1.980	NO
17	11	L-PFOA	412.8 > 368.9	16048.677	15236.868	1.00	4.65	13.166	9.0	89.9	NO	3.120	NO
18	13	PFHpS	449 > 80.0	1649.850	2870.740	1.00	4.76	7.184	8.1	81.3	NO	1.752	NO
19	14	PFNA	463.0 > 418.8	13883.779	15493.450	1.00	5.09	11.201	9.2	92.0	NO	5.013	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	3570.273	2734.481	1.00	4.60	16.321	11.6	92.4	NO		
21	41	13C4-PFHpA	367.2 > 321.8	8729.733	17301.664	1.00	4.17	6.307	12.3	98.2	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1108.328	2476.073	1.00	4.30	5.595	12.2	97.8	NO		
23	44	13C2-PFOA	414.9 > 369.7	15236.868	22055.766	1.00	4.65	8.635	12.5	99.9	NO		
24	47	13C8-PFOS	507.0 > 79.9	2870.740	2734.481	1.00	5.17	13.123	12.4	99.4	NO		
25	45	13C5-PFNA	468.2 > 422.9	15493.450	15126.697	1.00	5.09	12.803	12.7	101.6	NO		
26	-1												
27	15	PFOSA	497.9 > 77.9	3113.590	4011.416	1.00	5.13	9.702	9.0	90.3	NO	36.179	NO
28	16	L-PFOS	498.9 > 79.9	2093.745	2870.740	1.00	5.17	9.117	8.7	86.6	NO	2.084	NO
29	18	PFDA	513 > 468.8	14293.270	15945.099	1.00	5.47	11.205	9.1	90.7	NO	5.838	NO
30	19	8:2 FTS	527 > 506.9	3261.969	3033.633	1.00	5.43	13.441	8.8	87.7	NO	2.501	NO
31	20	PFNS	549.1 > 80.1	1356.254	2870.740	1.00	5.53	5.906	8.5	85.3	NO	1.902	NO
32	21	L-MeFOSAA	570 > 419	7371.484	4495.774	1.00	5.62	20.496	9.6	96.4	NO	2.669	NO
33	46	13C8-PFOSA	506.1 > 77.7	4011.416	19594.768	1.00	5.12	2.559	12.9	103.5	NO		
34	47	13C8-PFOS	507.0 > 79.9	2870.740	2734.481	1.00	5.17	13.123	12.4	99.4	NO		
35	48	13C2-PFDA	515.1 > 469.9	15945.099	17208.189	1.00	5.47	11.582	12.4	99.0	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	3033.633	2734.481	1.00	5.43	13.867	12.1	96.8	NO		

JCAH 12/4/18

MBF 12/04/18

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Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
37	47	13C8-PFOS	507.0 > 79.9	2870.740	2734.481	1.00	5.17	13.123	12.4	99.4	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	4495.774	19594.768	1.00	5.61	2.868	13.2	105.7	NO		
39	-1												
40	23	L-EtFOSAA	584.1 > 419	6623.952	6112.354	1.00	5.78	13.546	10.7	107.4	NO	1.538	NO
41	27	PFDoA	612.9 > 569.0	17282.998	17152.789	1.00	6.07	12.595	9.6	95.5	NO	9.004	NO
42	26	PFDS	598.8 > 79.9	2194.486	2870.740	1.00	5.84	9.555	8.9	89.4	NO	1.767	NO
43	25	PFUdA	563.0 > 518.9	14122.891	18884.535	1.00	5.79	9.348	9.2	92.1	NO	10.524	NO
44	28	N-MeFOSA	512.1 > 168.9		11742.457	1.00					NO		
45	29	PFTrDA	662.9 > 618.9	17380.631	17152.789	1.00	6.32	12.666	9.4	94.2	NO	26.197	NO
46	52	d5-N-EtFOSAA	589.3 > 419	6112.354	19594.768	1.00	5.77	3.899	12.8	102.5	NO		
47	53	13C2-PFDoA	615.0 > 569.7	17152.789	17208.189	1.00	6.07	12.460	12.1	96.5	NO		
48	47	13C8-PFOS	507.0 > 79.9	2870.740	2734.481	1.00	5.17	13.123	12.4	99.4	NO		
49	51	13C2-PFUdA	565 > 519.8	18884.535	19594.768	1.00	5.79	12.047	12.3	98.3	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	11742.457	19594.768	1.00	6.01	7.491	140.7	93.8	NO		
51	53	13C2-PFDoA	615.0 > 569.7	17152.789	17208.189	1.00	6.07	12.460	12.1	96.5	NO		
52	-1												
53	30	PFTeDA	713.0 > 669.0	15962.748	13429.475	1.00	6.53	14.858	9.2	92.4	NO	13.752	NO
54	31	N-EtFOSA	526.1 > 168.9		17694.090	1.00					NO		
55	32	PFHxDA	813.1 > 768.6		6432.175	1.00					NO		
56	33	PFODA	913.1 > 868.8		6432.175	1.00					NO		
57	34	N-MeFOSE	616.1 > 58.9		9773.620	1.00					NO		
58	35	N-EtFOSE	630.1 > 58.9		9999.564	1.00					NO		
59	55	13C2-PFTeDA	715.1 > 669.7	13429.475	19594.768	1.00	6.53	8.567	12.7	101.4	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	17694.090	19594.768	1.00	6.46	11.288	147.7	98.4	NO		
61	57	13C2-PFHxDA	815 > 769.7	6432.175	19594.768	1.00	6.85	4.103	4.9	98.5	NO		
62	57	13C2-PFHxDA	815 > 769.7	6432.175	19594.768	1.00	6.85	4.103	4.9	98.5	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	9773.620	19594.768	1.00	6.67	6.235	142.6	95.0	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	9999.564	19594.768	1.00	6.82	6.379	146.9	97.9	NO		
65	-1												
66	60	13C4-PFBA	217. > 172	8856.051	8856.051	1.00	1.37	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	17301.664	17301.664	1.00	3.52	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.8 > 79.9	2476.073	2476.073	1.00	4.30	12.500	12.5	100.0	NO		
69	63	13C8-PFOA	420.9 > 376	22055.766	22055.766	1.00	4.65	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	15126.697	15126.697	1.00	5.08	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	2734.481	2734.481	1.00	5.17	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	17208.189	17208.189	1.00	5.47	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\181204M1\181204M1-ICV.qld

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Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
73	67	13C7-PFUdA	570.1 > 524.8	19594.768	19594.768	1.00	5.79	12.500	12.5	100.0	NO		

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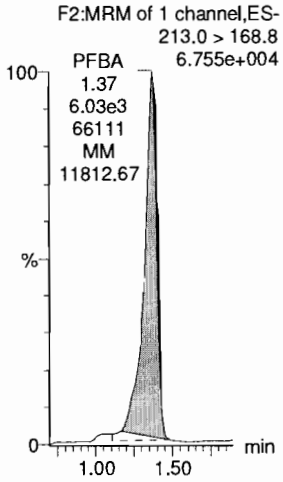
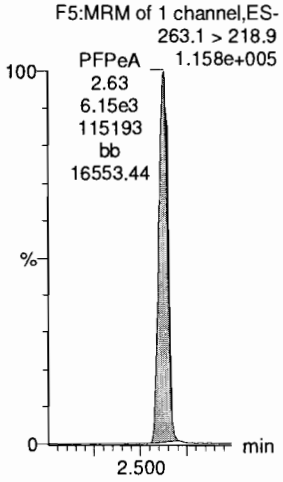
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_120418.mdb 04 Dec 2018 14:48:00
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_12-04-18.cdb 04 Dec 2018 14:42:21

Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

PFBA



PFPeA



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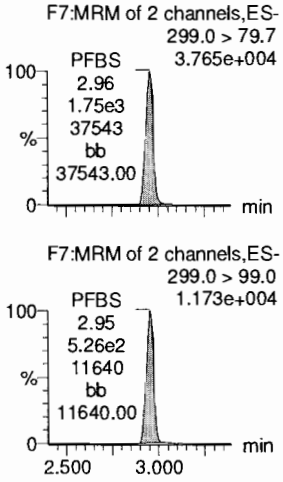
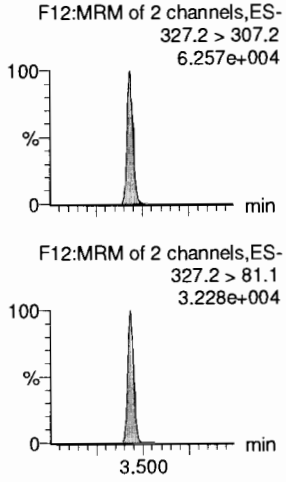


4:2 FTS



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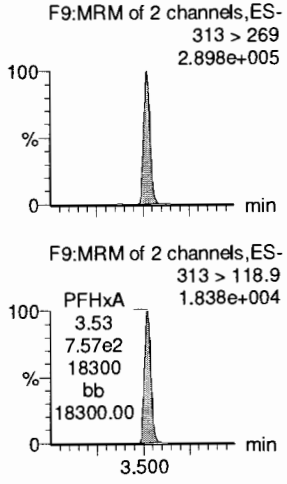
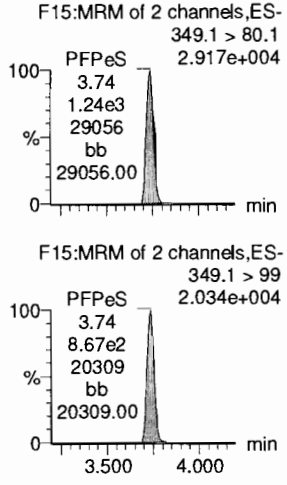
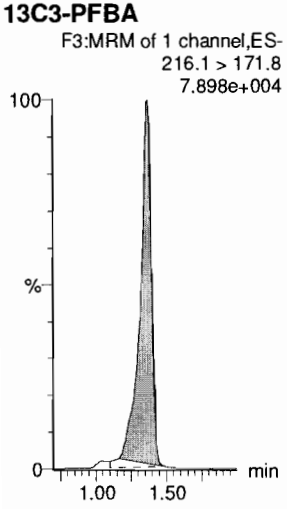


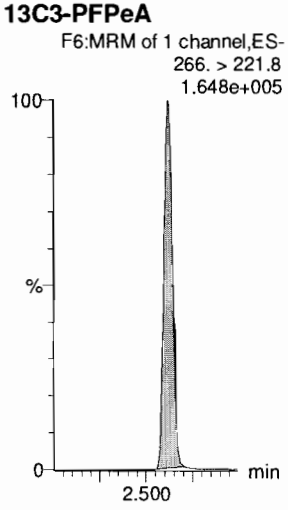
PFPeS



13C3-PFBA



13C3-PFPeA



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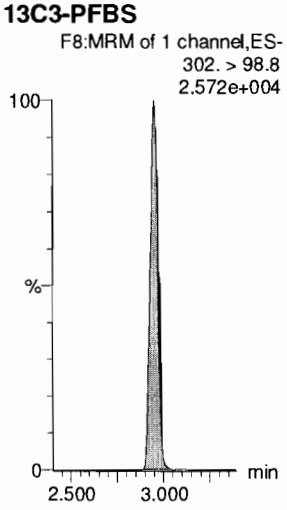

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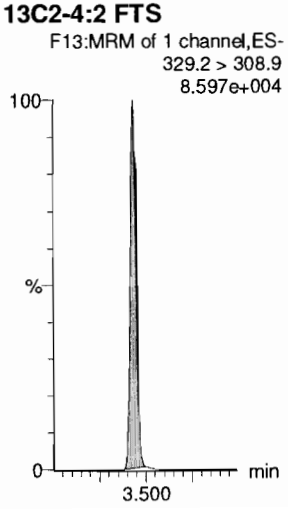

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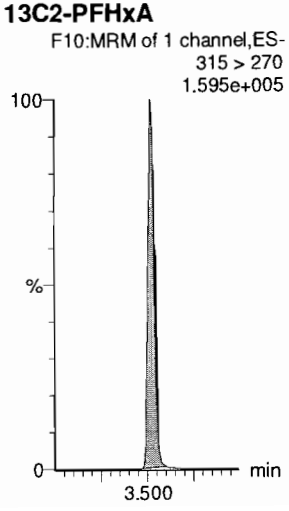
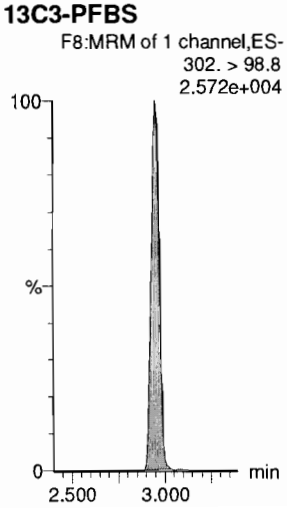


13C3-PFBS



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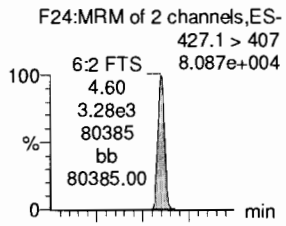
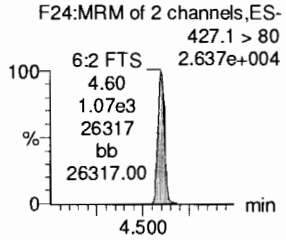
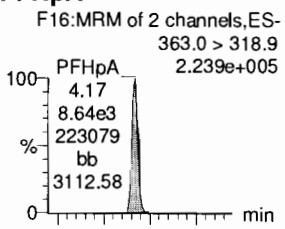
Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

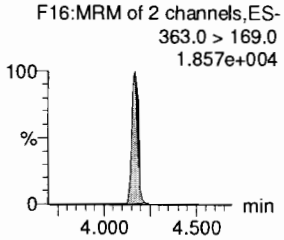
6:2 FTS





PFHpA





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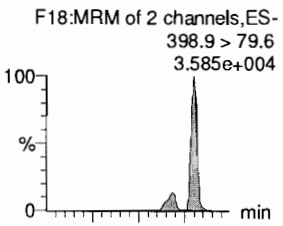
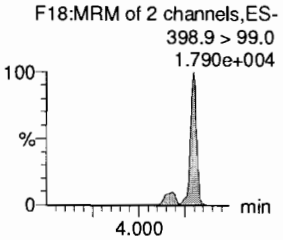
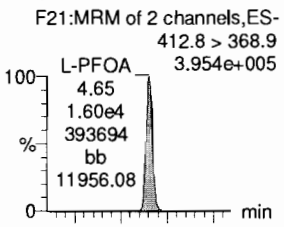
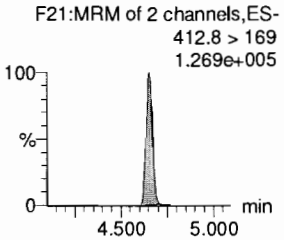




L-PFOA





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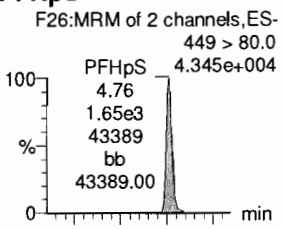
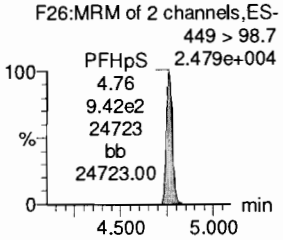
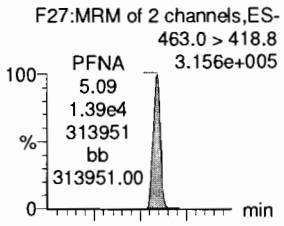
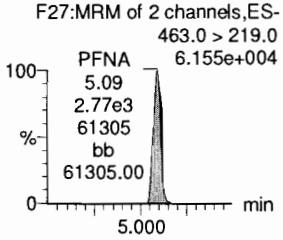


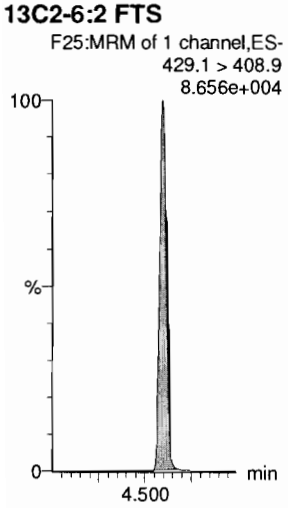


PFNA

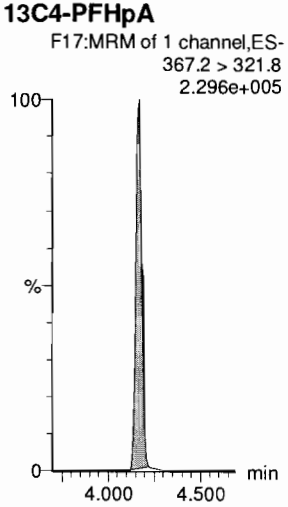




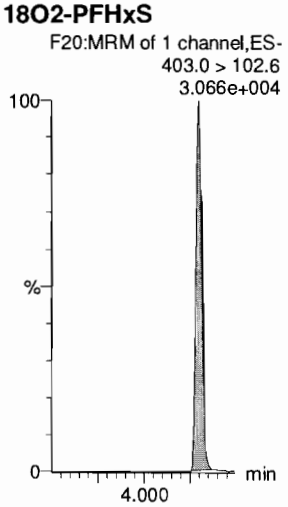
13C2-6:2 FTS



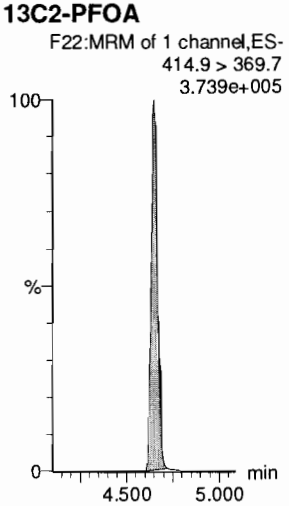
13C4-PFHpA



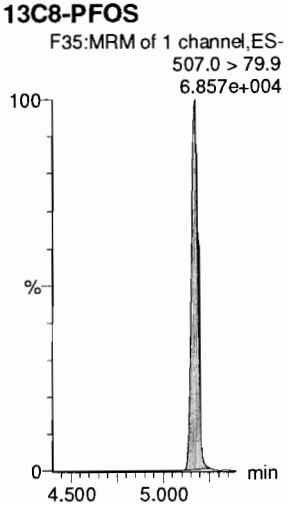
18O2-PFHxS



13C2-PFOA



13C8-PFOS



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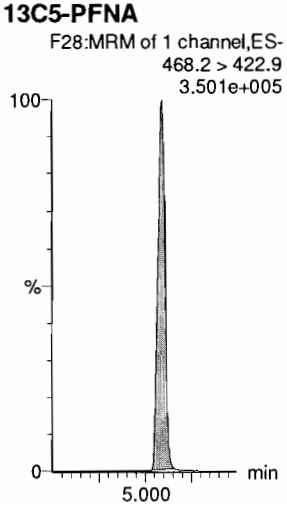

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Printed: Tuesday, December 04, 2018 14:59:46 Pacific Standard Time

Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

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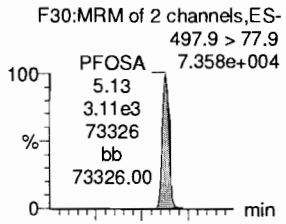

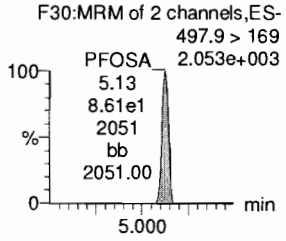

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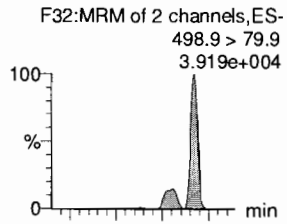

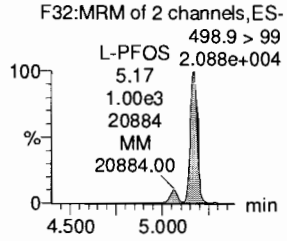

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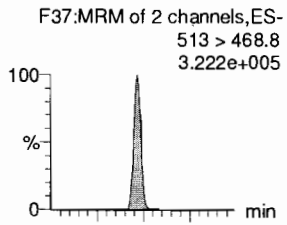
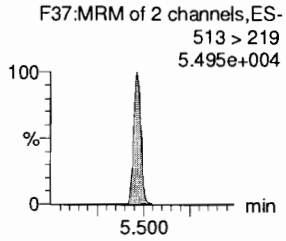
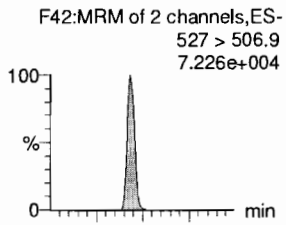
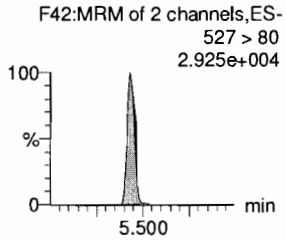




8:2 FTS





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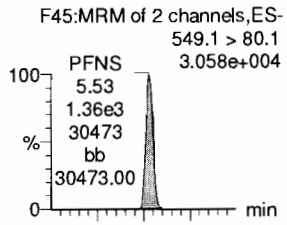

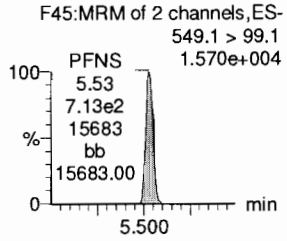

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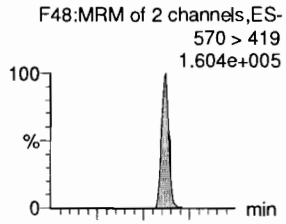

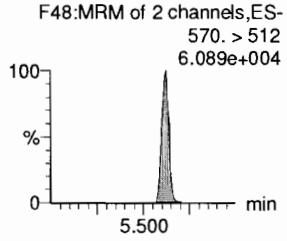

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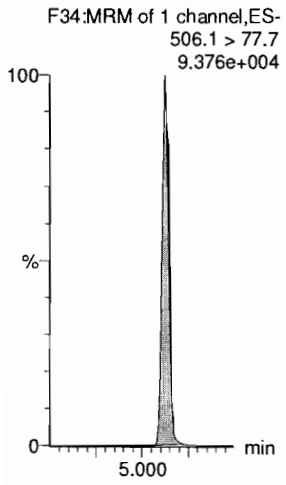

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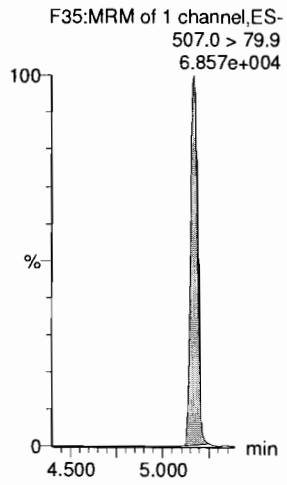

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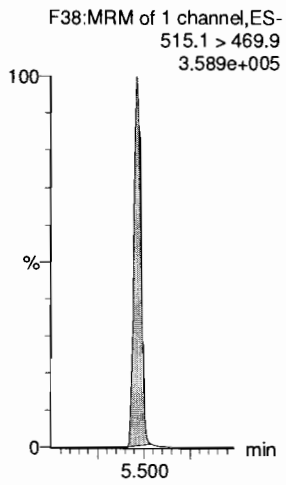
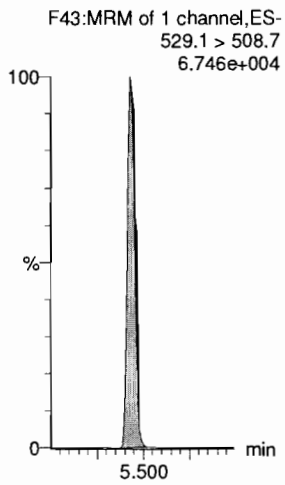


13C2-8:2 FTS



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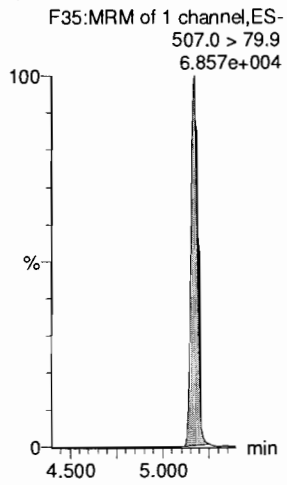
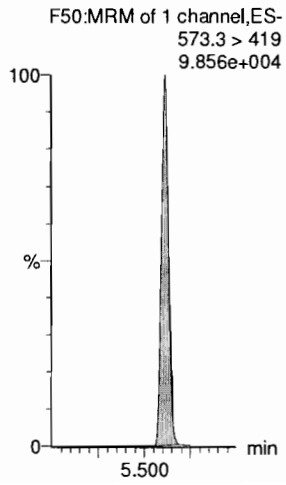


d3-N-MeFOSAA



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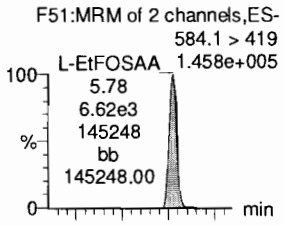
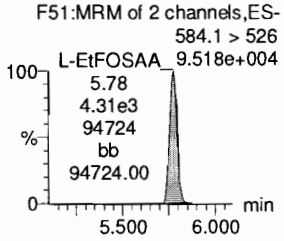
Name: 181204M1_14, Date: 04-Dec-2018, Time: 13:52:09, ID: ICV181204M2-1 PFC ICV 18K3011, Description: PFC ICV 18K3011

L-EtFOSAA





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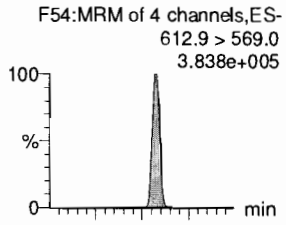

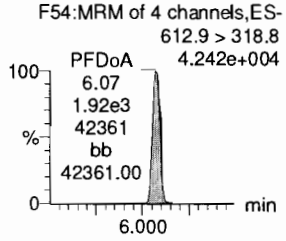

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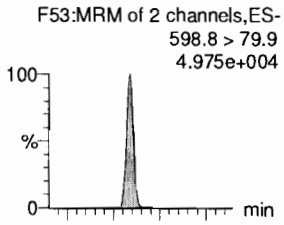

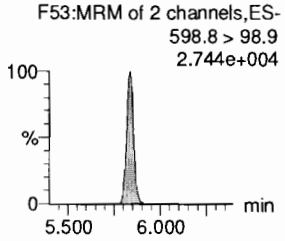

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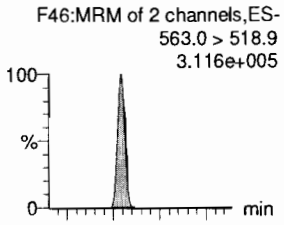

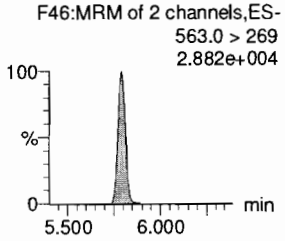

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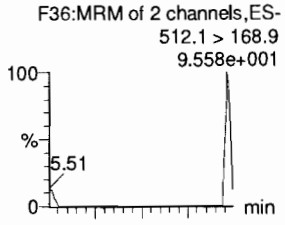

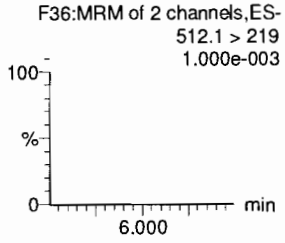

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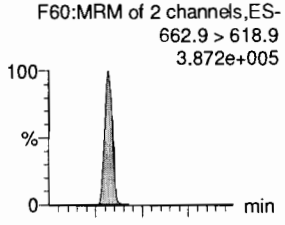
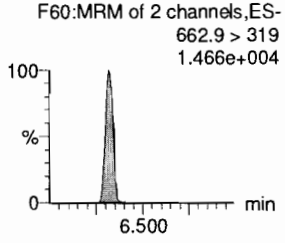
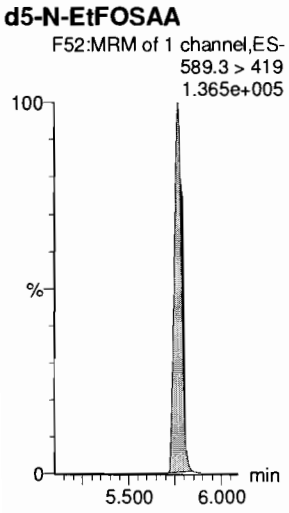
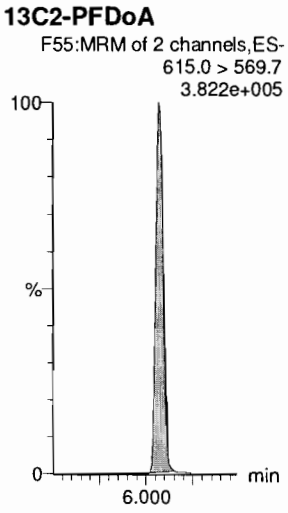




d5-N-EtFOSAA



13C2-PFDoA



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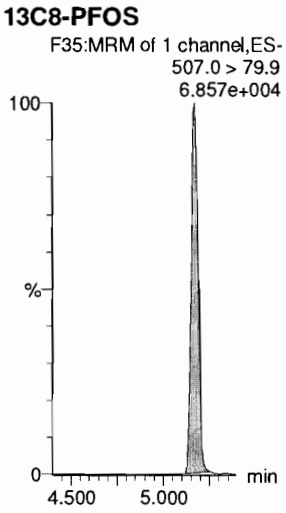
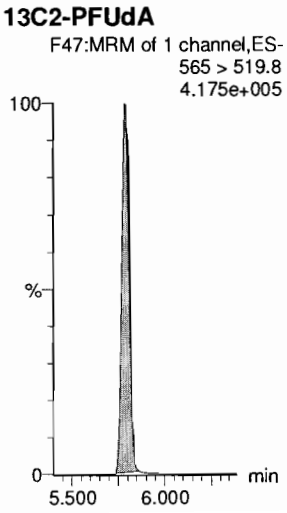


13C2-PFUdA



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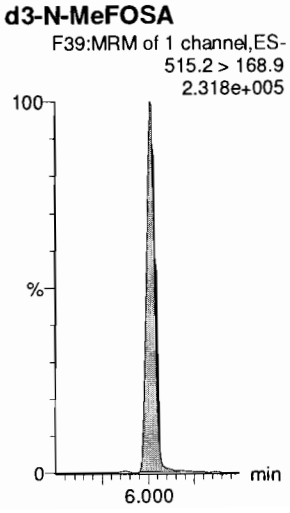

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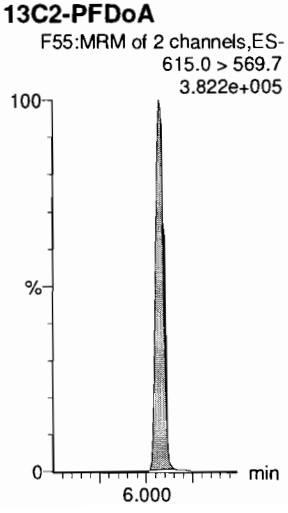

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Printed: Tuesday, December 04, 2018 14:59:46 Pacific Standard Time

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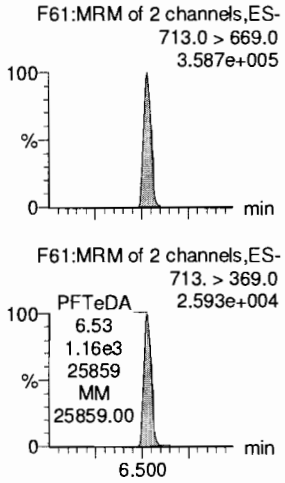

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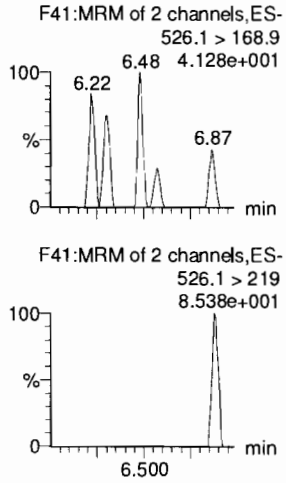

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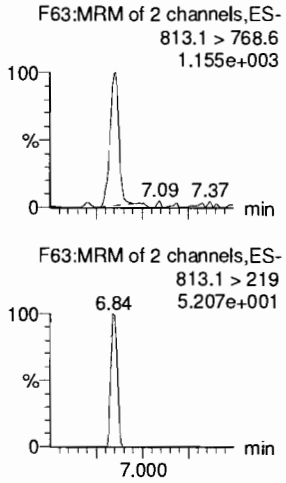
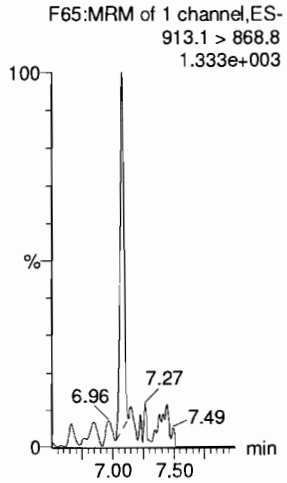
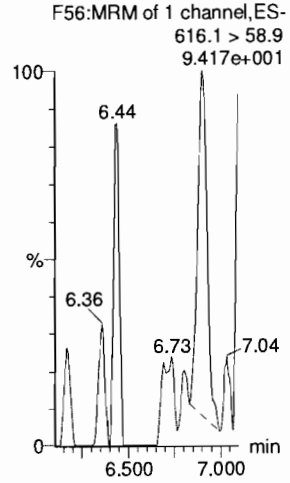


PFODA



N-MeFOSE



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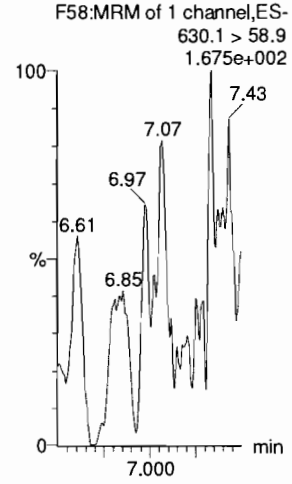

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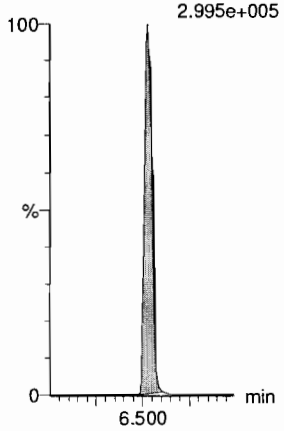

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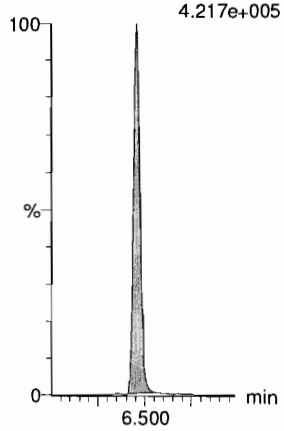

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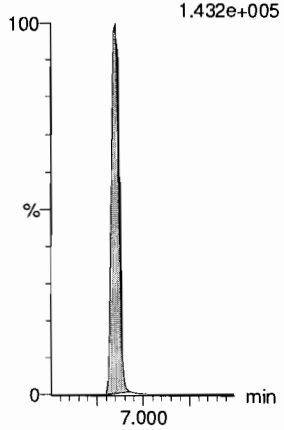
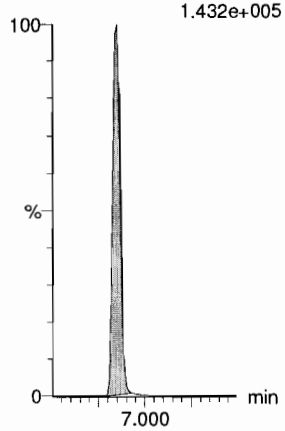
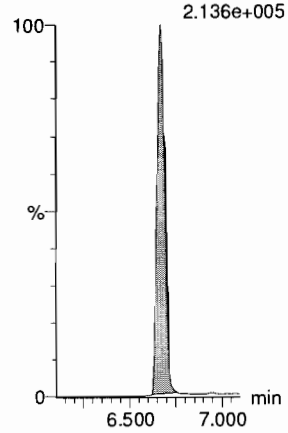


13C2-PFHxDA



d7-N-MeFOSE



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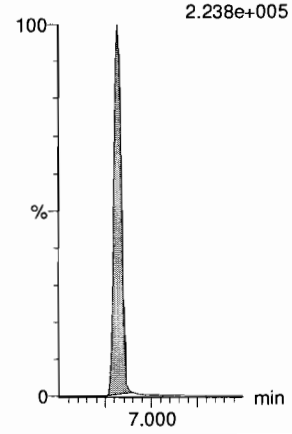

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Printed: Tuesday, December 04, 2018 14:59:46 Pacific Standard Time

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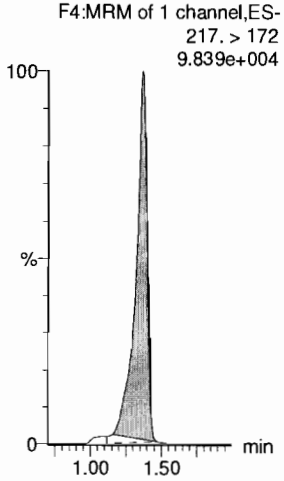

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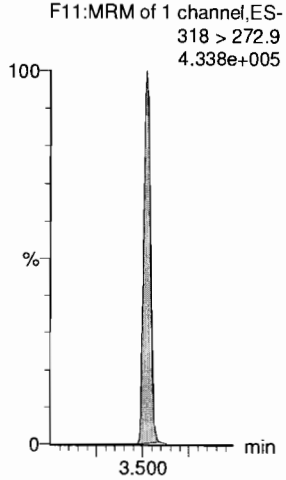

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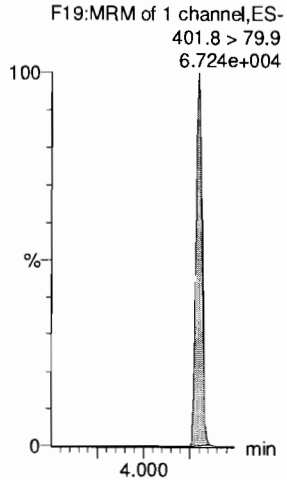

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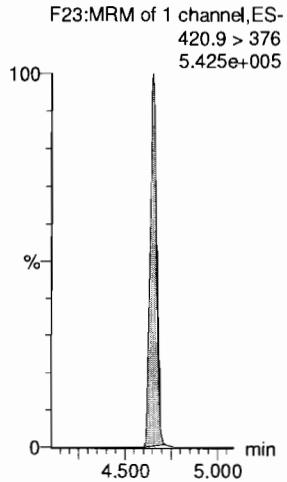

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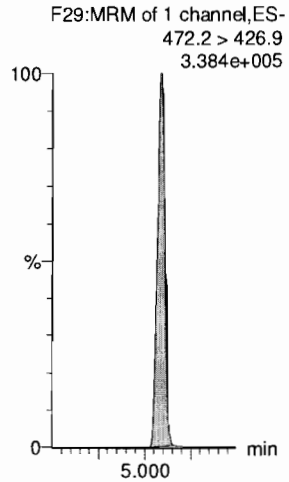

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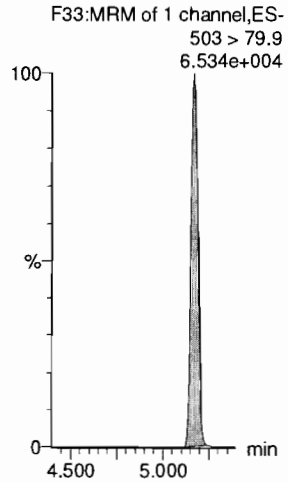

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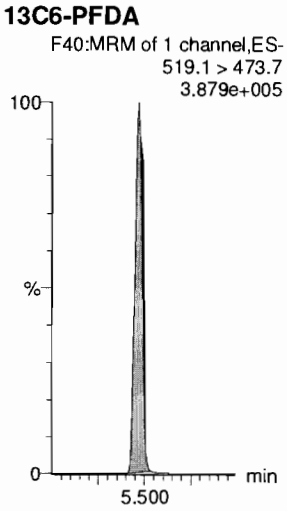

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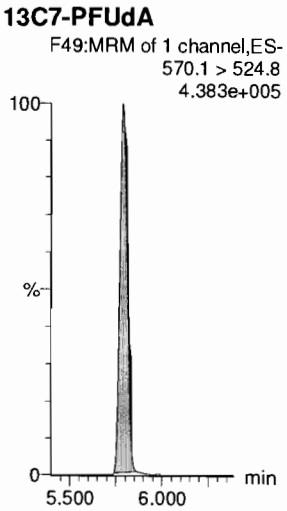

Vista Analytical Laboratory

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Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

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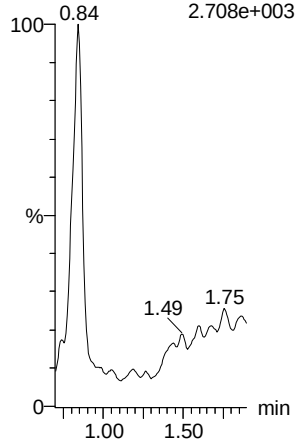

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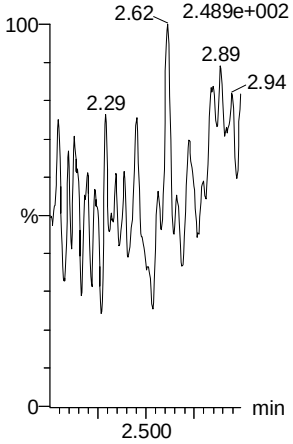

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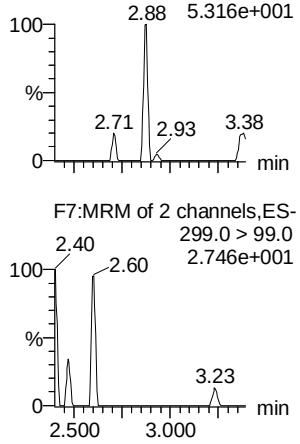

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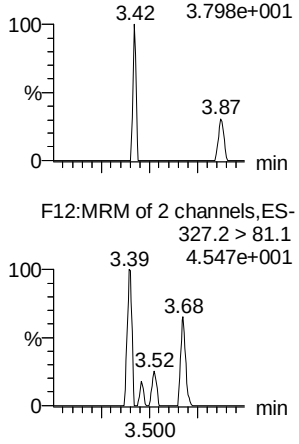

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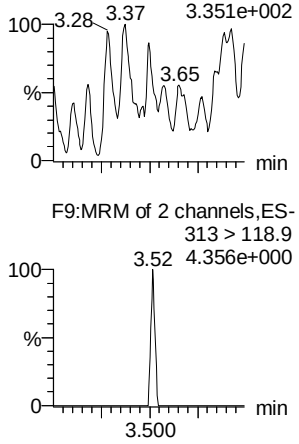

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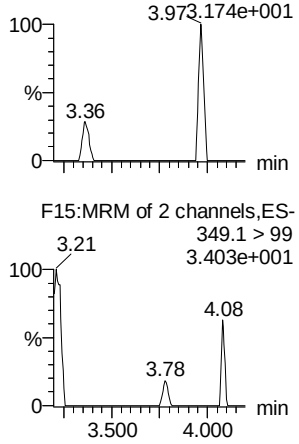

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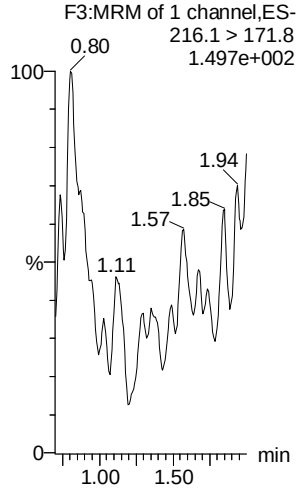

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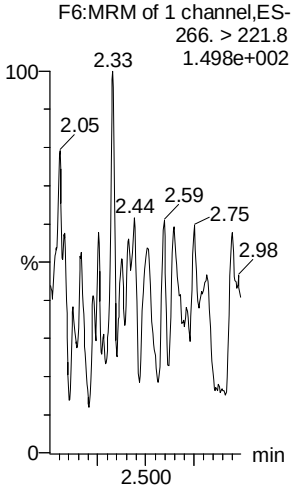

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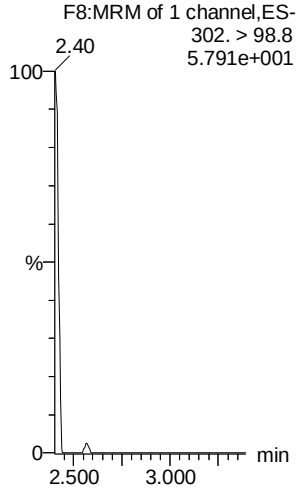

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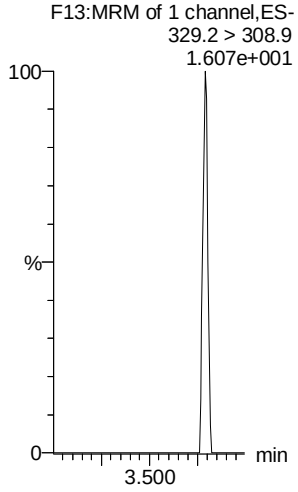

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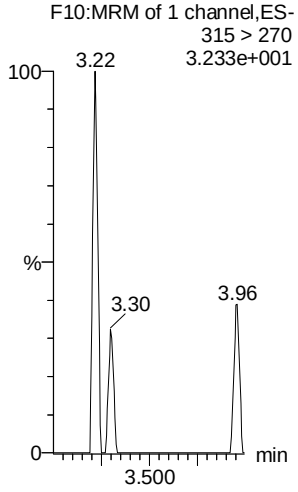

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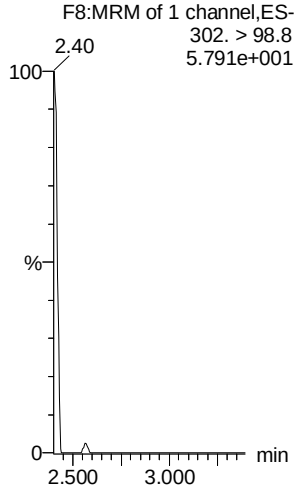

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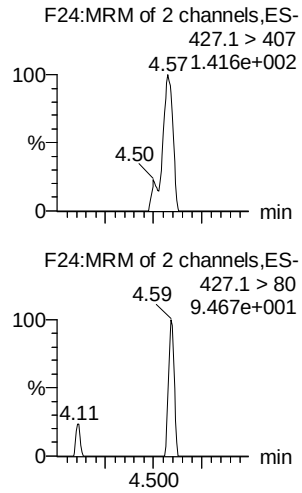
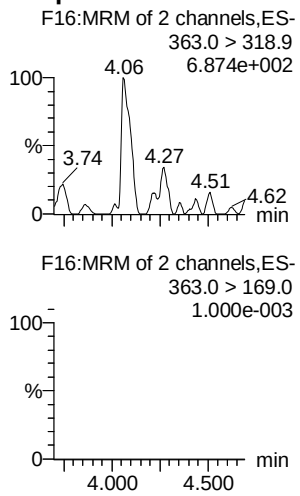
Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

6:2 FTS



PFHpA



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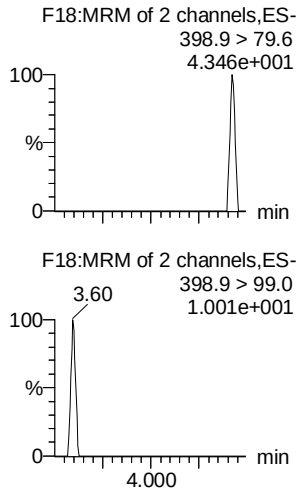

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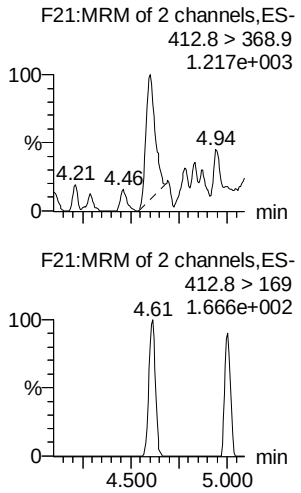

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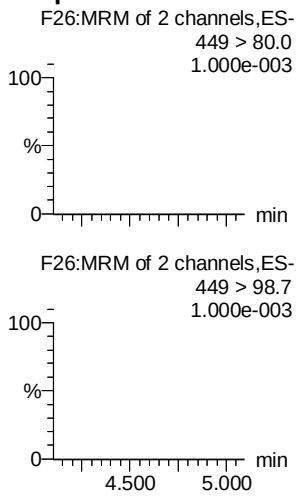

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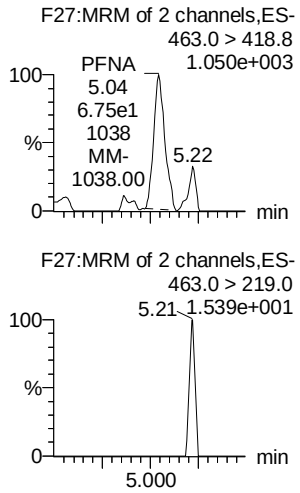

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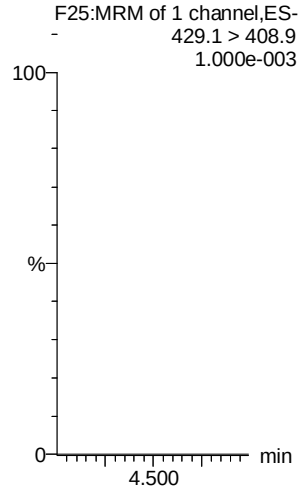
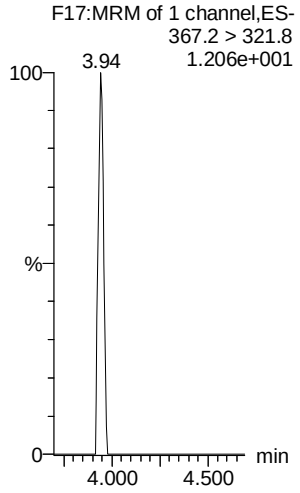
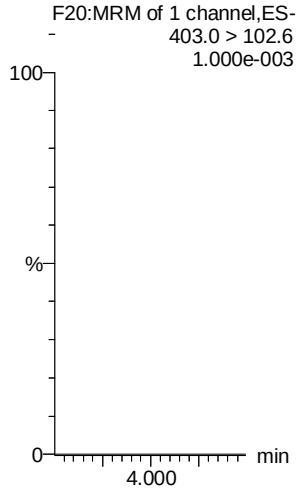


13C4-PFHpA



18O2-PFHxS



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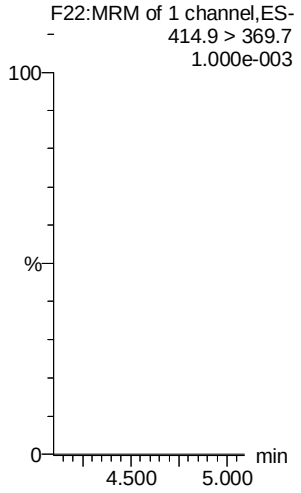

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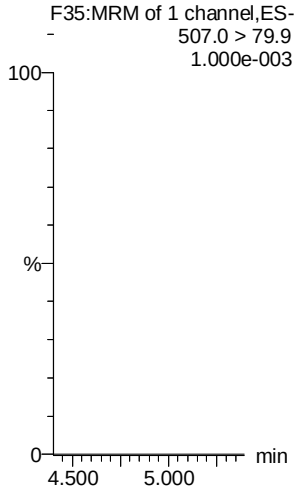

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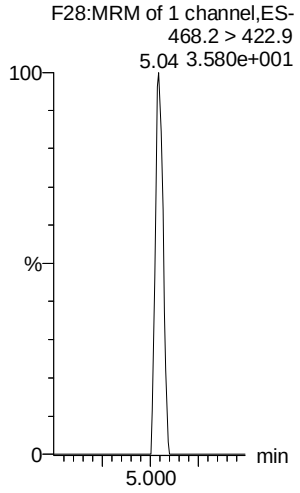

Vista Analytical Laboratory

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Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

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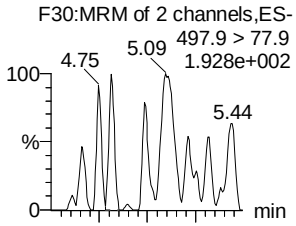
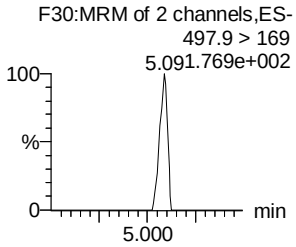
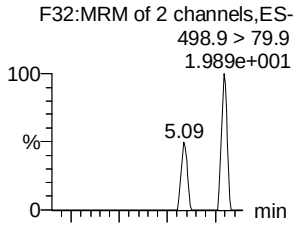
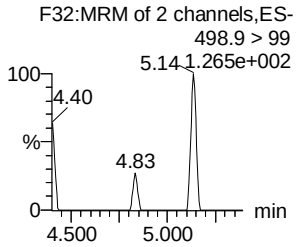




L-PFOS





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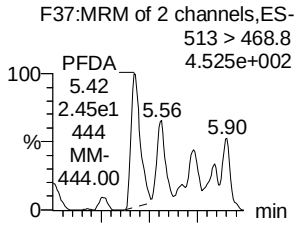
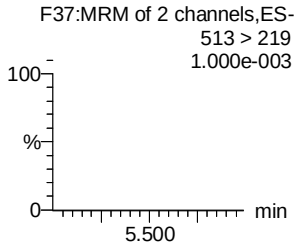
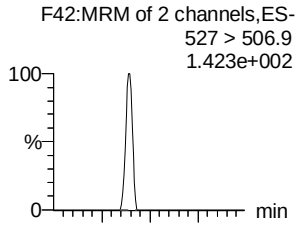
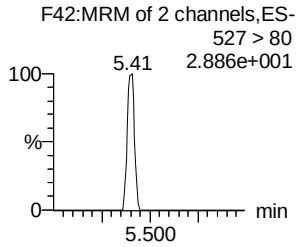




8:2 FTS





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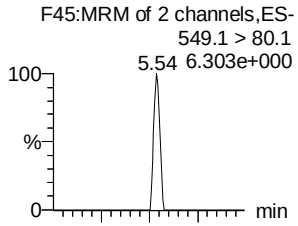

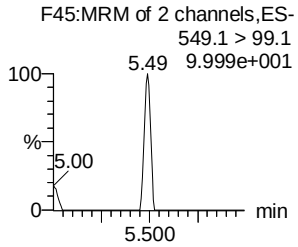

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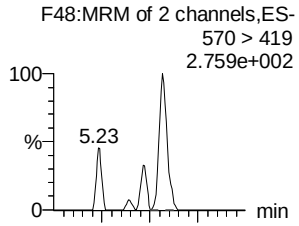

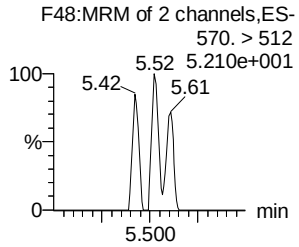

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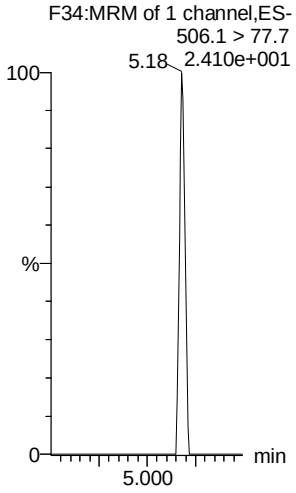

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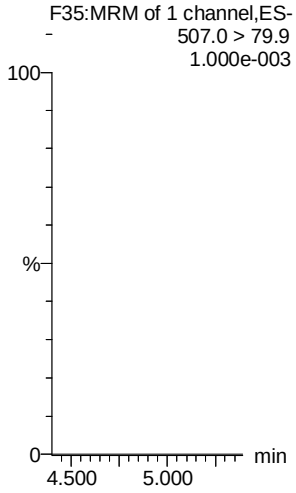

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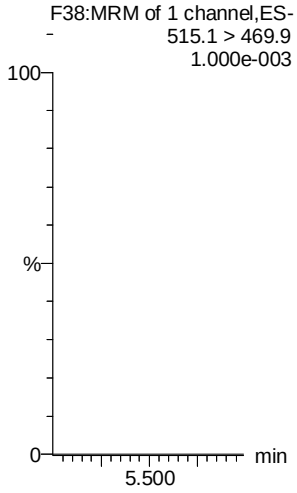
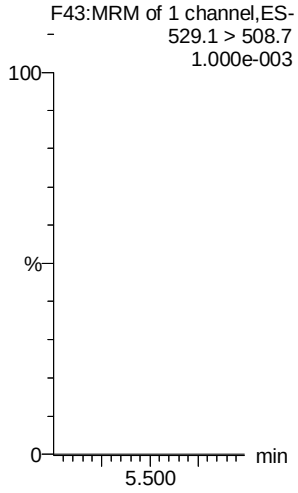


13C2-8:2 FTS



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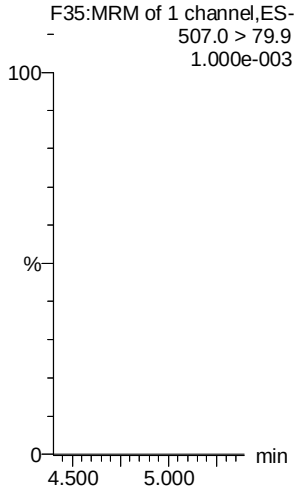

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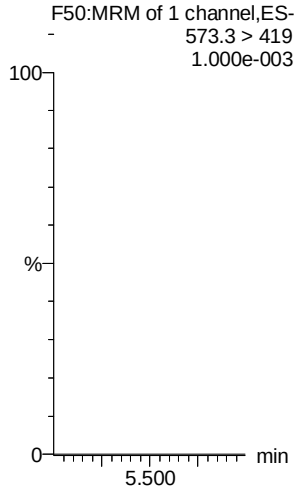

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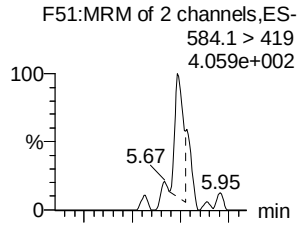
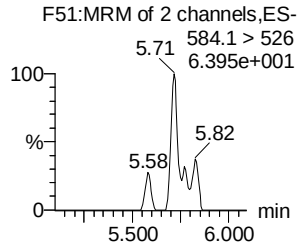
Name: 181204M1_13, Date: 04-Dec-2018, Time: 13:41:31, ID: IPA, Description: IPA

L-EtFOSAA





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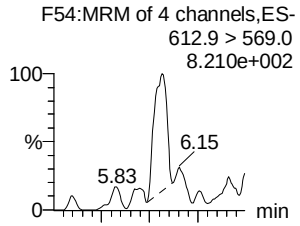

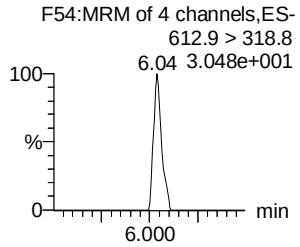

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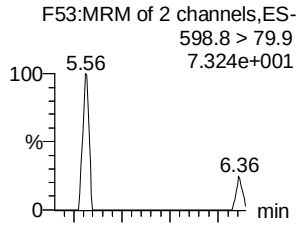

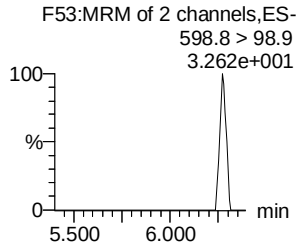

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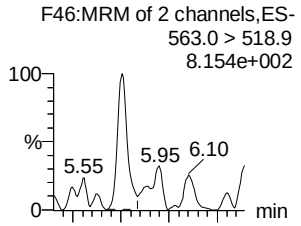

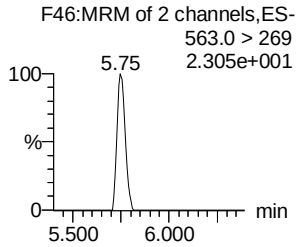

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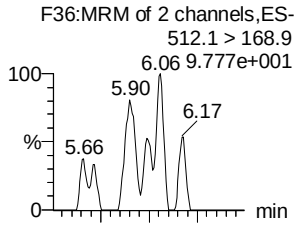

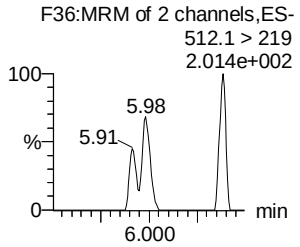

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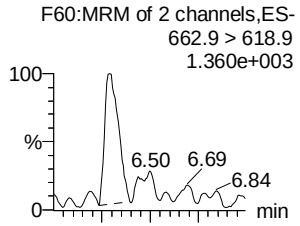

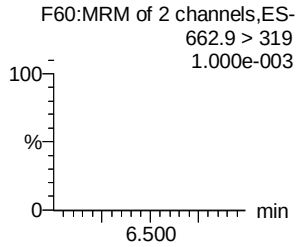

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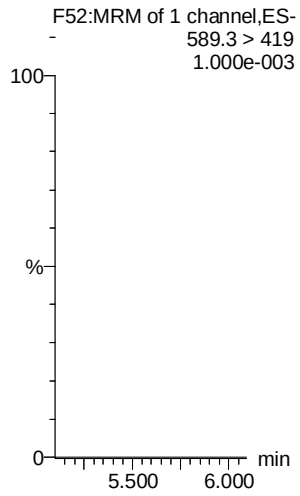

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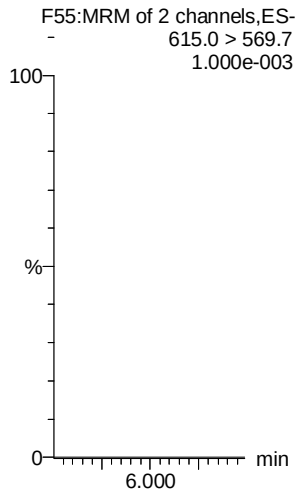

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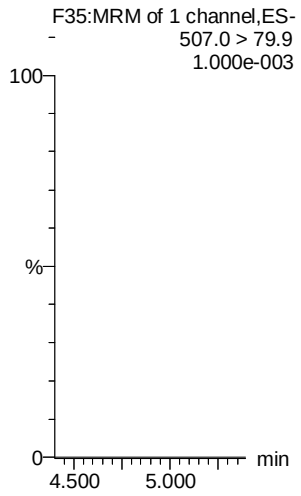

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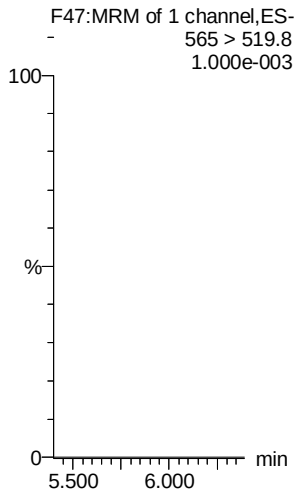

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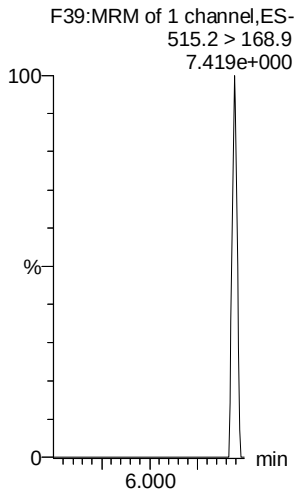

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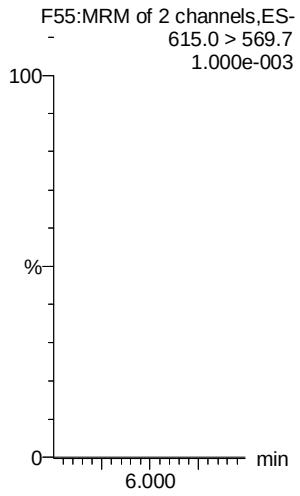

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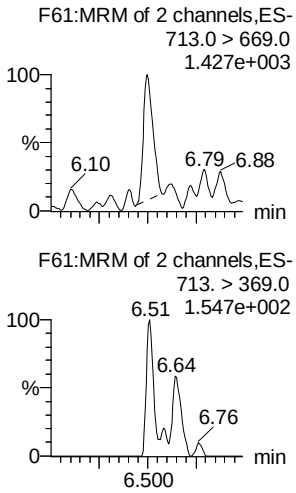

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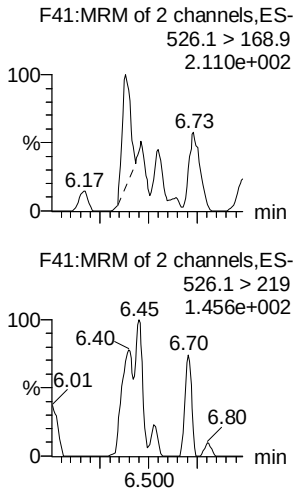

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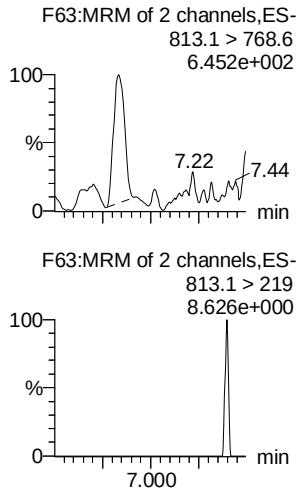

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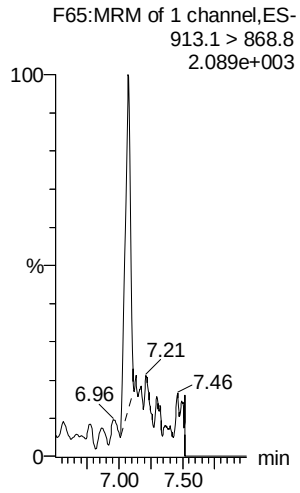

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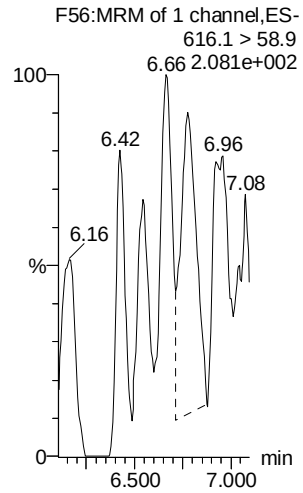

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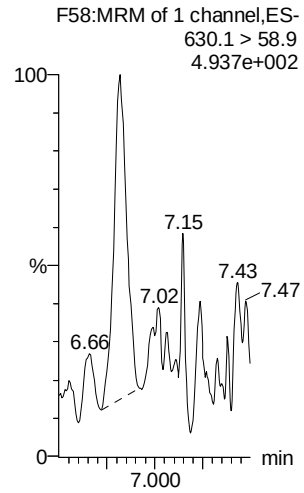

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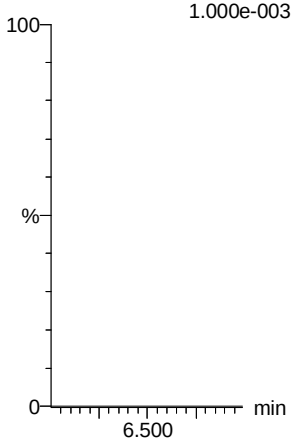

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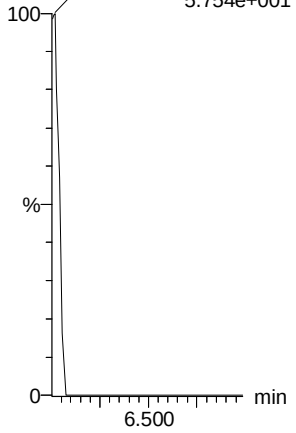

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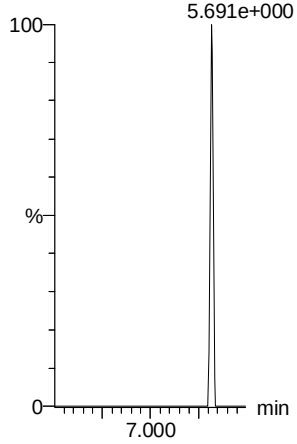

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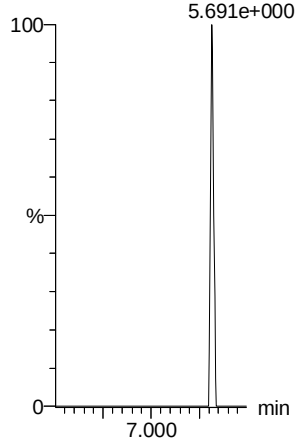

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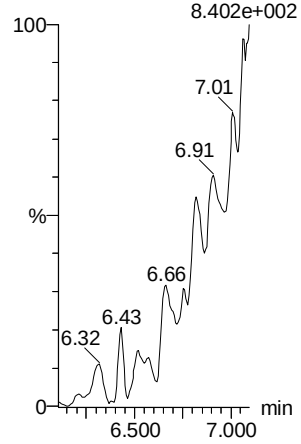

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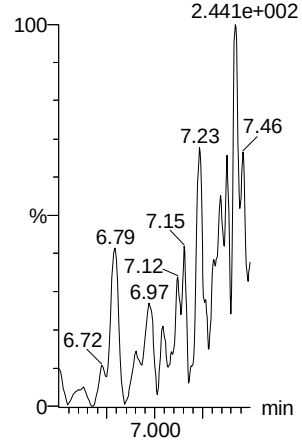

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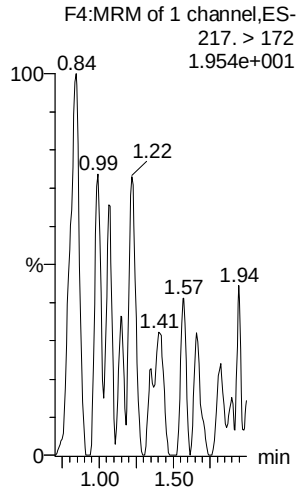

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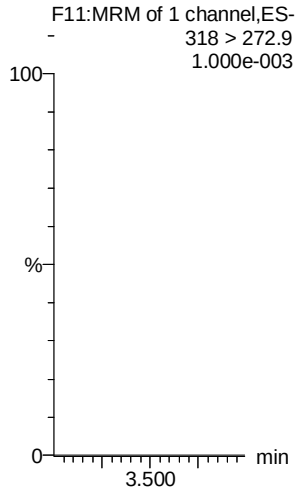

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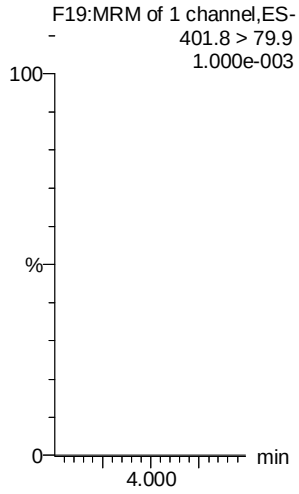

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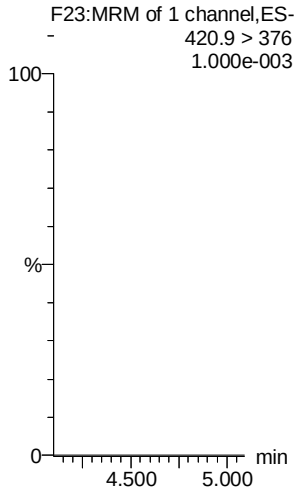

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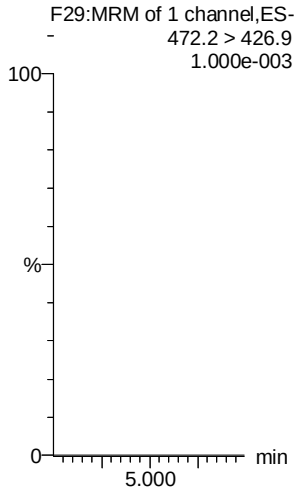

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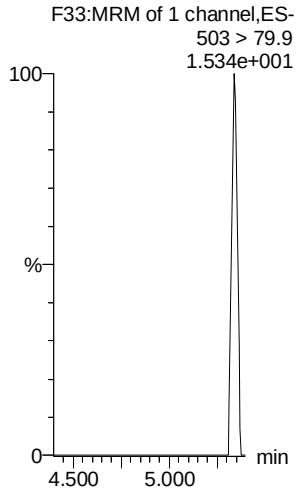

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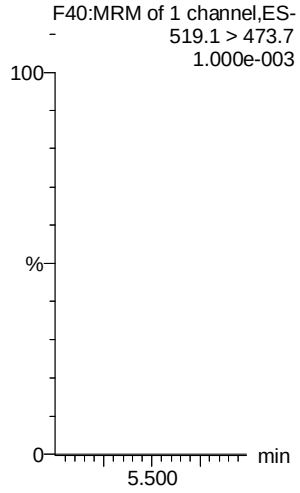

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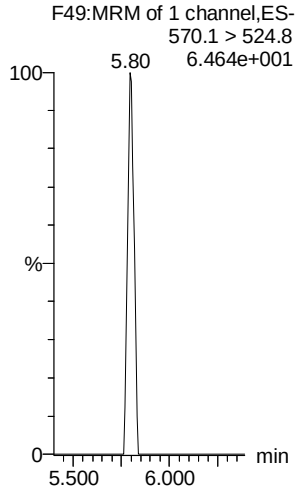

TUNE CHECKS

Tune check Q4(m)

Calibration Report - MS1 Static 20181203 **Page 1 of 6**

Printed: **Mon Dec 03 13:46:15 2018**

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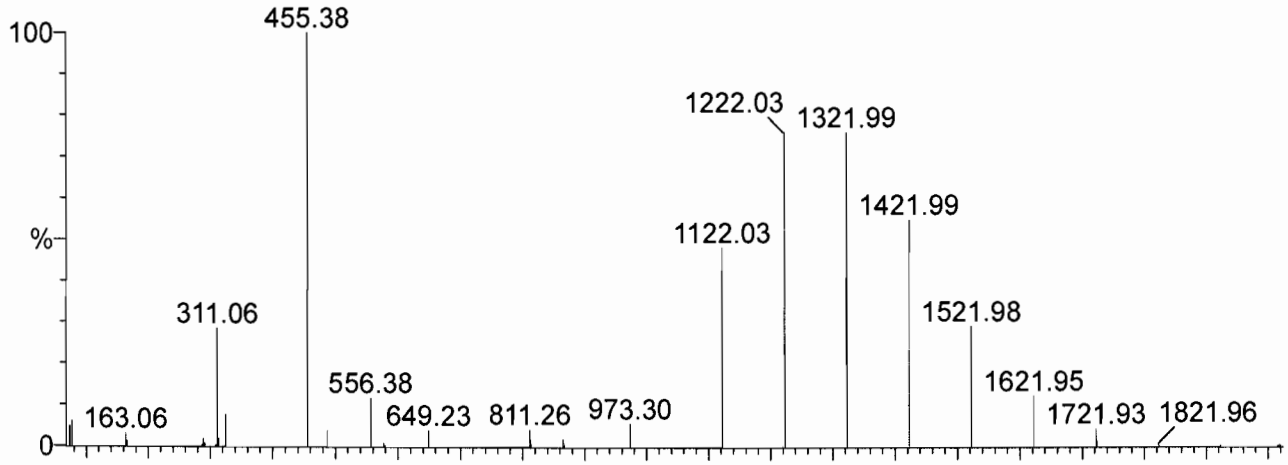

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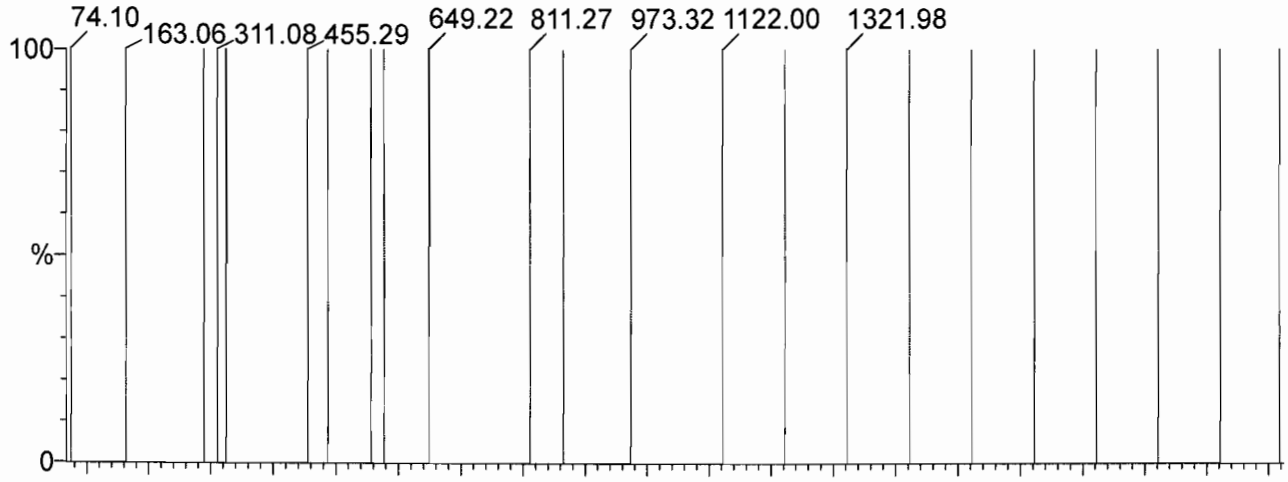

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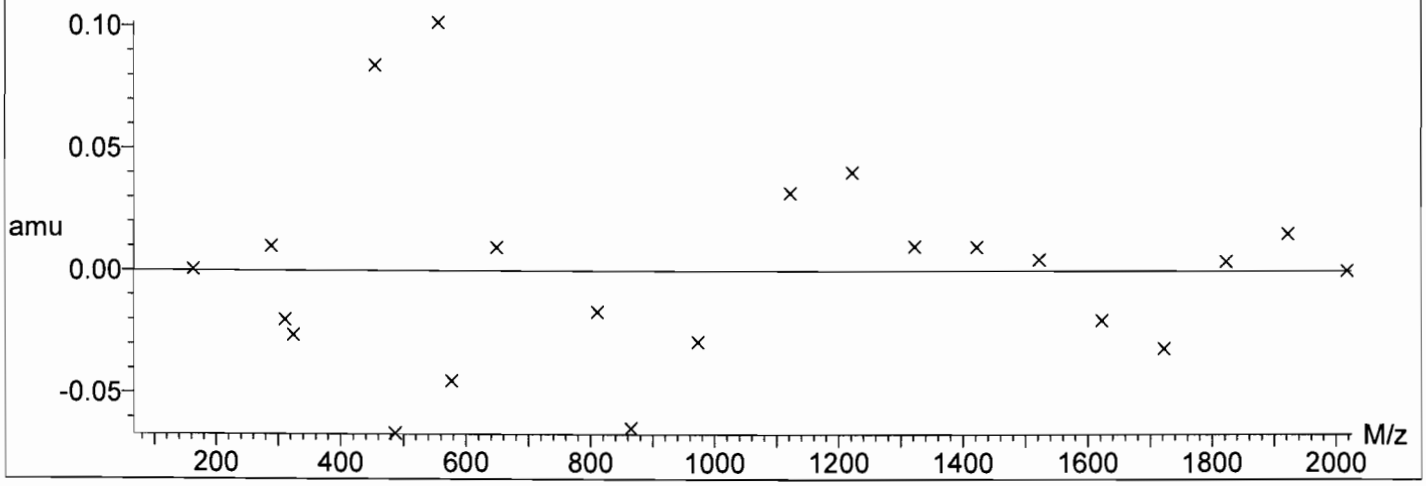
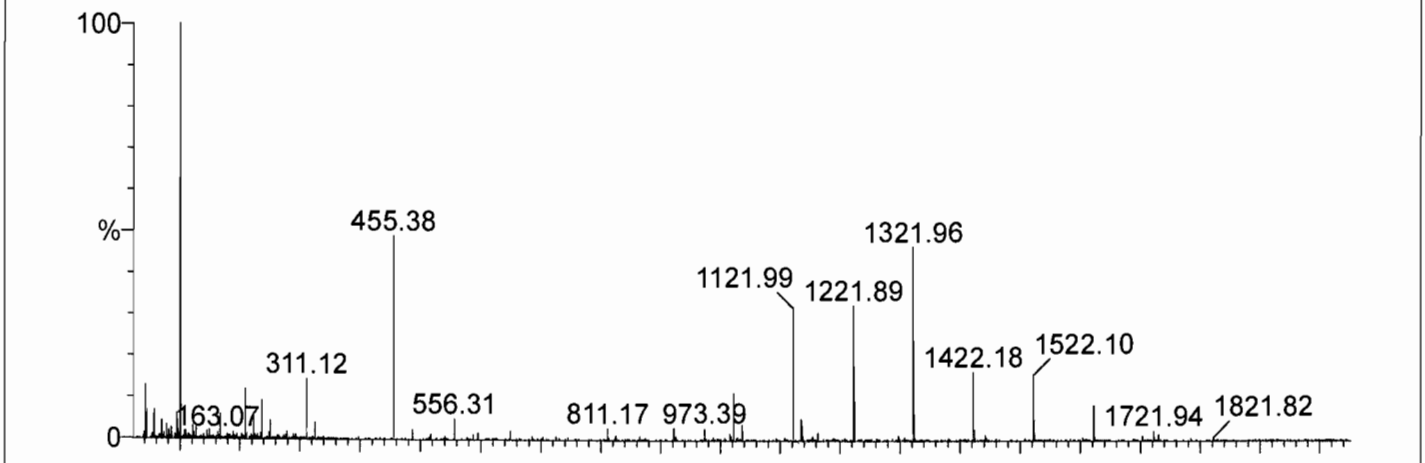
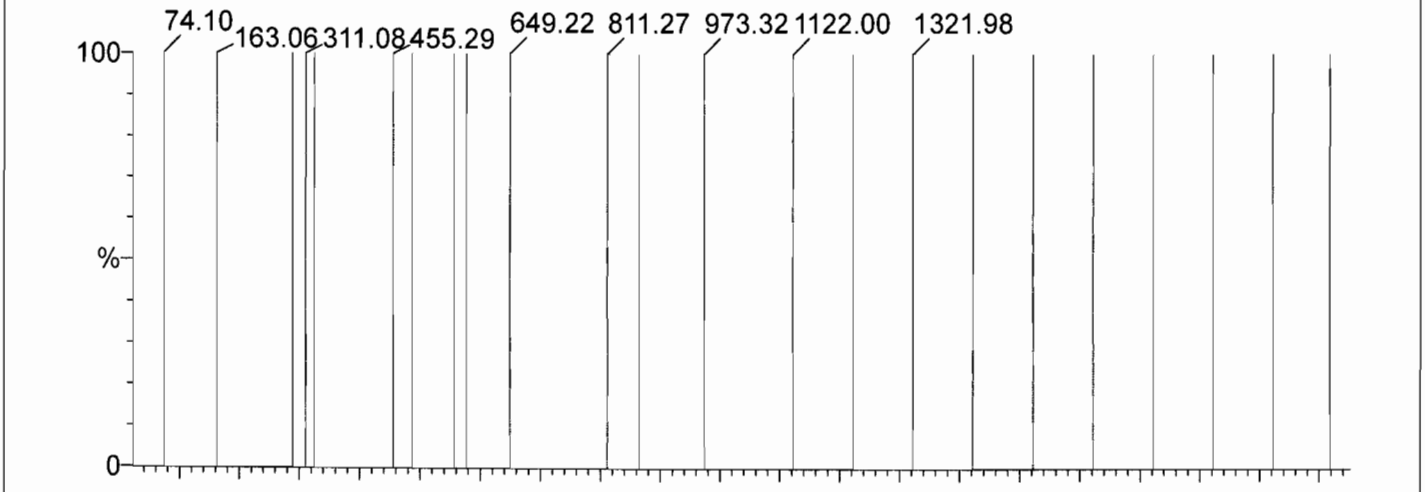


Data file: SCNMS1 - Calibrated 23 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0806 amu



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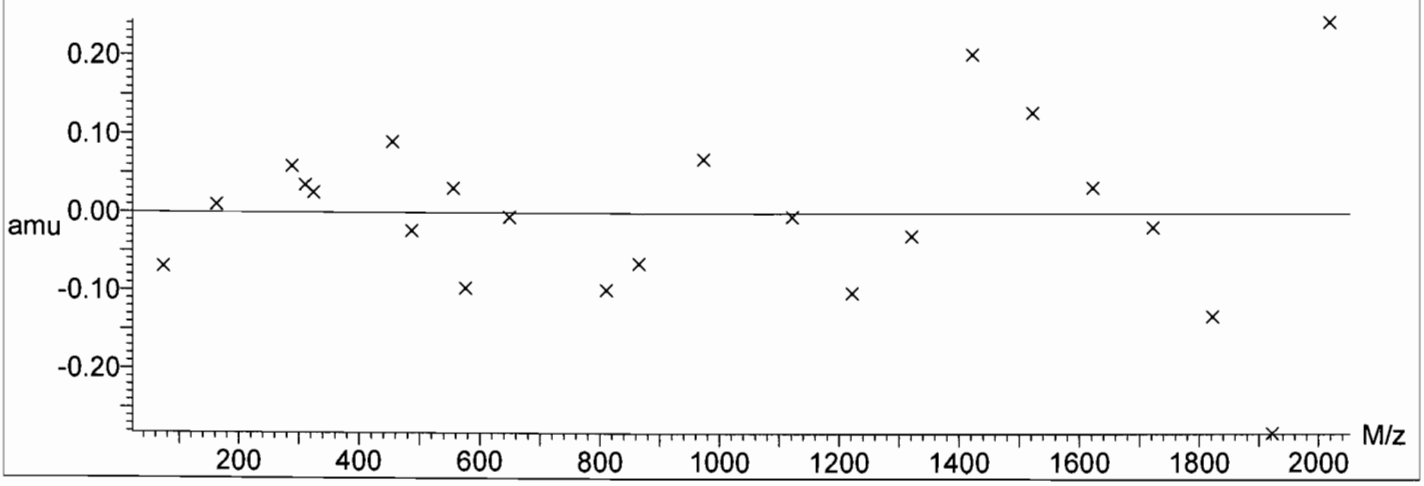
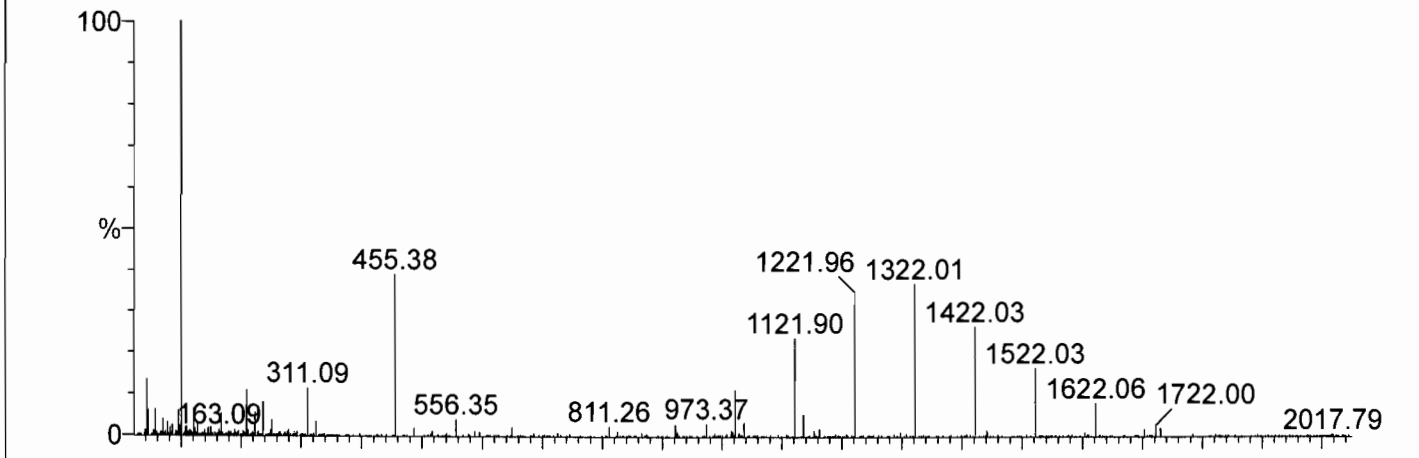


Data file: FASTMS1 - Calibrated 23 matches of 23 tested references



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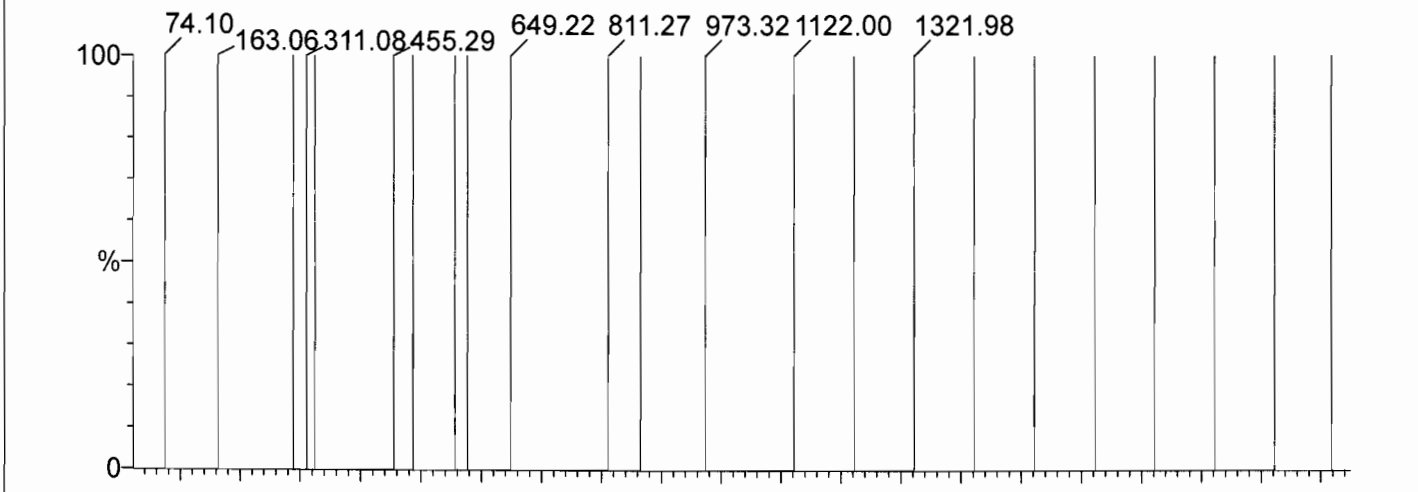

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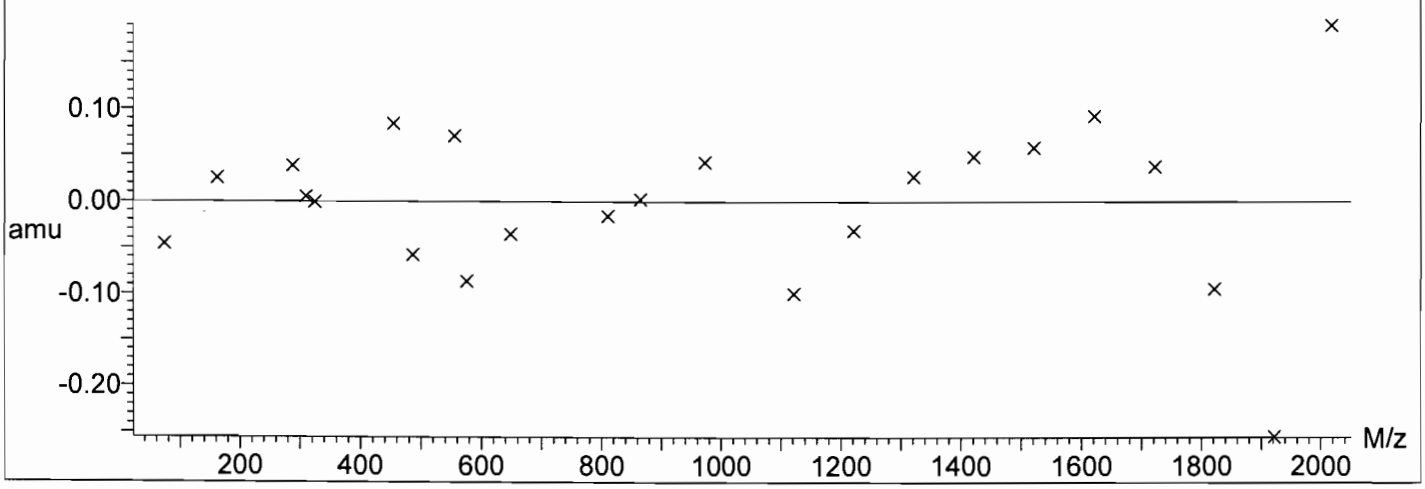
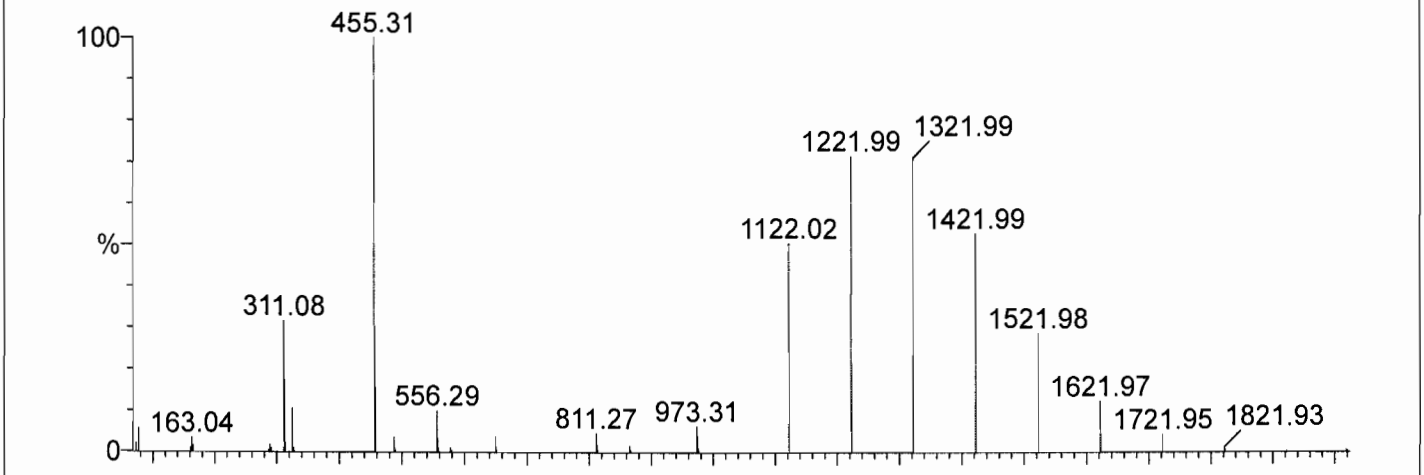


Data file: STATMS2 - Calibrated 22 matches of 23 tested references



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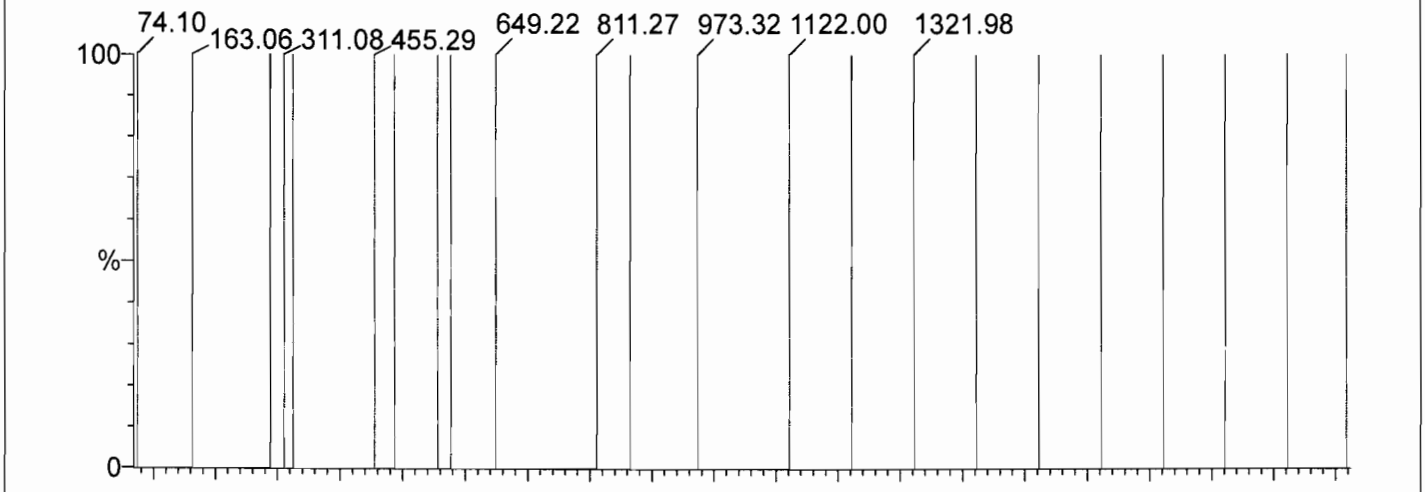

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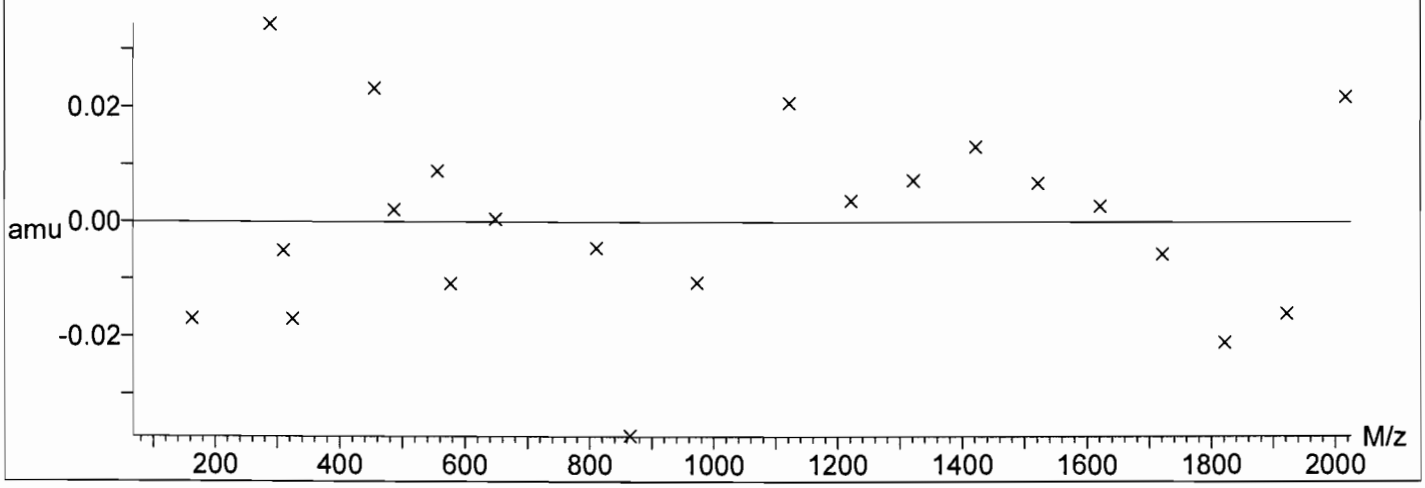
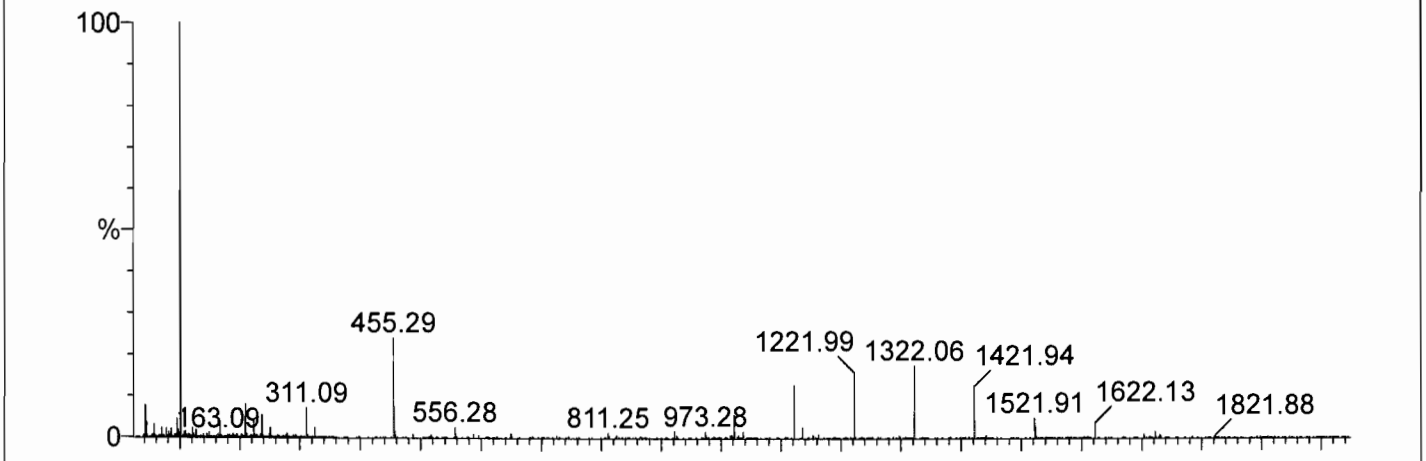
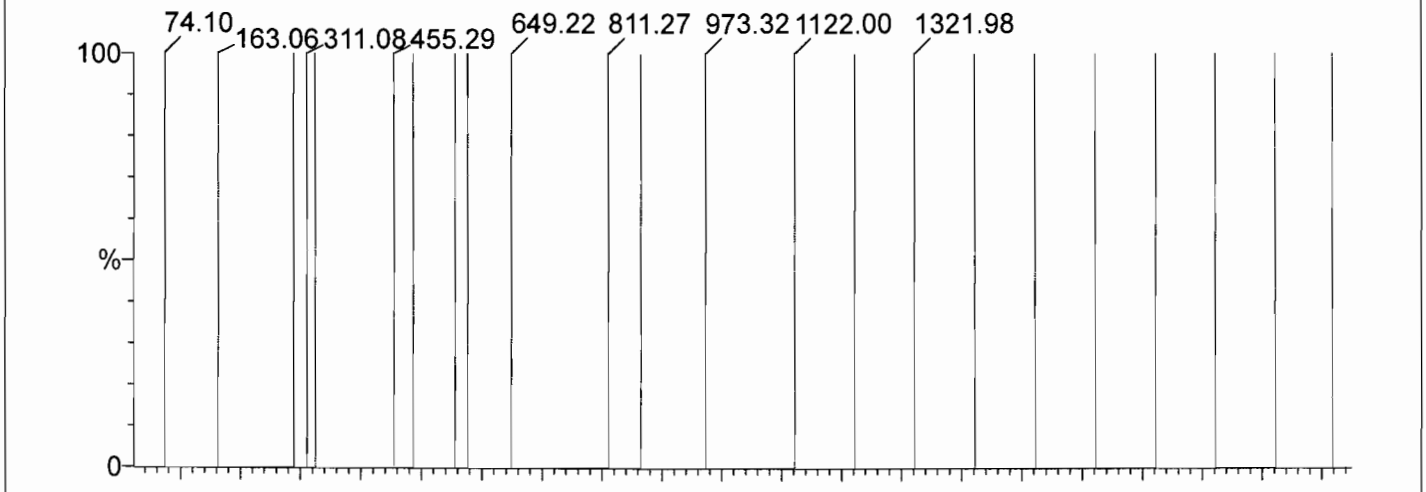


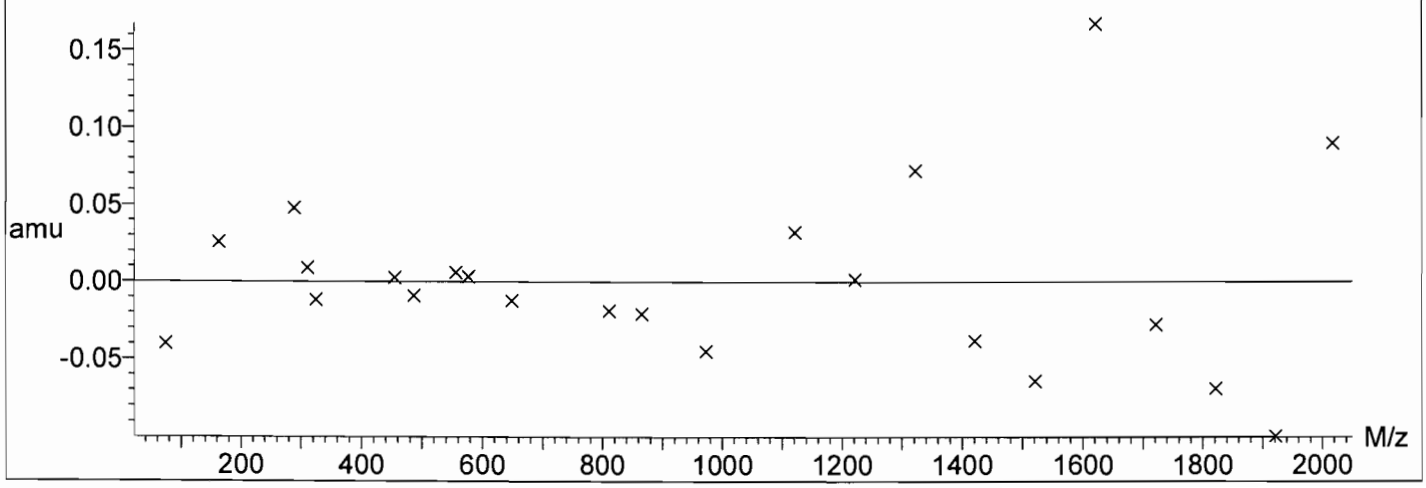
Data file: SCNMS2 - Calibrated 23 matches of 23 tested references



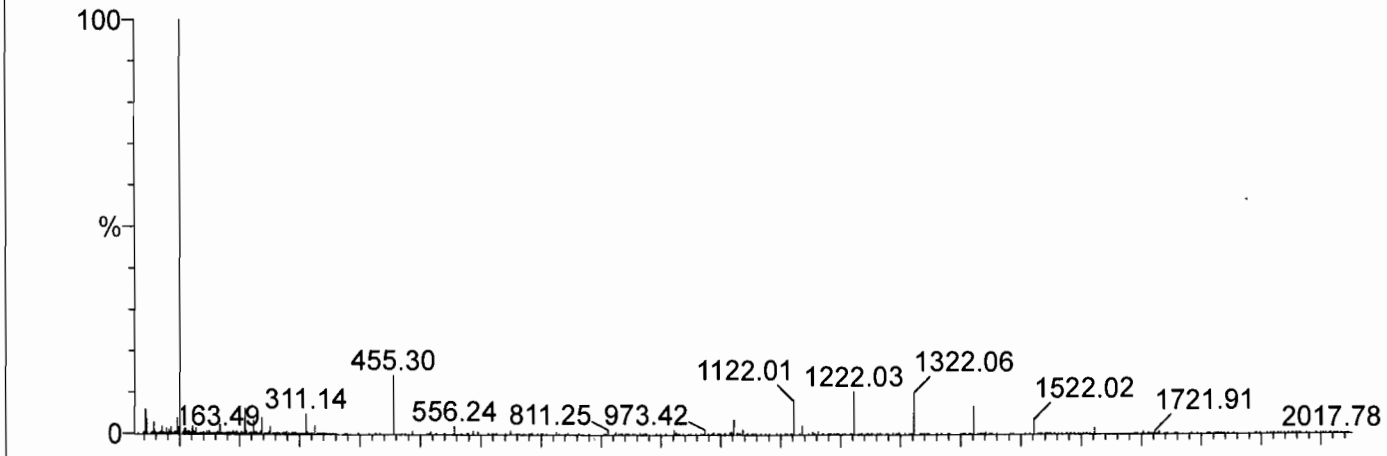
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0397 amu



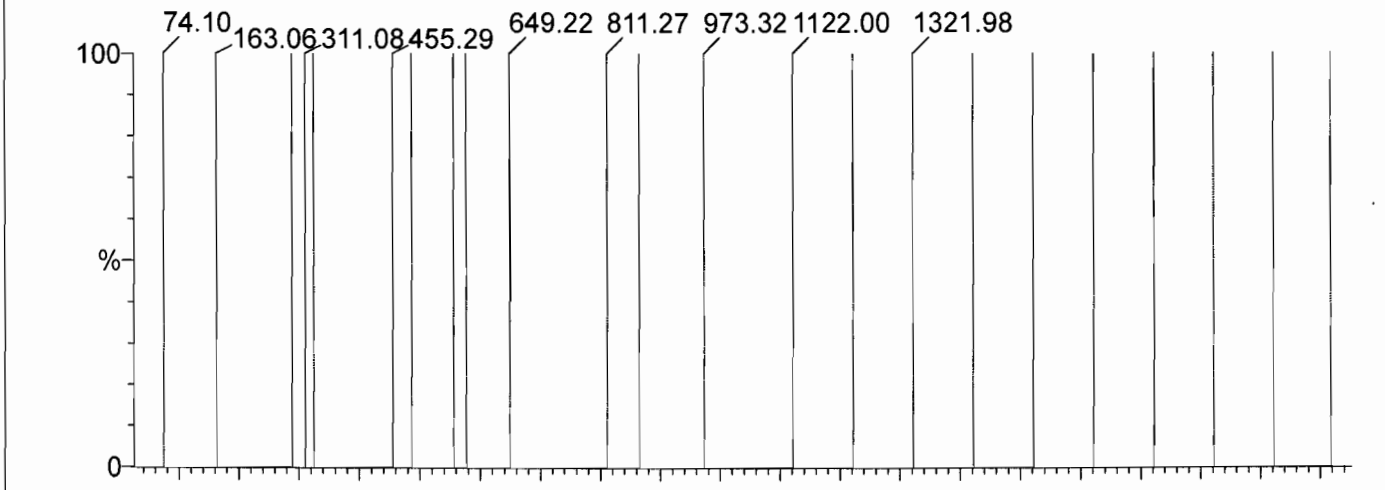
Residual Polynomial order = 4 RMS residual = 0.0556 amu



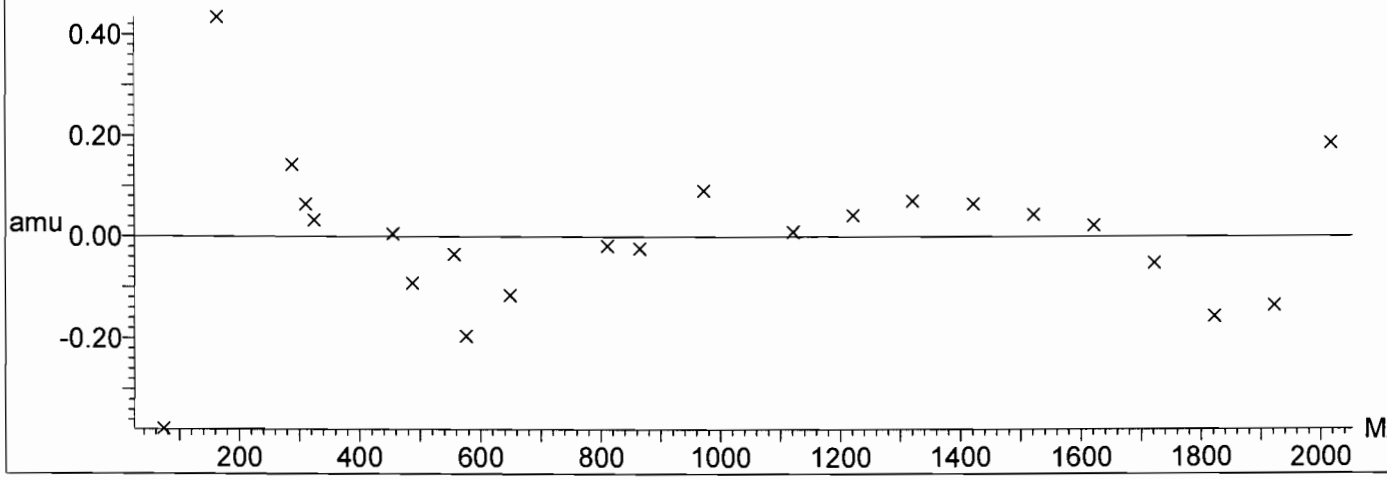
Data file: FASTMS2 - Calibrated 23 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.105 amu



Residual Polynomial order = 4 RMS residual = 0.15 amu



TUNE CHECK Q4(M) 12-04-18

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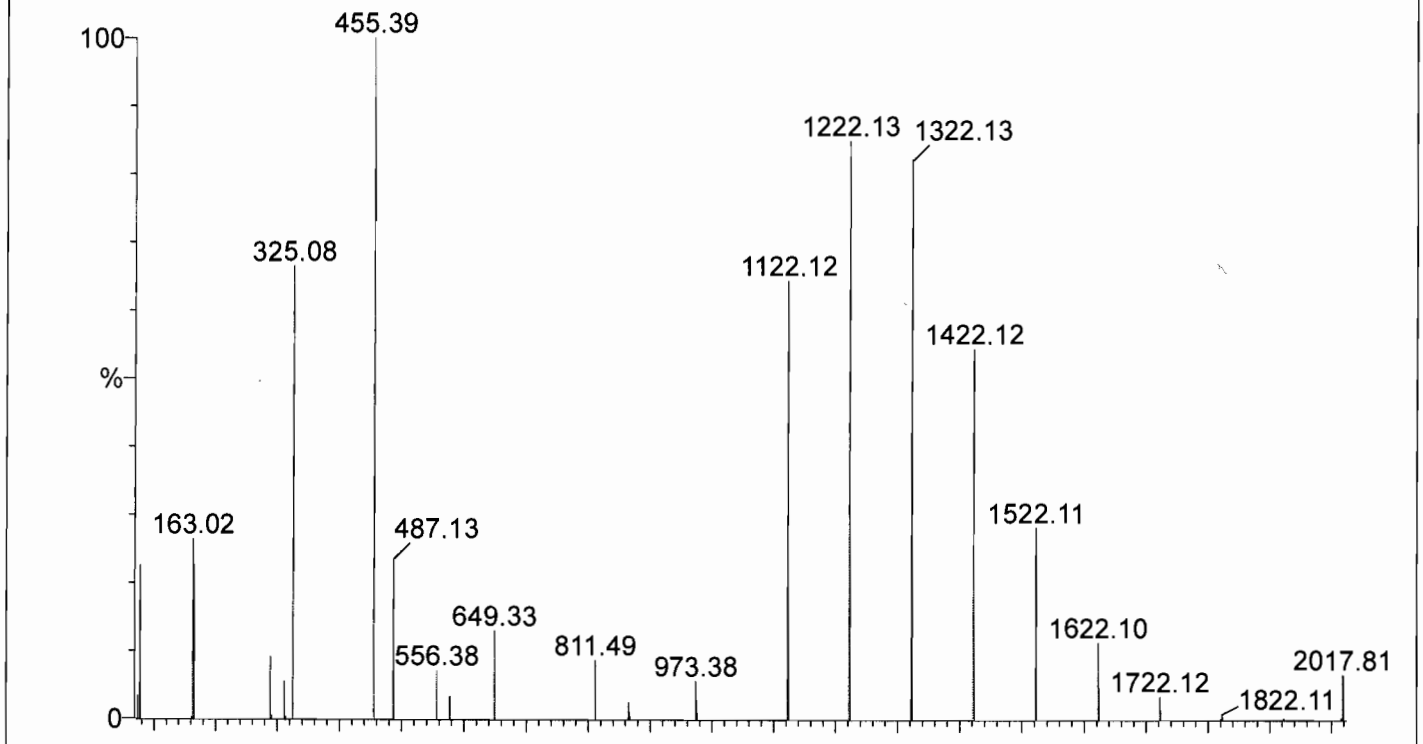
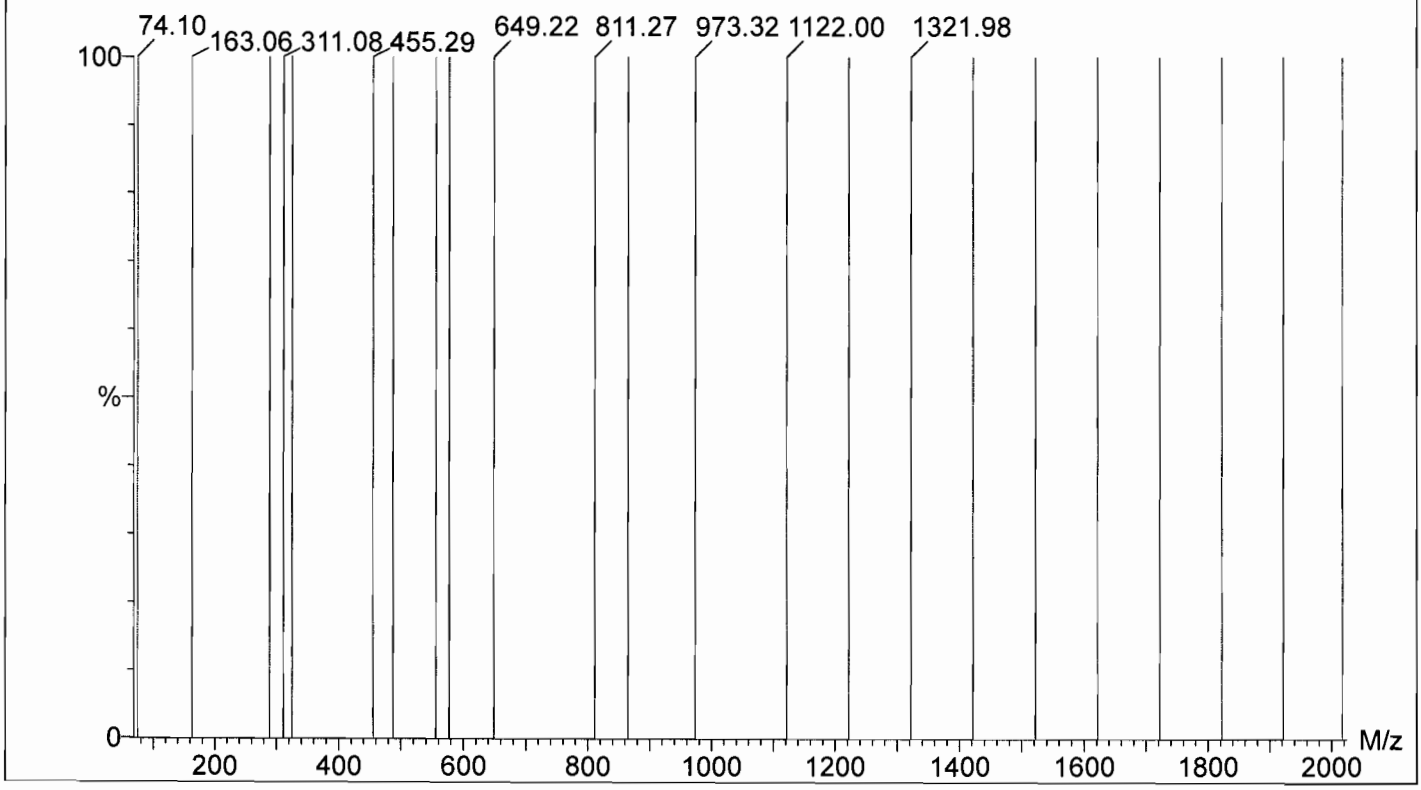
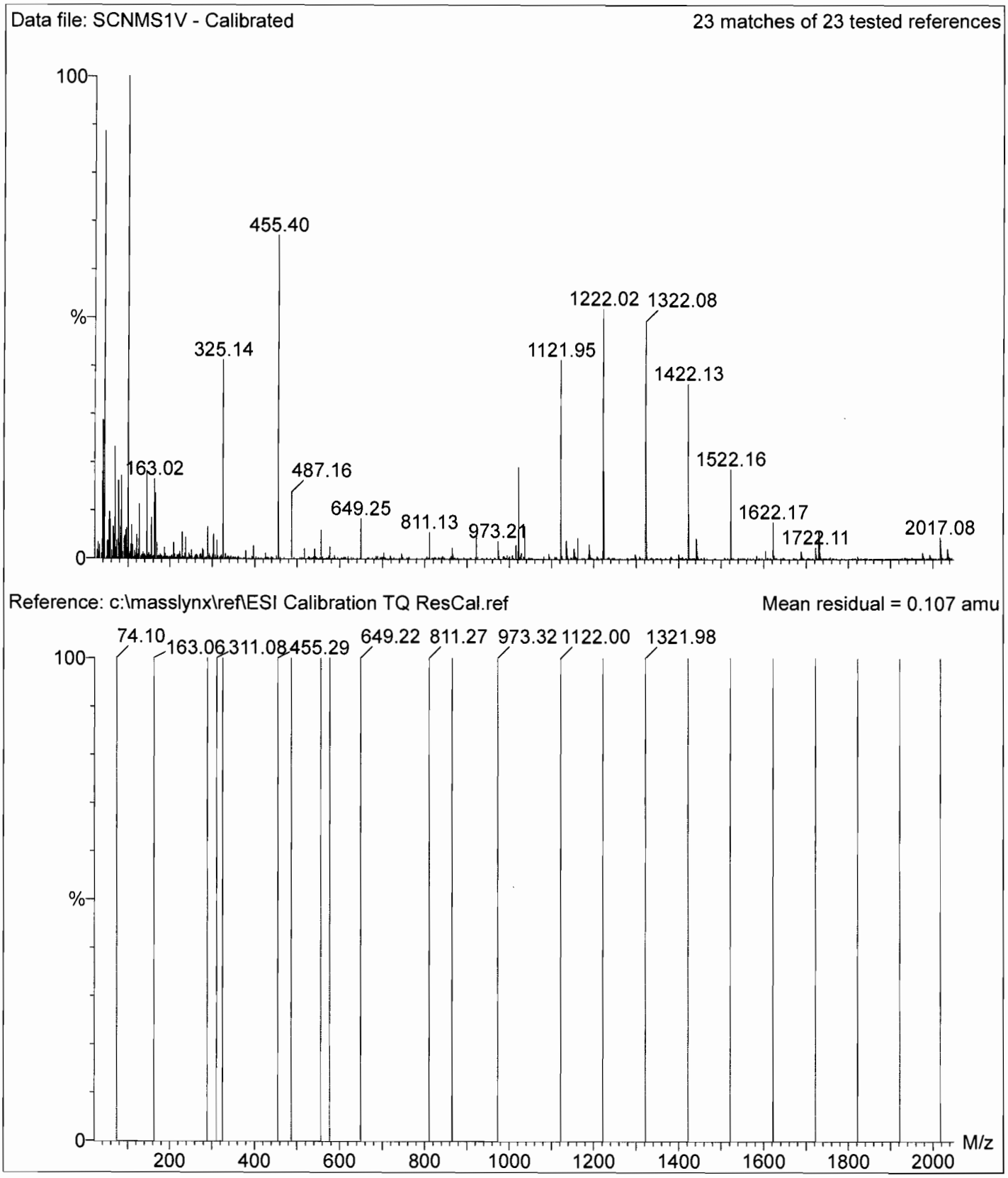
Data file: STATMS1V - Calibrated 22 matches of 23 tested references

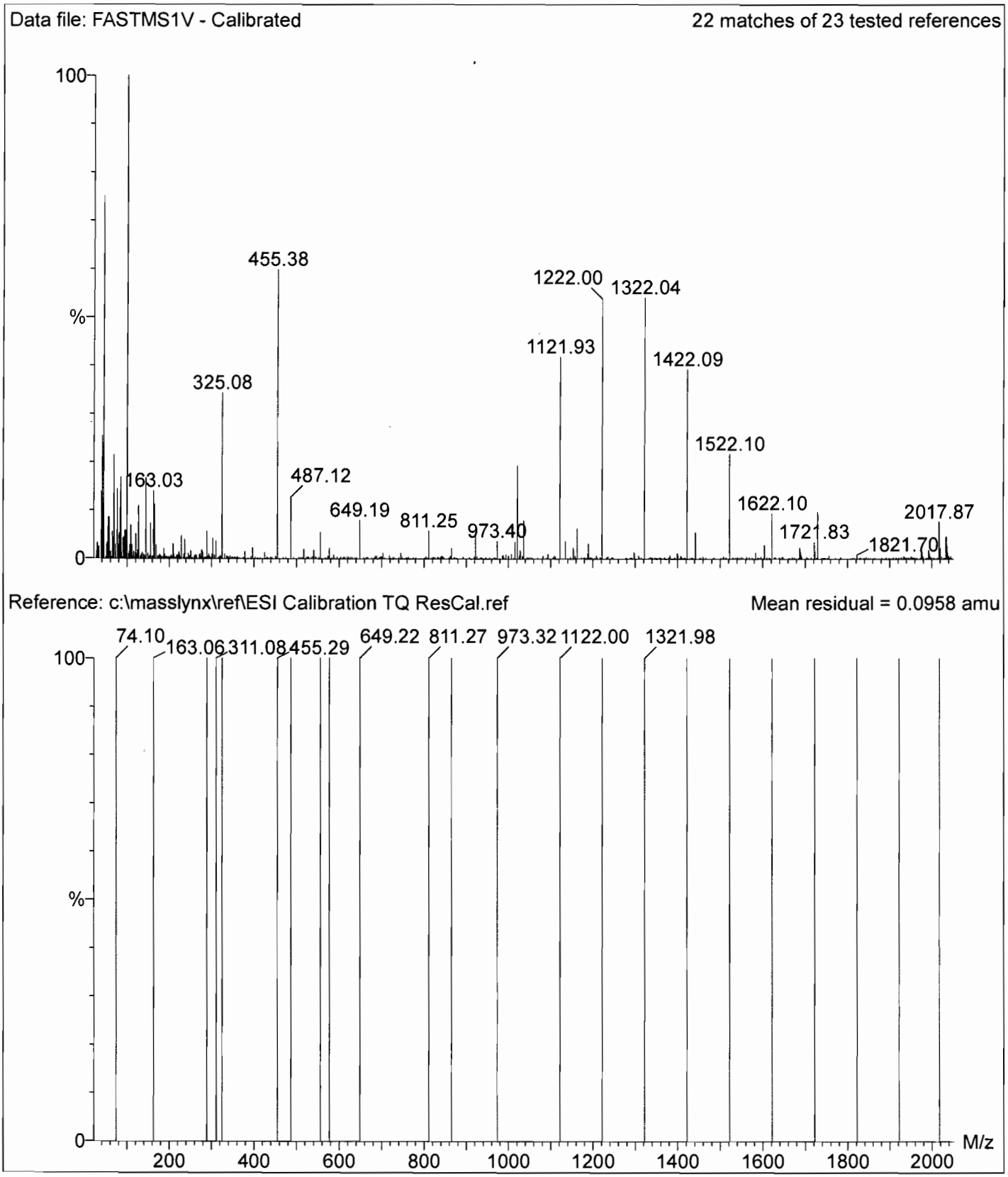


Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.104 amu

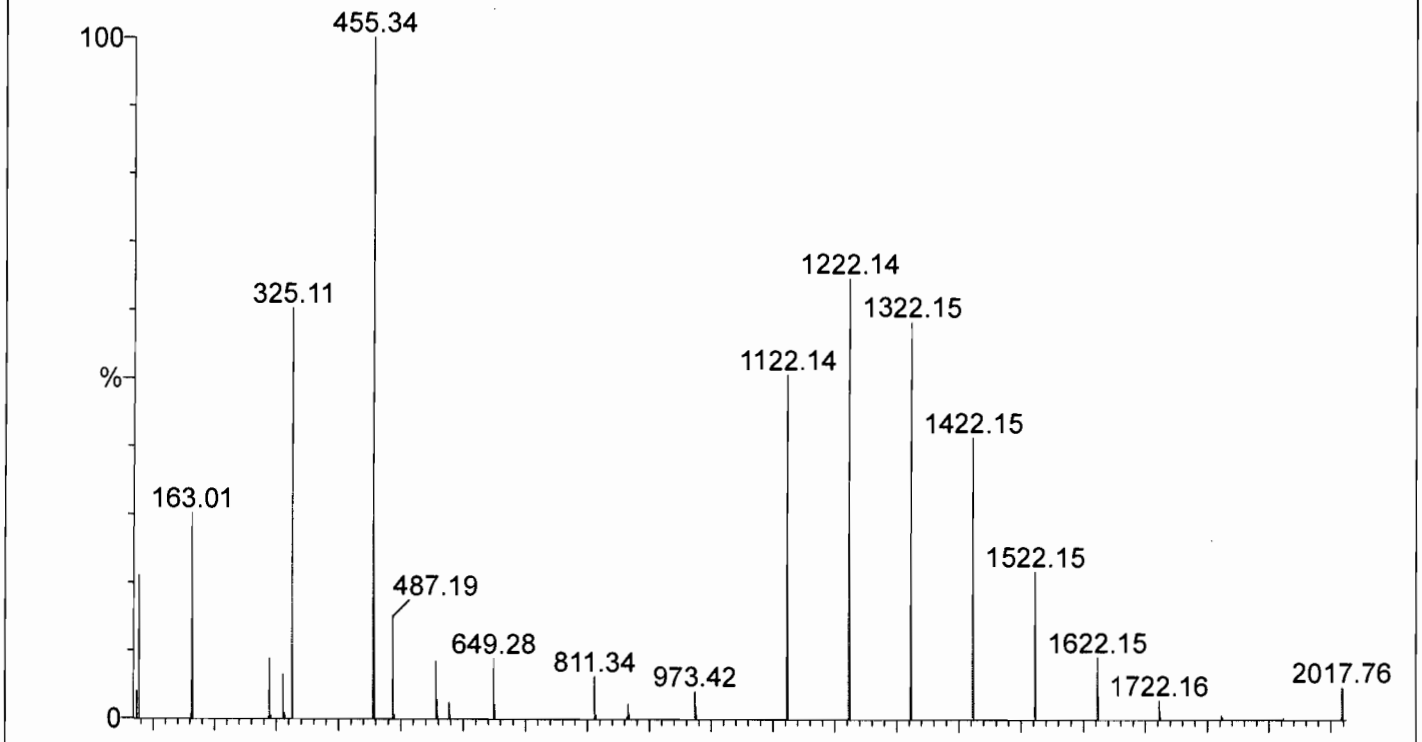



Data file: SCNMS1V - Calibrated
23 matches of 23 tested references
100
%
0
455.40
1222.02
1322.08
325.14
1121.95
1422.13
163.02
487.16
1522.16
649.25
811.13
973.21
1622.17
1722.11
2017.08
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref
Mean residual = 0.107 amu
74.10
163.06
311.08
455.29
649.22
811.27
973.32
1122.00
1321.98
100
%
0
200
400
600
800
1000
1200
1400
1600
1800
2000
M/z

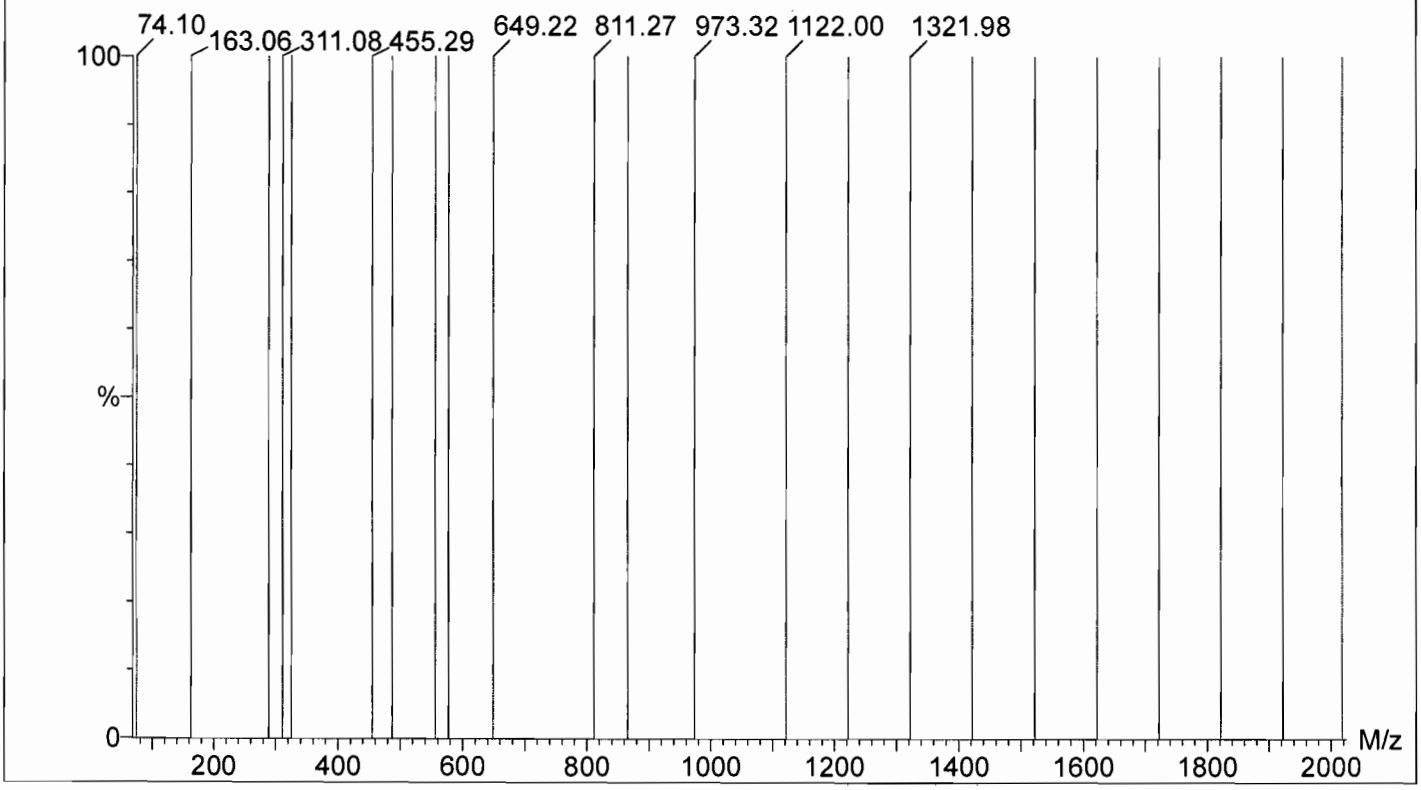
Printed: **Tue Dec 04 09:56:07 2018**



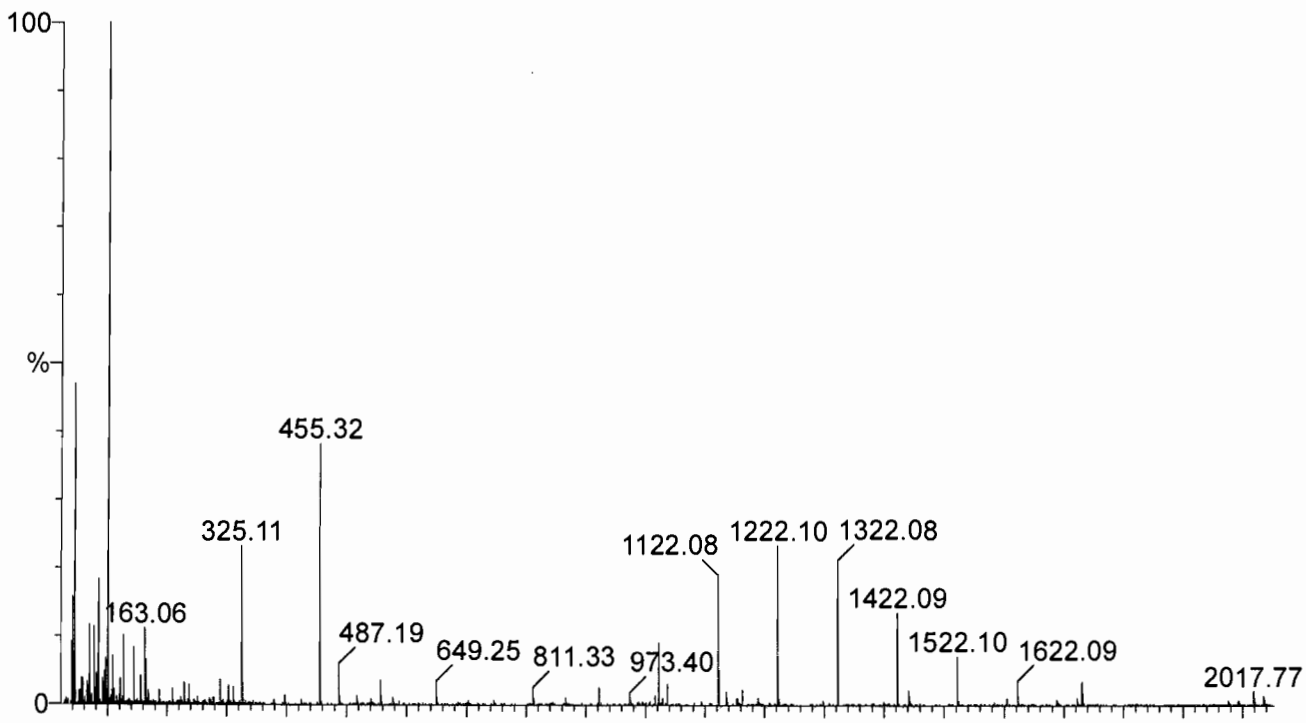
Data file: STATMS2V - Calibrated 22 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.101 amu



Data file: SCNMS2V - Calibrated 23 matches of 23 tested references



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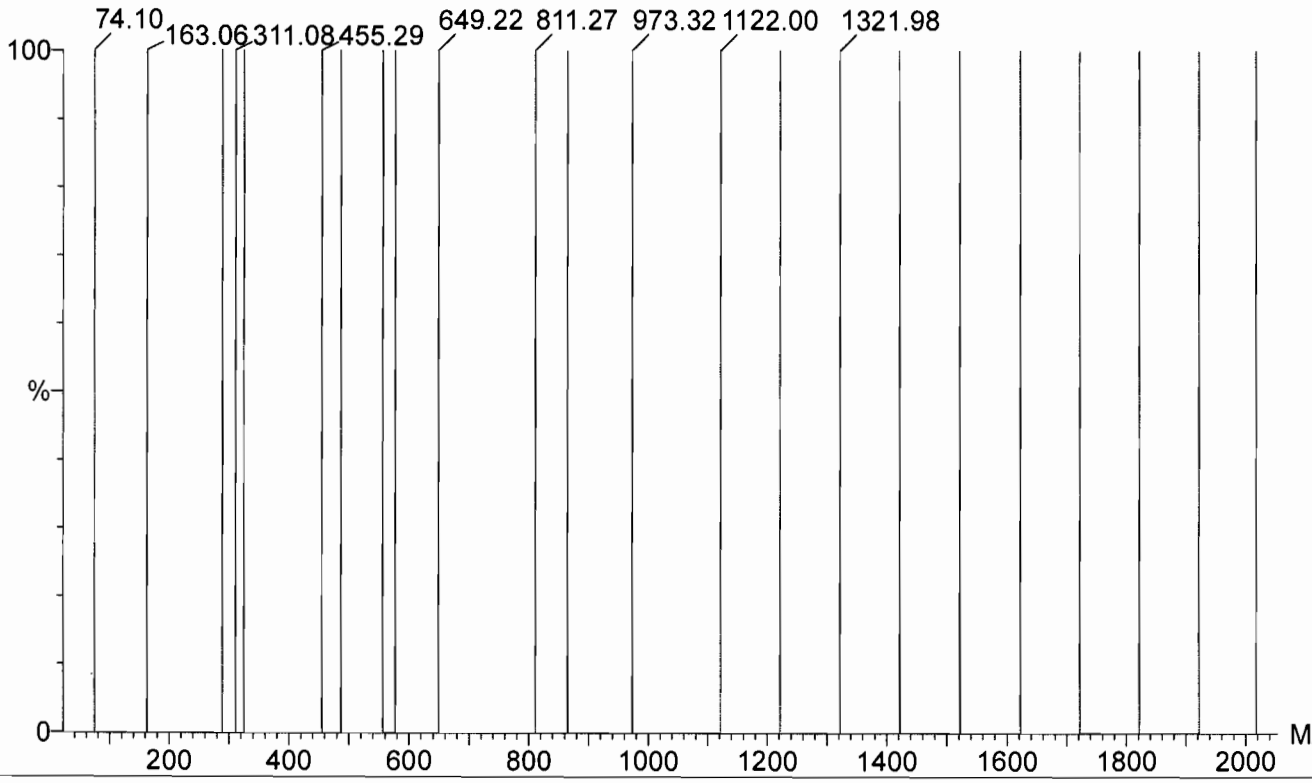
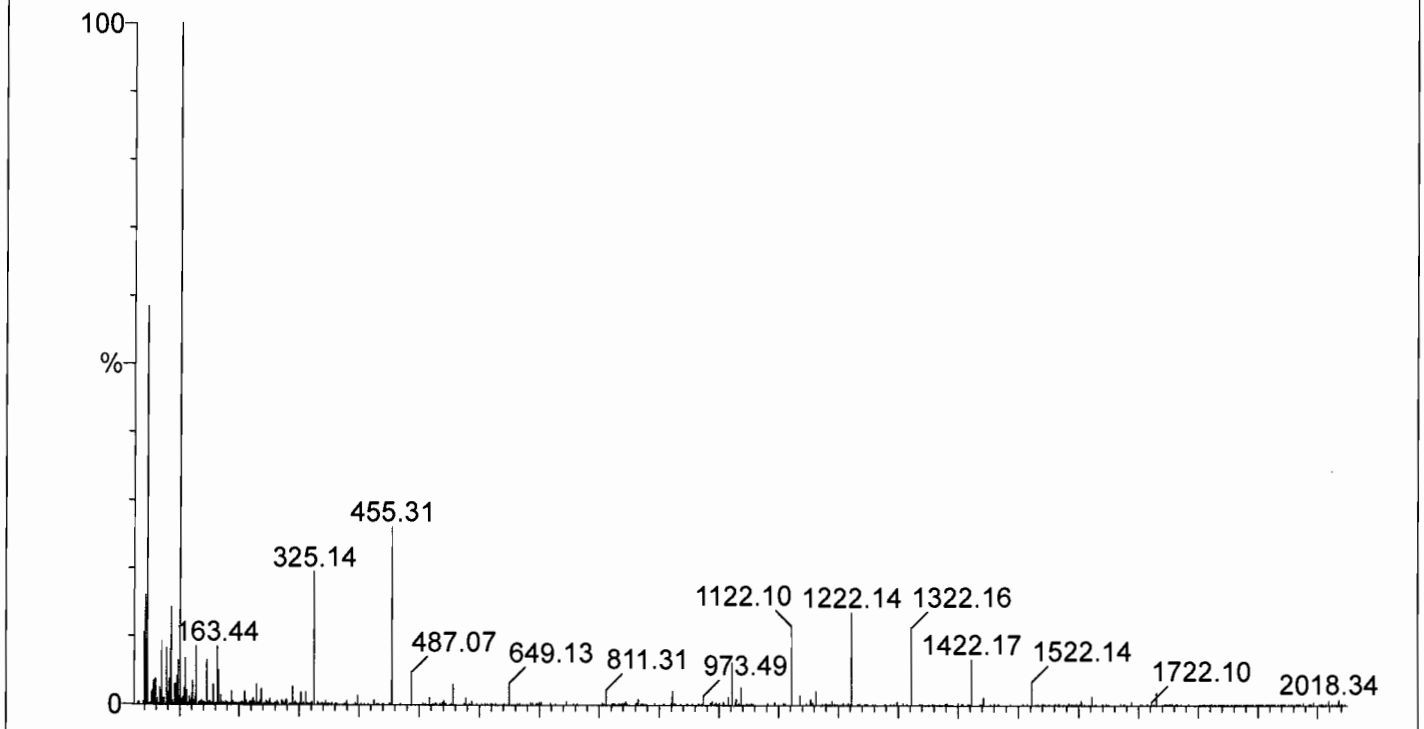


Printed: **Tue Dec 04 09:59:49 2018**

Data file: FASTMS2V - Calibrated 23 matches of 23 tested references



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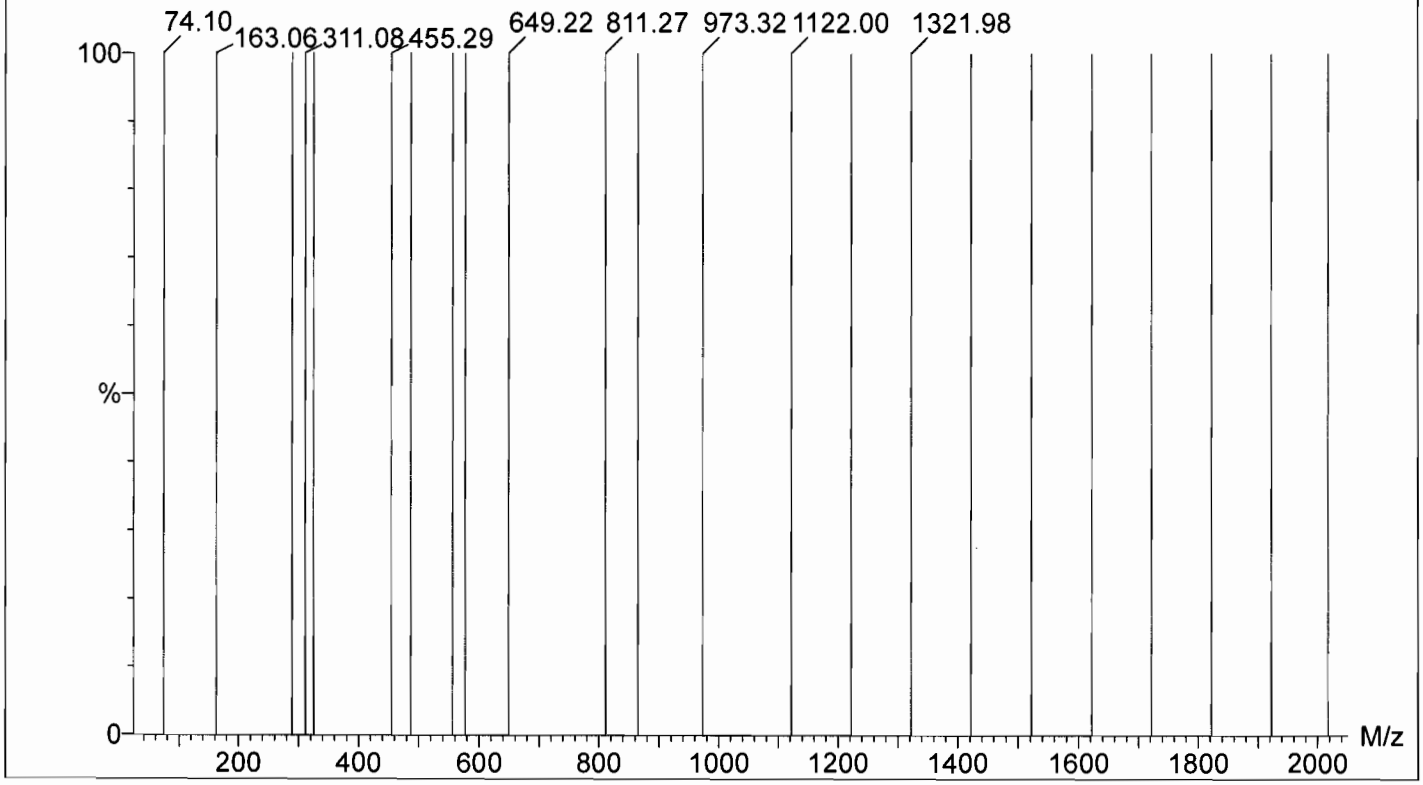

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7","PFTeDA","0.00481","ug/L","U","0.00481","CRDL","","TRG","","","0.00965","CRDL","YES","0.00331"
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C3-PFBS","13C3-
PFBS","77.5","%R","","","CRDL","","IS","77.5","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C2-PFHxA","13C2-
PFHxA","96.4","%R","","","CRDL","","IS","96.4","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C4-PFHpA","13C4-
PFHpA","70.7","%R","","","CRDL","","IS","70.7","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","18O2-PFHxS","18O2-
PFHxS","88.5","%R","","","CRDL","","IS","88.5","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C2-PFOA","13C2-
PFOA","67.5","%R","","","CRDL","","IS","67.5","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C5-PFNA","13C5-
PFNA","69.8","%R","","","CRDL","","IS","69.8","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C8-PFOS","13C8-
PFOS","98.3","%R","","","CRDL","","IS","98.3","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C2-PFDA","13C2-
PFDA","60.5","%R","","","CRDL","","IS","60.5","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","d3-MeFOSAA","d3-
MeFOSAA","49.1","%R","H","","CRDL","","IS","49.1","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","d5-EtFOSAA","d5-
EtFOSAA","65.1","%R","","","CRDL","","IS","65.1","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C2-PFUnA","13C2-
PFUnA","56.6","%R","","","CRDL","","IS","56.6","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C2-PFDoA","13C2-
PFDoA","76.2","%R","","","CRDL","","IS","76.2","","","CRDL","",""
"FRB-20181116","537 MOD","RES","1803678-03","Vista","13C2-PFTeDA","13C2-

PFTeDA","65.0","%R","","","CRDL","","IS","65.0","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","375-73-
5","PFBS","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","307-24-
4","PFHxA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","375-85-
9","PFHpA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","355-46-
4","PFHxS","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","335-67-
1","PFOA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","375-95-
1","PFNA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","1763-23-
1","PFOS","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","335-76-
2","PFDA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","2355-31-
9","NMeFOSAA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","2991-50-
6","NEtFOSAA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","2058-94-
8","PFUnA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","307-55-
1","PFDoA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","72629-94-
8","PFTrDA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","376-06-
7","PFTeDA","0.00424","ug/L","U","0.00424","CRDL","","TRG","","","0.00849","CRDL","YES","0.00291"
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C3-PFBS","13C3-
PFBS","80.0","%R","","","CRDL","","IS","80.0","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C2-PFHxA","13C2-
PFHxA","109","%R","","","CRDL","","IS","109","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C4-PFHpA","13C4-
PFHpA","73.5","%R","","","CRDL","","IS","73.5","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","18O2-PFHxS","18O2-
PFHxS","91.8","%R","","","CRDL","","IS","91.8","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C2-PFOA","13C2-
PFOA","72.6","%R","","","CRDL","","IS","72.6","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C5-PFNA","13C5-
PFNA","78.8","%R","","","CRDL","","IS","78.8","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C8-PFOS","13C8-
PFOS","106","%R","","","CRDL","","IS","106","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C2-PFDA","13C2-
PFDA","66.0","%R","","","CRDL","","IS","66.0","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","d3-MeFOSAA","d3-
MeFOSAA","59.3","%R","","","CRDL","","IS","59.3","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","d5-EtFOSAA","d5-
EtFOSAA","72.4","%R","","","CRDL","","IS","72.4","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C2-PFUnA","13C2-
PFUnA","68.6","%R","","","CRDL","","IS","68.6","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C2-PFDoA","13C2-
PFDoA","77.2","%R","","","CRDL","","IS","77.2","","","CRDL","",""
"EB-20181116","537 MOD","RES","1803678-04","Vista","13C2-PFTeDA","13C2-

PFTeDA","70.6","%R","","","CRDL","","IS","70.6","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","375-73-
5","PFBS","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","307-24-
4","PFHxA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","375-85-
9","PFHpA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","355-46-
4","PFHxS","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","335-67-
1","PFOA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","375-95-
1","PFNA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","1763-23-
1","PFOS","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","335-76-
2","PFDA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","2355-31-
9","NMeFOSAA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","2991-50-
6","NEtFOSAA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","2058-94-
8","PFUnA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","307-55-
1","PFDoA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","72629-94-
8","PFTrDA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","376-06-
7","PFTeDA","0.00200","ug/L","U","0.00200","CRDL","","TRG","","","0.00400","CRDL","YES","0.00137"
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C3-PFBS","13C3-
PFBS","75.9","%R","","","CRDL","","IS","75.9","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C2-PFHxA","13C2-
PFHxA","95.6","%R","","","CRDL","","IS","95.6","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C4-PFHpA","13C4-
PFHpA","72.6","%R","","","CRDL","","IS","72.6","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","18O2-PFHxS","18O2-
PFHxS","83.7","%R","","","CRDL","","IS","83.7","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C2-PFOA","13C2-
PFOA","74.8","%R","","","CRDL","","IS","74.8","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C5-PFNA","13C5-
PFNA","95.2","%R","","","CRDL","","IS","95.2","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C8-PFOS","13C8-
PFOS","98.6","%R","","","CRDL","","IS","98.6","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C2-PFDA","13C2-
PFDA","79.0","%R","","","CRDL","","IS","79.0","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","d3-MeFOSAA","d3-
MeFOSAA","58.7","%R","","","CRDL","","IS","58.7","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","d5-EtFOSAA","d5-
EtFOSAA","74.5","%R","","","CRDL","","IS","74.5","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C2-PFUnA","13C2-
PFUnA","75.5","%R","","","CRDL","","IS","75.5","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C2-PFDoA","13C2-
PFDoA","86.4","%R","","","CRDL","","IS","86.4","","","CRDL","",""
"B8K0153-BLK1","537 MOD","RES","B8K0153-BLK1","Vista","13C2-PFTeDA","13C2-

PFTeDA","72.4","%R","","","CRDL","","IS","72.4","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","375-73-
5","PFBS","0.0413","ug/L","","0.00200","CRDL","","SPK","103","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","307-24-
4","PFHxA","0.0371","ug/L","","0.00200","CRDL","","SPK","92.6","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","375-85-
9","PFHpA","0.0455","ug/L","","0.00200","CRDL","","SPK","114","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","355-46-
4","PFHxS","0.0428","ug/L","","0.00200","CRDL","","SPK","107","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","335-67-
1","PFOA","0.0473","ug/L","","0.00200","CRDL","","SPK","118","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","375-95-
1","PFNA","0.0420","ug/L","","0.00200","CRDL","","SPK","105","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","1763-23-
1","PFOS","0.0380","ug/L","","0.00200","CRDL","","SPK","95.1","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","335-76-
2","PFDA","0.0431","ug/L","","0.00200","CRDL","","SPK","108","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","2355-31-
9","NMeFOSAA","0.0452","ug/L","","0.00200","CRDL","","SPK","113","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","2991-50-
6","NEtFOSAA","0.0406","ug/L","","0.00200","CRDL","","SPK","101","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","2058-94-
8","PFUnA","0.0354","ug/L","","0.00200","CRDL","","SPK","88.5","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","307-55-
1","PFDoA","0.0396","ug/L","","0.00200","CRDL","","SPK","99.1","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","72629-94-
8","PFTrDA","0.0429","ug/L","","0.00200","CRDL","","SPK","107","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","376-06-
7","PFTeDA","0.0559","ug/L","H","0.00200","CRDL","","SPK","140","","0.00400","CRDL","YES","0.00137"
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C3-PFBS","13C3-
PFBS","81.5","%R","","","CRDL","","IS","81.5","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C2-PFHxA","13C2-
PFHxA","104","%R","","","CRDL","","IS","104","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C4-PFHpA","13C4-
PFHpA","80.3","%R","","","CRDL","","IS","80.3","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","18O2-PFHxS","18O2-
PFHxS","96.0","%R","","","CRDL","","IS","96.0","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C2-PFOA","13C2-
PFOA","76.2","%R","","","CRDL","","IS","76.2","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C5-PFNA","13C5-
PFNA","86.5","%R","","","CRDL","","IS","86.5","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C8-PFOS","13C8-
PFOS","105","%R","","","CRDL","","IS","105","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C2-PFDA","13C2-
PFDA","70.0","%R","","","CRDL","","IS","70.0","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","d3-MeFOSAA","d3-
MeFOSAA","52.8","%R","","","CRDL","","IS","52.8","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","d5-EtFOSAA","d5-
EtFOSAA","67.2","%R","","","CRDL","","IS","67.2","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C2-PFUnA","13C2-
PFUnA","68.3","%R","","","CRDL","","IS","68.3","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C2-PFDoA","13C2-
PFDoA","78.4","%R","","","CRDL","","IS","78.4","","","CRDL","",""
"B8K0153-BS1","537 MOD","RES","B8K0153-BS1","Vista","13C2-PFTeDA","13C2-

PFTeDA","72.9","%R","","","CRDL","","IS","72.9","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","375-73-
5","PFBS","0.200","ug/L","","0.00467","CRDL","","SPK","109","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","307-24-
4","PFHxA","0.295","ug/L","","0.00467","CRDL","","SPK","85.0","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","375-85-
9","PFHpA","0.123","ug/L","","0.00467","CRDL","","SPK","115","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","355-46-
4","PFHxS","0.144","ug/L","","0.00467","CRDL","","SPK","115","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","335-67-
1","PFOA","0.107","ug/L","","0.00467","CRDL","","SPK","114","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","375-95-
1","PFNA","0.0978","ug/L","","0.00467","CRDL","","SPK","105","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","1763-23-
1","PFOS","0.0858","ug/L","","0.00467","CRDL","","SPK","91.7","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","335-76-
2","PFDA","0.100","ug/L","","0.00467","CRDL","","SPK","107","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","2355-31-
9","NMeFOSAA","0.111","ug/L","","0.00467","CRDL","","SPK","118","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","2991-50-
6","NEtFOSAA","0.114","ug/L","","0.00467","CRDL","","SPK","122","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","2058-94-
8","PFUnA","0.0823","ug/L","","0.00467","CRDL","","SPK","87.9","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","307-55-
1","PFDoA","0.0880","ug/L","","0.00467","CRDL","","SPK","94.0","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","72629-94-
8","PFTrDA","0.102","ug/L","","0.00467","CRDL","","SPK","109","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","376-06-
7","PFTeDA","0.130","ug/L","H","0.00467","CRDL","","SPK","139","","0.00936","CRDL","YES","0.00321"
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C3-PFBS","13C3-
PFBS","73.6","%R","","","CRDL","","IS","73.6","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C2-PFHxA","13C2-
PFHxA","104","%R","","","CRDL","","IS","104","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C4-PFHpA","13C4-
PFHpA","75.4","%R","","","CRDL","","IS","75.4","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","18O2-PFHxS","18O2-
PFHxS","89.0","%R","","","CRDL","","IS","89.0","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C2-PFOA","13C2-
PFOA","78.6","%R","","","CRDL","","IS","78.6","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C5-PFNA","13C5-
PFNA","90.4","%R","","","CRDL","","IS","90.4","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C8-PFOS","13C8-
PFOS","107","%R","","","CRDL","","IS","107","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C2-PFDA","13C2-
PFDA","75.7","%R","","","CRDL","","IS","75.7","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","d3-MeFOSAA","d3-
MeFOSAA","71.9","%R","","","CRDL","","IS","71.9","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","d5-EtFOSAA","d5-
EtFOSAA","85.1","%R","","","CRDL","","IS","85.1","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C2-PFUnA","13C2-
PFUnA","77.4","%R","","","CRDL","","IS","77.4","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C2-PFDoA","13C2-
PFDoA","93.9","%R","","","CRDL","","IS","93.9","","","CRDL","",""
"A1-MW-01-SA2MS","537 MOD","RES","B8K0153-MS1","Vista","13C2-PFTeDA","13C2-

PFTeDA","81.2","%R","","","CRDL","","IS","81.2","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","375-73-
5","PFBS","0.177","ug/L","","0.00450","CRDL","","SPK","89.2","20.0","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","307-24-
4","PFHxA","0.314","ug/L","","0.00450","CRDL","","SPK","109","24.7","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","375-85-
9","PFHpA","0.100","ug/L","","0.00450","CRDL","","SPK","93.9","20.2","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","355-46-
4","PFHxS","0.119","ug/L","","0.00450","CRDL","","SPK","91.3","23.0","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","335-67-
1","PFOA","0.0898","ug/L","","0.00450","CRDL","","SPK","99.9","13.2","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","375-95-
1","PFNA","0.0860","ug/L","","0.00450","CRDL","","SPK","95.6","9.37","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","1763-23-
1","PFOS","0.0839","ug/L","","0.00450","CRDL","","SPK","93.4","1.84","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","335-76-
2","PFDA","0.0875","ug/L","","0.00450","CRDL","","SPK","97.0","9.80","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","2355-31-
9","NMeFOSAA","0.0816","ug/L","","0.00450","CRDL","","SPK","90.8","26.1","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","2991-50-
6","NEtFOSAA","0.0843","ug/L","","0.00450","CRDL","","SPK","93.7","26.2","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","2058-94-
8","PFUnA","0.0821","ug/L","","0.00450","CRDL","","SPK","91.3","3.79","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","307-55-
1","PFDoA","0.0926","ug/L","","0.00450","CRDL","","SPK","103","9.14","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","72629-94-
8","PFTrDA","0.0920","ug/L","","0.00450","CRDL","","SPK","102","6.64","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","376-06-
7","PFTeDA","0.0910","ug/L","H","0.00450","CRDL","","SPK","101","31.7","0.00899","CRDL","YES","0.00308"
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C3-PFBS","13C3-
PFBS","92.1","%R","","","CRDL","","IS","92.1","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C2-PFHxA","13C2-
PFHxA","97.2","%R","","","CRDL","","IS","97.2","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C4-PFHpA","13C4-
PFHpA","110","%R","","","CRDL","","IS","110","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","18O2-PFHxS","18O2-
PFHxS","94.1","%R","","","CRDL","","IS","94.1","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C2-PFOA","13C2-
PFOA","96.5","%R","","","CRDL","","IS","96.5","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C5-PFNA","13C5-
PFNA","93.1","%R","","","CRDL","","IS","93.1","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C8-PFOS","13C8-
PFOS","89.5","%R","","","CRDL","","IS","89.5","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C2-PFDA","13C2-
PFDA","77.0","%R","","","CRDL","","IS","77.0","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","d3-MeFOSAA","d3-
MeFOSAA","86.5","%R","","","CRDL","","IS","86.5","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","d5-EtFOSAA","d5-
EtFOSAA","86.7","%R","","","CRDL","","IS","86.7","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C2-PFUnA","13C2-
PFUnA","70.3","%R","","","CRDL","","IS","70.3","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C2-PFDoA","13C2-
PFDoA","69.8","%R","","","CRDL","","IS","69.8","","","CRDL","",""
"A1-MW-01-SA2MSD","537 MOD","RES","B8K0153-MSD1","Vista","13C2-PFTeDA","13C2-

PFTeDA","78.8","%R","","","CRDL","","IS","78.8","","","CRDL","",""
"4663.3803","CTO 17F3803 Yuma","A1-MW-01-SA2","11/16/2018 08:12","AQ","1803678-01","","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/03/2018 15:40","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","11/17/2018 12:02","12/05/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","A1-MW-42-SA2","11/16/2018 09:17","AQ","1803678-02","","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/03/2018 15:51","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","11/17/2018 12:02","12/05/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","FRB-20181116","11/16/2018 09:40","AQ","1803678-03","","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/03/2018 16:01","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","11/17/2018 12:02","12/05/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","EB-20181116","11/16/2018 09:50","AQ","1803678-04","","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/03/2018 16:12","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","11/17/2018 12:02","12/05/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","B8K0153-BLK1","","AQ","B8K0153-BLK1","MB","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/03/2018 15:29","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","","12/05/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","B8K0153-BS1","","AQ","B8K0153-BS1","LCS","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/03/2018 14:58","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","","12/05/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","A1-MW-01-SA2MS","11/30/2018 08:40","AQ","B8K0153-MS1","MS","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/03/2018 15:08","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","","12/05/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","A1-MW-01-SA2MSD","11/30/2018 08:40","AQ","B8K0153-MSD1","MSD","","","537 MOD","Gen Prep","RES","11/30/2018 08:40","12/04/2018 15:06","Vista","COA","","","1","","","","","B8K0153","B8K0153","S8L0005","S8L0005","1803678","","12/05/2018 00:00"

LABORATORY DATA CONSULTANTS, INC.
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Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
ATTN: Ms. Sabina Sudoko

July 24, 2018

SUBJECT: MCAS Yuma, CTO 17F3803, Data Validation

Dear Ms. Sudoko,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 6, 2018. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #42613:

SDG #	Fraction
280-110058-1, 280-110112-1 280-110226-1, 280-110291-1 280-110353-1, L1818881 L1819087, L1819352 L1819562, L1820050 L1820175, 1801024 1801037, 1801039 1801054, 1801071 1801084	Volatiles, 1,4-Dioxane, Wet Chemistry, Perfluorinated Alkyl Acids

The data validation was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona; April 2018
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1; 2017
- USEPA National Functional Guidelines for Superfund Organic Methods Data Review; January 2017
- USEPA National Functional Guidelines for Inorganic Superfund Data Review; January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

ADR/Stage 4 NEDD 80/20 **LDC #42613 (Tetra Tech-EC, Inc.-Irvine, CA / MCAS Yuma, CTO 17F3803)** **PO# 1153059**

LDC	SDG#	DATE REC'D	(3) DATE DUE	(3) VOA (8260B)		1,4-Diox (8270D -SIM)		PFAs (537)		Cl,SO_4 NO_3-N (9056A)		Fe II (3500 -Fe B)		pH (9040C)																							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	280-110058-1	07/06/18	07/27/18	6	0	-	-	-	-	5	0	5	0	5	0																				
B	280-110112-1	07/06/18	07/27/18	7	0	-	-	-	-	6	0	6	0	6	0																				
C	280-110226-1	07/06/18	07/27/18	9	0	-	-	-	-	6	0	6	0	6	0																				
D	280-110291-1	07/06/18	07/27/18	7	0	-	-	-	-	6	0	6	0	6	0																				
E	280-110353-1	07/06/18	07/27/18	5	0	-	-	-	-	3	0	3	0	3	0																				
F	L1818881	07/06/18	07/27/18	-	-	5	0	-	-	-	-	-	-	-	-																				
G	L1819087	07/06/18	07/27/18	-	-	6	0	-	-	-	-	-	-	-	-																				
H	L1819352	07/06/18	07/27/18	-	-	5	0	-	-	-	-	-	-	-	-																				
I	L1819562	07/06/18	07/27/18	-	-	8	0	-	-	-	-	-	-	-	-																				
J	L1820050	07/06/18	07/27/18	-	-	4	0	-	-	-	-	-	-	-	-																				
K	L1820175	07/06/18	07/27/18	-	-	1	0	-	-	-	-	-	-	-	-																				
L	1801024	07/06/18	07/27/18	-	-	-	-	6	0	-	-	-	-	-	-																				
M	1801037	07/06/18	07/27/18	-	-	-	-	1	0	-	-	-	-	-	-																				
M	1801037	07/06/18	07/27/18	-	-	-	-	8	0	-	-	-	-	-	-																				
N	1801039	07/06/18	07/27/18	-	-	-	-	6	0	-	-	-	-	-	-																				
O	1801054	07/06/18	07/27/18	-	-	-	-	9	0	-	-	-	-	-	-																				
P	1801071	07/06/18	07/27/18	-	-	-	-	5	0	-	-	-	-	-	-																				
Q	1801084	07/06/18	07/27/18	-	-	-	-	1	0	-	-	-	-	-	-																				
Total	T/SM			34	0	29	0	36	0	26	0	26	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177

Shaded cells indicate Stage 4 validation (all other cells are ADR/Stage 2B validation).

Data Validation Report
MCAS Yuma, CTO 17F3803

SDGs: 280-110058-1, 280-110112-1, 280-110226-1, 280-110291-1, 280-110353-1, L1818881, L1819087, L1819352, L1819562, L1820050, L1820175, 1801024, 1801037, 1801039, 1801054, 1801071, and 1801084

Prepared for

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

July 24, 2018

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2B and Stage 4 data validation results for samples collected during the May 2018 sampling period. Data validation was performed in accordance with the Final Sampling and Analysis Plan (SAP) for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), a modified outline of the US EPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017), and a modified outline of the US EPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B
1,4-Dioxane by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Perfluorinated Alkyl Acids (PFAs) by EPA Method 537 Modified

Wet Chemistry:
Chloride, Nitrate as Nitrogen, and Sulfate by EPA SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

For samples reviewed by automated data review, the sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2B Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which Stage 4 validation was performed are presented in Enclosure II. Validation for 1,4-Dioxane was performed manually and DVRs for Stage 2B and Stage 4 manual validation are also presented in Enclosure II.

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, initial and continuing calibration blanks (ICB/CCBs), surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ongoing precision recovery (OPR), internal standards, trip blanks, equipment blanks, field rinsate blanks, and field duplicates. Approximately 20 percent of samples were subjected to Stage 4 evaluation as indicated in Attachment 1, which comprises a review of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the calibrations, ICB/CCBs, and internal standards, and all QC for 1,4-Dioxane, which were validated manually. Quality assurance (QA)/QC criteria specified in the SAP, DoD QSM, and NFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not applicable): Data did not warrant qualification since detected results only are affected and the compound was not detected in the associated samples.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt & Technical Holding Times

All samples were received in good condition with the following exceptions:

SDG/ Method	Sample	Compound	Finding	Criteria	Flag	A or P
280-110291-1/ 8260B	A1-MW-23-SA1	All compounds	A headspace of >6 mm was apparent in the sample containers.	There should be no headspace in the sample containers.	J (all detects) UJ (all non-detects)	A

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures upon receipt by the laboratory met validation criteria with the exception of one cooler in SDG L1818881 that was reported at 7.9°C. No data was qualified based on the cooler temperature.

All technical holding time requirements were met with the exception of twenty-five samples for pH and twenty-one samples for ferrous iron. Due to grossly exceeded holding times (e.g., >2x recommended holding time), 15 ferrous iron results were qualified as rejected (R). Additionally, the remainder of the data were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

II. Instrument Performance Check

A tune was performed at 12 hour intervals as required by the methods.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

All criteria for the initial calibration and initial calibration verifications of each method were met.

IV. Continuing Calibration

All criteria for the continuing calibration of each method were met with the exception of one continuing calibration for PFAs. Since the outlier was associated with laboratory QC and there were no associated client samples, no data were qualified.

V. Laboratory Blanks

Laboratory blanks were performed as required by the methods. No contaminant concentrations were detected in the laboratory blanks reviewed by the ADR software program with the exception of one blank for chloride and sulfate. The associated sample results were not detected or were significantly greater than the concentrations found in the blanks, therefore no data were qualified. The details are presented in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the following exceptions:

SDG/ Method	Laboratory Blank ID	Analyte	Maximum Concentration	Associated Samples
280-110226-1/ 9056A	ICB/CCB	Nitrate as Nitrogen	0.04663 mg/L	A1-MW-42-SA1 A1-MW-54-SA1 A1-PZ-19-SA1 A1-MW-52-SA1 A1-MW-01-SA1 A1-MW-31-SA1
280-110291-1/ 9056A	ICB/CCB	Sulfate	0.2460 mg/L	A1-MW-14-SA1 A1-MW-23-SA1 A1-MW-55-SA1
280-110353-1/ 9056A	ICB/CCB	Chloride Sulfate	0.5385 mg/L 0.6554 mg/L	A1-MW-13-SA1 A1-MW-11-SA1 A1-MW-15-SA1

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were not detected or were significantly greater than the concentrations found in the associated blanks.

VI. Field Blank Samples

Five trip blanks were collected and analyzed for VOCs. No contaminants were found.

One equipment blank was collected and analyzed for VOCs and PFAs. No contaminants were found.

Five field rinsate blanks were collected and analyzed for PFAs. No contaminants were found.

VII. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of sample 16-HS-03-SA1 in SDG 280-110112-1 for VOCs. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

IX. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for 1,1-dichloroethene, two MS/MSD pairs for several PFAs, three MS/MSD pairs for chloride and sulfate, and three MS/MSD pairs for ferrous iron. The ferrous iron results in samples 16-HS-03-SA1 and A1-MW-31-SA1 were qualified as rejected (R) due to MS/MSD %Rs grossly outside QC limits (i.e., ≤ 30%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. No data were qualified where sample concentrations were significantly greater (>4x) than the spike amount. The details regarding the qualification of data are provided in Enclosures I and II.

X. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

XII. Laboratory Control Samples/Ongoing Precision Recovery

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

Ongoing precision recovery (OPR) samples were analyzed as required by Method 537 Mod. Percent recoveries (%R) were within QC limits with the exception of two OPR for PFTrDA. No data were qualified due to high %Rs since the associated results were non-detected. The details are presented in Enclosures I and II.

XIII. Field Duplicate Samples

Two field duplicate pairs were collected and analyzed for all methods. All RPDs were within QC limits. RPDs were not calculated when sample results in one or both samples were less than 5X the limit of quantitation (LOQ). The field duplicate result comparisons are provided in Enclosures I and II.

XIV. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

SDG/ Method	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
1801024/ 537	A1-MW-51-SA1	^{13}C3-PFBS	247 (50-150)	PFBS	J (all detects)	P
1801024/ 537	A1-MW-51-SA1	^{13}C3-NEtFOSAA	151 (50-150)	NEtFOSAA	UJ (all non-detects)	P
1801037/ 537	A1-MW-18-SA1	^{13}C3-PFBS	170 (50-150)	PFBS	J (all detects)	P
1801037/ 537	16-MW-08-SA1	^{13}C3-PFBS	187 (50-150)	PFBS	J (all detects)	P
1801037/ 537	A1-MW-19-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P
1801037/ 537	A1-MW-37-SA1	^{13}C3-PFBS	228 (50-150)	PFBS	J (all detects)	P
1801037/ 537	A1-MW-37-SA1D	^{13}C3-PFBS	161 (50-150)	PFBS	J (all detects)	P

SDG/ Method	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
1801037/ 537	16-HS-03-SA1	^{13}C3-PFBS	154 (50-150)	PFBS	J (all detects)	P
1801037/ 537	16-MW-09-SA1	^{13}C3-PFBS	153 (50-150)	PFBS	J (all detects)	P
1801037/ 537	16-MW-06-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-13-SA1	^{13}C3-PFBS	419 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-11-SA1	^{13}C3-PFBS	271 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-14-SA1	^{13}C3-PFBS	527 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-15-SA1	^{13}C3-PFBS	235 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-25-SA1	^{13}C3-PFBS	428 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-42-SA1	^{13}C3-PFBS	310 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-54-SA1	^{13}C3-PFBS	175 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-53-SA1	^{13}C3-PFBS	154 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-PZ-19-SA1	^{13}C3-PFBS	182 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-52-SA1	^{13}C3-PFBS	211 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-01-SA1	^{13}C3-PFBS	192 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-01-SA1D	^{13}C3-PFBS	204 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-31-SA1	^{13}C3-PFBS	254 (50-150)	PFBS	J (all detects)	P
1801071/ 537	A1-MW-27-SA1	^{13}C3-PFBS	174 (50-150)	PFBS	J (all detects)	P

SDG/ Method	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
1801071/ 537	A1-MW-07-SA1	$^{13}C3$-PFBS	209 (50-150)	PFBS	J (all detects)	P
1801071/ 537	A1-MW-55-SA1	$^{13}C3$-PFBS	165 (50-150)	PFBS	UJ (all non-detects)	P

XV. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the LOQ as detected by the laboratory were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosures I and II.

XVI. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to severe holding time exceedances and MS/MSD %Rs, data were qualified as rejected in fifteen samples.

Due to headspace, data were qualified as estimated in one sample.

Due to holding time exceedances, data were qualified as estimated in twenty-five samples.

Due to surrogate %R, data were qualified as estimated in one sample.

Due to MS/MSD %R and RPD, data were qualified as estimated in three samples.

Due to internal standard %R, data were qualified as estimated in twenty-five samples.

Due to results below the LOQ, data were qualified as estimated in twenty-six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
22-May-2018	TB-20180522	280-110058-1	TB	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1	1801024-01	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-51-SA1DUP	280-110058-2DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-51-SA1MS	280-110058-2MS	MS	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1MS	280-110058-2MS	MS	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-51-SA1MSD	280-110058-2MSD	MSD	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1MSD	280-110058-2MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-50-SA1	1801024-02	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-50-SA1DUP	280-110058-3DUP	DUP	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-49-SA1	1801024-03	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-05-SA1	1801024-04	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	9056A	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-04-SA1	1801024-05	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	FRB-20180522	1801024-06	FRB	Gen Prep	537 MOD	Stage 2B
23-May-2018	TB-20180523	280-110112-1	TB	METHOD	8260B	Stage 4
23-May-2018	A1-MW-18-SA1	1801037-01	N	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	8260B	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	9040C	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	9056A	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-18-SA1DUP	280-110112-2DUP	DUP	METHOD	9056A	Stage 4
23-May-2018	A1-MW-18-SA1MS	280-110112-2MS	MS	METHOD	9056A	Stage 4
23-May-2018	A1-MW-18-SA1MSD	280-110112-2MSD	MSD	METHOD	9056A	Stage 4
23-May-2018	16-MW-06-SA1	1801037-08	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-MW-09-SA1	1801037-07	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-MW-08-SA1	1801037-02	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	8260B	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	9040C	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	9056A	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-19-SA1	1801037-03	N	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	8260B	Stage 4
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	9040C	Stage 4

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EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	9056A	Stage 4
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-37-SA1	1801037-04	N	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	8260B	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	9040C	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	9056A	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-37-SA1D	1801037-05	FD	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-37-SA1D	280-110112-5	FD	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1	1801037-06	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	9040C	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	16-HS-03-SA1DUP	280-110112-7DUP	DUP	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1DUP	280-110112-7DUP	DUP	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	16-HS-03-SA1MS	280-110112-7MS	MS	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1MS	280-110112-7MS	MS	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1MS	280-110112-7MS	MS	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	16-HS-03-SA1MSD	280-110112-7MSD	MSD	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1MSD	280-110112-7MSD	MSD	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1MSD	280-110112-7MSD	MSD	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	FRB-20180523	1801037-09	FRB	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-13-SA1	1801039-01	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-11-SA1	1801039-02	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-14-SA1	1801039-03	N	Gen Prep	537 MOD	Stage 2B

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Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
24-May-2018	A1-MW-15-SA1	1801039-04	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-25-SA1	1801039-07	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	FRB-20180524	1801039-08	FRB	Gen Prep	537 MOD	Stage 2B
25-May-2018	TB-20180525	280-110226-12	TB	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-42-SA1	1801054-01	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-54-SA1	1801054-02	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-53-SA1	1801054-03	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-53-SA1	280-110226-3	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-53-SA1MS	280-110226-3MS	MS	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-53-SA1MSD	280-110226-3MSD	MSD	METHOD	8260B	Stage 2B
25-May-2018	A1-PZ-19-SA1	1801054-04	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	8260B	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	9040C	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	9056A	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-52-SA1	1801054-05	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	9040C	Stage 2B

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MSD = Matrix Spike Duplicate
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Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-52-SA1DUP	280-110226-5DUP	DUP	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-52-SA1MS	280-110226-5MS	MS	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-52-SA1MSD	280-110226-5MSD	MSD	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-01-SA1	1801054-06	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-01-SA1D	1801054-07	FD	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-01-SA1D	280-110226-7	FD	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-31-SA1	1801054-08	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-31-SA1DUP	280-110226-8DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-31-SA1MS	280-110226-8MS	MS	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-31-SA1MSD	280-110226-8MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	FRB-20180525	1801054-09	FRB	Gen Prep	537 MOD	Stage 2B
30-May-2018	TB-20180530	280-110291-1	TB	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-27-SA1	1801071-01	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	9056A	Stage 2B

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MSD = Matrix Spike Duplicate
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DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-55-SA1	1801071-02	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-23-SA1	1801071-03	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-07-SA1	1801071-04	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-14-SA1DUP	280-110291-2DUP	DUP	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-14-SA1MS	280-110291-2MS	MS	METHOD	9056A	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2018	A1-MW-14-SA1MSD	280-110291-2MSD	MSD	METHOD	9056A	Stage 2B
30-May-2018	FRB-20180530	1801071-05	FRB	Gen Prep	537 MOD	Stage 2B
31-May-2018	TB-20180531	280-110353-1	TB	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	9056A	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	SM3500 Fe B D	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	9056A	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	SM3500 Fe B D	Stage 2B
31-May-2018	A1-MW-11-SA1DUP	280-110353-3DUP	DUP	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	9056A	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	SM3500 Fe B D	Stage 2B
31-May-2018	EB-20180531	1801084-01	EB	Gen Prep	537 MOD	Stage 2B
31-May-2018	EB-20180531	280-110353-5	EB	METHOD	8260B	Stage 2B
31-May-2018	16-HS-03-SA1MS	B8E0244-MS1	MS	Gen Prep	537 MOD	Stage 4
31-May-2018	A1-MW-53-SA1MS	B8E0244-MS2	MS	Gen Prep	537 MOD	Stage 2B
31-May-2018	16-HS-03-SA1MSD	B8E0244-MSD1	MSD	Gen Prep	537 MOD	Stage 4
31-May-2018	A1-MW-53-SA1MSD	B8E0244-MSD2	MSD	Gen Prep	537 MOD	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Attachment 2

Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110058-1

Method Category: EM

Method: 9040C **Matrix: AQ**

Sample ID: A1-MW-04-SA1 **Collected:** 5/22/2018 2:06:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-05-SA1 **Collected:** 5/22/2018 1:19:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-49-SA1 **Collected:** 5/22/2018 12:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-50-SA1 **Collected:** 5/22/2018 11:30:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-51-SA1 **Collected:** 5/22/2018 10:14:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM

Method: 9056A **Matrix: AQ**

Sample ID: A1-MW-49-SA1 **Collected:** 5/22/2018 12:20:00 PM **Analysis Type:** RE/TOT **Dilution:** 10

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	2.82	J	1.00	LOD	5.00	LOQ	mg/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110058-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-04-SA1** ***Collected:*** **5/22/2018 2:06:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0751	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: **A1-MW-05-SA1** ***Collected:*** **5/22/2018 1:19:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0617	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: **A1-MW-49-SA1** ***Collected:*** **5/22/2018 12:20:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	UJ	StoA

Sample ID: **A1-MW-50-SA1** ***Collected:*** **5/22/2018 11:30:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-51-SA1** ***Collected:*** **5/22/2018 10:14:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0563	J HF F1	0.0500	LOD	0.200	LOQ	mg/L	J	RI, Ms, StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA1** ***Collected:*** **5/22/2018 11:30:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.643	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.903	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110058-1

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: A1-MW-51-SA1 **Collected:** 5/22/2018 10:14:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.629	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.571	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110112-1

Method Category: EM

Method: 9040C **Matrix:** AQ

Sample ID: 16-HS-03-SA1 **Collected:** 5/23/2018 2:19:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.2	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: 16-MW-08-SA1 **Collected:** 5/23/2018 11:09:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-18-SA1 **Collected:** 5/23/2018 9:00:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-19-SA1 **Collected:** 5/23/2018 12:03:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110112-1

Method Category: EM
Method: 9040C ***Matrix:*** AQ

Sample ID: A1-MW-37-SA1 ***Collected:*** 5/23/2018 1:16:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM
Method: 9056A ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RE2/TOT ***Dilution:*** 50

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Sulfate	2120	F1	25.0	LOD	250	LOQ	mg/L	J	Ms

Method Category: GENCHEM
Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	Ms

Sample ID: 16-MW-08-SA1 ***Collected:*** 5/23/2018 11:09:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0403	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI

Sample ID: A1-MW-18-SA1 ***Collected:*** 5/23/2018 9:00:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0215	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110112-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-37-SA1 ***Collected:*** 5/23/2018 1:16:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.166	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.800	U F1 F2	0.800	LOD	1.00	LOQ	ug/L	UJ	Ms, Surr
TETRACHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Surr
TRICHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Surr

Sample ID: 16-MW-08-SA1 ***Collected:*** 5/23/2018 11:09:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.669	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-18-SA1 ***Collected:*** 5/23/2018 9:00:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.452	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-19-SA1 ***Collected:*** 5/23/2018 12:03:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.424	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110112-1

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-37-SA1 ***Collected:*** 5/23/2018 1:16:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.624	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-37-SA1D ***Collected:*** 5/23/2018 1:26:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.652	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110226-1

Method Category: EM

Method: 9040C ***Matrix:*** AQ

Sample ID: A1-MW-01-SA1 ***Collected:*** 5/25/2018 1:56:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-31-SA1 ***Collected:*** 5/25/2018 2:49:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-42-SA1 ***Collected:*** 5/25/2018 7:56:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-52-SA1 ***Collected:*** 5/25/2018 1:00:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110226-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **9056A** ***Matrix:*** **AQ**

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RE/TOT** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLORIDE	500	F1	2.50	LOD	15.0	LOQ	mg/L	J	Ms

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	0.343	J	0.100	LOD	0.500	LOQ	mg/L	J	RI

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-01-SA1** ***Collected:*** **5/25/2018 1:56:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110226-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-31-SA1** ***Collected:*** **5/25/2018 2:49:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	Ms, StoA

Sample ID: **A1-MW-42-SA1** ***Collected:*** **5/25/2018 7:56:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.198	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-31-SA1** ***Collected:*** **5/25/2018 2:49:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.353	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110226-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-42-SA1** ***Collected:*** **5/25/2018 7:56:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.298	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.415	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.507	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.627	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.269	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110291-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA1** ***Collected:*** **5/30/2018 12:06:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-14-SA1** ***Collected:*** **5/30/2018 1:38:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110291-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-23-SA1** ***Collected:*** **5/30/2018 11:10:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-25-SA1** ***Collected:*** **5/30/2018 9:12:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-27-SA1** ***Collected:*** **5/30/2018 8:18:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-55-SA1** ***Collected:*** **5/30/2018 10:16:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA1** ***Collected:*** **5/30/2018 12:06:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-14-SA1** ***Collected:*** **5/30/2018 1:38:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110291-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-23-SA1 ***Collected:*** 5/30/2018 11:10:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-25-SA1 ***Collected:*** 5/30/2018 9:12:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.123	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: A1-MW-27-SA1 ***Collected:*** 5/30/2018 8:18:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-55-SA1 ***Collected:*** 5/30/2018 10:16:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-07-SA1 ***Collected:*** 5/30/2018 12:06:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.405	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.797	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-14-SA1 ***Collected:*** 5/30/2018 1:38:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.898	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110291-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-14-SA1** ***Collected:*** **5/30/2018 1:38:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.876	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-23-SA1** ***Collected:*** **5/30/2018 11:10:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.800	U	0.800	LOD	1.00	LOQ	ug/L	UJ	Headspace
TETRACHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Headspace
TRICHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Headspace

Sample ID: **A1-MW-25-SA1** ***Collected:*** **5/30/2018 9:12:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.204	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.418	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110353-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-11-SA1** ***Collected:*** **5/31/2018 8:24:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-13-SA1** ***Collected:*** **5/31/2018 7:43:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110353-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-15-SA1** ***Collected:*** **5/31/2018 9:16:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-11-SA1** ***Collected:*** **5/31/2018 8:24:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-13-SA1** ***Collected:*** **5/31/2018 7:43:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-15-SA1** ***Collected:*** **5/31/2018 9:16:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-15-SA1** ***Collected:*** **5/31/2018 9:16:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
TRICHLOROETHENE	0.321	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

Reason Code Legend

Reason Code	*Description*
Headspace	Preservation
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
Preservation	Preservation
RI	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
StoA	Sampling to Analysis Rejection
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801024

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-04-SA1** ***Collected:*** **5/22/2018 2:06:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00333	J	0.00508	LOD	0.00812	LOQ	ug/L	J	RI
PFOS	0.00161	J	0.00508	LOD	0.00812	LOQ	ug/L	J	RI

Sample ID: **A1-MW-05-SA1** ***Collected:*** **5/22/2018 1:19:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.000917	J	0.00525	LOD	0.00842	LOQ	ug/L	J	RI
PFHxS	0.00278	J	0.00525	LOD	0.00842	LOQ	ug/L	J	RI

Sample ID: **A1-MW-49-SA1** ***Collected:*** **5/22/2018 12:20:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.00627	J	0.00508	LOD	0.00812	LOQ	ug/L	J	RI

Sample ID: **A1-MW-51-SA1** ***Collected:*** **5/22/2018 10:14:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00521	U	0.00521	LOD	0.00836	LOQ	ug/L	UJ	Is
PFBS	0.0613		0.00521	LOD	0.00836	LOQ	ug/L	J	Is
PFOS	0.00303	J	0.00521	LOD	0.00836	LOQ	ug/L	J	RI

SDG: 1801037

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **16-HS-03-SA1** ***Collected:*** **5/23/2018 2:19:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.582		0.00500	LOD	0.00803	LOQ	ug/L	J	Is
PFHxS	0.150		0.00500	LOD	0.00803	LOQ	ug/L	J	Ms

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801037

Method Category: SVOA

Method: 537 MOD ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.0218		0.00500	LOD	0.00803	LOQ	ug/L	J	Ms
PFHpA	0.198		0.00500	LOD	0.00803	LOQ	ug/L	J	Ms, Ms

Sample ID: 16-MW-06-SA1 ***Collected:*** 5/23/2018 9:50:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.112		0.00563	LOD	0.00897	LOQ	ug/L	J	Is
PFOS	0.00227	J	0.00563	LOD	0.00897	LOQ	ug/L	J	RI

Sample ID: 16-MW-08-SA1 ***Collected:*** 5/23/2018 11:09:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	1.29		0.00543	LOD	0.00870	LOQ	ug/L	J	Is
PFNA	0.00102	J	0.00543	LOD	0.00870	LOQ	ug/L	J	RI

Sample ID: 16-MW-09-SA1 ***Collected:*** 5/23/2018 10:15:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.124		0.00543	LOD	0.00871	LOQ	ug/L	J	Is
PFDA	0.00440	J	0.00543	LOD	0.00871	LOQ	ug/L	J	RI
PFNA	0.00326	J	0.00543	LOD	0.00871	LOQ	ug/L	J	RI

Sample ID: A1-MW-18-SA1 ***Collected:*** 5/23/2018 9:00:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0244		0.00553	LOD	0.00888	LOQ	ug/L	J	Is
PFOA	0.00187	J	0.00553	LOD	0.00888	LOQ	ug/L	J	RI
PFOS	0.00437	J	0.00553	LOD	0.00888	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801037

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-19-SA1** ***Collected:*** **5/23/2018 12:03:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0166		0.00530	LOD	0.00846	LOQ	ug/L	J	Is
PFDA	0.00727	J	0.00530	LOD	0.00846	LOQ	ug/L	J	RI

Sample ID: **A1-MW-37-SA1** ***Collected:*** **5/23/2018 1:16:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.230		0.00525	LOD	0.00839	LOQ	ug/L	J	Is
PFNA	0.00170	J	0.00525	LOD	0.00839	LOQ	ug/L	J	RI

Sample ID: **A1-MW-37-SA1D** ***Collected:*** **5/23/2018 1:26:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.252		0.00539	LOD	0.00862	LOQ	ug/L	J	Is
PFNA	0.00210	J	0.00539	LOD	0.00862	LOQ	ug/L	J	RI
PFUnA	0.00135	J	0.00539	LOD	0.00862	LOQ	ug/L	J	RI

SDG: 1801039

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-11-SA1** ***Collected:*** **5/24/2018 8:51:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00359	J	0.00539	LOD	0.00860	LOQ	ug/L	J	RI
PFBS	0.109		0.00539	LOD	0.00860	LOQ	ug/L	J	Is

Sample ID: **A1-MW-13-SA1** ***Collected:*** **5/24/2018 7:44:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.318		0.00568	LOD	0.00912	LOQ	ug/L	J	Is

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039, **Laboratory: Vista**

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

SDG: 1801039

Method Category: SVOA

Method: 537 MOD ***Matrix:*** AQ

Sample ID: A1-MW-14-SA1 ***Collected:*** 5/24/2018 10:05:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.118		0.00558	LOD	0.00893	LOQ	ug/L	J	Is

Sample ID: A1-MW-15-SA1 ***Collected:*** 5/24/2018 11:11:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.523		0.00558	LOD	0.00889	LOQ	ug/L	J	Is

Sample ID: A1-MW-25-SA1 ***Collected:*** 5/24/2018 2:18:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.355		0.00553	LOD	0.00889	LOQ	ug/L	J	Is

SDG: 1801054

Method Category: SVOA

Method: 537 MOD ***Matrix:*** AQ

Sample ID: A1-MW-01-SA1 ***Collected:*** 5/25/2018 1:56:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0524		0.00568	LOD	0.00907	LOQ	ug/L	J	Is
PFHpA	0.00225	J	0.00568	LOD	0.00907	LOQ	ug/L	J	RI

Sample ID: A1-MW-01-SA1D ***Collected:*** 5/25/2018 2:06:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0557		0.00534	LOD	0.00854	LOQ	ug/L	J	Is
PFHpA	0.00273	J	0.00534	LOD	0.00854	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039, **Laboratory: Vista**

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

SDG: 1801054

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-31-SA1** ***Collected:*** **5/25/2018 2:49:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0634		0.00553	LOD	0.00887	LOQ	ug/L	J	Is
PFHpA	0.00851	J	0.00553	LOD	0.00887	LOQ	ug/L	J	RI

Sample ID: **A1-MW-42-SA1** ***Collected:*** **5/25/2018 7:56:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.292		0.00553	LOD	0.00887	LOQ	ug/L	J	Is
PFOS	0.00186	J	0.00553	LOD	0.00887	LOQ	ug/L	J	RI

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.146		0.00543	LOD	0.00869	LOQ	ug/L	J	Is

Sample ID: **A1-MW-53-SA1** ***Collected:*** **5/25/2018 10:14:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.551		0.00548	LOD	0.00878	LOQ	ug/L	J	Is
PFOS	0.00188	J	0.00548	LOD	0.00878	LOQ	ug/L	J	RI

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.536		0.00558	LOD	0.00892	LOQ	ug/L	J	Is
PFOS	0.00652	J	0.00558	LOD	0.00892	LOQ	ug/L	J	RI

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0152		0.00534	LOD	0.00852	LOQ	ug/L	J	Is

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801054

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00326	J	0.00534	LOD	0.00852	LOQ	ug/L	J	RI
PFOA	0.00756	J	0.00534	LOD	0.00852	LOQ	ug/L	J	RI
PFOS	0.00115	J	0.00534	LOD	0.00852	LOQ	ug/L	J	RI

SDG: 1801071

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA1** ***Collected:*** **5/30/2018 12:06:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.112		0.00525	LOD	0.00840	LOQ	ug/L	J	Is

Sample ID: **A1-MW-23-SA1** ***Collected:*** **5/30/2018 11:10:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHxS	0.00581	J	0.00548	LOD	0.00874	LOQ	ug/L	J	RI

Sample ID: **A1-MW-27-SA1** ***Collected:*** **5/30/2018 8:18:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0819		0.00534	LOD	0.00854	LOQ	ug/L	J	Is

Sample ID: **A1-MW-55-SA1** ***Collected:*** **5/30/2018 10:16:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.00548	U	0.00548	LOD	0.00875	LOQ	ug/L	UJ	Is

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

Reason Code Legend

Reason Code	*Description*
Is	Internal Standard Estimation
Lcs	Laboratory Control Spike Upper Estimation
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Enclosure I

Stage 2B ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

280-110058-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110058-1 **Laboratory: TA DEN**

EDD Filename: 280-110058-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA1 (RES/TOT)	Sampling To Analysis	226.00	24.00	HOURS	J (all detects)
A1-MW-05-SA1 (RES/TOT)		319.25	24.00	HOURS	
A1-MW-49-SA1 (RES/TOT)		227.75	24.00	HOURS	
A1-MW-50-SA1 (RES/TOT)		228.25	24.00	HOURS	
A1-MW-50-SA1DUP (RES/TOT)		228.50	24.00	HOURS	
A1-MW-51-SA1 (RES/TOT)		229.25	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA1 (RES/TOT)	Sampling To Analysis	45.75	24.00	HOURS	J(all detects)
A1-MW-05-SA1 (RES/TOT)		46.50	24.00	HOURS	UJ(all non-detects)
A1-MW-49-SA1 (RES/TOT)		47.50	24.00	HOURS	
A1-MW-50-SA1 (RES/TOT)	Sampling To Analysis	48.25	24.00	HOURS	J(all detects)
A1-MW-51-SA1 (RES/TOT)		49.50	24.00	HOURS	R(all non-detects)
A1-MW-51-SA1DUP (RES/TOT)		49.50	24.00	HOURS	
A1-MW-51-SA1MS (RES/TOT)		49.50	24.00	HOURS	
A1-MW-51-SA1MSD (RES/TOT)		49.50	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-110058-1 **Laboratory: TA DEN**

EDD Filename: 280-110058-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **SM3500 Fe B D**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-51-SA1MS A1-MW-51-SA1MSD (A1-MW-51-SA1)	Ferrous Iron	38	39	85.00-113.00	-	Ferrous Iron	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110058-1 **Laboratory: TA DEN**

EDD Filename: 280-110058-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-50-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.643 0.903	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-51-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.629 0.571	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-49-SA1	NITRATE	J	2.82	5.00	LOQ	mg/L	J (all detects)

Method: SM3500 Fe B D

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-04-SA1	Ferrous Iron	J HF	0.0751	0.200	LOQ	mg/L	J (all detects)
A1-MW-05-SA1	Ferrous Iron	J HF	0.0617	0.200	LOQ	mg/L	J (all detects)
A1-MW-51-SA1	Ferrous Iron	J HF F1	0.0563	0.200	LOQ	mg/L	J (all detects)

LDC #: 42613A1
SDG #: 280-110058-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/13/18
Page: 1 of 1
Reviewer: Q
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD≤15%. ICV≤20%
IV.	Continuing calibration	A	CCV≤20/60%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB=1.
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180522	280-110058-1	Water	05/22/18
2	A1-MW-51-SA1	280-110058-2	Water	05/22/18
3	A1-MW-50-SA1	280-110058-3	Water	05/22/18
4	A1-MW-49-SA1	280-110058-4	Water	05/22/18
5	A1-MW-05-SA1	280-110058-5	Water	05/22/18
6	A1-MW-04-SA1	280-110058-6	Water	05/22/18
7	A1-MW-51-SA1MS	280-110058-2MS	Water	05/22/18
8	A1-MW-51-SA1MSD	280-110058-2MSD	Water	05/22/18
9				
10				

Notes:

LDC #: 42613A6
SDG #: 280-110058-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/18/18
Page: 1 of 1
Reviewer: a
2nd Reviewer: KC

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	—	
VI.	Matrix Spike/Matrix Spike Duplicates	N	
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	—	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-51-SA1	280-110058-2	Water	05/22/18
2	A1-MW-50-SA1	280-110058-3	Water	05/22/18
3	A1-MW-49-SA1	280-110058-4	Water	05/22/18
4	A1-MW-05-SA1	280-110058-5	Water	05/22/18
5	A1-MW-04-SA1	280-110058-6	Water	05/22/18
6	A1-MW-51-SA1MS	280-110058-2MS	Water	05/22/18
7	A1-MW-51-SA1MSD	280-110058-2MSD	Water	05/22/18
8	A1-MW-51-SA1DUP	280-110058-2DUP	Water	05/22/18
9	A1-MW-50-SA1DUP	280-110058-3DUP	Water	05/22/18
10				
11				
12				
13				
14				
15				

Notes:

LDC #: 42613A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KW

All circled methods are applicable to each sample.

Sample ID	Parameter
1-5	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe3+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC:6,7	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
8	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
9	(pH) TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

Quality Control
Outlier Reports

280-110112-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**
EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**
Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
16-HS-03-SA1 (RES/TOT)	Sampling To Analysis	201.25	24.00	HOURS	J (all detects)
16-MW-08-SA1 (RES/TOT)		204.25	24.00	HOURS	
A1-MW-18-SA1 (RES/TOT)		206.25	24.00	HOURS	
A1-MW-19-SA1 (RES/TOT)		203.25	24.00	HOURS	
A1-MW-37-SA1 (RES/TOT)		202.25	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**
Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-18-SA1 (RES/TOT)	Sampling To Analysis	26.85	24.00	HOURS	J(all detects) UJ(all non-detects)

Surrogate Outlier Report

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**
Matrix: **AQ**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
16-HS-03-SA1	TOLUENE-D8	75	89.00-112.00	All Target Analytes	J (all detects) UJ (all non-detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: SM3500 Fe B D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	Ferrous Iron	1	0	85.00-113.00	-	Ferrous Iron	J (all detects) R (all non-detects)

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	1,1-DICHLOROETHENE	56	33	71.00-131.00	53 (20.00)	1,1-DICHLOROETHENE	J(all detects) UJ(all non-detects)

Method: 9056A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-HS-03-SA1MSD (16-HS-03-SA1)	Sulfate	-	86	87.00-112.00	-	Sulfate	J(all detects) UJ(all non-detects)
A1-MW-18-SA1MS A1-MW-18-SA1MSD (A1-MW-18-SA1)	CHLORIDE Sulfate	50 73	45 72	87.00-111.00 87.00-112.00	- -	CHLORIDE Sulfate	No Qual, >4x

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-08-SA1	TETRACHLOROETHENE	J	0.669	1.00	LOQ	ug/L	J (all detects)
A1-MW-18-SA1	1,1-DICHLOROETHENE	J	0.452	1.00	LOQ	ug/L	J (all detects)
A1-MW-19-SA1	TRICHLOROETHENE	J	0.424	1.00	LOQ	ug/L	J (all detects)
A1-MW-37-SA1	TRICHLOROETHENE	J	0.624	1.00	LOQ	ug/L	J (all detects)
A1-MW-37-SA1D	TRICHLOROETHENE	J	0.652	1.00	LOQ	ug/L	J (all detects)

Method: **SM3500 Fe B D**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-08-SA1	Ferrous Iron	J HF	0.0403	0.200	LOQ	mg/L	J (all detects)
A1-MW-18-SA1	Ferrous Iron	J HF	0.0215	0.200	LOQ	mg/L	J (all detects)
A1-MW-37-SA1	Ferrous Iron	J HF	0.166	0.200	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-37-SA1	A1-MW-37-SA1D			
TRICHLOROETHENE	0.624	0.652	NC	30.00	No Qualifiers Applied

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Quality Control
Outlier Reports

280-110226-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110226-1 **Laboratory: TA DEN**

EDD Filename: 280-110226-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA1 (RES/TOT)	Sampling To Analysis	154.50	24.00	HOURS	J (all detects)
A1-MW-31-SA1 (RES/TOT)		154.00	24.00	HOURS	
A1-MW-42-SA1 (RES/TOT)		160.25	24.00	HOURS	
A1-MW-52-SA1 (RES/TOT)		155.50	24.00	HOURS	
A1-MW-54-SA1 (RES/TOT)		159.25	24.00	HOURS	
A1-PZ-19-SA1 (RES/TOT)		156.50	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA1 (RES/TOT)	Sampling To Analysis	452.25	24.00	HOURS	J(all detects)
A1-MW-31-SA1 (RES/TOT)		451.25	24.00	HOURS	R(all non-detects)
A1-MW-31-SA1DUP (RES/TOT)		451.25	24.00	HOURS	
A1-MW-31-SA1DUP (RE/TOT)		452.25	24.00	HOURS	
A1-MW-31-SA1MS (RES/TOT)		451.25	24.00	HOURS	
A1-MW-31-SA1MS (RE/TOT)		452.25	24.00	HOURS	
A1-MW-31-SA1MSD (RES/TOT)		451.50	24.00	HOURS	
A1-MW-31-SA1MSD (RE/TOT)		452.25	24.00	HOURS	
A1-MW-42-SA1 (RES/TOT)		458.25	24.00	HOURS	
A1-MW-52-SA1 (RES/TOT)		453.25	24.00	HOURS	
A1-MW-54-SA1 (RES/TOT)		457.00	24.00	HOURS	
A1-PZ-19-SA1 (RES/TOT)		454.25	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-110226-1 **Laboratory: TA DEN**

EDD Filename: 280-110226-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9056A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-52-SA1MS A1-MW-52-SA1MSD (A1-MW-52-SA1)	CHLORIDE Sulfate	- 75	84 70	87.00-111.00 87.00-112.00	- -	CHLORIDE Sulfate**	J (all detects) ** No Qual, >4x

Method: SM3500 Fe B D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-31-SA1MS A1-MW-31-SA1MSD (A1-MW-31-SA1)	Ferrous Iron	21	21	85.00-113.00	-	Ferrous Iron	J(all detects) R(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110226-1 **Laboratory: TA DEN**

EDD Filename: 280-110226-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-31-SA1	TRICHLOROETHENE	J	0.353	1.00	LOQ	ug/L	J (all detects)
A1-MW-42-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.298 0.415	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-52-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.507 0.627	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-PZ-19-SA1	TRICHLOROETHENE	J	0.269	1.00	LOQ	ug/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-54-SA1	NITRATE	J	0.343	0.500	LOQ	mg/L	J (all detects)

Method: SM3500 Fe B D

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-PZ-19-SA1	Ferrous Iron	J HF	0.198	0.200	LOQ	mg/L	J (all detects)

LDC #: 42613C1
SDG #: 280-110226-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/19/18
Page: 1 of 1
Reviewer: 1
2nd Reviewer: RW

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/20%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB = 9
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	ND	D = 6+7
XI.	Internal standards	A	(MS/MSD - FSaut)
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	280-110226-1	Water	05/25/18
2	A1-MW-54-SA1	280-110226-2	Water	05/25/18
3	A1-MW-53-SA1	280-110226-3	Water	05/25/18
4	A1-PZ-19-SA1	280-110226-4	Water	05/25/18
5	A1-MW-52-SA1	280-110226-5	Water	05/25/18
6	A1-MW-01-SA1	280-110226-6	Water	05/25/18
7	A1-MW-01-SA1D	280-110226-7	Water	05/25/18
8	A1-MW-31-SA1	280-110226-8	Water	05/25/18
9	TB-20180525	280-110226-12	Water	05/25/18
10	A1-MW-53-SA1MS	280-110226-3MS	Water	05/25/18
11	A1-MW-53-SA1MSD	280-110226-3MSD	Water	05/25/18
12				
13				

LDC #: 42613C6
SDG #: 280-110226-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/18/18
Page: 1 of 1
Reviewer: G
2nd Reviewer: KW

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B)
pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/-	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	ASW	
V	Field blanks	-	
VI.	Matrix Spike/Matrix Spike Duplicates	N	7/8:SO4 7/x
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	-	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	280-110226-1	Water	05/25/18
2	A1-MW-54-SA1	280-110226-2	Water	05/25/18
3	A1-PZ-19-SA1	280-110226-4	Water	05/25/18
4	A1-MW-52-SA1	280-110226-5	Water	05/25/18
5	A1-MW-01-SA1	280-110226-6	Water	05/25/18
6	A1-MW-31-SA1	280-110226-8	Water	05/25/18
7	A1-MW-52-SA1MS	280-110226-5MS	Water	05/25/18
8	A1-MW-52-SA1MSD	280-110226-5MSD	Water	05/25/18
9	A1-MW-52-SA1DUP	280-110226-5DUP	Water	05/25/18
10	A1-MW-31-SA1MS1	280-110226-8MS1	Water	05/25/18
11	A1-MW-31-SA1MSD1	280-110226-8MSD1	Water	05/25/18
12	A1-MW-31-SA1DUP1	280-110226-8DUP2	Water	05/25/18
13	A1-MW-31-SA1MS2	280-110226-8MS2	Water	05/25/18
14	A1-MW-31-SA1MSD2	280-110226-8MSD2	Water	05/25/18
15	A1-MW-31-SA1DUP2	280-110226-8DUP2	Water	05/25/18
16				

Notes:

LDC #: 42613C6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KK

All circled methods are applicable to each sample.

Sample ID	Parameter
1-6	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC: 7,8	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
9	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
10,11	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
12	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
13,14	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
15	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

LDC #: 42613C6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: G
2nd Reviewer: KK

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** All

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No qual (>5x)								
NO3-N		0.04663	0.23315									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-110291-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110291-1 **Laboratory: TA DEN**

EDD Filename: 280-110291-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA1 (RES/TOT)	Sampling To Analysis	78.25	24.00	HOURS	J (all detects)
A1-MW-14-SA1 (RES/TOT)		76.25	24.00	HOURS	
A1-MW-23-SA1 (RES/TOT)		79.00	24.00	HOURS	
A1-MW-25-SA1 (RES/TOT)		81.00	24.00	HOURS	
A1-MW-27-SA1 (RES/TOT)		82.00	24.00	HOURS	
A1-MW-55-SA1 (RES/TOT)		79.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA1 (RES/TOT)	Sampling To Analysis	334.25	24.00	HOURS	J(all detects)
A1-MW-14-SA1 (RES/TOT)		332.50	24.00	HOURS	R(all non-detects)
A1-MW-23-SA1 (RES/TOT)		335.00	24.00	HOURS	
A1-MW-25-SA1 (RES/TOT)		337.00	24.00	HOURS	
A1-MW-27-SA1 (RES/TOT)		338.00	24.00	HOURS	
A1-MW-55-SA1 (RES/TOT)		336.00	24.00	HOURS	

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110291-1 **Laboratory: TA DEN**

EDD Filename: 280-110291-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-07-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.405 0.797	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-14-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.898 0.876	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-25-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.204 0.418	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

Method: **SM3500 Fe B D**

Matrix: **AQ**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-25-SA1	Ferrous Iron	J HF	0.123	0.200	LOQ	mg/L	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613D1

SDG #: 280-110291-1

Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET

ADR

Date: 7/18/18

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration / Endrin	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180530	280-110291-1	Water	05/30/18
2	A1-MW-14-SA1	280-110291-2	Water	05/30/18
3	A1-MW-23-SA1	280-110291-3	Water	05/30/18
4	A1-MW-55-SA1	280-110291-4	Water	05/30/18
5	A1-MW-25-SA1	280-110291-5	Water	05/30/18
6	A1-MW-27-SA1	280-110291-6	Water	05/30/18
7	A1-MW-07-SA1	280-110291-7	Water	05/30/18
8				
9				

Notes:

LDC #: 43613D1

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: 9
2nd Reviewer: RK

All circled dates have exceeded the technical holding times.
(Y) N N/A Were all cooler temperatures within validation criteria?
(Y) N N/A Were air bubbles > 1/4 inch or was headspace present in the vials?

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
3 (ND)	Headspace		> 6 mm				J (ND)

TECHNICAL HOLDING TIME CRITERIA

Water unpreserved:	Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Water preserved:	Within 14 days of sample collection.
Soil:	Within 14 days of sample collection.

LDC #: 42613D6
SDG #: 280-110291-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/18/18
Page: 1 of 1
Reviewer: a
2nd Reviewer: KK

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/-	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	—	
VI.	Matrix Spike/Matrix Spike Duplicates	N	
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	—	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-14-SA1	280-110291-2	Water	05/30/18
2	A1-MW-23-SA1	280-110291-3	Water	05/30/18
3	A1-MW-55-SA1	280-110291-4	Water	05/30/18
4	A1-MW-25-SA1	280-110291-5	Water	05/30/18
5	A1-MW-27-SA1	280-110291-6	Water	05/30/18
6	A1-MW-07-SA1	280-110291-7	Water	05/30/18
7	A1-MW-14-SA1MS	280-110291-2MS	Water	05/30/18
8	A1-MW-14-SA1MSD	280-110291-2MSD	Water	05/30/18
9	A1-MW-14-SA1DUP	280-110291-2DUP	Water	05/30/18
10				
11				
12				
13				
14				
15				
16				

Notes:

LDC #: 42613O6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: RW

All circled methods are applicable to each sample.

Sample ID	Parameter
1-6	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC: 7,8	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
9	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments: _____

LDC #: 42613D6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: G
2nd Reviewer: KK

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 1-3

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No qual (>5x)								
SO4		0.2460	1.23									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-110353-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110353-1 **Laboratory: TA DEN**

EDD Filename: 280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA1 (RES/TOT)	Sampling To Analysis	111.75	24.00	HOURS	J (all detects)
A1-MW-11-SA1DUP (RES/TOT)		111.75	24.00	HOURS	
A1-MW-13-SA1 (RES/TOT)		112.50	24.00	HOURS	
A1-MW-15-SA1 (RES/TOT)		110.50	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA1 (RES/TOT)	Sampling To Analysis	313.75	24.00	HOURS	J(all detects)
A1-MW-13-SA1 (RES/TOT)		314.50	24.00	HOURS	R(all non-detects)
A1-MW-15-SA1 (RES/TOT)		313.00	24.00	HOURS	

Method Blank Outlier Report

Lab Reporting Batch ID: 280-110353-1 **Laboratory: TA DEN**

EDD Filename: 280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-417070/6	6/1/2018 12:10:00 PM	CHLORIDE Sulfate	0.5189 mg/L 0.6146 mg/L	A1-MW-11-SA1 A1-MW-13-SA1 A1-MW-15-SA1

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110353-1 **Laboratory: TA DEN**

EDD Filename: 280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-15-SA1	TRICHLOROETHENE	J	0.321	1.00	LOQ	ug/L	J (all detects)

LDC #: 42613E1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/12/18
SDG #: 280-110353-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB = 1. EB = 5
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180531	280-110353-1	Water	05/31/18
2	A1-MW-13-SA1	280-110353-2	Water	05/31/18
3	A1-MW-11-SA1	280-110353-3	Water	05/31/18
4	A1-MW-15-SA1	280-110353-4	Water	05/31/18
5	EB-20180531	280-110353-5	Water	05/31/18
6				
7				
8				

Notes:

LDC #: 42613E6
SDG #: 280-110353-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/8/18
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/—	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	—	
VI.	Matrix Spike/Matrix Spike Duplicates	N	
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	—	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-13-SA1	280-110353-2	Water	05/31/18
2	A1-MW-11-SA1	280-110353-3	Water	05/31/18
3	A1-MW-15-SA1	280-110353-4	Water	05/31/18
4	A1-MW-11-SA1DUP	280-110353-3DUP	Water	05/31/18
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

Notes:

LDC #: 42613E6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KK

All circled methods are applicable to each sample.

Sample ID	Parameter
1-3	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC:4	(pH) TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

LDC #: 42613E6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: G
2nd Reviewer: KK

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** All

Analyte	Blank ID	Blank ID	Blank Action Limit										
	PB	ICB/CCB (mg/L)		No qual (>5x)									
Cl		0.5385	2.6925										
SO4		0.6554	3.277										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control Outlier Reports

1801024

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801024 **Laboratory: Vista**

EDD Filename: 1801024 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8E0250-BS1 (A1-MW-04-SA1 A1-MW-05-SA1 A1-MW-49-SA1 A1-MW-50-SA1 A1-MW-51-SA1 FRB-20180522)	PFTrDA	138	-	70.00-130.00	-	PFTrDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1801024 **Laboratory: Vista**

EDD Filename: 1801024 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-04-SA1	PFOA PFOS	J J	0.00333 0.00161	0.00812 0.00812	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-05-SA1	PFHpA PFHxS	J J	0.000917 0.00278	0.00842 0.00842	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-49-SA1	PFBS	J	0.00627	0.00812	LOQ	ug/L	J (all detects)
A1-MW-51-SA1	PFOS	J	0.00303	0.00836	LOQ	ug/L	J (all detects)

LDC #: 42613L96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801024 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 2nd Reviewer: KLC

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD<20% r². True/ICV = 30%
IV.	Continuing calibration	A	CCV = 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	FRB = 6
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-51-SA1	1801024-01	Water	05/22/18
2	A1-MW-50-SA1	1801024-02	Water	05/22/18
3	A1-MW-49-SA1	1801024-03	Water	05/22/18
4	A1-MW-05-SA1	1801024-04	Water	05/22/18
5	A1-MW-04-SA1	1801024-05	Water	05/22/18
6	FRB-20180522	1801024-06	Water	05/22/18
7				
8				
9				

Notes:

	BBE0250-BK1						

LDC #: 26132L96

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N N/A Were all internal standard area counts within 50-150% limits?

Y/N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		BBE0250-BA	13C2-PFUnA	AT. 6 (50-150)		Y/N/A
		1 (dets)	13C3-PFBS	247		(PFBS)
		(ND)	d5-Et FOSAA	151		(Et FOSAA)

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Quality Control
Outlier Reports

1801037

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	NMeFOSAA	-	-	70.00-130.00	41.1 (30.00)	NMeFOSAA	J (all detects)
	PFDA	132	-	70.00-130.00	-	PFDA	
	PFDoA	136	-	70.00-130.00	-	PFDoA	
	PFHpA	140	-	70.00-130.00	49.6 (30.00)	PFHpA	
	PFHxS	146	-	70.00-130.00	-	PFHxS	
	PFOA	131	-	70.00-130.00	-	PFOA	
	PFTrDA	136	133	70.00-130.00	-	PFTrDA	
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	PFHxA	-21	-	70.00-130.00	329 (30.00)	PFHxA	No Qual, >4x
	PFBS	182	-	70.00-130.00	45.9 (30.00)	PFBS	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8E0244-BS1 (16-HS-03-SA1 16-MW-06-SA1 16-MW-08-SA1 16-MW-09-SA1 A1-MW-18-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D FRB-20180523)	PFTrDA	153	-	70.00-130.00	-	PFTrDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-06-SA1	PFOS	J	0.00227	0.00897	LOQ	ug/L	J (all detects)
16-MW-08-SA1	PFNA	J	0.00102	0.00870	LOQ	ug/L	J (all detects)
16-MW-09-SA1	PFDA PFNA	J J	0.00440 0.00326	0.00871 0.00871	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-18-SA1	PFOA PFOS	J J	0.00187 0.00437	0.00888 0.00888	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-19-SA1	PFDA	J	0.00727	0.00846	LOQ	ug/L	J (all detects)
A1-MW-37-SA1	PFNA	J	0.00170	0.00839	LOQ	ug/L	J (all detects)
A1-MW-37-SA1D	PFNA PFUnA	J J	0.00210 0.00135	0.00862 0.00862	LOQ LOQ	ug/L ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	A1-MW-37-SA1	A1-MW-37-SA1D			
PFBS	0.230	0.252	9	30.00	No Qualifiers Applied
PFHpA	0.0328	0.0322	NC	30.00	
PFHxA	1.66	1.71	3	30.00	
PFHxS	0.155	0.152	2	30.00	
PFNA	0.00170	0.00210	NC	30.00	
PFOA	0.0196	0.0203	NC	30.00	
PFOS	0.0458	0.0416	NC	30.00	
PFUnA	0.00839 U	0.00135	NC	30.00	

LDC #: 42613M96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801037 ADR/Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 1
2nd Reviewer: KC

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	
IV.	Continuing calibration	A	
V.	Laboratory Blanks	N	Not reviewed for ADR validation
VI.	Field blanks	ND	FRB = 9
VII.	Surrogate spikes	N	Not reviewed for ADR validation
VIII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation
IX.	Laboratory control samples		Not reviewed for ADR validation
X.	Field duplicates	SW	D = 4+5
XI.	Internal standards	SW	Not reviewed for ADR validation
XII.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation
XIII.	Target compound identification		Not reviewed for ADR validation
XIV.	System performance		Not reviewed for ADR validation
XV.	Overall assessment of data		Not reviewed for ADR validation

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA1**	1801037-01**	Water	05/23/18
2	16-MW-08-SA1**	1801037-02**	Water	05/23/18
3	A1-MW-19-SA1**	1801037-03**	Water	05/23/18
4	A1-MW-37-SA1**	1801037-04**	Water	05/23/18
5	A1-MW-37-SA1D**	1801037-05**	Water	05/23/18
6	16-HS-03-SA1**	1801037-06**	Water	05/23/18
7	16-MW-09-SA1**	1801037-07**	Water	05/23/18
8	16-MW-06-SA1**	1801037-08**	Water	05/23/18
9	FRB-20180523	1801037-09	Water	05/23/18
10	16-HS-03-SA1MS	1801037-06MS	Water	05/23/18
11	16-HS-03-SA1MSD	1801037-06MSD	Water	05/23/18
12				
13	B8E0244-BLK1			
14				

LDC #: 423496

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (lab)	13C3-PFBS	170 (50-150)		J (PFBS)
		2		187		
		3		214		
		4		228		
		5		161		
		6		154		
		7		153		
		8		214		
		10 (MS)		167		No Qual
		11 (MSD)		165		

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LDC#: 42613M96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: RK

METHOD: PFCs

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	4	5		
PFBS	0.230	0.252	9	
PFHxA	1.66	1.71	3	
PFHpA	0.0328	0.0322	~~2~~ NC	
PFHxS	0.155	0.152	2	
PFOA	0.0196	0.0203	~~4~~ NC	
PFNA	0.00170	0.00210	~~21~~ NC	
PFOS	0.0458	0.0416	~~10~~ NC	
PFUnA	0.00525U	0.00135	NC	

Quality Control
Outlier Reports

1801039

Reporting Limit Outliers

Lab Reporting Batch ID: 1801039 **Laboratory: Vista**

EDD Filename: 1801039 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-11-SA1	PFOS	J	0.00359	0.00860	LOQ	ug/L	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613N96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/12/18
SDG #: 1801039 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	
IV.	Continuing calibration	A	
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	FRB=6
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	SW	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-13-SA1	1801039-01	Water	05/24/18
2	A1-MW-11-SA1	1801039-02	Water	05/24/18
3	A1-MW-14-SA1	1801039-03	Water	05/24/18
4	A1-MW-15-SA1	1801039-04	Water	05/24/18
5	A1-MW-25-SA1	1801039-07	Water	05/24/18
6	FRB-20180524	1801039-08	Water	05/24/18
7				
8				
9				

Notes:

	BBF0004-BK1						

LDC #: ~~26363N96~~

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: [illegible]

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dob)	13C3-PFBS	419 (50-150)		Y/N/A (PFBS)
		2		271		
		3		527		
		4		235		
		5 (~~ND~~) (Det)		428		

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Quality Control Outlier Reports

1801054

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-53-SA1MS A1-MW-53-SA1MSD (A1-MW-53-SA1)	NMeFOSAA PFTrDA	- 141	- 148	70.00-130.00 70.00-130.00	32.9 (30.00) -	NMeFOSAA PFTrDA	J (all detects)
A1-MW-53-SA1MS A1-MW-53-SA1MSD (A1-MW-53-SA1)	PFBS PFHxS PFHxA	- 141 232	37.7 58.4 175	70.00-130.00 70.00-130.00 70.00-130.00	96.5 (30.00) 82.8 (30.00) -	PFBS PFHxS PFHxA	No Qual, >4x

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8E0244-BS1 (A1-MW-01-SA1 A1-MW-01-SA1D A1-MW-31-SA1 A1-MW-42-SA1 A1-MW-52-SA1 A1-MW-53-SA1 A1-MW-54-SA1 A1-PZ-19-SA1 FRB-20180525)	PFTrDA	153	-	70.00-130.00	-	PFTrDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-01-SA1	PFHpA	J	0.00225	0.00907	LOQ	ug/L	J (all detects)
A1-MW-01-SA1D	PFHpA	J	0.00273	0.00854	LOQ	ug/L	J (all detects)
A1-MW-31-SA1	PFHpA	J	0.00851	0.00887	LOQ	ug/L	J (all detects)
A1-MW-42-SA1	PFOS	J	0.00186	0.00887	LOQ	ug/L	J (all detects)
A1-MW-53-SA1	PFOS	J	0.00188	0.00878	LOQ	ug/L	J (all detects)
A1-MW-54-SA1	PFOS	J	0.00652	0.00892	LOQ	ug/L	J (all detects)
A1-PZ-19-SA1	PFHpA	J	0.00326	0.00852	LOQ	ug/L	J (all detects)
	PFOA	J	0.00756	0.00852	LOQ	ug/L	
	PFOS	J	0.00115	0.00852	LOQ	ug/L	

Field Duplicate RPD Report

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-01-SA1	A1-MW-01-SA1D			
PFBS	0.0524	0.0557	6	30.00	No Qualifiers Applied
PFHpA	0.00225	0.00273	NC	30.00	
PFHxA	0.101	0.0971	4	30.00	
PFHxS	0.0230	0.0238	NC	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613O96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801054 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	RSD ≤ 20% . r^2 . TMC/ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	NO	FRB = 9
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	SW	D = 6+7
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	1801054-01	Water	05/25/18
2	A1-MW-54-SA1	1801054-02	Water	05/25/18
3	A1-MW-53-SA1	1801054-03	Water	05/25/18
4	A1-PZ-19-SA1	1801054-04	Water	05/25/18
5	A1-MW-52-SA1	1801054-05	Water	05/25/18
6	A1-MW-01-SA1	1801054-06	Water	05/25/18
7	A1-MW-01-SA1D	1801054-07	Water	05/25/18
8	A1-MW-31-SA1	1801054-08	Water	05/25/18
9	FRB-20180525	1801054-09	Water	05/25/18
10	A1-MW-53-SA1MS	1801054-03MS	Water	05/25/18
11	A1-MW-53-SA1MSD	1801054-03MSD	Water	05/25/18
12				
13				
14	B8E0244-B4[illegible]			

LDC#: 42613096

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: WK

METHOD: PFCs

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	6	7		
PFBS	0.0524	0.0557	6	
PFHxA	0.101	0.0971	4	
PFHpA	0.00225	0.00273	~~19~~ NC	
PFHxS	0.0230	0.0238	~~3~~ NC	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613O96.wpd

LDC #: 42613096

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: MK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dets)	13C3-PFBS	310 (50-150)		J (all dets) UJ (PFBS)
		2 (dets)		175		
		3		154		
		10 (MS)		169		No qual
		11 (MSD)		161		
		4 (dets)		182		J (all dets) UJ (PFBS)
		5		211		
		6		192		
		7		204		
		8		254		

Privileged and Confidential

Quality Control Outlier Reports

1801071

Reporting Limit Outliers

Lab Reporting Batch ID: 1801071 **Laboratory: Vista**

EDD Filename: 1801071 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-23-SA1	PFHxS	J	0.00581	0.00874	LOQ	ug/L	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613P96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801071 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	
IV.	Continuing calibration	A	
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	FRB = 5
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-27-SA1	1801071-01	Water	05/30/18
2	A1-MW-55-SA1	1801071-02	Water	05/30/18
3	A1-MW-23-SA1	1801071-03	Water	05/30/18
4	A1-MW-07-SA1	1801071-04	Water	05/30/18
5	FRB-20180530	1801071-05	Water	05/30/18
6				
7				
8				
9				

Notes:

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 6:2FTS			
S. 8:2 FTS			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			

LDC #: 42613P96

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all internal standard area counts within 50-150% limits?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dets)	13C8-PFBS	174 (50-150)		J/UJ (PFBS)
		2 (ND)	↓	165		↓
		4 (dets)	↓	209		↓

Privileged and Confidential

Quality Control
Outlier Reports

1801084

LDC #: 42613Q96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18

SDG #: 1801084 ADR Page: 1 of 1

Laboratory: Vista Analytical Laboratory Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	~~RSD≤20%~~. r^2 TMO/ICV ≤ 30%
IV.	Continuing calibration	SW	CCV ≤ 30% ~~≤20%~~
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	EB=1
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	EB-20180531	1801084-01	Water	05/31/18
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	RBF0069-BLK1						

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			

LDC #: ~~42638~~ 96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: Q
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a continuing calibration standard analyzed after every 10 injections for each instrument?

Y (N) N/A Were all continuing calibration percent differences (%D) ≤30 %?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit:)	Associated Samples	Qualifications
	6/18/18	180617L1-10	d3-T	55.2 (~~>50%~~)		MB	J/UJ/P (T)

Enclosure II

Manual Stage 2B and Stage 4 Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 16, 2018

Parameters: Volatiles

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-110112-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-20180523	280-110112-1	Water	05/23/18
A1-MW-18-SA1	280-110112-2	Water	05/23/18
16-MW-08-SA1	280-110112-3	Water	05/23/18
A1-MW-19-SA1	280-110112-4	Water	05/23/18
A1-MW-37-SA1D	280-110112-5	Water	05/23/18
A1-MW-37-SA1	280-110112-6	Water	05/23/18
16-HS-03-SA1	280-110112-7	Water	05/23/18
16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TB-20180523 was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
16-HS-03-SA1	Toluene-d8	75 (89-112)	All compounds	UJ (all non-detects)	A

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	1,1-Dichloroethene	56 (71-131)	33 (71-131)	UJ (all non-detects)	A

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	1,1-Dichloroethene	53 (≤20)	NA	-

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples A1-MW-37-SA1 and A1-MW-37-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	A1-MW-37-SA1D	A1-MW-37-SA1			
Trichloroethene	0.652	0.624	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1D A1-MW-37-SA1	All compounds reported below the LOQ.	J (all detects)	A

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogate %R, MS/MSD %R, and results below the LOQ, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Volatiles - Data Qualification Summary - SDG 280-110112-1

Sample	Compound	Flag	A or P	Reason
16-HS-03-SA1	All compounds	UJ (all non-detects)	A	Surrogates (%R)
16-HS-03-SA1	1,1-Dichloroethene	UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1D A1-MW-37-SA1	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Volatiles - Laboratory Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Volatiles - Field Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

LDC #: 42613B1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18

SDG #: 280-110112-1 Stage 4 Page: 1 of 1

Laboratory: Test America, Inc. Reviewer: Q

2nd Reviewer: KLC

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration Level 3	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D = 5+6
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180523	280-110112-1	Water	05/23/18
2	A1-MW-18-SA1	280-110112-2	Water	05/23/18
3	16-MW-08-SA1	280-110112-3	Water	05/23/18
4	A1-MW-19-SA1	280-110112-4	Water	05/23/18
5	A1-MW-37-SA1D	280-110112-5	Water	05/23/18
6	A1-MW-37-SA1	280-110112-6	Water	05/23/18
7	16-HS-03-SA1	280-110112-7	Water	05/23/18
8	16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
9	16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18
10				
11				
12				
13				

LDC #: 42613B1

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: RV

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) ≥ 0.05?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks were identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	✓			

LDC #: 42613B1

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: KK

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data	✓			
Overall assessment of data was found to be acceptable.				

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 42613B1

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer:
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

Y N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		7	TOL	75 (89-112)	J/UH/A (ND)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	

(TOL) = Toluene-d8 (DCE) = 1,2-Dichloroethane-d4
(BFB) = Bromofluorobenzene (DFM) = Dibromofluoromethane

LDC #: 43633

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		8/9	H	56 (71-131)	33 (71-131)	( )	7 (ND)	J (H) / A
			H	( )	( )	53 (≤20)		J (all det.) / A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )	

LDC#: 42613B1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GCMS VOA 8260B

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	5	6		
S	0.652	0.624	4 NC	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613B1.wpd

LDC #: ~~42643B~~

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL (R1)	5/16/18	H (1st internal standard)	0.3187	0.3187	0.3149	0.3149	4.8	4.8
			AA (2nd internal standard)	1.3348	1.3348	1.3251	1.3251	3.5	3.5
			(3rd internal standard)						
			(4th internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613B1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	R1735	6/4/18	H (1st internal standard)	0.3149	0.3312	0.3312	5.2	5.2
			AA (2nd internal standard)	1.325	1.401	1.401	5.7	5.7
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 40413B1

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	11.5	12.2	106	106	0
1,2-Dichloroethane-d4	↓	12.4	108	108	↓
Toluene-d8		11.5	100	100	
Bromofluorobenzene		11.6	100	102	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 42438J

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 8/9

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	5.00	5.00	ND	2.795	1.629	56	56	33	33	53	53
Trichloroethene	V	V	V	4.863	4.489	97	97	90	90	8	8
Benzene											
Toluene											
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613B1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 280-417198/4

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	5.00	NA	5.615	NA	112	112				
Trichloroethene	↓	↓	5.111	↓	102	102				
Benzene										
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 26138

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: A
2nd reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2 , H :

Conc. = $\frac{(22988)(12.5)(1)}{(201941)(0.3149)(\quad)(\quad)}$

= 0.452 µg/L

#	Sample ID	Compound	Reported Concentration (µg/L)	Calculated Concentration ( )	Qualification
	2	H	0.452		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: Wet Chemistry

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-110112-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-18-SA1	280-110112-2	Water	05/23/18
16-MW-08-SA1	280-110112-3	Water	05/23/18
A1-MW-19-SA1	280-110112-4	Water	05/23/18
A1-MW-37-SA1	280-110112-6	Water	05/23/18
16-HS-03-SA1	280-110112-7	Water	05/23/18
A1-MW-18-SA1MS	280-110112-2MS	Water	05/23/18
A1-MW-18-SA1MSD	280-110112-2MSD	Water	05/23/18
A1-MW-18-SA1DUP	280-110112-2DUP	Water	05/23/18
16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18
16-HS-03-SA1DUP	280-110112-7DUP	Water	05/23/18
16-HS-03-SA1DLMS	280-110112-7DLMS	Water	05/23/18
16-HS-03-SA1DLMSD	280-110112-7DLMSD	Water	05/23/18
16-HS-03-SA1DLDUP	280-110112-7DLDUP	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 16-HS-03-SA1	pH	8 days	24 hours	J (all detects)	P
A1-MW-18-SA1	Ferrous Iron	26.85 hours	24 hours	J (all detects)	P

II. Initial Calibration

All criteria for the initial calibration of each method were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	Sulfate	88 (87-112)	86 (87-112)	J (all detects)	A
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	Ferrous Iron	1 (85-113)	0 (85-113)	R (all non-detects)	A

For A1-MW-18-SA1MS/MSD, no data were qualified for Chloride and Sulfate percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All sample result verifications were acceptable.

All analytes reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-37-SA1	All analytes reported below the LOQ.	J (all detects)	A

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to MS/MSD %R, data were rejected in one sample.

Due to technical holding time, MS/MSD %R, and results below the LOQ, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Wet Chemistry - Data Qualification Summary - SDG 280-110112-1

Sample	Analyte	Flag	A or P	Reason
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 16-HS-03-SA1	pH	J (all detects)	P	Technical holding times
A1-MW-18-SA1	Ferrous Iron	J (all detects)	P	Technical holding times
16-HS-03-SA1	Sulfate	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
16-HS-03-SA1	Ferrous Iron	R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-37-SA1	All analytes reported below the LOQ.	J (all detects)	A	Sample result verification

MCAS Yuma, CTO 17F3803
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Wet Chemistry - Field Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

LDC #: 42613B6
SDG #: 280-110112-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
Statge 4

Date: 7/18/18
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: KK

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	~~10/11~~: Cl, SO_4: 7/8 >4x
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	~~(4,5)~~ a
X.	Sample result verification	A	
XI.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA1	280-110112-2	Water	05/23/18
2	16-MW-08-SA1	280-110112-3	Water	05/23/18
3	A1-MW-19-SA1	280-110112-4	Water	05/23/18
~~4~~	~~A1-MW-37-SA1D~~	~~280-110112-5~~	~~Water~~	~~05/23/18~~ 02
5	A1-MW-37-SA1	280-110112-6	Water	05/23/18
6	16-HS-03-SA1	280-110112-7	Water	05/23/18
7	A1-MW-18-SA1MS	280-110112-2MS	Water	05/23/18
8	A1-MW-18-SA1MSD	280-110112-2MSD	Water	05/23/18
9	A1-MW-18-SA1DUP	280-110112-2DUP	Water	05/23/18
10	16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
11	16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18
12	16-HS-03-SA1DUP	280-110112-7DUP	Water	05/23/18
13	#6 DL MS			
14	↓ MSD			
15	↓ DUP			

Notes:

LDC #: 47961386

VALIDATION FINDINGS CHECKLIST

Reviewer: 01
2nd Reviewer: KK

Method: Inorganics (EPA Method Sel cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.		✓		
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓	✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 4296B86

VALIDATION FINDINGS CHECKLIST

Reviewer: 02
2nd Reviewer: KK

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 42653B6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KK

All circled methods are applicable to each sample.

Sample ID	Parameter
1-3,5,6	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC: 7,8	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
9	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
10,11	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
12	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
13,14	pH TDS (Cl) F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
15	pH TDS (Cl) F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

LDC #: 42613B6

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: CA
2nd reviewer: KK

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	9040C				SM 3500 FE B		
Parameters:	pH				Ferrous Iron		
Technical holding time:	~~48 HRS~~ 24 hrs				24 hrs		
Sample ID	Sampling date	Analysis date	Time ~~Exceeded~~	Qualifier	Analysis date	Time Exceeded	Qualifier
All (Det)	5/23/18	5/31/18	8days	J/UJ/P			
1 (Det)	5/23/18				5/24/18	26.85 hrs	J/UJ/P
	(09:00)				(11:51)		

HTTETRA.wpd

LDC #: 42613B6

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer:
2nd Reviewer: KK

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	10/11		SO_4	88(87-112)	86		6	J/UJ/A (Det)
			~~Ferrous Fe~~	1(85-113)	0		6	J/R/A (MD)
			Ferrous Iron					

Comments: 7/8: Cl, SO_4 74X

LDC #: 42623B6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: G
2nd Reviewer: KK

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cl was recalculated. Calibration date: 3/21/18

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found X 100 / True Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cl	s1	1.0	16911296	*1.000*	*1.000*	Y
		s2	2.5	43759132			
		s3	5	85841374			
		s4	60	1053445301			
		s5	120	2068634717			
		s6	200	3433898767			
Calibration verification	NO_3N	ICV	4	3.93	98	98	
Calibration verification	SO_4	CCV	100	102.1	102	102	
Calibration verification	Fe^{2+}	CCV	1.0	10686	107	107	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613B6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: OR
2nd Reviewer: KK

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Ferrous Iron	2.2416	2.00	112	112	Y
10	Matrix spike sample	NO3N	(SSR-SR) 10.0	10	100	100	
12	Duplicate sample	SO4	42.4	38.4	10	10	

Comments: _____

LDC #: 42613 B6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: CR
2nd reviewer: KK

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Cl reported with a positive detect were recalculated and verified using the following equation:

Concentration = $y = 1655360x - 440112$

Recalculation: $\frac{1079969301 + 440112}{1655360} \times 50 = 3263.3 mg/L$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	1	pH (SU)	7.7	7.7	Y
	2	Ferrous Iron	0.0403	0.0403	↓
	3	Cl	3260	3260	↓
	5	NO_3N	7.26	7.26	↓
	6	SO_4	2120	2120	✓

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1818881

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-51-SA1	L1818881-01	Water	05/22/18
A1-MW-50-SA1	L1818881-02	Water	05/22/18
A1-MW-49-SA1	L1818881-03	Water	05/22/18
A1-MW-05-SA1	L1818881-04	Water	05/22/18
A1-MW-04-SA1	L1818881-05	Water	05/22/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

The chain-of-custodies were reviewed for documentation of cooler temperatures. Cooler temperatures for all samples were reported at 7.9°C upon receipt by the laboratory. No data was qualified based on the cooler temperature.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1818881

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1818881

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1818881

No Sample Data Qualified in this SDG

LDC #: 42613F2b

SDG #: L1818881

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer:

2nd Reviewer: KW

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	Temp @ 7.9°C
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration / 2nd Col	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	⊂
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-51-SA1	L1818881-01	Water	05/22/18
2	A1-MW-50-SA1	L1818881-02	Water	05/22/18
3	A1-MW-49-SA1	L1818881-03	Water	05/22/18
4	A1-MW-05-SA1	L1818881-04	Water	05/22/18
5	A1-MW-04-SA1	L1818881-05	Water	05/22/18
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 16, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 4

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1819087

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-18-SA	L1819087-01	Water	05/23/18
16-MW-08-SA1	L1819087-02	Water	05/23/18
A1-MW-19-SA1	L1819087-03	Water	05/23/18
A1-MW-37-SA1	L1819087-04	Water	05/23/18
A1-MW-37-SA1D	L1819087-05	Water	05/23/18
16-HS-03-SA1	L1819087-06	Water	05/23/18
16-HS-03-SA1MS	L1819087-06MS	Water	05/23/18
16-HS-03-SA1MSD	L1819087-06MSD	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-37-SA1 and A1-MW-37-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ng/L)				
Compound	A1-MW-37-SA1	A1-MW-37-SA1D	RPD (Limits)	Flag	A or P
1,4-Dioxane	7780	7500	4 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations were within validation criteria.

XIII. Target Compound Identifications

All target compound identifications were within validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1819087

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1819087

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1819087

No Sample Data Qualified in this SDG

LDC #: 42613G2b **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: L1819087 Stage 4 Page: 1 of 1
Laboratory: Alpha Analytical, Inc. Reviewer: Q
2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD≤ 15%. ICV≤ 20%
IV.	Continuing calibration / Endrin	A	CCV≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D=4+5
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA	L1819087-01	Water	05/23/18
2	16-MW-08-SA1	L1819087-02	Water	05/23/18
3	A1-MW-19-SA1	L1819087-03	Water	05/23/18
4	A1-MW-37-SA1	L1819087-04	Water	05/23/18
5	A1-MW-37-SA1D	L1819087-05	Water	05/23/18
6	16-HS-03-SA1	L1819087-06	Water	05/23/18
7	16-HS-03-SA1MS	L1819087-06MS	Water	05/23/18
8	16-HS-03-SA1MSD	L1819087-06MSD	Water	05/23/18
9				

Notes:

LDC #: 42613F26

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Semivolatiles (EPA SW 846 Method 8270C-SIM)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check (Not required)				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) ≥ 0.05?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes				
Were all surrogate percent differences (%R) within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 42613B6

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: MK

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1.
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1.
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1.
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1.
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1.
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1.
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1.
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1.
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1.
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1.
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1.
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1.
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1.
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1.
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 1,2-Diphenylhydrazine	O1.
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1.
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4-Methylphenol	Q1.
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiophene (4MDT)	R1.
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1.
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1.
U. Hexachlorobutadiene	UU. Phenanthrene	UUU.Benzo(b)thiophene	UUUU.	U1.
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV.Benzonaphthothiophene	VVVV.	V1.
W. 2-Methylnaphthalene	WW. Carbazole	WWW.Benzo(e)pyrene	WWWW.	W1.
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX.	X1.
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY.	Y1.
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ.	Z1.

LDC#: 42613G2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GCMS SVOA 8270D-SIM

Compound	Concentration (ng/L)		(≤30) RPD	Qual
	4	5		
1,4-Dioxane	7780	7500	4	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613G2b.wpd

LDC #: [illegible]

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: Q
2nd Reviewer: KK

METHOD: GC/MS BNA (EPA SW 846 Method 8270C-SIM)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (500 std)	Recalculated RRF (500 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	5/29/18	IIII (1st internal standard)	1.618	1.618	1.686	1.686	7.57	7.57
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Phenanthrene (4th internal standard)						
			Chrysene (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2	ICAL	6/1/18	IIII (1st internal standard)	1.471	1.471	1.437	1.437	4.02	4.02
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Phenanthrene (4th internal standard)						
			Chrysene (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			(1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Phenanthrene (4th internal standard)						
			Chrysene (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: ~~46613~~6

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: A
2nd Reviewer: KK

METHOD: GC/MS BNA (EPA SW 846 Method 8270C-SIM)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	F6060118 02	6/1/18	1111 (1st internal standard)	1.686	1.767	1.767	4.8	4.8
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Phenanthrene (4th internal standard)					
			Chrysene (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	F1606058 07	6/5/18	1111 (1st internal standard)	1.437	1.538	1.538	7	7
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Phenanthrene (4th internal standard)					
			Chrysene (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3	~~F~~		(1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Phenanthrene (4th internal standard)					
			Chrysene (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42436-b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: Q
2nd reviewer: KK

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
1,4-Dioxane-d8	500	98.32	20	20	0

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

LDC #: 36154-D

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS (EPA SW 846 Method 8270C-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 7/8

Compound	Spike Added (NS/L)		Sample Concentration (NS/L)	Spiked Sample Concentration (NS/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Acenaphthene											
Pyrene											
1,4-Dioxane	5100	5100	3270	8340	8660	99	99	106	106	4	4

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: KK

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: NG1120650-2/-3

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Acenaphthene										
Pyrene										
1,4-Dioxane	5000	5000	5640	5660	113	113	113	113	0	0

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613-26

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd reviewer: KK

METHOD: GC/MS PAHs (EPA SW 846 Method 8270D-SIM)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 1,4-Dioxane

Conc. = $\frac{(2376)(500)(5)(1)(\quad)}{(5587)(1.686)(0.5)(\quad)(\quad)}$

= 1261.1 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	1	1,4-Dioxane	1260		

LDC Report# 42613H2b

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1819352

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-13-SA1	L1819352-01	Water	05/24/18
A1-MW-11-SA1	L1819352-02	Water	05/24/18
A1-MW-14-SA1	L1819352-03	Water	05/24/18
A1-MW-15-SA1	L1819352-04	Water	05/24/18
A1-MW-25-SA1	L1819352-07	Water	05/24/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1819352

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1819352

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1819352

No Sample Data Qualified in this SDG

LDC #: 42613H2b

SDG #: L1819352

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer:

2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCSB
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-13-SA1	L1819352-01	Water	05/24/18
2	A1-MW-11-SA1	L1819352-02	Water	05/24/18
3	A1-MW-14-SA1	L1819352-03	Water	05/24/18
4	A1-MW-15-SA1	L1819352-04	Water	05/24/18
5	A1-MW-25-SA1	L1819352-07	Water	05/24/18
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1819562

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-42-SA1	L1819562-01	Water	05/25/18
A1-MW-54-SA1	L1819562-02	Water	05/25/18
A1-MW-53-SA1	L1819562-03	Water	05/25/18
A1-PZ-19-SA1	L1819562-04	Water	05/25/18
A1-MW-52-SA1	L1819562-05	Water	05/25/18
A1-MW-01-SA1	L1819562-06	Water	05/25/18
A1-MW-01-SA1D	L1819562-07	Water	05/25/18
A1-MW-31-SA1	L1819562-08	Water	05/25/18
A1-MW-53-SA1MS	L1819562-03MS	Water	05/25/18
A1-MW-53-SA1MSD	L1819562-03MSD	Water	05/25/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-01-SA1 and A1-MW-01-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ug/L)				
Compound	A1-MW-01-SA1	A1-MW-01-SA1D	RPD (Limits)	Flag	A or P
1,4-Dioxane	1840	1880	2 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1819562

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1819562

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1819562

No Sample Data Qualified in this SDG

LDC #: 42613I2b

SDG #: L1819562

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer:

2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D = 6+7
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	L1819562-01	Water	05/25/18
2	A1-MW-54-SA1	L1819562-02	Water	05/25/18
3	A1-MW-53-SA1	L1819562-03	Water	05/25/18
4	A1-PZ-19-SA1	L1819562-04	Water	05/25/18
5	A1-MW-52-SA1	L1819562-05	Water	05/25/18
6	A1-MW-01-SA1	L1819562-06	Water	05/25/18
7	A1-MW-01-SA1D	L1819562-07	Water	05/25/18
8	A1-MW-31-SA1	L1819562-08	Water	05/25/18
9	A1-MW-53-SA1MS	L1819562-03MS	Water	05/25/18
10	A1-MW-53-SA1MSD	L1819562-03MSD	Water	05/25/18
11				
12				
13				

LDC#: 42613I2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: Q
2nd Reviewer: KK

METHOD: GCMS SVOA 8270D-SIM

Compound	Concentration (ng/L)		(≤30) RPD	Qual
	6	7		
1,4-Dioxane	1840	1880	2	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613I2b.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1820050

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-27-SA1	L1820050-01	Water	05/30/18
A1-MW-55-SA1	L1820050-02	Water	05/30/18
A1-MW-23-SA1	L1820050-03	Water	05/30/18
A1-MW-07-SA1	L1820050-04	Water	05/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-23-SA1	All compounds reported below the RL.	J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results below the RL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1820050

Sample	Compound	Flag	A or P	Reason
A1-MW-23-SA1	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1820050

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1820050

No Sample Data Qualified in this SDG

LDC #: 42613J2b

SDG #: L1820050

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/12/18

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD≤15%. ICV≤20%
IV.	Continuing calibration	A	CCV≤20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-27-SA1	L1820050-01	Water	05/30/18
2	A1-MW-55-SA1	L1820050-02	Water	05/30/18
3	A1-MW-23-SA1	L1820050-03	Water	05/30/18
4	A1-MW-07-SA1	L1820050-04	Water	05/30/18
5				
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1820175

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
EB-20180531	L1820175-01	Water	05/31/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB-20180531 was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1820175

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1820175

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1820175

No Sample Data Qualified in this SDG

LDC #: 42613K2b

SDG #: L1820175

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: RK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB=1
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/6
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	EB-20180531	L1820175-01	Water	05/31/18
2				
3				
4				
5				
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 16, 2018

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1801037

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-18-SA1	1801037-01	Water	05/23/18
16-MW-08-SA1	1801037-02	Water	05/23/18
A1-MW-19-SA1	1801037-03	Water	05/23/18
A1-MW-37-SA1	1801037-04	Water	05/23/18
A1-MW-37-SA1D	1801037-05	Water	05/23/18
16-HS-03-SA1	1801037-06	Water	05/23/18
16-MW-09-SA1	1801037-07	Water	05/23/18
16-MW-06-SA1	1801037-08	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration point, the percent differences (%D) for their true value were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample FRB-20180523 was identified as a field rinsate blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	PFHpA PFHxS PFOA	140 (70-130) 146 (70-130) 131 (70-130)	- - -	J (all detects) J (all detects) J (all detects)	A
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	PFDA PFDoA PFTrDA	132 (70-130) 136 (70-130) 136 (70-130)	- - 133 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	PFHpA	49.6 (≤30)	J (all detects)	A
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	NMeFOSAA	41.1 (≤30)	NA	-

For 16-HS-03-SA1MS/MSD, no data were qualified for PFBS and PFHxA percent recoveries (%R) and relative percent differences (RPD) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

VIII. Ongoing Precision Recovery

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

OPR ID (Associated Samples)	Compound	%R (Limits)	Flag	A or P
B8E0244-BS1 (All samples in SDG 1801037)	PFTrDA	153 (70-130)	NA	-

IX. Field Duplicates

Samples A1-MW-37-SA1 and A1-MW-37-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	A1-MW-37-SA1	A1-MW-37-SA1D			
PFBS	0.230	0.252	9 (≤30)	-	-
PFHxA	1.66	1.71	3 (≤30)	-	-
PFHpA	0.0328	0.0322	Not calculable	-	-
PFHxS	0.155	0.152	2 (≤30)	-	-
PFOA	0.0196	0.0203	Not calculable	-	-
PFNA	0.00170	0.00210	Not calculable	-	-
PFOS	0.0458	0.0416	Not calculable	-	-
PFUnA	0.00525U	0.00135	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

X. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Sample	Internal Standards	Area (Limits)	Affected Compound	Flag	A or P
A1-MW-18-SA1	^{13}C3-PFBS	170 (50-150)	PFBS	J (all detects)	P
16-MW-08-SA1	^{13}C3-PFBS	187 (50-150)	PFBS	J (all detects)	P
A1-MW-19-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P
A1-MW-37-SA1	^{13}C3-PFBS	228 (50-150)	PFBS	J (all detects)	P
A1-MW-37-SA1D	^{13}C3-PFBS	161 (50-150)	PFBS	J (all detects)	P
16-HS-03-SA1	^{13}C3-PFBS	154 (50-150)	PFBS	J (all detects)	P
16-MW-09-SA1	^{13}C3-PFBS	153 (50-150)	PFBS	J (all detects)	P
16-MW-06-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P

XI. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D 16-MW-09-SA1 16-MW-06-SA1	All compounds reported below the LOQ.	J (all detects)	A

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and RPD, internal standard %R, and results below the LOQ, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1801037

Sample	Compound	Flag	A or P	Reason
16-HS-03-SA1	PFHpA PFHxS PFOA	J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
16-HS-03-SA1	PFHpA	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D 16-HS-03-SA1 16-MW-09-SA1 16-MW-06-SA1	PFBS	J (all detects)	P	Internal standards (%R)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D 16-MW-09-SA1 16-MW-06-SA1	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1801037

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1801037

No Sample Data Qualified in this SDG

LDC #: 42613M96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801037 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: IKK

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD ≤ 20% or r^2 True value/ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	FRB = 9
~~VII.~~	~~Surrogate spikes~~	N	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	SW	OPR
X.	Field duplicates	SW	D = 1-5
XI.	Internal standards	SW	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA1**	1801037-01**	Water	05/23/18
2	16-MW-08-SA1**	1801037-02**	Water	05/23/18
3	A1-MW-19-SA1**	1801037-03**	Water	05/23/18
4	A1-MW-37-SA1**	1801037-04**	Water	05/23/18
5	A1-MW-37-SA1D**	1801037-05**	Water	05/23/18
6	16-HS-03-SA1**	1801037-06**	Water	05/23/18
7	16-MW-09-SA1**	1801037-07**	Water	05/23/18
8	16-MW-06-SA1**	1801037-08**	Water	05/23/18
9	FRB-20180523	1801037-09	Water	05/23/18
10	16-HS-03-SA1MS	1801037-06MS	Water	05/23/18
11	16-HS-03-SA1MSD	1801037-06MSD	Water	05/23/18
12				
13				
14				

LDC #: 42613496

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: WC

Method: LC/MS PFOS/PFOAs (EPA Method 537M)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the S/N ratio for all compounds within validation criteria?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			
IIIb.Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 30%	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 30%	✓			
Were the S/N ratio for all compounds within validation criteria?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Laboratory Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		
VII. Surrogate spikes				
Were all surrogate %R within the QC limits?			✓	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Matrix spike/Matrix spike duplicates				

LDC #: 42613M96

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: KK

Validation Area	Yes	No	NA	Findings/Comments
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IV. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
X. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XI. Internal standards				
Were internal standard area counts within acceptance limits?	✓			
XII. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XIII. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 6:2FTS			
S. 8:2 FTS			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			

LDC #: 42613M96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates/Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) or duplicate sample analyzed for each matrix in this SDG?
Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?
Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?
Y N N/A Were all duplicate sample relative percent differences (RPD) or differences within QC limits?

#	Date	MS/MSD/DUP ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		10/11	PFBS	182 (70-130)		45.9 (≤30)	6 (dets)	No Qual >4xSA
			PFHxA	-21.0 (↓)		32.9 (↓)	↓	↓
			PFHpA	140 (70-130)			↓	dets/A
			PFHxS	146 (↓)			↓	↓
			PFOA	131 (↓)			↓	↓
			PFDA	132 (↓)			(ND)	↓
			PFDoA	136 (↓)			↓	↓
			PFTxDA	136 (↓)	133 (70-130)		↓	↓
			PFHpA			49.6 (≤30)	(dets)	dets/A
			MeFOSAA			41.1 (↓)	(ND)	↓

LDC #: 42623M96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a LCS required?

Y (N) N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	BBE0244-BS1		( )	( )	( )		
	B		( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	BBE0244-BS1	PFTeDA	153 (70-130)	( )	( )	All (ND)	J+ (all samples)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )	

LDC#: 42613M96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: KK

METHOD: PFCs

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	4	5		
PFBS	0.230	0.252	9	
PFHxA	1.66	1.71	3	
PFHpA	0.0328	0.0322	~~2~~ NC	
PFHxS	0.155	0.152	2	
PFOA	0.0196	0.0203	~~4~~ NC	
PFNA	0.00170	0.00210	~~21~~ NC	
PFOS	0.0458	0.0416	~~10~~ NC	
PFUnA	0.00525U	0.00135	NC	

LDC #: 4-163496

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dets)	13C3-PFBS	170 (50-150)		J (4 PFBS)
		2		187		
		3		214		
		4		228		
		5		161		
		6		154		
		7		153		
		8		214		
		10 (MS)		167		No qual
		11 (MSD)		165		

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LDC #: 46634 96

Validation Findings Worksheet
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: KK

Method: PFCs (EPA Method 537)

Calibration Date	Instrument/Column	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
6/6/2018	M2	PFBS	0	0.51953	0.25	0.0625
			s1	0.9040925	0.5	0.25
			s2	1.9572675	1	1
			s3	3.7049862	2	4
			s4	10.06541	5	25
			s5	19.886856	10	100
			s6	99.722347	50	2500
			s7	204.60758	100	10000
			s8	513.09516	250	62500
			s9	1017.3084	500	250000

Regression Output	Calculated		*Reported*	
Constant	c	-0.63805	c	-0.0700934
Std Err of Y Est				
R Squared		0.9999897		0.9999340
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	2.063159148	-5.34413E-05	2.03725	2.30679E-06
Std Err of Coef.				
Correlation Coefficient		0.999995		
Coefficient of Determination (r^2)		0.999990		

Validation Findings Worksheet
Initial Calibration Calculation Verification

Method: PFCs (EPA Method 537)

Calibration Date	Instrument/Column	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
6/6/2018	M2	PFOA	0	0.2482712	0.25	0.0625
			s1	0.5747737	0.5	0.25
			s2	1.0592625	1	1
			s3	1.846235	2	4
			s4	4.6900387	5	25
			s5	10.243193	10	100
			s6	51.521462	50	2500
			s7	93.85144027	100	10000
			s8	228.044994	250	62500
			s9	451.7265496	500	250000

Regression Output	Calculated		*Reported*	
Constant	c	0.76340	c	0.0441882
Std Err of Y Est				
R Squared		0.9998726		0.9994240
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	0.931889278	-6.1517E-05	0.964706	-0.000132122
Std Err of Coef.				
Correlation Coefficient		0.999936		
Coefficient of Determination (r^2)		0.999873		

Validation Findings Worksheet
Initial Calibration Calculation Verification

Method: PFCs (EPA Method 537)

Calibration Date	Instrument/Column	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
6/13/2018	M2	PFHxA	0	0.4266035	0.25	0.0625
			s1	0.97093	0.5	0.25
			s2	1.9639255	1	1
			s3	3.6634565	2	4
			s4	8.4481905	5	25
			s5	15.881127	10	100
			s6	85.352945	50	2500
			s7	154.4073192	100	10000
			s8	412.8312447	250	62500
			s9	789.7483287	500	250000

Regression Output	Calculated		*Reported*	
Constant	c	-0.57068	c	0.0713566
Std Err of Y Est				
R Squared		0.9997320		0.9993330
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.676648676	-0.000187679	1.64736	-0.000124659
Std Err of Coef.				
Correlation Coefficient		0.999866		
Coefficient of Determination (r^2)		0.999732		

LDC #: 26BU96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 1
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	18060TM2_3	6/7/18	PFBS (1st internal standard)	1.0	0.913	0.911	8.7	8.9
			PFOA (2nd internal standard)	1.0	1.05	1.06	5.4	5.8
			(3rd internalstandard)					
2	18060TM2_28	6/7/18	PFBS (1st internal standard)	10.0	9.27	9.27	7.3	7.3
			PFOA (2nd internal standard)	10.0	9.52	9.53	4.8	4.7
			(3rd internalstandard)					
3	18060TM2_45	6/7/18	PFBS (1st internal standard)	1.0	0.885	0.884	11.5	11.8
			PFOA (2nd internal standard)	1.0	1.10	1.10	9.8	10.1
			(3rd internalstandard)					
4	18061TM2_40	6/13/18	PFHxA (1st internal standard)	10.0	10.4	10.4	4.2	4.5
			(2nd internal standard)					
			(3rd internalstandard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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LDC #: 4963M90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MSC - MSC | * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 10/11

Compound	Spike Added (ng/L)		Sample Concentration (ng/L)	Spiked Sample Concentration (ng/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
PFBS	0.0907	0.0883	0.582	0.746	0.682	182	181	114	113	~~45.9~~	45.9
PFOA	↓	↓	0.0218	0.141	0.113	131	131	103	103	23.9	23.9

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BBE0244-BS1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PFBS	0.0800	NA	0.0918	NA	115	115				
PFOA	↓	↓	0.0941	↓	118	118				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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LDC #: 426BH96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, PFOA:

Conc. = $\frac{-0.964706 + \sqrt{(0.964706)^2 - 4 \times (-0.00013212)\left(\frac{-180 \times 12^5}{9070} + 0.0448\right)}}{(2)(-0.00013212)(2)(0.113)}$

= 1.87 ng/L

= 0.00187 µg/L

#	Sample ID	Compound	Reported Concentration (µg/L)	Calculated Concentration ( )	Qualification
	1	PFOA	0.00187		

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
ATTN: Ms. Sabina Sudoko

January 2, 2019

SUBJECT: MCAS Yuma, CTO 3803, Data Validation

Dear Ms. Sudoko,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on December 10, 2018. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #43888:

SDG #	Fraction
280-116898-1, 280-116942-1 280-117007-1, 280-117103-1 280-117110-1, L1846366 L1846592, L1846856 L1847243, L1847316 1803615, 1803626 1803659, 1803676 1803678	Volatiles, 1,4-Dioxane, Wet Chemistry, Perfluoroalkyl and Polyfluoroalkyl Substances

The data validation was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona; April 2018
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1; 2017
- USEPA National Functional Guidelines for Superfund Organic Methods Data Review; January 2017
- USEPA National Functional Guidelines for Inorganic Superfund Data Review; January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

Stage 2B/4 ADR/NEDD 80/20

LDC #43888 (Tetra Tech-EC, Inc.-Irvine, CA / MCAS Yuma, CTO 3803)

PO# 1153059

LDC	SDG#	DATE REC'D	(3) DATE DUE	(3) VOA (8260B)		1,4-Diox (8270D -SIM)		PFAs (537)		Cl,SO_4 NO_3-N (9056A)		Fe II (3500 -Fe B)		pH (9040C)																							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	280-116898-1	12/10/18	01/02/19	1	0	-	-	-	-	1	0	1	0	1	0																				
A	280-116898-1	12/10/18	01/02/19	8	0	-	-	-	-	6	0	6	0	6	0																				
B	280-116942-1	12/10/18	01/02/19	9	0	-	-	-	-	7	0	7	0	7	0																				
C	280-117007-1	12/10/18	01/02/19	7	0	-	-	-	-	6	0	6	0	6	0																				
D	280-117103-1	12/10/18	01/02/19	8	0	-	-	-	-	6	0	6	0	6	0																				
E	280-117110-1	12/10/18	01/02/19	4	0	-	-	-	-	2	0	2	0	2	0																				
F	L1846366	12/10/18	01/02/19	-	-	1	0	-	-	-	-	-	-	-	-																				
F	L1846366	12/10/18	01/02/19	-	-	7	0	-	-	-	-	-	-	-	-																				
G	L1846592	12/10/18	01/02/19	-	-	8	0	-	-	-	-	-	-	-	-																				
H	L1846856	12/10/18	01/02/19	-	-	6	0	-	-	-	-	-	-	-	-																				
I	L1847243	12/10/18	01/02/19	-	-	7	0	-	-	-	-	-	-	-	-																				
J	L1847316	12/10/18	01/02/19	-	-	3	0	-	-	-	-	-	-	-	-																				
K	1803615	12/10/18	01/02/19	-	-	-	-	1	0	-	-	-	-	-	-																				
K	1803615	12/10/18	01/02/19	-	-	-	-	8	0	-	-	-	-	-	-																				
L	1803626	12/10/18	01/02/19	-	-	-	-	9	0	-	-	-	-	-	-																				
M	1803659	12/10/18	01/02/19	-	-	-	-	7	0	-	-	-	-	-	-																				
N	1803676	12/10/18	01/02/19	-	-	-	-	8	0	-	-	-	-	-	-																				
O	1803678	12/10/18	01/02/19	-	-	-	-	4	0	-	-	-	-	-	-																				
Total	T/SM			37	0	32	0	37	0	28	0	28	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	190

Shaded cells indicate Stage 4 validation (all other cells are ADR validation).

Data Validation Report
MCAS Yuma, CTO 3803

SDGs: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1, L1846366, L1846592, L1846856, L1847243, L1847316, 1803615, 1803626, 1803659, 1803676, and 1803678

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January 2, 2019

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2B and Stage 4 data validation results for samples collected during the November 2018 sampling period. Data validation was performed in accordance with the Final Sampling and Analysis Plan (SAP) for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), a modified outline of the US EPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017), and a modified outline of the US EPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B
1,4-Dioxane by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by EPA Method 537 Modified

Wet Chemistry:
Chloride, Nitrate as Nitrogen, and Sulfate by EPA SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

For samples reviewed by automated data review, the sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2B Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which Stage 4 validation was performed are presented in Enclosure II. Validation for 1,4-Dioxane was performed manually and DVRs for Stage 2B and Stage 4 manual validation are also presented in Enclosure II.

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, initial and continuing calibration blanks (ICB/CCBs), surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ongoing precision recovery (OPR), internal standards, trip blanks, equipment blanks, field rinsate blanks, and field duplicates. Approximately 20 percent of samples were subjected to Stage 4 evaluation as indicated in Attachment 1, which comprises a review of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the calibrations, ICB/CCBs, and internal standards, and all QC for 1,4-Dioxane, which were validated manually. Quality assurance (QA)/QC criteria specified in the SAP, DoD QSM, and NFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not applicable): Data did not warrant qualification since detected results only are affected and the compound was not detected in the associated samples.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt & Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met with the exception of eight samples for PFAs, twenty-eight samples for pH, one sample for nitrate as N, and twenty-eight samples for ferrous iron. Due to grossly exceeded holding times (e.g., >2x recommended holding time), 23 ferrous iron results were qualified as rejected (R). The remainder of the data were qualified as detected estimated (J) and non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

II. Instrument Performance Check

A tune was performed at 12 hour intervals as required by the methods.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

All criteria for the initial calibration and initial calibration verifications of each method were met.

IV. Continuing Calibration

All criteria for the continuing calibration verifications of each method were met with the following exceptions:

SDG/ Method	Date	Compound	%D (Limits)	Associated Samples	Flag	A or P
1803676/ 537 Mod.	12/03/18	PFTeDA	42.4 (≤30)	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-37-SA2 A1-MW-37-SA2D FRB-20181115 A1-MW-31-SA2	UJ (all non-detects)	A
1803678/ 537 Mod.	12/03/18	PFTeDA	42.4 (≤30)	A1-MW-01-SA2 A1-MW-42-SA2 FRB-20181116 EB-20181116	UJ (all non-detects)	A

V. Laboratory Blanks

Laboratory blanks were performed as required by the methods. No contaminant concentrations were detected in the laboratory blanks reviewed by the ADR software program with the exception of several blanks for chloride, nitrate as N, and sulfate. The associated sample results were not detected or were significantly greater than the concentrations found in the blanks, therefore no data were qualified. The details are presented in Enclosures I and II.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the following exceptions:

SDG/ Method	Laboratory Blank ID	Analyte	Maximum Concentration	Associated Samples
280-116898-1/ 9056A	ICB/CCB	Nitrate as Nitrogen Sulfate	0.04526 mg/L 0.3841 mg/L	A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-51-SA2 A1-PZ-19-SA2 A1-MW-52-SA2
280-116942-1/ 9056A	ICB/CCB	Sulfate	0.6931 mg/L	16-HS-03-SA2 16-MW-06-SA2 16-MW-08-SA2 16-MW-09-SA2 A1-MW-19-SA2
280-116942-1/ 9056A	ICB/CCB	Chloride	0.3086 mg/L	16-MW-06-SA2 16-MW-08-SA2 16-MW-09-SA2 A1-MW-53-SA2
280-117007-1/ 9056A	ICB/CCB	Chloride	0.2558 mg/L	A1-MW-07-SA2 A1-MW-23-SA2 A1-MW-25-SA2 A1-MW-27-SA2 A1-MW-55-SA2
280-117007-1/ 9056A	ICB/CCB	Chloride	0.2618 mg/L	A1-MW-54-SA2
280-117103-1/ 9056A	ICB/CCB	Chloride Sulfate	0.2982 mg/L 0.4094 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-37-SA2 A1-MW-31-SA2
280-117103-1/ 9056A	ICB/CCB	Nitrate as N	0.04805 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-37-SA2
280-117103-1/ 9056A	ICB/CCB	Nitrate as N	0.04749 mg/L	A1-MW-31-SA2
280-117110-1/ 9056A	ICB/CCB	Chloride Sulfate	0.6147 mg/L 0.3987 mg/L	A1-MW-42-SA2

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were not detected or were significantly greater than the concentrations found in the associated blanks.

VI. Field Blank Samples

Five trip blanks were collected and analyzed for VOCs. No contaminants were found.
One equipment blank was collected and analyzed for VOCs and PFAs. No contaminants were found.

Five field rinsate blanks were collected and analyzed for PFAs. No contaminants were found.

VII. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of sample EB-20181116 in SDG 280-117110-1 for VOCs. No data were qualified due to high %Rs since the associated results were non-detected.

IX. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for 1,1-dichloroethene, one MS/MSD pair for PFTeDA, one MS/MSD pair for sulfate, three MS/MSD pairs for ferrous iron. The ferrous iron results in sample A1-MW-42-SA2 was qualified as rejected (R) due to MS/MSD %Rs grossly outside QC limits (i.e., < 30%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

X. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

XII. Laboratory Control Samples/Ongoing Precision Recovery

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

Ongoing precision recovery (OPR) samples were analyzed as required by Method 537 Mod. Percent recoveries (%R) were within QC limits with the exception of two OPR samples for PFTeDA. No data were qualified due to high %Rs since the associated results were non-detected. The details are presented in Enclosure I.

XIII. Field Duplicate Samples

Three field duplicate pairs were collected and analyzed for all methods. All RPDs were within QC limits. RPDs were not calculated when sample results in one or both samples were less than 5X the limit of quantitation (LOQ). The field duplicate result comparisons are provided in Enclosures I and II.

XIV. Internal Standards/Labeled Compounds

All internal standard areas and retention times were within QC limits. All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XV. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

The laboratory indicated that the parent/product transition ion ratios met laboratory requirements with the following exceptions:

SDG/Method	Sample	Compound	Finding
1803615/537M	A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.
1803626/537M	A1-MW-53-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.
1803659/537M	A1-MW-25-SA2 A1-MW-54-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.
1803678/537M	A1-MW-01-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.

Since there are no established transition ion ratio requirements in the validation documents for this project, using professional judgment, no data were qualified.

All compounds reported below the LOQ as detected by the laboratory were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosures I and II.

XVI. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to severe holding time exceedances, data were qualified as rejected in twenty-three samples.

Due to gross MS/MSD %R exceedance, data were qualified as rejected in one sample.

Due to holding time exceedances, data were qualified as estimated in thirty samples.

Due to CCV %D, data were qualified as estimated in twelve samples.

Due to MS/MSD %R, data were qualified as estimated in one sample.

Due to results below the LOQ, data were qualified as estimated in twenty-two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
12-Nov-2018	TB-20181112	280-116898-7	TB	METHOD	8260B	Stage 2B
12-Nov-2018	A1-MW-49-SA2	1803615-03	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-50-SA2	1803615-04	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-50-SA2DUP	280-116898-4DUP	DUP	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2MS	280-116898-4MS	MS	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-50-SA2MS	280-116898-4MS	MS	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2MSD	280-116898-4MSD	MSD	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-50-SA2MSD	280-116898-4MSD	MSD	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2D	1803615-05	FD	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-50-SA2D	280-116898-5	FD	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-51-SA2	1803615-06	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	9040C	Stage 2B
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	9056A	Stage 2B
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	SM3500 Fe B D	Stage 2B
12-Nov-2018	A1-MW-04-SA2	1803615-01	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	9040C	Stage 4

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-PZ-19-SA2	1803615-09	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-52-SA2	1803615-07	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-05-SA2	1803615-02	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	FRB-20181112	1803615-08	FRB	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	TB-20181113	280-116942-7	TB	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-06-SA2	1803626-02	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	9040C	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-06-SA2DUP	280-116942-2DUP	DUP	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-06-SA2MS	280-116942-2MS	MS	METHOD	9056A	Stage 2B

N = Normal Sample *MS = Matrix Spike* *DUP = Laboratory Duplicate*
FD = Field Duplicate *MSD = Matrix Spike Duplicate*
TB = Trip Blank *EB = Equipment Blank* *FRB = Field Rinsate Blank*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
13-Nov-2018	16-MW-06-SA2MSD	280-116942-2MSD	MSD	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-18-SA2	1803626-05	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	8260B	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	9040C	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	A1-MW-19-SA2	1803626-06	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	8260B	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	9040C	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-HS-03-SA2	1803626-01	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	9040C	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-HS-03-SA2D	1803626-09	FD	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-HS-03-SA2D	280-116942-9	FD	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-08-SA2	1803626-03	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	9040C	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2	1803626-04	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	9040C	Stage 2B

N = Normal Sample *MS = Matrix Spike* *DUP = Laboratory Duplicate*
FD = Field Duplicate *MSD = Matrix Spike Duplicate*
TB = Trip Blank *EB = Equipment Blank* *FRB = Field Rinsate Blank*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2DUP	280-116942-4DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2MS	280-116942-4MS	MS	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2MSD	280-116942-4MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	A1-MW-53-SA2	1803626-08	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	8260B	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	9040C	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	FRB-20181113	1803626-07	FRB	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	TB-20181114	280-117007-6	TB	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-07-SA2	1803659-01	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-07-SA2MS	280-117007-1MS	MS	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-07-SA2MSD	280-117007-1MSD	MSD	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-23-SA2	1803659-02	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-55-SA2	1803659-05	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	8260B	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-25-SA2	1803659-03	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-27-SA2	1803659-04	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	FRB-20181114	1803659-07	FRB	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-54-SA2	1803659-06	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-54-SA2DUP	280-117007-7DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-54-SA2MS	280-117007-7MS	MS	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-54-SA2MSD	280-117007-7MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	TB-20181115	280-117103-7	TB	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-13-SA2	1803676-02	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	9040C	Stage 2B

N = Normal Sample
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MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-11-SA2	1803676-01	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-15-SA2	1803676-04	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-14-SA2	1803676-03	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-14-SA2DUP	280-117103-3DUP	DUP	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-37-SA2	1803676-05	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-37-SA2D	1803676-06	FD	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-37-SA2D	280-117103-6	FD	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-31-SA2	1803676-08	N	Gen Prep	537 MOD	Stage 2B

N = Normal Sample *MS = Matrix Spike* *DUP = Laboratory Duplicate*
FD = Field Duplicate *MSD = Matrix Spike Duplicate*
TB = Trip Blank *EB = Equipment Blank* *FRB = Field Rinsate Blank*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	FRB-20181115	1803676-07	FRB	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	TB-20181116	280-117110-3	TB	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-01-SA2	1803678-01	N	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	9040C	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	9056A	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-01-SA2MS	280-117110-1MS	MS	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-01-SA2MSD	280-117110-1MSD	MSD	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-42-SA2	1803678-02	N	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	9040C	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	9056A	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-42-SA2DUP	280-117110-2DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-42-SA2MS	280-117110-2MS	MS	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-42-SA2MSD	280-117110-2MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	FRB-20181116	1803678-03	FRB	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	EB-20181116	1803678-04	EB	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	EB-20181116	280-117110-4	EB	METHOD	8260B	Stage 2B
19-Nov-2018	A1-MW-50-SA2MS	B8K0091-MS1	MS	Gen Prep	537 MOD	Stage 4
19-Nov-2018	A1-MW-50-SA2MSD	B8K0091-MSD1	MSD	Gen Prep	537 MOD	Stage 4

N = Normal Sample *MS = Matrix Spike* *DUP = Laboratory Duplicate*
FD = Field Duplicate *MSD = Matrix Spike Duplicate*
TB = Trip Blank *EB = Equipment Blank* *FRB = Field Rinsate Blank*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-Nov-2018	A1-MW-01-SA2MS	B8K0153-MS1	MS	Gen Prep	537 MOD	Stage 2B
30-Nov-2018	A1-MW-01-SA2MSD	B8K0153-MSD1	MSD	Gen Prep	537 MOD	Stage 2B

N = Normal Sample
FD = Field Duplicate
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MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Attachment 2

Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

11/12/2018 11:40:00

Sample ID: **A1-MW-04-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 2:24:00

Sample ID: **A1-MW-05-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 8:32:00

Sample ID: **A1-MW-49-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 9:25:00

Sample ID: **A1-MW-50-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 10:46:00

Sample ID: **A1-MW-51-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 1:39:00

Sample ID: **A1-MW-52-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: EM

Method: 9040C ***Matrix:*** AQ

Sample ID: A1-PZ-19-SA2 ***Collected:*** 11/12/2018 12:43:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM

Method: 9056A ***Matrix:*** AQ

Sample ID: A1-PZ-19-SA2 ***Collected:*** 11/12/2018 12:43:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	0.896	J B	0.200	LOD	1.00	LOQ	mg/L	J	RI

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-04-SA2 ***Collected:*** 11/12/2018 11:40:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-05-SA2 ***Collected:*** 11/12/2018 2:24:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.119	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: A1-MW-49-SA2 ***Collected:*** 11/12/2018 8:32:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA2** ***Collected:*** **11/12/2018 9:25:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.380	HF	0.0500	LOD	0.200	LOQ	mg/L	J	StoA

Sample ID: **A1-MW-51-SA2** ***Collected:*** **11/12/2018 10:46:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0278	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: **A1-MW-52-SA2** ***Collected:*** **11/12/2018 1:39:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-PZ-19-SA2** ***Collected:*** **11/12/2018 12:43:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0591	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA2** ***Collected:*** **11/12/2018 9:25:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.564	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.780	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-50-SA2D** ***Collected:*** **11/12/2018 9:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.630	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA2D** ***Collected:*** **11/12/2018 9:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.949	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-52-SA2** ***Collected:*** **11/12/2018 1:39:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.458	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.811	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-PZ-19-SA2** ***Collected:*** **11/12/2018 12:43:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.430	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-116942-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **16-HS-03-SA2** ***Collected:*** **11/13/2018 12:00:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.4	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **16-MW-06-SA2** ***Collected:*** **11/13/2018 9:38:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.2	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116942-1

Method Category: EM

Method: 9040C **Matrix: AQ**

Sample ID:16-MW-08-SA2 **Collected: 11/13/2018 1:00:00 PM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:16-MW-09-SA2 **Collected: 11/13/2018 1:44:00 PM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:A1-MW-18-SA2 **Collected: 11/13/2018 10:31:00 AM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:A1-MW-19-SA2 **Collected: 11/13/2018 11:15:00 AM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:A1-MW-53-SA2 **Collected: 11/13/2018 2:54:00 PM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM

Method: 9056A **Matrix: AQ**

Sample ID:16-MW-06-SA2 **Collected: 11/13/2018 9:38:00 AM** **Analysis Type: RE/TOT** **Dilution: 10**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Sulfate	695	F1	5.00	LOD	50.0	LOQ	mg/L	J	Ms

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116942-1

Method Category: GENCHEM

Method: 9056A ***Matrix:*** AQ

Sample ID: A1-MW-18-SA2 ***Collected:*** 11/13/2018 10:31:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 5

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	11.0	H	0.500	LOD	2.50	LOQ	mg/L	J	StoA

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: 16-HS-03-SA2 ***Collected:*** 11/13/2018 12:00:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: 16-MW-06-SA2 ***Collected:*** 11/13/2018 9:38:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: 16-MW-08-SA2 ***Collected:*** 11/13/2018 1:00:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: 16-MW-09-SA2 ***Collected:*** 11/13/2018 1:44:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF F1	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-18-SA2 ***Collected:*** 11/13/2018 10:31:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116942-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-19-SA2 ***Collected:*** 11/13/2018 11:15:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-53-SA2 ***Collected:*** 11/13/2018 2:54:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: 16-MW-06-SA2 ***Collected:*** 11/13/2018 9:38:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.195	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: 16-MW-08-SA2 ***Collected:*** 11/13/2018 1:00:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.538	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: 16-MW-09-SA2 ***Collected:*** 11/13/2018 1:44:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.271	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-19-SA2 ***Collected:*** 11/13/2018 11:15:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.545	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1,

Laboratory: TA DEN

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-117007-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA2** ***Collected:*** **11/14/2018 9:07:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-23-SA2** ***Collected:*** **11/14/2018 10:03:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-25-SA2** ***Collected:*** **11/14/2018 12:15:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-27-SA2** ***Collected:*** **11/14/2018 1:03:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-54-SA2** ***Collected:*** **11/14/2018 3:17:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-55-SA2** ***Collected:*** **11/14/2018 11:02:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117007-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

11/14/2018 9:07:00

Sample ID: **A1-MW-07-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 10:03:00

Sample ID: **A1-MW-23-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 12:15:00

Sample ID: **A1-MW-25-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 1:03:00

Sample ID: **A1-MW-27-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 3:17:00

Sample ID: **A1-MW-54-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF F1	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 11:02:00

Sample ID: **A1-MW-55-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117007-1

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-07-SA2 ***Collected:*** 11/14/2018 9:07:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.357	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.826	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-25-SA2 ***Collected:*** 11/14/2018 12:15:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.273	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.539	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-117103-1

Method Category: EM

Method: 9040C ***Matrix:*** AQ

Sample ID: A1-MW-11-SA2 ***Collected:*** 11/15/2018 9:06:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-13-SA2 ***Collected:*** 11/15/2018 8:20:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-14-SA2 ***Collected:*** 11/15/2018 10:53:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117103-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

11/15/2018 10:07:00

Sample ID: **A1-MW-15-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/15/2018 2:16:00

Sample ID: **A1-MW-31-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/15/2018 11:54:00

Sample ID: **A1-MW-37-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

11/15/2018 9:06:00

Sample ID: **A1-MW-11-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/15/2018 8:20:00

Sample ID: **A1-MW-13-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/15/2018 10:53:00

Sample ID: **A1-MW-14-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117103-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-15-SA2 ***Collected:*** 11/15/2018 10:07:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-31-SA2 ***Collected:*** 11/15/2018 2:16:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-37-SA2 ***Collected:*** 11/15/2018 11:54:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.156	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-14-SA2 ***Collected:*** 11/15/2018 10:53:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.635	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.728	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-15-SA2 ***Collected:*** 11/15/2018 10:07:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.426	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-37-SA2 ***Collected:*** 11/15/2018 11:54:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.379	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117103-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-37-SA2** ***Collected:*** **11/15/2018 11:54:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.914	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-37-SA2D** ***Collected:*** **11/15/2018 12:04:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.373	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.909	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-117110-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-01-SA2** ***Collected:*** **11/16/2018 8:12:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-42-SA2** ***Collected:*** **11/16/2018 9:17:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-01-SA2** ***Collected:*** **11/16/2018 8:12:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117110-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-42-SA2 ***Collected:*** 11/16/2018 9:17:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF F1	0.0500	LOD	0.200	LOQ	mg/L	R	Ms, StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-42-SA2 ***Collected:*** 11/16/2018 9:17:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.238	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.367	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1,

Laboratory: TA DEN

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
RI	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
StoA	Sampling to Analysis Rejection
Surr	Surrogate/Tracer Recovery Upper Estimation

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803615

Method Category: SVOA

Method: 537 MOD **Matrix:** AQ

11/12/2018 11:40:

Sample ID: A1-MW-04-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00646	J	0.00442	LOD	0.00881	LOQ	ug/L	J	RI

11/12/2018 2:24:0

Sample ID: A1-MW-05-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHxS	0.00359	J, Q	0.00431	LOD	0.00864	LOQ	ug/L	J	RI

11/12/2018 9:25:0

Sample ID: A1-MW-50-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00474	J, Q	0.00446	LOD	0.00894	LOQ	ug/L	J	RI

11/12/2018 9:35:0

Sample ID: A1-MW-50-SA2D **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00494	J	0.00439	LOD	0.00874	LOQ	ug/L	J	RI

11/12/2018 1:39:0

Sample ID: A1-MW-52-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00356	J	0.00435	LOD	0.00872	LOQ	ug/L	J	RI

11/12/2018 12:43:

Sample ID: A1-PZ-19-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00548	J	0.00442	LOD	0.00884	LOQ	ug/L	J	RI
PFOS	0.00321	J, Q	0.00442	LOD	0.00884	LOQ	ug/L	J	RI

SDG: 1803626

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803626

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/13/2018 9:38:0
Sample ID:16-MW-06-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00582	J	0.00417	LOD	0.00835	LOQ	ug/L	J	RI

11/13/2018 1:44:0
Sample ID:16-MW-09-SA2 **Collected:**PM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00449	J	0.00427	LOD	0.00852	LOQ	ug/L	J	RI
PFOS	0.00503	J	0.00427	LOD	0.00852	LOQ	ug/L	J	RI

11/13/2018 10:31:
Sample ID:A1-MW-18-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00309	J	0.00427	LOD	0.00856	LOQ	ug/L	J	RI

11/13/2018 11:15:
Sample ID:A1-MW-19-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFDA	0.00721	J	0.00431	LOD	0.00861	LOQ	ug/L	J	RI
PFNA	0.00398	J	0.00431	LOD	0.00861	LOQ	ug/L	J	RI

11/13/2018 2:54:0
Sample ID:A1-MW-53-SA2 **Collected:**PM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00400	J, Q	0.00420	LOD	0.00841	LOQ	ug/L	J	RI

SDG: 1803659

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/14/2018 10:03:
Sample ID:A1-MW-23-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHxS	0.00594	J	0.00424	LOD	0.00849	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA
Method: 537 MOD ***Matrix:*** AQ

11/15/2018 9:06:0

Sample ID: A1-MW-11-SA2 ***Collected:*** AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFBS	0.184		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFDoA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFHpA	0.0352		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxA	0.460		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxS	0.109		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFNA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFOS	0.00916		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFTeDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFUnA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFOA	0.0349		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE

11/15/2018 8:20:0

Sample ID: A1-MW-13-SA2 ***Collected:*** AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFBS	0.259		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFDA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFDoA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFHpA	0.105		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFHxA	0.655		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFHxS	0.368		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFNA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFOA	0.0695		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFOS	0.107		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFTeDA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFUnA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA

Method: 537 MOD **Matrix:** AQ

11/15/2018 10:53

Sample ID: A1-MW-14-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFBS	0.101		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFDoA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFHpA	0.0658		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxA	0.327		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxS	0.253		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFNA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFOA	0.0527		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFOS	0.0604		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFTeDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFUnA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE

11/15/2018 10:07

Sample ID: A1-MW-15-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFBS	0.363		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFDA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFDoA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFHpA	0.0773		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFHxA	0.596		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFHxS	0.322		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFNA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFOA	0.190		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFOS	0.0185		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFTeDA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFUnA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/15/2018 2:16:0

Sample ID: A1-MW-31-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFBS	0.0235		0.00427	LOD	0.00855	LOQ	ug/L	J	StoE
PFDA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFDoA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFHpA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFHxA	0.0732		0.00427	LOD	0.00855	LOQ	ug/L	J	StoE
PFHxS	0.00855		0.00427	LOD	0.00855	LOQ	ug/L	J	StoE
PFNA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFOA	0.00388	J	0.00427	LOD	0.00855	LOQ	ug/L	J	RI, StoE
PFOS	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFTeDA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFUnA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE

11/15/2018 11:54:

Sample ID: A1-MW-37-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFBS	0.151		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFDA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFDoA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFHpA	0.0856		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFHxA	0.520		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFHxS	0.438		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFNA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFOA	0.0599		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFOS	0.0288		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFTeDA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFUnA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA

Method: 537 MOD **Matrix:** AQ

11/15/2018 12:04:

Sample ID: A1-MW-37-SA2D **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFBS	0.150		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFDA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFDoA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFHpA	0.0830		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFHxA	0.529		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFHxS	0.429		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFNA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFOA	0.0555		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFOS	0.0275		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFTeDA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFUnA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE

11/15/2018 2:30:0

Sample ID: FRB-20181115 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFBS	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFDA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFDoA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFHpA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFHxA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFHxS	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFNA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFOA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFOS	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFTeDA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFUnA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803678

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/16/2018 8:12:0
Sample ID: A1-MW-01-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00446	U	0.00446	LOD	0.00894	LOQ	ug/L	UJ	Ccv

11/16/2018 9:17:0
Sample ID: A1-MW-42-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00424	U	0.00424	LOD	0.00849	LOQ	ug/L	UJ	Ccv

11/16/2018 9:50:0
Sample ID: EB-20181116 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00424	U	0.00424	LOD	0.00849	LOQ	ug/L	UJ	Ccv

11/16/2018 9:40:0
Sample ID: FRB-20181116 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00481	U	0.00481	LOD	0.00965	LOQ	ug/L	UJ	Ccv

* denotes a non-reportable result

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

Reason Code Legend

Reason Code	*Description*
Ccv	Continuing Calibration Verification Percent Difference Lower Estimation
Lcs	Laboratory Control Spike Upper Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value
StoE	Sampling to Extraction Estimation

* denotes a non-reportable result

Enclosure I

Stage 2B ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

280-116898-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: 280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA2 (RES/TOT)	Sampling To Analysis	267.00	24.00	HOURS	J (all detects)
A1-MW-05-SA2 (RES/TOT)		335.00	24.00	HOURS	
A1-MW-49-SA2 (RES/TOT)		341.00	24.00	HOURS	
A1-MW-50-SA2 (RES/TOT)		270.00	24.00	HOURS	
A1-MW-51-SA2 (RES/TOT)		268.75	24.00	HOURS	
A1-MW-52-SA2 (RES/TOT)		265.75	24.00	HOURS	
A1-PZ-19-SA2 (RES/TOT)		336.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA2 (RES/TOT)	Sampling To Analysis	222.75	24.00	HOURS	J(all detects)
A1-MW-05-SA2 (RES/TOT)		220.00	24.00	HOURS	R(all non-detects)
A1-MW-49-SA2 (RES/TOT)		226.00	24.00	HOURS	
A1-MW-50-SA2 (RES/TOT)		225.00	24.00	HOURS	
A1-MW-51-SA2 (RES/TOT)		223.75	24.00	HOURS	
A1-MW-52-SA2 (RES/TOT)		220.75	24.00	HOURS	
A1-PZ-19-SA2 (RES/TOT)		221.75	24.00	HOURS	

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: 280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437370/6	11/13/2018 12:25:00 PM	Sulfate	0.3332 mg/L	A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2
MB 280-437371/6	11/13/2018 12:25:00 PM	NITRATE	0.04530 mg/L	A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: 280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-50-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.564 0.780	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-50-SA2D	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.630 0.949	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-52-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.458 0.811	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-PZ-19-SA2	TRICHLOROETHENE	J	0.430	1.00	LOQ	ug/L	J (all detects)

Method: 9056A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-PZ-19-SA2	NITRATE	J B	0.896	1.00	LOQ	mg/L	J (all detects)

Method: SM3500 Fe B D
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-05-SA2	Ferrous Iron	J HF	0.119	0.200	LOQ	mg/L	J (all detects)
A1-MW-51-SA2	Ferrous Iron	J HF	0.0278	0.200	LOQ	mg/L	J (all detects)
A1-PZ-19-SA2	Ferrous Iron	J HF	0.0591	0.200	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: Prep280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	A1-MW-50-SA2	A1-MW-50-SA2D			
1,1-DICHLOROETHENE	0.564	0.630	NC	30.00	No Qualifiers Applied
TRICHLOROETHENE	0.780	0.949	NC	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 43888A1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/18/18
SDG #: 280-116898-1 ADR/Stage ~~2B~~ 4 Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: DM
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20 %
IV.	Continuing calibration	A	CCV ≤ 20/50 %
V.	Laboratory Blanks	N	Not reviewed for ADR validation.
VI.	Field blanks		
VII.	Surrogate spikes		Not reviewed for ADR validation.
VIII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation.
IX.	Laboratory control samples		Not reviewed for ADR validation.
X.	Field duplicates		
XI.	Internal standards	A	Not reviewed for ADR validation.
XII.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation.
XIII.	Target compound identification		Not reviewed for ADR validation.
XIV.	System performance		Not reviewed for ADR validation.
XV.	Overall assessment of data		Not reviewed for ADR validation.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2**	280-116898-4**	Water	11/12/18
5	A1-MW-50-SA2D**	280-116898-5**	Water	11/12/18
6	A1-MW-51-SA2**	280-116898-6**	Water	11/12/18
7	TB-20181112	280-116898-7	Water	11/12/18
8	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
9	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
10	A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
11	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
12				
13	MB 280-498700/6 - 498747/4			

LDC #: 43888A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-116898-1 ADR/~~Stage 4~~ Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	Not reviewed for ADR validation. MS/MSD
VII.	Duplicate sample analysis	A	Not reviewed for ADR validation. DUP
VIII.	Laboratory control samples	A	Not reviewed for ADR validation. LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for ADR validation.
XI	Overall assessment of data	A	Not reviewed for ADR validation.

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2**	280-116898-4**	Water	11/12/18
5	A1-MW-51-SA2	280-116898-6	Water	11/12/18
6	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
7	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
8	A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
9	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
10	A1-MW-50-SA2DUP	280-116898-4DUP	Water	11/12/18
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 → 7	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+3)
QC 8 → 10	↓	pH TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: MG
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		9040C		SM 3500 Fe B			
Parameters:		pH		Ferrous Iron			
Technical holding time:		24 hr		24 hr			
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1	11:40 11-12-18	14:43 11-23-18	(11 days)				J/UJ/P (det)
2	14:24 11-12-18	13:37 11-26-18	(14)				( )
3	08:32 11-12-18	13:36 11-26-18	(14)				( )
4	09:35 11-12-18	15:19 11-23-18	(11)				( )
5	10:46 11-12-18	15:33 11-23-18	(11)				( )
6	12:43 11-12-18	13:32 11-26-18	(14)				( )
7	13:39 11-12-18	15:23 11-23-18	(11)				( )
1	11:40 11-12-18			18:30 11-21-18	(9 days)		J/R/P (N.D.)
2	14:24 11-12-18				( )		(det)
3	08:32 11-12-18				( )		(ND)
4	09:35 11-12-18				( )		(det)
5	10:46 11-12-18				( )		( )
6	12:43 11-12-18				( )		( )
7	13:39 11-12-18				( )		(ND)

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** all **(NO3-N: 2x dil, SO4: 20x dil, >5x or ND)**

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
NO3-N	0.04530	0.04526	0.4526									
SO4	0.3332	0.3841	38.41									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-116942-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-116942-1 **Laboratory: TA DEN**

EDD Filename: 280-116942-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
16-HS-03-SA2 (RES/TOT)	Sampling To Analysis	316.00	24.00	HOURS	J (all detects)
16-MW-06-SA2 (RES/TOT)		318.50	24.00	HOURS	
16-MW-08-SA2 (RES/TOT)		314.75	24.00	HOURS	
16-MW-09-SA2 (RES/TOT)		314.50	24.00	HOURS	
A1-MW-18-SA2 (RES/TOT)		317.50	24.00	HOURS	
A1-MW-19-SA2 (RES/TOT)		316.25	24.00	HOURS	
A1-MW-53-SA2 (RES/TOT)		312.75	24.00	HOURS	

Method: 9056A **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-18-SA2 (RES/TOT)	Sampling To Analysis	62.25	48.00	HOURS	J(all detects)
		62.50	48.00	HOURS	UJ(all non-detects)

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
16-HS-03-SA2 (RES/TOT)	Sampling To Analysis	198.50	24.00	HOURS	J(all detects)
16-MW-06-SA2 (RES/TOT)		200.75	24.00	HOURS	R(all non-detects)
16-MW-08-SA2 (RES/TOT)		197.50	24.00	HOURS	
16-MW-09-SA2 (RES/TOT)		196.75	24.00	HOURS	
16-MW-09-SA2DUP (RES/TOT)		196.75	24.00	HOURS	
16-MW-09-SA2MS (RES/TOT)		196.75	24.00	HOURS	
16-MW-09-SA2MSD (RES/TOT)		196.75	24.00	HOURS	
A1-MW-18-SA2 (RES/TOT)		200.00	24.00	HOURS	
A1-MW-19-SA2 (RES/TOT)		199.25	24.00	HOURS	
A1-MW-53-SA2 (RES/TOT)		195.50	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116942-1 **Laboratory: TA DEN**

EDD Filename: 280-116942-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-MW-06-SA2MS 16-MW-06-SA2MSD (16-MW-06-SA2)	Sulfate	80	74	87.00-112.00	-	Sulfate	J (all detects) UJ (all non-detects)

Method: **SM3500 Fe B D**
Matrix: **AQ**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-MW-09-SA2MS 16-MW-09-SA2MSD (16-MW-09-SA2)	Ferrous Iron	53	51	85.00-113.00	-	Ferrous Iron	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116942-1 **Laboratory: TA DEN**

EDD Filename: 280-116942-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-06-SA2	TRICHLOROETHENE	J	0.195	1.00	LOQ	ug/L	J (all detects)
16-MW-08-SA2	TETRACHLOROETHENE	J	0.538	1.00	LOQ	ug/L	J (all detects)
16-MW-09-SA2	TETRACHLOROETHENE	J	0.271	1.00	LOQ	ug/L	J (all detects)
A1-MW-19-SA2	TRICHLOROETHENE	J	0.545	1.00	LOQ	ug/L	J (all detects)

LDC #: 43888B1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-116942-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: DG
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15%. ICV ≤ 20%.
IV.	Continuing calibration	A	CCV ≤ 20/50%.
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	~~N~~A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	16-HS-03-SA2	280-116942-1	Water	11/13/18
2	16-MW-06-SA2	280-116942-2	Water	11/13/18
3	16-MW-08-SA2	280-116942-3	Water	11/13/18
4	16-MW-09-SA2	280-116942-4	Water	11/13/18
5	A1-MW-18-SA2	280-116942-5	Water	11/13/18
6	A1-MW-19-SA2	280-116942-6	Water	11/13/18
7	TB-20181113	280-116942-7	Water	11/13/18
8	A1-MW-53-SA2	280-116942-8	Water	11/13/18
9	16-HS-063-SA2D	280-116942-9	Water	11/13/18
10				
11				
12	MB 280-438817/4			
13				

(H, AA, S only)

LDC #: 43888B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-116942-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}; NO3 out for #5
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	MS/MSD (#8/9: SO4 fails, #11/12: Fe^{+2} fails)
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	16-HS-03-SA2	280-116942-1	Water	11/13/18
2	16-MW-06-SA2	280-116942-2	Water	11/13/18
3	16-MW-08-SA2	280-116942-3	Water	11/13/18
4	16-MW-09-SA2	280-116942-4	Water	11/13/18
5	A1-MW-18-SA2	280-116942-5	Water	11/13/18
6	A1-MW-19-SA2	280-116942-6	Water	11/13/18
7	A1-MW-53-SA2	280-116942-8	Water	11/13/18
8	16-MW-06-SA2MS	280-116942-2MS	Water	11/13/18
9	16-MW-06-SA2MSD	280-116942-2MSD	Water	11/13/18
10	16-MW-06-SA2DUP	280-116942-2DUP	Water	11/13/18
11	16-MW-09-SA2MS	280-116942-4MS	Water	11/13/18
12	16-MW-09-SA2MSD	280-116942-4MSD	Water	11/13/18
13	16-MW-09-SA2DUP	280-116942-4DUP	Water	11/13/18
14	PBW1			
15	PBW2			

Notes:

LDC #: 43888B6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→7	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 8→10	↓	pH TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
↓ 11→13	↓	pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888B6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 1-4,6 (various dilutions, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
SO4		0.6931	3.466									

Conc. units: mg/L **Associated Samples:** 2,3,4,7 (various dilutions, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.3086	1.543									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-117007-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-117007-1 **Laboratory: TA DEN**

EDD Filename: 280-117007-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA2 (RES/TOT)	Sampling To Analysis	363.25	24.00	HOURS	J (all detects)
A1-MW-23-SA2 (RES/TOT)		362.25	24.00	HOURS	
A1-MW-25-SA2 (RES/TOT)		359.75	24.00	HOURS	
A1-MW-27-SA2 (RES/TOT)		359.25	24.00	HOURS	
A1-MW-54-SA2 (RES/TOT)		356.75	24.00	HOURS	
A1-MW-55-SA2 (RES/TOT)		361.00	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA2 (RES/TOT)	Sampling To Analysis	177.50	24.00	HOURS	J(all detects)
A1-MW-23-SA2 (RES/TOT)		176.50	24.00	HOURS	R(all non-detects)
A1-MW-25-SA2 (RES/TOT)		174.25	24.00	HOURS	
A1-MW-27-SA2 (RES/TOT)		173.50	24.00	HOURS	
A1-MW-54-SA2 (RES/TOT)		171.25	24.00	HOURS	
A1-MW-54-SA2DUP (RES/TOT)		171.25	24.00	HOURS	
A1-MW-54-SA2MS (RES/TOT)		171.25	24.00	HOURS	
A1-MW-54-SA2MSD (RES/TOT)		171.25	24.00	HOURS	
A1-MW-55-SA2 (RES/TOT)		175.50	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-117007-1 **Laboratory: TA DEN**

EDD Filename: 280-117007-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **SM3500 Fe B D**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-54-SA2MS A1-MW-54-SA2MSD (A1-MW-54-SA2)	Ferrous Iron	34	35	85.00-113.00	-	Ferrous Iron	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-117007-1 **Laboratory: TA DEN**

EDD Filename: 280-117007-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-07-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.357 0.826	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-25-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.273 0.539	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

LDC #: 43888C1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-117007-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: JV
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-07-SA2	280-117007-1	Water	11/14/18
2	A1-MW-23-SA2	280-117007-2	Water	11/14/18
3	A1-MW-25-SA2	280-117007-3	Water	11/14/18
4	A1-MW-27-SA2	280-117007-4	Water	11/14/18
5	A1-MW-55-SA2	280-117007-5	Water	11/14/18
6	TB-20181114	280-117007-6	Water	11/14/18
7	A1-MW-54-SA2	280-117007-7	Water	11/14/18
8	A1-MW-07-SA2MS	280-117007-1MS	Water	11/14/18
9	A1-MW-07-SA2MSD	280-117007-1MSD	Water	11/14/18
10				
11	MB 280-438841/6			
12				
13				

(H, AA, S only)

LDC #: 43888C6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-117007-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	MS/MSD (#7/8: Fe^{+2} fails)
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-07-SA2	280-117007-1	Water	11/14/18
2	A1-MW-23-SA2	280-117007-2	Water	11/14/18
3	A1-MW-25-SA2	280-117007-3	Water	11/14/18
4	A1-MW-27-SA2	280-117007-4	Water	11/14/18
5	A1-MW-55-SA2	280-117007-5	Water	11/14/18
6	A1-MW-54-SA2	280-117007-7	Water	11/14/18
7	A1-MW-54-SA2MS	280-117007-7MS	Water	11/14/18
8	A1-MW-54-SA2MSD	280-117007-7MSD	Water	11/14/18
9	A1-MW-54-SA2DUP	280-117007-7DUP	Water	11/14/18
10				
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888C6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→6	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 7→9	↓	pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888C6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 1-5 (10x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.2558	12.79									

Conc. units: mg/L **Associated Samples:** 6 (10x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual.								
Cl		0.2618	13.09									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-117103-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: 280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA2 (RES/TOT)	Sampling To Analysis	340.75	24.00	HOURS	J (all detects)
A1-MW-13-SA2 (RES/TOT)		341.00	24.00	HOURS	
A1-MW-14-SA2 (RES/TOT)		338.75	24.00	HOURS	
A1-MW-14-SA2DUP (RES/TOT)		338.75	24.00	HOURS	
A1-MW-15-SA2 (RES/TOT)		339.75	24.00	HOURS	
A1-MW-31-SA2 (RES/TOT)		335.50	24.00	HOURS	
A1-MW-37-SA2 (RES/TOT)		337.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA2 (RES/TOT)	Sampling To Analysis	153.50	24.00	HOURS	J(all detects)
A1-MW-13-SA2 (RES/TOT)		154.25	24.00	HOURS	R(all non-detects)
A1-MW-14-SA2 (RES/TOT)		151.75	24.00	HOURS	
A1-MW-15-SA2 (RES/TOT)		152.50	24.00	HOURS	
A1-MW-31-SA2 (RES/TOT)		148.25	24.00	HOURS	
A1-MW-37-SA2 (RES/TOT)		150.75	24.00	HOURS	

Method Blank Outlier Report

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: 280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437914/6	11/16/2018 5:36:00 PM	CHLORIDE Sulfate	0.2635 mg/L 0.3386 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-31-SA2 A1-MW-37-SA2
MB 280-437915/6	11/16/2018 5:36:00 PM	NITRATE	0.04638 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-31-SA2 A1-MW-37-SA2

Reporting Limit Outliers

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: 280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-14-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.635 0.728	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-15-SA2	TRICHLOROETHENE	J	0.426	1.00	LOQ	ug/L	J (all detects)
A1-MW-37-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.379 0.914	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-37-SA2D	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.373 0.909	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

Method: SM3500 Fe B D

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-37-SA2	Ferrous Iron	J HF	0.156	0.200	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: Prep280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-37-SA2	**A1-MW-37-SA2D**			
1,1-DICHLOROETHENE	0.379	0.373	NC	30.00	No Qualifiers Applied
TRICHLOROETHENE	0.914	0.909	NC	30.00	

LDC #: 43888D1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-117103-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: SV6
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 15? ICV ≤ 20?
IV.	Continuing calibration	A	CCV ≤ 20/50?
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-11-SA2	280-117103-1	Water	11/15/18
2	A1-MW-13-SA2	280-117103-2	Water	11/15/18
3	A1-MW-14-SA2	280-117103-3	Water	11/15/18
4	A1-MW-15-SA2	280-117103-4	Water	11/15/18
5	A1-MW-37-SA2	280-117103-5	Water	11/15/18
6	A1-MW-37-SA2D	280-117103-6	Water	11/15/18
7	TB-20181115	280-117103-7	Water	11/15/18
8	A1-MW-31-SA2	280-117103-8	Water	11/15/18
9				
10				
11				
12	MB 280-438823/9			
13				

(H, AA, S only)

LDC #: 43888D6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-117103-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	client specified
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-11-SA2	280-117103-1	Water	11/15/18
2	A1-MW-13-SA2	280-117103-2	Water	11/15/18
3	A1-MW-14-SA2	280-117103-3	Water	11/15/18
4	A1-MW-15-SA2	280-117103-4	Water	11/15/18
5	A1-MW-37-SA2	280-117103-5	Water	11/15/18
6	A1-MW-31-SA2	280-117103-8	Water	11/15/18
7	A1-MW-14-SA2DUP	280-117103-3DUP	Water	11/15/18
8				
9				
10				
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888D6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→6	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 7	↓	(pH) TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888D6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** all (20x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.2982	29.82									
SO4		0.4094	40.94									

Conc. units: mg/L **Associated Samples:** 1-5 (>5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
NO3-N		0.04805	0.2402									

Conc. units: mg/L **Associated Samples:** 6 (>5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual.								
NO3-N		0.04749	0.2374									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-117110-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA2 (RES/TOT)	Sampling To Analysis	318.00	24.00	HOURS	J (all detects)
A1-MW-42-SA2 (RES/TOT)		316.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA2 (RES/TOT)	Sampling To Analysis	130.25	24.00	HOURS	J(all detects)
A1-MW-42-SA2 (RES/TOT)		129.25	24.00	HOURS	R(all non-detects)
A1-MW-42-SA2DUP (RES/TOT)		129.25	24.00	HOURS	
A1-MW-42-SA2MS (RES/TOT)		129.25	24.00	HOURS	
A1-MW-42-SA2MSD (RES/TOT)		129.25	24.00	HOURS	

Surrogate Outlier Report

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**
Matrix: **AQ**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
EB-20181116	1,2-DICHLOROETHANE-D4	122	81.00-118.00	All Target Analytes	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: SM3500 Fe B D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-42-SA2MS A1-MW-42-SA2MSD (A1-MW-42-SA2)	Ferrous Iron	27	27	85.00-113.00	-	Ferrous Iron	J (all detects) R (all non-detects)

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-01-SA2MSD (A1-MW-01-SA2)	1,1-DICHLOROETHENE	-	-	71.00-131.00	22 (20.00)	1,1-DICHLOROETHENE	J(all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-42-SA2	1,1-DICHLOROETHENE	J	0.238	1.00	LOQ	ug/L	J (all detects)
	TRICHLOROETHENE	J	0.367	1.00	LOQ	ug/L	

LDC #: 43888E1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-117110-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: JV
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	TB
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	NA	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	A1-MW-01-SA2	280-117110-1	Water	11/16/18
2	A1-MW-42-SA2	280-117110-2	Water	11/16/18
3	TB-20181116	280-117110-3	Water	11/16/18
4	EB-20181116	280-117110-4	Water	11/16/18
5	A1-MW-01-SA2MS	280-117110-1MS	Water	11/16/18
6	A1-MW-01-SA2MSD	280-117110-1MSD	Water	11/16/18
7				
8				
9				

Notes:

(H, AA, S only)

LDC #: 43888E6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-117110-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	MS/MSD (#3/4: Fe^{+2} fails)
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-01-SA2	280-117110-1	Water	11/16/18
2	A1-MW-42-SA2	280-117110-2	Water	11/16/18
3	A1-MW-42-SA2MS	280-117110-2MS	Water	11/16/18
4	A1-MW-42-SA2MSD	280-117110-2MSD	Water	11/16/18
5	A1-MW-42-SA2DUP	280-117110-2DUP	Water	11/16/18
6				
7				
8				
9				
10				
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888E6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1, 2	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 3→5	↓	pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888E6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 2 (20x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.6147	61.47									
SO4		0.3987	39.87									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

1803615

Reporting Limit Outliers

Lab Reporting Batch ID: 1803615 **Laboratory: Vista**

EDD Filename: 1803615 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-04-SA2	PFOA	J	0.00646	0.00881	LOQ	ug/L	J (all detects)
A1-MW-05-SA2	PFHxS	J, Q	0.00359	0.00864	LOQ	ug/L	J (all detects)
A1-MW-50-SA2	PFHpA	J, Q	0.00474	0.00894	LOQ	ug/L	J (all detects)
A1-MW-50-SA2D	PFHpA	J	0.00494	0.00874	LOQ	ug/L	J (all detects)
A1-MW-52-SA2	PFOS	J	0.00356	0.00872	LOQ	ug/L	J (all detects)
A1-PZ-19-SA2	PFHpA PFOS	J J, Q	0.00548 0.00321	0.00884 0.00884	LOQ LOQ	ug/L ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1803615 **Laboratory: Vista**

EDD Filename: Prep1803615 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-50-SA2	**A1-MW-50-SA2D**			
PFBS	0.0250	0.0264	5	30.00	
PFHpA	0.00474	0.00494	NC	30.00	
PFHxA	0.0806	0.0829	3	30.00	No Qualifiers Applied
PFHxS	0.0367	0.0355	3	30.00	
PFOA	0.00947	0.00878	8	30.00	

LDC #: 43888K96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803615 ADR/Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: JM
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 20% Individual ≤ 30% ICV ≤ 30%
IV.	Continuing calibration/ISC	A	CCV ≤ 30% true conc.
V.	Laboratory Blanks	N	Not reviewed for ADR validation.
VI.	Field blanks		
VII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation.
VIII.	Laboratory control samples		Not reviewed for ADR validation.
IX.	Field duplicates		
X.	Labeled Compounds	A	Not reviewed for ADR validation.
XI.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation.
XII.	Target compound identification		Not reviewed for ADR validation.
XIII.	System performance		Not reviewed for ADR validation.
XIV.	Overall assessment of data		Not reviewed for ADR validation.

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	1803615-01**	Water	11/12/18
2	A1-MW-05-SA2**	1803615-02**	Water	11/12/18
3	A1-MW-49-SA2**	1803615-03**	Water	11/12/18
4	A1-MW-50-SA2**	1803615-04**	Water	11/12/18
5	A1-MW-50-SA2D**	1803615-05**	Water	11/12/18
6	A1-MW-51-SA2**	1803615-06**	Water	11/12/18
7	A1-MW-52-SA2**	1803615-07**	Water	11/12/18
8	FRB-20181112	1803615-08	Water	11/12/18
9	A1-~~MW~~ PZ-19-SA2**	1803615-09**	Water	11/12/18
10	A1-MW-50-SA2MS	1803615-04MS	Water	11/12/18
11	A1-MW-50-SA2MSD	1803615-04MSD	Water	11/12/18
12				
13				
14	PBW0091-BLK1			
15				

Quality Control
Outlier Reports

1803626

Reporting Limit Outliers

Lab Reporting Batch ID: 1803626 **Laboratory: Vista**

EDD Filename: 1803626 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-06-SA2	PFOS	J	0.00582	0.00835	LOQ	ug/L	J (all detects)
16-MW-09-SA2	PFOA PFOS	J J	0.00449 0.00503	0.00852 0.00852	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-18-SA2	PFOA	J	0.00309	0.00856	LOQ	ug/L	J (all detects)
A1-MW-19-SA2	PFDA PFNA	J J	0.00721 0.00398	0.00861 0.00861	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-53-SA2	PFOS	J, Q	0.00400	0.00841	LOQ	ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1803626 **Laboratory: Vista**

EDD Filename: 1803626 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	16-HS-03-SA2	**16-HS-03-SA2D**			
PFBS	1.34	1.39	4	30.00	
PFHpA	0.405	0.412	2	30.00	
PFHxA	10.3	11.7	13	30.00	No Qualifiers Applied
PFHxS	0.324	0.312	4	30.00	
PFOA	0.0206	0.0200	3	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 43888L96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803626 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: JVC
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	r² Individual ≤30% Mean value ICV ≤30%
IV.	Continuing calibration/ISC	A	CCV ≤30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	N/A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	16-HS-03-SA2	1803626-01	Water	11/13/18
2	16-MW-06-SA2	1803626-02	Water	11/13/18
3	16-MW-08-SA2	1803626-03	Water	11/13/18
4	16-MW-09-SA2	1803626-04	Water	11/13/18
5	A1-MW-18-SA2	1803626-05	Water	11/13/18
6	A1-MW-19-SA2	1803626-06	Water	11/13/18
7	FRB-20181113	1803626-07	Water	11/13/18
8	A1-MW-53-SA2	1803626-08	Water	11/13/18
9	16-HS-03-SA2D	1803626-09	Water	11/13/18
10				
11				

Notes:

Quality Control
Outlier Reports

1803659

Reporting Limit Outliers

Lab Reporting Batch ID: 1803659 **Laboratory: Vista**

EDD Filename: 1803659 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-23-SA2	PFHxS	J	0.00594	0.00849	LOQ	ug/L	J (all detects)

LDC #: 43888M96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803659 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: SM
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	~~r~~ r Individual ≤30% ICV ≤ 30% True value
IV.	Continuing calibration/ISC	A	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	~~N~~ A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-07-SA2	1803659-01	Water	11/14/18
2	A1-MW-23-SA2	1803659-02	Water	11/14/18
3	A1-MW-25-SA2	1803659-03	Water	11/14/18
4	A1-MW-27-SA2	1803659-04	Water	11/14/18
5	A1-MW-55-SA2	1803659-05	Water	11/14/18
6	A1-MW-54-SA2	1803659-06	Water	11/14/18
7	FRB-20181114	1803659-07	Water	11/14/18
8				
9				
10				

Notes:

	B8K0149-BLK1						

Quality Control
Outlier Reports

1803676

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD **Preparation Method: Gen Prep**

Matrix: AQ

Sample ID	*Type*	*Actual*	*Criteria*	*Units*	*Flag*
A1-MW-11-SA2 (RES)	Sampling To Extraction	15.00	14.00	DAYS	J (all detects)
A1-MW-13-SA2 (RES)		15.00	14.00	DAYS	UJ (all non-detects)
A1-MW-14-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-15-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-31-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-37-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-37-SA2D (RES)		15.00	14.00	DAYS	
FRB-20181115 (RES)		15.00	14.00	DAYS	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8K0153-BS1 (A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-31-SA2 A1-MW-37-SA2 A1-MW-37-SA2D FRB-20181115)	PFTeDA	140	-	70.00-130.00	-	PFTeDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-31-SA2	PFOA	J	0.00388	0.00855	LOQ	ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-37-SA2	**A1-MW-37-SA2D**			
PFBS	0.151	0.150	1	30.00	No Qualifiers Applied
PFHpA	0.0856	0.0830	3	30.00	
PFHxA	0.520	0.529	2	30.00	
PFHxS	0.438	0.429	2	30.00	
PFOA	0.0599	0.0555	8	30.00	
PFOS	0.0288	0.0275	5	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 43888N96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803676 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: DG
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, ~~A~~SW	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	r r Individual ≤30% ICV≤30% true value
IV.	Continuing calibration/ISC	SW	CCV≤30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	~~N~~ A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-11-SA2	1803676-01	Water	11/15/18
2	A1-MW-13-SA2	1803676-02	Water	11/15/18
3	A1-MW-14-SA2	1803676-03	Water	11/15/18
4	A1-MW-15-SA2	1803676-04	Water	11/15/18
5	A1-MW-37-SA2	1803676-05	Water	11/15/18
6	A1-MW-37-SA2D	1803676-06	Water	11/15/18
7	FRB-20181115	1803676-07	Water	11/15/18
8	A1-MW-31-SA2	1803676-08	Water	11/15/18
9				
10				
11				

Notes:

	B8K0153-BLK1						

TARGET COMPOUND WORKSHEET

METHOD: PFAS

A. PFHxA			
B. PFHpA			
C. PFOA			
D. PFNA			
E. PFDA			
F. PFUnA			
G. PFDoA			
H. PFTriA			
I. PFTeDA			
J. PFBS			
K. PFHxS			
L. PFHpS			
M. PFOS			
N. PFDS			
O. FOSA			
P. PFBA			
Q. PFPeA			
R. 6:2FTS			
S. 8:2FTS			
T. MeFOSAA			
U. EtFOSAA			
V. Combined PFOAS/PFOS			

LDC #: 43588 N96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: MG
2nd Reviewer:

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed after every 10 injections for each instrument?

Y N N/A Were all continuing calibration percent differences (%D) ≤30 %?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Associated Samples	Qualifications
	12/03/18	181203M1_3	I	42.4	All (ND)	J/UJ/A

Quality Control
Outlier Reports

1803678

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1803678 **Laboratory: Vista**

EDD Filename: 1803678 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-01-SA2MS A1-MW-01-SA2MSD (A1-MW-01-SA2)	PFTeDA	139	-	70.00-130.00	31.7 (30.00)	PFTeDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1803678 **Laboratory: Vista**

EDD Filename: 1803678 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
B8K0153-BS1 (A1-MW-01-SA2 A1-MW-42-SA2 EB-20181116 FRB-20181116)	PFTeDA	140	-	70.00-130.00	-	PFTeDA	J (all detects)

LDC #: 43888O96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803678 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: JW
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	te r² Individual ≤ 30% ICV ≤ 30% True value
IV.	Continuing calibration/ISC	SW	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	FRB = 3 EB = 4
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	N/A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-01-SA2	1803678-01	Water	11/16/18
2	A1-MW-42-SA2	1803678-02	Water	11/16/18
3	FRB-20181116	1803678-03	Water	11/16/18
4	EB-20181116	1803678-04	Water	11/16/18
5	A1-MW-01-SA2MS	1803678-01MS	Water	11/16/18
6	A1-MW-01-SA2MSD	1803678-01MSD	Water	11/16/18
7				
8				
9				
10				

Notes:

	B8K0153-BLK1						

TARGET COMPOUND WORKSHEET

METHOD: PFAS

A. PFHxA			
B. PFHpA			
C. PFOA			
D. PFNA			
E. PFDA			
F. PFUnA			
G. PFDoA			
H. PFTriA			
I. PFTeDA			
J. PFBS			
K. PFHxS			
L. PFHpS			
M. PFOS			
N. PFDS			
O. FOSA			
P. PFBA			
Q. PFPeA			
R. 6:2FTS			
S. 8:2FTS			
T. MeFOSAA			
U. EtFOSAA			
V. Combined PFOAS/PFOS			

LDC #: 43888096

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: JVG
2nd Reviewer: C

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed after every 10 injections for each instrument?

Y (N) N/A Were all continuing calibration percent differences (%D) ≤30 %?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit:)	Associated Samples	Qualifications
	12/03/18	181203M1_2	I	42.4		All (ND)	J/UJ/A

Enclosure II

Manual Stage 2B and Stage 4 Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: Volatiles

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-116898-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2	280-116898-1	Water	11/12/18
A1-MW-05-SA2	280-116898-2	Water	11/12/18
A1-MW-49-SA2	280-116898-3	Water	11/12/18
A1-MW-50-SA2	280-116898-4	Water	11/12/18
A1-MW-50-SA2D	280-116898-5	Water	11/12/18
A1-MW-51-SA2	280-116898-6	Water	11/12/18
A1-PZ-19-SA2	280-116898-8	Water	11/12/18
A1-MW-52-SA2	280-116898-9	Water	11/12/18
A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TB-20181112 was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples A1-MW-50-SA2 and A1-MW-50-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ug/L)				
Compound	A1-MW-50-SA2	A1-MW-50-SA2D	RPD (Limits)	Flag	A or P
1,1-Dichloroethene	0.564	0.630	Not calculable	-	-
Trichloroethene	0.780	0.949	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All compounds reported below the LOQ.	J (all detects)	A

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results below the LOQ, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Volatiles - Data Qualification Summary - SDG 280-116898-1

Sample	Compound	Flag	A or P	Reason
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Volatiles - Laboratory Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Volatiles - Field Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

LDC #: 43888A1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-116898-1 ADR/Stage ~~2B~~ 4 Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: SW
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50 %
V.	Laboratory Blanks	A	~~Not reviewed for ADR validation.~~
VI.	Field blanks	ND	TB = 7
VII.	Surrogate spikes	A	~~Not reviewed for ADR validation.~~
VIII.	Matrix spike/Matrix spike duplicates	A	Not reviewed for ADR validation.
IX.	Laboratory control samples	A	~~Not reviewed for ADR validation.~~ LCS
X.	Field duplicates	SW	D = 4/5
XI.	Internal standards	A	~~Not reviewed for ADR validation.~~
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Target compound identification	A	Not reviewed for ADR validation.
XIV.	System performance	A	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	~~Not reviewed for ADR validation.~~

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2** D	280-116898-4**	Water	11/12/18
5	A1-MW-50-SA2D** D	280-116898-5**	Water	11/12/18
6	A1-MW-51-SA2**	280-116898-6**	Water	11/12/18
7	~~TB-20181112~~	280-116898-7	Water	11/12/18
8	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
9	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
10	A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
11	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
12	MB 280-438700/6			
13	L - 438747/4			

(H, AA, S only)

LDC #: 43888A1N

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) ≥ 0.05?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks were identified in this SDG?	✓	*		
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	

LDC #: 93888A1a

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene	A2.
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane	B2.
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane	C2.
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene	D2.
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11	E2.
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12	F2.
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113	G2.
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114	H2.
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane	I2.
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide	J2.
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane	K2.
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane	L2.
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane	M2.
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane	N2.
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane	O2.
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane	P2.
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane	Q2.
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane	R2.
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane	S2.
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane	T2.
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal	U2.
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene	V2.
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol	W2.
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene	X2.
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.	Y2.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.	Z2.

LDC#: 43888A1a

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: GCMS VOA (EPA SW 846 Method 8260B)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)	Qualifications (Parent only)
	4	5		
H	0.564	0.630	NC	
S	0.780	0.949	NC	

V:\Josephine\FIELD DUPLICATES\43888A1a ttech yuma.wpd

LDC #: 43888A1a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of Compound — A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound — C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) — S= Standard deviation of the RRFs — X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 10 std)	Recalculated RRF (RRF 10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL GC MSV G	10/29/2018	Trichloroethene (IS1)	0.4141	0.4141	0.3989	0.3989	3.0	3.0
			Tetrachloroethene (IS2)	1.5494	1.5494	1.4974	1.4974	2.5	2.5
2	ICAL GC MSV Z	11/3/2018	Trichloroethene (IS1)	0.4665	0.4665	0.4837	0.4837	6.8	6.8
			Tetrachloroethene (IS2)	1.6975	1.6975	1.7599	1.7599	5.9	5.9

LDC # 43888A1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CCV)	Recalculated RRF (CCV)	Reported % D	Recalculated %D
1	G2197 GC MSV G	11/26/2018	Trichloroethene (IS1)	0.3989	0.4216	0.4216	5.7	5.7
			Tetrachloroethene (IS2)	1.4974	1.5171	1.5171	1.3	1.3
2	Z3472 GC MSV Z	11/26/2018	Trichloroethene (IS1)	0.4837	0.5081	0.5081	5.0	5.0
			Tetrachloroethene (IS2)	1.7599	1.7106	1.7106	2.8	2.8

LDC #: 43888 A1a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: JVG
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	10.0	10.1	101	101	0
1,2-Dichloroethane-d4		9.22	92	92	
Toluene-d8		10.3	103	103	
Bromofluorobenzene		10.1	101	101	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 42888A1a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 10/11

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	5.00	5.00	0.564	5.549	5.972	100	100	108	108	7	7
Trichloroethene	↓	↓	0.780	5.580	5.935	96	96	103	107	6	6
Benzene											
Toluene											
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 93888 A1a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: LCS 280-438700/4

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	5.00	NA	4.874	NA	97	97				
Trichloroethene	5.00	↓	5.029	↓	101	101				
Benzene										
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888A1a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 4, TCE:

Conc. = $\frac{(13951)(12.5)(\quad)}{(560722)(0.3989)(\quad)(\quad)}$

= 0.780 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration ( )	Qualification
			0.780		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: January 2, 2019

Parameters: Wet Chemistry

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-116898-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2	280-116898-1	Water	11/12/18
A1-MW-05-SA2	280-116898-2	Water	11/12/18
A1-MW-49-SA2	280-116898-3	Water	11/12/18
A1-MW-50-SA2	280-116898-4	Water	11/12/18
A1-PZ-19-SA2	280-116898-8	Water	11/12/18
A1-MW-52-SA2	280-116898-9	Water	11/12/18
A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
A1-MW-50-SA2DUP	280-116898-4DUP	Water	11/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
A1-MW-04-SA2 A1-MW-50-SA2 A1-MW-52-SA2	pH	11 days	24 hours	J (all detects)	P
A1-MW-05-SA2 A1-MW-49-SA2 A1-PZ-19-SA2	pH	14 days	24 hours	J (all detects)	P
A1-MW-04-SA2 A1-MW-49-SA2 A1-MW-52-SA2	Ferrous Iron	9 days	24 hours	R (all non-detects)	P
A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	Ferrous Iron	9 days	24 hours	J (all detects)	P

II. Initial Calibration

All criteria for the initial calibration of each method were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Nitrate as N Sulfate	0.04530 mg/L 0.3332 mg/L	All samples in SDG 280-116898-1
ICB/CCB	Nitrate as N Sulfate	0.04526 mg/L 0.3841 mg/L	All samples in SDG 280-116898-1

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All sample result verifications were acceptable.

All analytes reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All analytes reported below the LOQ.	J (all detects)	A

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in three samples.

Due to technical holding time and results below the LOQ, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Wet Chemistry - Data Qualification Summary - SDG 280-116898-1

Sample	Analyte	Flag	A or P	Reason
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	pH	J (all detects)	P	Technical holding times
A1-MW-04-SA2 A1-MW-49-SA2 A1-MW-52-SA2	Ferrous Iron	R (all non-detects)	P	Technical holding times
A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	Ferrous Iron	J (all detects)	P	Technical holding times
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All analytes reported below the LOQ.	J (all detects)	A	Sample result verification

MCAS Yuma, CTO 17F3803
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Wet Chemistry - Field Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

LDC #: 43888A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18

SDG #: 280-116898-1 ~~ADR~~/Stage 4 Page: 1 of 1

Laboratory: Test America, Inc. Reviewer: MG

2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	Not reviewed for ADR validation. MS/MSD
VII.	Duplicate sample analysis	A	Not reviewed for ADR validation. DUP
VIII.	Laboratory control samples	A	Not reviewed for ADR validation. LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for ADR validation.
XI	Overall assessment of data	A	Not reviewed for ADR validation.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2**	280-116898-4**	Water	11/12/18
5	~~A1-MW-51-SA2~~	280-116898-6	Water	11/12/18
6	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
7	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
8	~~A1-MW-50-SA2MS~~	280-116898-4MS	Water	11/12/18
9	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
10	~~A1-MW-50-SA2DUP~~	280-116898-4DUP	Water	11/12/18
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888A6

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer:

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.		✓		
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→7	W	(pH) TDS (Cl) F (NO_3) NO_2 (SO_4) PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 (Fe+2)
QC 8→10	↓	pH TDS (Cl) F (NO_3) NO_2 (SO_4) PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4

Comments:

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: MG
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	9040C	SM 3500 Fe B				
Parameters:	pH	Ferrous Iron				
Technical holding time:	24 hr	24 hr				

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
1	11:40 11-12-18	14:43 11-23-18	(11 days)				J/UJ/P	(det)
2	14:24 11-12-18	13:27 11-26-18	(14)					( )
3	08:32 11-12-18	13:36 11-26-18	(14)					( )
4	09:25 11-12-18	15:19 11-23-18	(11)					( )
~~5~~	~~10:46 11-12-18~~	~~15:33 11-23-18~~	(11)					( )
6	12:43 11-12-18	13:32 11-26-18	(14)					( )
7	13:39 11-12-18	15:23 11-23-18	(11)					( )
1	11:40 11-12-18			18:30 11-21-18	(9 days)		J/R/P	(N.D.)
2	14:24 11-12-18				( )			(det)
3	08:32 11-12-18				( )			(ND)
4	09:25 11-12-18				( )			(det)
~~5~~	~~10:46 11-12-18~~				( )			( )
6	12:43 11-12-18				( )			( )
7	13:39 11-12-18				( )			(ND)

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** all **(NO3-N: 2x dil, SO4: 20x dil, >5x or ND)**

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.									
NO3-N	0.04530	0.04526	0.4526									
SO4	0.3332	0.3841	38.41									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of Cl was recalculated. Calibration date: 9-1-18

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte	Standard ID	Conc. Found (units)	Area True (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	Cl	Blank	-	-	r=1.000	r= 1.000	Y
		Standard 1	1.0 (mg/L)	17320827			
		Standard 2	2.5 ( )	46063990			
		Standard 3	5.0 ( )	94576246			
		Standard 4	60.0 ( )	1169987193			
		Standard 5	120.0 ( )	2305131911			
		Standard 6	200.0 ( )	3845262113			
		Standard 7	-	-			
Calibration verification	Ferrous Iron	1830 ICV	1.045 (mg/L)	1.00 (mg/L)	104	105	
Calibration verification	NO_3-N	1052 CCV	4.85 (mg/L)	5.00 (mg/L)	97	97	
Calibration verification	SO_4	1646 CCV	102.2 (mg/L)	100 (mg/L)	102	102	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
1830 LCS	Laboratory control sample	Ferrous Iron	2.13 (mg/L)	2.00 (mg/L)	106	106	Y
1801 8	Matrix spike sample	Cl	(SSR-SR) 512 (mg/L)	500 (mg/L)	102	102	
1724/1743 10	Duplicate sample	SO_4	894 (mg/L)	866 (mg/L)	3	3	

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd reviewer:

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for #1, SO_4 reported with a positive detect were recalculated and verified using the following equation:

Concentration = $Y = mx + b$
where
$m = 14253830$
$b = -272056$
dil = 20 x

Recalculation:

$$601084316 = 14253830\left(\frac{x}{20}\right) - 272056$$

$$843.78 \text{ mg/L} = x$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
1	1	SO_4	847	844	Y
2	2	Ferrous Iron	0.119	0.119	
3	3	pH	7.9 (SU)	7.9 (SU)	
4	4	NO_3-N	3.26	3.18	
5	6	Ferrous Iron	0.0591	0.0591	
6	7	pH	8.0 (SU)	8.0 (SU)	

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B & 4

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1846366

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2**	L1846366-01**	Water	11/12/18
A1-MW-05-SA2**	L1846366-02**	Water	11/12/18
A1-MW-49-SA2**	L1846366-03**	Water	11/12/18
A1-MW-50-SA2**	L1846366-04**	Water	11/12/18
A1-MW-50-SA2D	L1846366-05	Water	11/12/18
A1-MW-51-SA2**	L1846366-06**	Water	11/12/18
A1-PZ-19-SA2**	L1846366-07**	Water	11/12/18
A1-MW-52-SA2**	L1846366-08**	Water	11/12/18
A1-MW-50-SA2MS	L1846366-04MS	Water	11/12/18
A1-MW-50-SA2MSD	L1846366-04MSD	Water	11/12/18

**Indicates sample underwent Stage 4 validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Stage 4 data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-50-SA2** and A1-MW-50-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ng/L)				
Compound	A1-MW-50-SA2**	A1-MW-50-SA2D	RPD (Limits)	Flag	A or P
1,4-Dioxane	592	591	0 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1846366

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1846366

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1846366

No Sample Data Qualified in this SDG

LDC #: 43888F2b

SDG #: L1846366

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

~~ADR/~~Stage 4 2B

Date: 12/19/18

Page: 1 of 1

Reviewer: JG

2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	~~Not reviewed for ADR validation~~.
VI.	Field blanks	N	
VII.	Surrogate spikes	A	~~Not reviewed for ADR validation~~.
VIII.	Matrix spike/Matrix spike duplicates	A	Not reviewed for ~~ADR~~ validation.
IX.	Laboratory control samples	A	~~Not reviewed for ADR validation~~. LCS/D
X.	Field duplicates	SW	D = 4/5
XI.	Internal standards	A	~~Not reviewed for ADR validation~~.
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Target compound identification	A	Not reviewed for ADR validation.
XIV.	System performance	A	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	~~Not reviewed for ADR validation~~.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	L1846366-01**	Water	11/12/18
2	A1-MW-05-SA2**	L1846366-02**	Water	11/12/18
3	A1-MW-49-SA2**	L1846366-03**	Water	11/12/18
4	A1-MW-50-SA2** D	L1846366-04**	Water	11/12/18
5	A1-MW-50-SA2D D	L1846366-05	Water	11/12/18
6	A1-MW-51-SA2**	L1846366-06**	Water	11/12/18
7	A1-PZ-19-SA2**	L1846366-07**	Water	11/12/18
8	A1-MW-52-SA2**	L1846366-08**	Water	11/12/18
9	A1-MW-50-SA2MS	L1846366-04MS	Water	11/12/18
10	A1-MW-50-SA2MSD	L1846366-04MSD	Water	11/12/18
11				
12				
13	NG118091I-1 BLANK			

LDC #: 43888F2b

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Method: ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check (Not required)				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤30% or percent recoveries (%R) 70-130%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes				
Were all surrogate percent differences (%R) within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 43858F26

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓	-		
Were target compounds detected in the field duplicates?		✓		
XI. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 43888F2b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of Compound — A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound, — C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) — S= Standard deviation of the RRFs, — X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (500 std)	Recalculated RRF (500 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL MS16	11/15/2018	1,4-Dioxane (DXN-d8)	1.428	1.428	1.407	1.407	3.61	3.60

LDC #: 43888 F2b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
~~Nitrobenzene-d5~~ 1,4-Dioxane-d8	500	126.288	25	25	0
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

LDC #: 43888 F26

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 9/10

Compound	Spike Added (ng/L)		Sample Concentration (ng/L)	Spiked Sample Concentration (ng/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Acenaphthene											
Pyrene											
1,4-Dioxane-d8	5000	5000	592	6560	6760	119	119	123	123	3	3

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888F2b

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: WG11 80911-2/3

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Acenaphthene										
Pyrene										
1,4-Dioxane	5000	5000	5780	5890	116	116	118	118	2	2

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888 F26

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
Y (N) N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 1,4-Dioxane

Conc. = $\frac{(9071)(500)(5\ ml)(\ )(\ )(\ )}{(7476)(1.407)(0.5\ L)(\ )(\ )(\ )}$

= 4311 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
			4310		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1846592

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
16-HS-03-SA2	L1846592-01	Water	11/13/18
16-MW-06-SA2	L1846592-02	Water	11/13/18
16-MW-08-SA2	L1846592-03	Water	11/13/18
16-MW-09-SA2	L1846592-04	Water	11/13/18
A1-MW-18-SA2	L1846592-05	Water	11/13/18
A1-MW-19-SA2	L1846592-06	Water	11/13/18
A1-MW-53-SA2	L1846592-07	Water	11/13/18
16-HS-03-SA2D	L1846592-08	Water	11/13/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples 16-HS-03-SA2 and 16-HS-03-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Flag	A or P
	16-HS-03-SA2	16-HS-03-SA2D			
1,4-Dioxane	5330	6120	14 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1846592

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1846592

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1846592

No Sample Data Qualified in this SDG

LDC #: 43888G2b **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: L1846592 ADR Stage2B Page: 1 of 1
Laboratory: Alpha Analytical, Inc. Reviewer: SW
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N/A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N/A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N/A	LCS/D
X.	Field duplicates	SW	D = 1/8
XI.	Internal standards	N/A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N/A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID		Lab ID	Matrix	Date
1	16-HS-03-SA2	D	L1846592-01	Water	11/13/18
2	16-MW-06-SA2		L1846592-02	Water	11/13/18
3	16-MW-08-SA2		L1846592-03	Water	11/13/18
4	16-MW-09-SA2		L1846592-04	Water	11/13/18
5	A1-MW-18-SA2		L1846592-05	Water	11/13/18
6	A1-MW-19-SA2		L1846592-06	Water	11/13/18
7	A1-MW-53-SA2		L1846592-07	Water	11/13/18
8	16-HS-03-SA2D	D	L1846592-08	Water	11/13/18
9					
10					

Notes:

	WG 1180911-1 BLANK						

LDC#: 43888G2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JVG
2nd Reviewer:

METHOD: GCMS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ng/L)		RPD (≤30%)	Qualifications (Parent only)
	1	8		
1,4-Dioxane	5330	6120	14	

V:\Josephine\FIELD DUPLICATES\43888G2b ttech yuma.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1846856

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-07-SA2	L1846856-01	Water	11/14/18
A1-MW-23-SA2	L1846856-02	Water	11/14/18
A1-MW-25-SA2	L1846856-03	Water	11/14/18
A1-MW-27-SA2	L1846856-04	Water	11/14/18
A1-MW-55-SA2	L1846856-05	Water	11/14/18
A1-MW-54-SA2	L1846856-06	Water	11/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1846856

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1846856

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1846856

No Sample Data Qualified in this SDG

LDC #: 43888H2b **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: L1846856 ~~ADR~~ Stage2B Page: 1 of 1
Laboratory: Alpha Analytical, Inc. Reviewer: SW
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	~~N~~ A	
VI.	Field blanks	N	
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	~~N~~ A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	~~N~~ A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
+ 1	A1-MW-07-SA2	L1846856-01	Water	11/14/18
— 2	A1-MW-23-SA2	L1846856-02	Water	11/14/18
+ 3	A1-MW-25-SA2	L1846856-03	Water	11/14/18
+ 4	A1-MW-27-SA2	L1846856-04	Water	11/14/18
— 5	A1-MW-55-SA2	L1846856-05	Water	11/14/18
— 6	A1-MW-54-SA2	L1846856-06	Water	11/14/18
7				
8				
9				

Notes:

—	WG1181575-1 BLANK						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1847243

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-11-SA2	L1847243-01	Water	11/15/18
A1-MW-13-SA2	L1847243-02	Water	11/15/18
A1-MW-14-SA2	L1847243-03	Water	11/15/18
A1-MW-15-SA2	L1847243-04	Water	11/15/18
A1-MW-37-SA2	L1847243-05	Water	11/15/18
A1-MW-37-SA2D	L1847243-06	Water	11/15/18
A1-MW-31-SA2	L1847243-07	Water	11/15/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-37-SA2 and A1-MW-37-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Flag	A or P
	A1-MW-37-SA2	A1-MW-37-SA2D			
1,4-Dioxane	13100	13200	1 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1847243

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1847243

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1847243

No Sample Data Qualified in this SDG

LDC #: 43888I2b

SDG #: L1847243

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

ADR Stage 2B

Date: 12/19/18

Page: 1 of 1

Reviewer: JM

2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	~~N~~ A	
VI.	Field blanks	N	
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	~~N~~ A	LCS/D
X.	Field duplicates	SW	D = 5/6
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	~~N~~ A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID		Lab ID	Matrix	Date
1	A1-MW-11-SA2		L1847243-01	Water	11/15/18
2	A1-MW-13-SA2		L1847243-02	Water	11/15/18
3	A1-MW-14-SA2		L1847243-03	Water	11/15/18
4	A1-MW-15-SA2		L1847243-04	Water	11/15/18
5	A1-MW-37-SA2	D	L1847243-05	Water	11/15/18
6	A1-MW-37-SA2D	D	L1847243-06	Water	11/15/18
7	A1-MW-31-SA2		L1847243-07	Water	11/15/18
8					
9					

Notes:

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(EB - on hold)

LDC#: 43888I2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: GCMS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ng/L)		RPD (≤30%)	Qualifications (Parent only)
	5	6		
1,4-Dioxane	13100	13200	1	

V:\Josephine\FIELD DUPLICATES\43888I2b ttech yuma.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1847316

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-01-SA2	L1847316-01	Water	11/16/18
A1-MW-42-SA2	L1847316-02	Water	11/16/18
EB-20181116	L1847316-03	Water	11/16/18
A1-MW-01-SA2MS	L1847316-01MS	Water	11/16/18
A1-MW-01-SA2MSD	L1847316-01MSD	Water	11/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB-20181116 was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1847316

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1847316

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1847316

No Sample Data Qualified in this SDG

LDC #: 43888J2b

VALIDATION COMPLETENESS WORKSHEET

~~ADR~~ Stage2B

Date: 2/19/19

SDG #: L1847316

Page: 1 of 1

Laboratory: Alpha Analytical, Inc.

Reviewer: JVG

2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20%/50%.
V.	Laboratory Blanks	~~X~~ A	
VI.	Field blanks	ND	EB = 3
VII.	Surrogate spikes	~~X~~ A	
VIII.	Matrix spike/Matrix spike duplicates	~~X~~ A	
IX.	Laboratory control samples	~~X~~ A	LCS
X.	Field duplicates	N	
XI.	Internal standards	~~X~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	~~X~~ A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
+ 1	A1-MW-01-SA2	L1847316-01	Water	11/16/18
+ 2	A1-MW-42-SA2	L1847316-02	Water	11/16/18
− 3	EB-20181116	L1847316-03	Water	11/16/18
4	A1-MW-01-SA2MS	L1847316-01MS	Water	11/16/18
5	A1-MW-01-SA2MSD	L1847316-01MSD	Water	11/16/18
6				
7				
8				

Notes:

−	WG1181887-1 BLANK						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: January 2, 2019

Parameters: Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1803615

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2	1803615-01	Water	11/12/18
A1-MW-05-SA2	1803615-02	Water	11/12/18
A1-MW-49-SA2	1803615-03	Water	11/12/18
A1-MW-50-SA2	1803615-04	Water	11/12/18
A1-MW-50-SA2D	1803615-05	Water	11/12/18
A1-MW-51-SA2	1803615-06	Water	11/12/18
A1-MW-52-SA2	1803615-07	Water	11/12/18
FRB-20181112	1803615-08	Water	11/12/18
A1-PZ-19-SA2	1803615-09	Water	11/12/18
A1-MW-50-SA2MS	1803615-04MS	Water	11/12/18
A1-MW-50-SA2MSD	1803615-04MSD	Water	11/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

For each calibration standard, all compounds were less than or equal to 30% of their true value.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample FRB-20181112 was identified as a field rinsate blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Ongoing Precision Recovery

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples A1-MW-50-SA2 and A1-MW-50-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	A1-MW-50-SA2	A1-MW-50-SA2D			
PFTeDA	0.0250	0.0264	5 (≤30)	-	-
PFHxA	0.0806	0.0829	3 (≤30)	-	-
PFHpA	0.00474	0.00494	Not calculable	-	-
PFHxS	0.0367	0.0355	3 (≤30)	-	-
PFOA	0.00947	0.00878	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XI. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that the parent/product transition ion ratios met laboratory requirements with the following exceptions:

Sample	Compound	Finding
A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.

Since there are no established transition ion ratio requirements in the validation documents for this project, using professional judgment, no data were qualified.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2	All compounds reported below the LOQ.	J (all detects)	A

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results below the LOQ, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG 1803615

Sample	Compound	Flag	A or P	Reason
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG 1803615

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG 1803615

No Sample Data Qualified in this SDG

LDC #: 43888K96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18

SDG #: 1803615 ADR/Stage 4 Page: 1 of 1

Laboratory: Vista Analytical Laboratory Reviewer: SVG

2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	ICAL ~~≤~~ r² Individual ≤30% ICV ≤ 30%
IV.	Continuing calibration/ISC	A	CCV ≤ 30% True value
V.	Laboratory Blanks	A	Not reviewed for ADR validation.
VI.	Field blanks	ND	FRB = 8
VII.	Matrix spike/Matrix spike duplicates	A	Not reviewed for ADR validation.
VIII.	Laboratory control samples	A	Not reviewed for ADR validation. OPR
IX.	Field duplicates	SW	D = 4/5
X.	Labeled Compounds	A	Not reviewed for ADR validation.
XI.	Compound quantitation RL/LOQ/LODs	SW	Not reviewed for ADR validation.
XII.	Target compound identification	A	Not reviewed for ADR validation.
XIII.	System performance	A	Not reviewed for ADR validation.
XIV.	Overall assessment of data	A	Not reviewed for ADR validation.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER: FRB = Field Rinsate Blk

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	1803615-01**	Water	11/12/18
2	A1-MW-05-SA2**	1803615-02**	Water	11/12/18
3	A1-MW-49-SA2**	1803615-03**	Water	11/12/18
4	A1-MW-50-SA2**	1803615-04**	Water	11/12/18
5	A1-MW-50-SA2D**	1803615-05**	Water	11/12/18
6	A1-MW-51-SA2**	1803615-06**	Water	11/12/18
7	A1-MW-52-SA2**	1803615-07**	Water	11/12/18
8	FRB-20181112	1803615-08	Water	11/12/18
9	A1-MW-19-SA2**	1803615-09**	Water	11/12/18
10	A1-MW-50-SA2MS	1803615-04MS	Water	11/12/18
11	A1-MW-50-SA2MSD	1803615-04MSD	Water	11/12/18
12				
13				
14	B8K0091-BLK1			
15				

LDC #: 43888 K96

VALIDATION FINDINGS CHECKLIST

Reviewer: SK
2nd Reviewer: [illegible]

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?			✓	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 30%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the continuing calibration < 30%?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check < 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			

LDC #: P3888K96

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?	✓			
XII. Compound quantitation				
Did the laboratory reporting limits (RL) meet the QAPP RLs?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: PFAS

A. PFHxA			
B. PFHpA			
C. PFOA			
D. PFNA			
E. PFDA			
F. PFUnA			
G. PFDoA			
H. PFTriA			
I. PFTeDA			
J. PFBS			
K. PFHxS			
L. PFHpS			
M. PFOS			
N. PFDS			
O. FOSA			
P. PFBA			
Q. PFPeA			
R. 6:2FTS			
S. 8:2FTS			
T. MeFOSAA			
U. EtFOSAA			
V. Combined PFOAS/PFOS			

LDC#: 43888K96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JVG
2nd Reviewer:

METHOD: LCMS PFAS (EPA Method 537M)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)	Qualifications (Parent only)
	4	5		
J	0.0250	0.0264	5	
A	0.0806	0.0829	3	
B	0.00474	0.00494	NC	
K	0.0367	0.0355	3	
C	0.00947	0.00878	NC	

V:\Josephine\FIELD DUPLICATES\43888K96 ttech yuma.wpd

LDC #: 43888K96

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: JVG
2nd Reviewer: A

METHOD: LCMS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Samples	Compound	Finding	Qualifications
	2, 4, 9	All compounds qualified "Q" by the lab.	The laboratory indicated that the parent/product transition ion ratio was outside of the 70-130% laboratory limits.	Since there are no established transition ion ratio requirements in the validation documents for this project, using professional judgment, no data were qualified.

Comments: See sample calculation verification worksheet for recalculations

LDC # 43888K96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFCs (EPA Method 537Mod)

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
11/19/2018	SCN960	PFOA	1	0.0327	0.02	0.00040
			2	0.0593	0.04	0.0016
		13C2-PFOA	3	0.1197	0.08	0.0064
			4	0.2358	0.16	0.0256
			5	0.5699	0.40	0.1600
			6	1.0165	0.80	0.6400
			7	5.1296	4.00	16.0000
			8	10.3516	8.00	64.0000
			9	25.6395	20.00	400.0000
			10	51.9892	40.00	1600.0000

Regression Output	**Calculated**		***Reported WQR***	
Constant	*c*	*0.03180*	*c*	*0.1398430*
Std Err of Y Est				
R Squared		*0.9999917*		*0.9999030*
Degrees of Freedom				
	m1	*m2*	*m1*	*m2*
X Coefficient(s)	*1.2736124*	*0.0006421*	*1.2814700*	*0.000032442*
Std Err of Coef.				
Correlation Coefficient		*0.999996*		
Coefficient of Determination (r^2)		*0.999992*		

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

METHOD: LC/MS PFCs (EPA Method 537Mod)

Calibration Date	System	Compound	Standard	(Y) Area ratio	(X) Conc ratio
11/19/2018	SCN960	PFOS	1	0.02405	0.020
			2	0.04028	0.040
			3	0.00828	0.080
		13C8-PFOS	4	0.15076	0.160
			5	0.42475	0.400
			6	0.84488	0.800
			7	4.25487	4.000
			8	8.43628	8.000
			9	21.03584	20.000
			10	43.32010	40.000

Regression Output	Calculated	Reported WLR
Constant	-0.073380	-0.0118865
Std Err of Y Est		
R Squared	0.999854	0.999775
Degrees of Freedom		
X Coefficient(s)	1.07855632	1.069710
Std Err of Coef.		
Correlation Coefficient	0.999927	
Coefficient of Determination (r^2)	0.999854	0.999775

LDC # 43888K96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFAs (EPA Method 537Mod)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound	(IS)	Conc	Reported	Recalculated	Reported % R	Recalculated % R
1	181120M1_58	11/20/2018	PFOA	(13C2-PFOA)	1.00	1.139	1.139	113.9	113.9
			PFOS	(13C8-PFOS)	1.00	1.092	1.092	109.2	109.2

LDC #: 43888k9G

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFAS (EPA Method 537Mod)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 10/11

Compound	Spike Added (ng/L)		Sample Conc (ng/L)	Spiked Sample Concentration (ng/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
PFOA	0.0567	0.0863	0.00947	0.112	0.110	118	118	116	116	1.71	1.80
PFOS	↓	↓	0	0.0954	0.0910	110	110	105	105	4.65	4.72

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888K96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/ Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFCs (EPA Method 537Mod)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BSK0091-BS1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc..
PFOS	0.0800	~~0.086~~ NA	0.0864	NA	108	108				
PFOA	"	"	0.0969	"	119	119				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888 K96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: JVG
2nd reviewer:

METHOD: LC/MS PFAS (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 , PFOA :

Conc. $= \frac{(437)(12.5)}{(5070)} = 3.24421e-5X^2 + 1.28147X + 0.B9843$

$X = 0.73163$

final conc. $= \frac{(0.73163)(1L)}{(0.113454)(1000)}$

$= 0.00645$ ng/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration ( )	Qualification
			0.00646		

LOCATION-NAME	SITE_NAME	INSTALLATION_ID	LOCATION_TYPE	LOCATION_TYPE_DESC	SDG	COORD_X	COORD_Y	ANALYTICAL_METHOD_GRP_DESC	SAMPLE_NAME	SAMPLE_MATRIX	SAMPLE_MATRIC_DESC	COLLECT_DATE
A1-MW-01	SITE 00019	YUMA_MCAS	WLM	Monitoring well	1803678	436397.4025	607204.2176	Perfluoroalkyl Compounds	A1-MW-01-SA2	WG	GROUNDWATER	11/16/2018
A1-MW-42	SITE 00019	YUMA_MCAS	WLM	Monitoring well	1803678	436422.6597	607084.7952	Perfluoroalkyl Compounds	A1-MW-42-SA2	WG	GROUNDWATER	11/16/2018