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Naval Facilities Engineering Command

Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 18-0392

Naval Air Station Willow Grove
Willow Grove, Pennsylvania

August 2019

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

N00158_000818
WILLOW_GROVE_NAS
SSIC 5000-33c

LABORATORY DATA PACKAGE, 18-0392, NAWC WARMINSTER NAS WILLOW GROVE PA

06/29/2018

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Approved for public release: distribution unlimited.

Naval Air Station Joint Reserve Base Willow Grove, PA
Project No 100117920-WE04
PFAS in drinking water

DW

Batch 18-0392

Package DP-18-0158

Submitted to:
Tetra Tech
661 Anderson Drive Foster Plaza 7
Pittsburgh, PA 15220 USA

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061

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Naval Air Station Joint Reserve Base Willow Grove, PA

Project No 100117920-WE04

PFAS in drinking water

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Submitted to:
Tetra Tech
661 Anderson Drive Foster Plaza 7
Pittsburgh, PA 15220 USA

NELAP Accreditation Number: E87856 (Florida Department of Health)

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061

Analyst Approval:	Lauren M. Griffith	Lauren Griffith 2018.06.29 13:40:17 -04'00'
QC Chemist Approval:	Carla Devine	Digitally signed by devinec@battelle.org DN: cn=devinec@battelle.org Date: 2018.07.03 14:24:46 -04'00'
Project Manager Approval:		Digitally signed by Jonathan Thorn Date: 2018.07.05 10:13:32 -04'00'

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Naval Air Station Joint Reserve Base Willow Grove, PA

Project No 100117920-WE04

PFAS in drinking water

DW

Batch 18-0392

Package DP-18-0158

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Signature Page

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Signature Page

Name (Printed)	Signature	Initials	Date
Jonathan Thorn	[signature]	JRT	4/4/2018
Robert Lizotte, Jr.	[signature]	BL	4.4.2018
FRANCO PALA	[signature]	[initials]	4.4.2018
Carla Devine	[signature]	CRD	4/4/18
Denise Schumitz	[signature]	DMS	4/4/18
Candice Pearson McCarty	[signature]	CSM	4/4/2018
Rich Rostucci	[signature]	RR	4/4/2018
Michael Meara	[signature]	[initials]	4/4/2018
Christie Usher	[signature]	CU	4/4/18
Kevin McInerney	[signature]	KM	4/4/18
Stephanie Schultz	[signature]	SAS	4/4/18
Jordan Tower	[signature]	JCT	4/4/18
KRISTEN NICHOLS	[signature]	KN	4/4/18
Chimiao H Brown	[signature]	CB	4/4/18
Matt Schumitz	[signature]	MS	4-4-18
Sam Guimaraes	[signature]	SG	4-4-18
Lauren Griffith	[signature]	LMG	4.4.18

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Name (Printed)	Signature	Initials	Date
KAVITHA DASU		KD	04/04/18
Kayla Lamarre		KAL	04/04/18
Weidong Li		W.L	04/04/18
Tracy W Stenner		TWS	04/04/18
Ellyn M Fitch		EMF	12-April-2018
Gail DeRuzzo		GD	4/18/18
Zachary Willenberg		ZW	4/20/18

Work Plan

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WORK/QUALITY ASSURANCE PROJECT PLAN

1.0 GENERAL PROJECT INFORMATION

Project Title:	WE04 PFAS Analysis
Project Number:	100117920-WE04
Client:	Tetra Tech 661 Anderson Drive Foster Plaza 7 Pittsburgh, PA 15220 USA
Client Contact Information:	Andrew Frebowitz Project Manager (610) 382-1170(V) NA andy.frebowitz@tetratech.com
Effective Date of QAPP:	5/4/2018
Version Number:	100117920-WE04(L)-01
Project Manager:	Thorn, Jonathan
Laboratory Task Manager:	Thorn, Jonathan
Deliverable Due Date:	5/22/2018

2.0 SCOPE OF WORK

Overview:	Analysis of drinking water samples collected at Naval Air Station Joint Reserve Base Willow Grove.
Matrix:	Water

2.1 TECHNICAL APPROACH

2.1.1 Sample Receipt, Storage, and Handling

The list of samples for this project plan are presented in Attachment 1.

Storage Directions:	Store refrigerated.
Sub_Sampling:	None
Procedures:	NA
Contact:	NA
Comment:	NA
Archiving:	Store for six months after delivery of final data. Notify client prior to disposal of samples.
Disposal:	Dispose of samples in the proper waste stream.

2.1.2 Sample Preparation

Up to 150 field samples and 150 field reagent blanks (FRB) per quarter. FRB samples will only be analyzed if the corresponding sample has detected levels of any PFAS analyte at or above the LOQ.

Samples Expected:	Samples Per Batch:	Batches Expected:
300	20	15

Batch quality control samples are defined in Table 1.

Target samples are presented in Attachment 1.

Table 1: Quality Control Samples

Type:	*Description:*	*Count:*	*Rgt:*	*Reference:*	*Comment:*
PB	Laboratory control reagent blank.	1 per batch	--	NA	Millipore water with Trizma
LCS	Laboratory Control Sample	1 per batch	No	NA	Millipore water with Trizma
MS	Spiked field sample for determining method accuracy in the presence of matrix.	1 per batch	--	NA	MS/MSD indicated on COC
MSD	Spiked field sample for determining method accuracy and precision in the presence of matrix.	1 per batch	--	NA	MS/MSD indicated on COC

2.1.3 Extraction/Preparation

2.1.3.1 Extraction

SOP No.-Rev:	**5-371-03**
SOP Title:	*ANALYSIS OF POLY AND PERFLUOROALKYL SUBSTANCES IN DRINKING WATER SAMPLES BY LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (LC-MS/MS) FOLLOWING EPA METHOD 537.1*
Sample Size:	250 ml
SIS and LCS/MS Compounds:	Defined in Table 2.
Deviations:	None
Comments:	• MQO requirements per SOP 5-371 (EPA Method 537 Version 1.1). • FRB samples will only be analyzed if associated field sample has hits above the LOQ for any individual analyte.

Table 2: SIS and LCS/MS Spiking Level

Standard Type	Standard Contents		Spike Amount (ng)	Volume (uL)	Comment
PFAS - 537.1 Surrogate Solution	JV60	SIS	~ 0.100 - 0.40 ng	50 uL	NA
PFAS - 537.1 Second Source LCS/MS Solution	JV41	LCS/MS	~ 2.00 - 2.50	50 uL	LCS samples - vary each batch (50, 75, 100, 150 µL spikes)
PFAS - 537.1 Second Source LCS/MS Solution	JV41	LCS/MS	~ 3.00 - 3.8 ng	75 uL	MS/MSD samples - vary each batch (75, 100, 150 µL spikes)

2.1.3.2 Cleanup

None.

RIS spiking levels are presented in Table 3.

Extract PIV (uL): 1000

Table 3: RIS Spiking Level

Standard Type	Standard Contents		Spike Amount (ng)	Volume (uL)	Comment
PFAS - 537.1 Internal Standard Solution	JV59	RIS	~ 0.100 - 0.40 ng	50 uL	NA

2.1.4 Instrumental Analysis

The list of analytes along with data quality criteria are presented in Attachment 2.

1) SOP_No-Rev: **5-371-03**

SOP_Title: *ANALYSIS OF POLY AND PERFLUOROALKYL SUBSTANCES IN DRINKING WATER SAMPLES BY LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (LC-MS/MS) FOLLOWING EPA METHOD 537.1*

Deviations: None

Comments:
- MQO requirements per SOP 5-371 (EPA Method 537 Version 1.1).
- FRB samples will only be analyzed if associated field sample has hits above the LOQ for any individual analyte.

2.2. DELIVERABLES

Deliverables Due:	5/22/2018
LIMS Reports:	*Yes*
Histograms:	*No*
Excel Tables:	*Yes*
EICs:	*No*
Chromatograms:	*No*
EDDs:	*Yes*
Comments:	Each data set will be due 21 days from receipt of samples Full QSM data package showing all aspects of Table B-15 Tetra Tech EDD format

3.0 QUALITY

The Method Quality Objectives are defined in Attachment 3.

4.0 ORGANIZATION AND COMMUNICATION

4.1 ORGANIZATION

The project team is defined in Table 4. Supervisors may make substitutions with Project Manager concurrence.

Table 4: Project Team and Roles

Staff Member	Role	Comment
Jonathan R. Thorn	Project Manager	NA
Stephanie A. Schultz	Sample Preparation	NA
Denise M. Schumitz	LC-MS/MS Analysis	NA
Matt D. Schumitz	Sample Custody	NA
Carla R. Devine	Quality Control Officer	NA
Zachary J. Willenberg	Quality Assurance Officer	NA

4.2 COMMUNICATION

A kick-off meeting will be held to discuss project scope and goals.

5.0 SCHEDULE

The project schedule is presented in Table 5.

Table 5. Schedule of Laboratory Activities

Activity:	Start Date:	End Date:	TAT (days):	Comment:
Sample Receipt	05/01/2018	12/31/2018	244	NA
Sample Preparation	05/04/2018	01/31/2019	272	NA
Instrument Analysis	05/07/2018	01/31/2019	269	NA
Quality Control Review	05/14/2018	01/31/2019	262	NA
Final Data Reporting	05/18/2018	01/31/2019	258	NA
Quality Assurance Review	05/21/2018	01/31/2019	255	NA

6.0 BUDGET

The labor budget for the analytical task is presented in Table 6.

Table 6. Labor Budget (Laboratory Analytical Task)

Labor Activity:	Hours/ Batch:	Batches:	Total Hours:	Comment:
Sample Receipt	2	1	2	All labor hours are based on a batch of 20 field samples.
Sample Preparation	8	1	8	All labor hours are based on a batch of 20 field samples.
Instrument Analysis	8	1	8	All labor hours are based on a batch of 20 field samples.
Quality Control Review	3	1	3	All labor hours are based on a batch of 20 field samples.
Final Data Reporting	1	1	1	All labor hours are based on a batch of 20 field samples.
Quality Assurance Review	1	1	1	All labor hours are based on a batch of 20 field samples.

7.0 STAFF DEVELOPMENT

None anticipated

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 1: Target Samples

Shipment: **SHP-180501-01**

Status: Approved

Description: WE04

Range: J5964-J5969

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J5964	WGNA-043018-RW-3103	04/30/2018 10:10 am	DW	R0118 (NA)			MSMSD
2	J5965	WGNA-043018-FRB-3103	04/30/2018 10:05 am	DW	R0118 (NA)			
3	J5966	NAWC-043018-RW-207	04/30/2018 10:40 am	DW	R0118 (NA)			
4	J5967	NAWC-043018-FRB-207	04/30/2018 10:35 am	DW	R0118 (NA)			
5	J5968	WGNA-043018-RW-3409	04/30/2018 1:40 pm	DW	R0118 (NA)			
6	J5969	WGNA-043018-FRB-3409	04/30/2018 1:35 pm	DW	R0118 (NA)			

Shipment: **SHP-180502-02**

Status: Approved

Description: WE04

Range: J5970-J5977

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J5970	WGNA-050118-RW-3385	05/01/2018 9:10 am	DW	R0118 (NA)			
2	J5971	WGNA-050118-FRB-3385	05/01/2018 9:05 am	DW	R0118 (NA)			
3	J5972	WGNA-050118-RW-3178	05/01/2018 9:40 am	DW	R0118 (NA)			
4	J5973	WGNA-050118-FRB-3178	05/01/2018 9:35 am	DW	R0118 (NA)			
5	J5974	NAWC-050118-RW-304	05/01/2018 10:10 am	DW	R0118 (NA)			
6	J5975	NAWC-050118-FRB-304	05/01/2018 10:05 am	DW	R0118 (NA)			
7	J5976	NAWC-050118-RW-098	05/01/2018 10:40 am	DW	R0118 (NA)			
8	J5977	NAWC-050118-FRB-098	05/01/2018 10:35 am	DW	R0118 (NA)			

Shipment: **SHP-180508-02**

Status: Approved

Description: WE04

Range: J6148-J6170

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6148	NAWC-050718-RW-316	05/07/2018 10:10 am	DW	R0118 (NA)			
2	J6149	NAWC-050718-FRB-316	05/07/2018 10:05 am	DW	R0118 (NA)			
3	J6150	NAWC-050718-RW-180	05/07/2018 10:40 am	DW	R0118 (NA)			
4	J6151	NAWC-050718-FRB-180	05/07/2018 10:35 am	DW	R0118 (NA)			
5	J6152	NAWC-050718-RW-275	05/07/2018 11:10 am	DW	R0118 (NA)			
6	J6153	NAWC-050718-FRB-275	05/07/2018 11:05 am	DW	R0118 (NA)			
7	J6154	NAWC-050718-RW-145	05/07/2018 12:40 pm	DW	R0118 (NA)			

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WORK/QUALITY ASSURANCE PROJECT PLAN

Shipment: **SHP-180508-02**

Status: Approved

Description: WE04

Range: J6148-J6170

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
8	J6155	NAWC-050718-FRB-145	05/07/2018 12:35 pm	DW	R0118 (NA)			
9	J6156	NAWC-050718-RW-357	05/07/2018 1:10 pm	DW	R0118 (NA)			
10	J6157	NAWC-050718-FRB-357	05/07/2018 1:05 pm	DW	R0118 (NA)			
11	J6158	NAWC-050718-RW-162	05/07/2018 1:40 pm	DW	R0118 (NA)			
12	J6159	NAWC-050718-FRB-162	05/07/2018 1:35 pm	DW	R0118 (NA)			
13	J6160	WGNA-050718-RW-0800	05/07/2018 2:10 pm	DW	R0118 (NA)			
14	J6161	WGNA-050718-FRB-0800	05/07/2018 2:05 pm	DW	R0118 (NA)			
15	J6162	WGNA-050718-RW-0335	05/07/2018 2:40 pm	DW	R0118 (NA)			
16	J6163	WGNA-050718-FRB-0335	05/07/2018 2:35 pm	DW	R0118 (NA)			
17	J6164	WGNA-050718-RW-3556	05/07/2018 3:10 pm	DW	R0118 (NA)			
18	J6165	WGNA-050718-FRB-3556	05/07/2018 3:05 pm	DW	R0118 (NA)			
19	J6166	NAWC-050718-RW-356	05/07/2018 3:40 pm	DW	R0118 (NA)			
20	J6167	NAWC-050718-FRB-356	05/07/2018 3:35 pm	DW	R0118 (NA)			
21	J6168	NAWC-050718-RW-289	05/07/2018 4:10 pm	DW	R0118 (NA)			
22	J6169	NAWC-050718-FRB-289	05/07/2018 4:05 pm	DW	R0118 (NA)			
23	J6170	WGNA-050718-DUP-35	05/07/2018 7:00 am	DW	R0118 (NA)			

Shipment: **SHP-180511-02**

Status: Approved

Description: WE04

Range: J6204-J6212

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6204	NAWC-051018-RW-303	05/10/2018 9:10 am	DW	R0118 (NA)			
2	J6205	NAWC-051018-FRB-303	05/10/2018 9:05 am	DW	R0118 (NA)			
3	J6206	WGNA-051018-RW-3220	05/10/2018 9:40 am	DW	R0118 (NA)			
4	J6207	WGNA-051018-FRB-3220	05/10/2018 9:35 am	DW	R0118 (NA)			
5	J6208	NAWC-051018-RW-177	05/10/2018 10:40 am	DW	R0118 (NA)			
6	J6209	NAWC-051018-FRB-177	05/10/2018 10:35 am	DW	R0118 (NA)			
7	J6210	WGNA-051018-RW-3295	05/10/2018 3:10 pm	DW	R0118 (NA)			
8	J6211	WGNA-051018-FRB-3295	05/10/2018 3:05 pm	DW	R0118 (NA)			
9	J6212	WGNA-051018-DUP-36	05/10/2018 7:00 am	DW	R0118 (NA)			

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Shipment: **SHP-180530-01**

Status: Approved

Description: WE04

Range: J6258-J6267

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6258	WGNA-052918-RW-3124	05/29/2018 9:40 am	DW	R0118 (NA)			
2	J6259	WGNA-052918-FRB-3124	05/29/2018 9:35 am	DW	R0118 (NA)			
3	J6260	WGNA-052918-RW-3493	05/29/2018 10:10 am	DW	R0118 (NA)			
4	J6261	WGNA-052918-FRB-3493	05/29/2018 10:05 am	DW	R0118 (NA)			
5	J6262	WGNA-052918-RW-3882	05/29/2018 10:25 am	DW	R0118 (NA)			
6	J6263	WGNA-052918-FRB-3882	05/29/2018 10:20 am	DW	R0118 (NA)			
7	J6264	WGNA-052918-RW-3978	05/29/2018 10:40 am	DW	R0118 (NA)			
8	J6265	WGNA-052918-FRB-3978	05/29/2018 10:35 am	DW	R0118 (NA)			
9	J6266	NAWC-052918-RW-161	05/29/2018 11:40 am	DW	R0118 (NA)			
10	J6267	NAWC-052918-FRB-161	05/29/2018 11:35 am	DW	R0118 (NA)			

Shipment: **SHP-180531-02**

Status: Approved

Description: WE04

Range: J6270-J6288

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6270	WGNA-053018-RW-3876	05/30/2018 8:10 am	DW	R0119 (NA)			
2	J6271	WGNA-053018-FRB-3876	05/30/2018 8:05 am	DW	R0119 (NA)			
3	J6272	WGNA-053018-DUP-37	05/30/2018 7:00 am	DW	R0119 (NA)			
4	J6273	NAWC-053018-RW-231	05/30/2018 8:40 am	DW	R0119 (NA)			
5	J6274	NAWC-053018-FRB-231	05/30/2018 8:35 am	DW	R0119 (NA)			
6	J6275	WGNA-053018-RW-3933	05/30/2018 11:10 am	DW	R0119 (NA)			
7	J6276	WGNA-053018-FRB-3933	05/30/2018 11:05 am	DW	R0119 (NA)			
8	J6277	NAWC-053018-RW-164	05/30/2018 2:10 pm	DW	R0119 (NA)			
9	J6278	NAWC-053018-FRB-164	05/30/2018 2:05 pm	DW	R0119 (NA)			
10	J6279	NAWC-053018-RW-292	05/30/2018 2:40 pm	DW	R0119 (NA)			
11	J6280	NAWC-053018-FRB-292	05/30/2018 2:35 pm	DW	R0119 (NA)			
12	J6281	NAWC-053018-RW-271	05/30/2018 3:10 pm	DW	R0119 (NA)			
13	J6282	NAWC-053018-FRB-271	05/30/2018 3:05 pm	DW	R0119 (NA)			
14	J6283	NAWC-053018-RW-270	05/30/2018 3:20 pm	DW	R0119 (NA)			
15	J6284	NAWC-053018-FRB-270	05/30/2018 3:15 pm	DW	R0119 (NA)			
16	J6285	NAWC-053018-RW-196	05/30/2018 3:40 pm	DW	R0119 (NA)			
17	J6286	NAWC-053018-FRB-196	05/30/2018 3:35 pm	DW	R0119 (NA)			
18	J6287	NAWC-053018-RW-172	05/30/2018 4:10 pm	DW	R0119 (NA)			
19	J6288	NAWC-053018-FRB-172	05/30/2018 4:05 pm	DW	R0119 (NA)			

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Shipment: **SHP-180601-02**

Status: Approved

Description: WE04

Range: J6290-J6300

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6290	NAWC-053118-RW-256	05/31/2018 8:10 am	DW	R0119 (NA)			
2	J6291	NAWC-053118-FRB-256	05/31/2018 8:05 am	DW	R0119 (NA)			
3	J6292	NAWC-053118-RW-126	05/31/2018 8:40 am	DW	R0119 (NA)			
4	J6293	NAWC-053118-FRB-126	05/31/2018 8:35 am	DW	R0119 (NA)			
5	J6294	WGNA-053118-DUP-38	05/31/2018 7:00 am	DW	R0119 (NA)			
6	J6295	WGNA-053118-RW-4850	05/31/2018 9:40 am	DW	R0119 (NA)			
7	J6296	WGNA-053118-FRB-4850	05/31/2018 9:35 am	DW	R0119 (NA)			
8	J6297	NAWC-053118-RW-311	05/31/2018 12:10 pm	DW	R0119 (NA)			
9	J6298	NAWC-053118-FRB-311	05/31/2018 12:05 pm	DW	R0119 (NA)			
10	J6299	NAWC-053118-RW-265	05/31/2018 4:10 pm	DW	R0119 (NA)			
11	J6300	NAWC-053118-FRB-265	05/31/2018 4:05 pm	DW	R0119 (NA)			

Shipment: **SHP-180605-07**

Status: Approved

Description: WE04

Range: J6582-J6591

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6582	NAWC-060418-RW-230	06/04/2018 8:10 am	DW	R0119 (NA)			
2	J6583	NAWC-060418-FRB-230	06/04/2018 8:05 am	DW	R0119 (NA)			
3	J6584	NAWC-060418-RW-309	06/04/2018 8:40 am	DW	R0119 (NA)			
4	J6585	NAWC-060418-FRB-309	06/04/2018 8:35 am	DW	R0119 (NA)			
5	J6586	NAWC-060418-RW-293	06/04/2018 9:40 am	DW	R0119 (NA)			
6	J6587	NAWC-060418-FRB-293	06/04/2018 9:35 am	DW	R0119 (NA)			
7	J6588	NAWC-060418-RW-038	06/04/2018 9:55 am	DW	R0119 (NA)			
8	J6589	NAWC-060418-FRB-038	06/04/2018 9:50 am	DW	R0119 (NA)			
9	J6590	NAWC-060418-RW-039	06/04/2018 10:10 am	DW	R0119 (NA)			
10	J6591	NAWC-060418-FRB-039	06/04/2018 10:05 am	DW	R0119 (NA)			

Shipment: **SHP-180608-03**

Status: Pending

Description: WE04

Range: J6637-J6643

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6637	WGNA-060718-RW-0488	06/07/2018 12:40 pm	DW	R0119 (NA)			
2	J6638	WGNA-060718-FRB-0488	06/07/2018 12:35 pm	DW	R0119 (NA)			
3	J6639	NAWC-060718-RW-175	06/07/2018 1:10 pm	DW	R0119 (NA)			

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WORK/QUALITY ASSURANCE PROJECT PLAN

Shipment: **SHP-180608-03**

Status: Pending

Description: WE04

Range: J6637-J6643

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
4	J6640	NAWC-060718-FRB-175	06/07/2018 1:05 pm	DW	R0119 (NA)			
5	J6641	WGNA-060718-DUP-39	06/07/2018 7:00 am	DW	R0119 (NA)			
6	J6642	WGNA-060718-RW-0626	06/07/2018 2:10 pm	DW	R0119 (NA)			
7	J6643	WGNA-060718-FRB-0626	06/07/2018 2:05 pm	DW	R0119 (NA)			

Shipment: **SHP-180613-02**

Status: Pending

Description: WE04

Range: J6737-J6746

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6737	WGNA-061118-RW-3073	06/11/2018 11:10 am	DW	R0119 (NA)			
2	J6738	WGNA-061118-FRB-3073	06/11/2018 11:05 am	DW	R0119 (NA)			
3	J6739	WGNA-061118-RW-0437	06/11/2018 11:40 am	DW	R0119 (NA)			
4	J6740	WGNA-061118-FRB-0437	06/11/2018 11:35 am	DW	R0119 (NA)			
5	J6741	WGNA-061218-RW-3283	06/12/2018 9:10 am	DW	R0119 (NA)			
6	J6742	WGNA-061218-FRB-3283	06/12/2018 9:05 am	DW	R0119 (NA)			
7	J6743	WGNA-061218-RW-3382	06/12/2018 9:40 am	DW	R0119 (NA)			
8	J6744	WGNA-061218-FRB-3382	06/12/2018 9:35 am	DW	R0119 (NA)			
9	J6745	NAWC-061218-RW-276	06/12/2018 10:10 am	DW	R0119 (NA)			
10	J6746	NAWC-061218-FRB-276	06/12/2018 10:05 am	DW	R0119 (NA)			

Shipment: **SHP-180615-01**

Status: Pending

Description: WE04

Range: J6758-J6761

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6758	NAWC-061418-RW-111	06/14/2018 9:10 am	DW	R0119 (NA)			
2	J6759	NAWC-061418-FRB-111	06/14/2018 9:05 am	DW	R0119 (NA)			
3	J6760	NAWC-061418-RW-056	06/14/2018 9:40 am	DW	R0119 (NA)			
4	J6761	NAWC-061418-FRB-056	06/14/2018 9:35 am	DW	R0119 (NA)			

BATTELLE
It can be done

WORK/QUALITY ASSURANCE PROJECT PLAN

Shipment: **SHP-180627-01**

Status: Pending

Description: WE04

Range: J6816-J6817

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6816	WGNA-062618-RW-3136	06/26/2018 8:40 am	DW	R0119 (NA)			
2	J6817	WGNA-062618-FRB-3136	06/26/2018 8:35 am	DW	R0119 (NA)			

BATTELLE
It can be done

WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name:	Master_371
SOP Reference:	5-371 - ANALYSIS OF POLY AND PERFLUOROALKYL SUBSTANCES IN DRINKING WATER SAMPLES BY LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (LC-MS/MS) FOLLOWING EPA METHOD 537.1
Description:	PFAS in drinking water
Matrix:	L - Liquid Samples, like water or sea water, prepared and anlyzed under the same class of detection limits.
Detection Limit Study:	5-371
Instrument:	LC-MS/MS
MQO Criteria	Universal_LC
Standard Report:	Standard Result Report

Method Specific Reporting				Holding Times (days)		Data Flags	
Result Units:	ng/L	***Unit Conversion:***	(none)	***Sample:***	14	***DL_Flag:***	U
Weight Basis:	Liquid	***Result Format:***	Fixed Digits	***Frozen:***	40	***RL_Flag:***	J
Standard Basis:	RIS	***# of Figures/Digits:***	2	***Extract:***	28	***PB_Flag:***	B
Oil Weight Basis:	No	***Oil Weight Source:***	Oil Weight			***DIL_Flag:***	D
U-Value Substition:	U-Flag=MD	***Histograms:***	No			***HT_Flag:***	T
ECD_Reporting:	No						

No:	Analyte:	Report Name:	Type	RIS	SIS	Hidden:	Graph:
1	Perfluoro-n-hexanoic acid	PFHxA	T	13C2-PFOA		No	No
2	Perfluoro-n-heptanoic Acid	PFHpA	T	13C2-PFOA		No	No
3	Perfluoro-n-octanoic Acid	PFOA	T	13C2-PFOA		No	No
4	Perfluorononanoic Acid	PFNA	T	13C2-PFOA		No	No
5	Perfluoro-n-decanoic Acid	PFDA	T	13C2-PFOA		No	No
6	Perfluoro-n-undecanoic acid	PFUnA	T	13C2-PFOA		No	No
7	Perfluoro-n-dodecanoic acid	PFDoA	T	13C2-PFOA		No	No
8	Perfluoro-n-tridecanoic acid	PFTrDA	T	13C2-PFOA		No	No
9	Perfluoro-n-tetradecanoic acid	PFTeDA	T	13C2-PFOA		No	No
10	N-methylperfluoro-1-octanesulfonamidoacetic acid	NMeFOSAA	T	d3-MeFOSAA		No	No
11	N-ethylperfluoro-octanesulfonamidoacetic acid	NEtFOSAA	T	d3-MeFOSAA		No	No
12	Perfluoro-1-butanesulfonate	PFBS	T	13C4-PFOS		No	No
13	Perfluoro-1-hexanesulfonate	PFHxS	T	13C4-PFOS		No	No
14	Perfluoro-1-octanesulfonate	PFOS	T	13C4-PFOS		No	No
1	13C2-PFHxA	13C2-PFHxA	SIS			No	No
2	13C2-PFDA	13C2-PFDA	SIS			No	No

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name: Master_371

No:	Analyte:	Report Name:	Type	RIS	SIS	Hidden:	Graph:
3	d5-EtFOSAA	d5-EtFOSAA	SIS			No	No
Total Analytes:	17						

Subtract Peaks:

None

Sum Peaks:

None

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name: Master_371

ICAL Acceptance Criteria:

Curve Fit:	Limit Mean(%):	Mean Qual:	Limit Ind.:	Ind. Qual:	Min Points:	Points Qual:	Comments:
Linear	NA	NA	0.995	N	5	N	NA
Average RF	15	N	25	N	5	N	NA
Linear (0,0)	NA	NA	0.995	N	5	N	NA
Quadratic	NA	NA	0.995	N	6	N	NA
Quadratic (0,0)	NA	NA	0.995	N	6	N	NA

Continuing Calibration Verification Criteria:

CCV Name: Standard

Frequency Hrs:	Mean PD(%):	Individual PD(%):	RIS/SIS RT Window (min):	Area Limit Low(%):	Area Limit High(%):	Comment:
12 (N)	20 (N)	25 (N)	0.07 (N)	-50	100 (N)	Lab Default Continuing Calibration Verfication Criteria

Independent Calibration Verification:

ICC Name: Standard

Mean PD Limit(%):	Ind. PD Limit(%):	RIS/SIS Window Limit (Secs):	Area Limit High(%):	Area Limit Low(%):	Comment:
15 (N)	20 (N)	0.07 (N)	-50	100 (N)	Standard laboratory criteria for ICCs

Mass Discrimination Criteria:

None

Degredation Check Criteria:

None

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 3: Method Quality Objectives

MQO Application	***Universal_LC***		
MQO:	**Acceptance Criteria**	**Qual:**	**Corrective Action:**
Procedural Blank	Samples must be greater than five times the blank concentration (>5xPB).	B	Review with Project Manager; re-analyze or justify results in project records.
PB Measurement Quality Objective	Organic results in the Procedural Blank are less than 1/2 times the LOQ (<1/2xLOQ)	N	Review with Project Manager; re-analyze or justify results in project records.
Laboratory Control Sample	Recovery values 70-130%.	N	Review with project manager; re-analyze or justify reporting the results in project records.
Matrix Spike / Matrix Spike Duplicate Recovery	Organics 70-130%. Analyte concentration in MS/MSD must be greater than five times reported background concentration.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the Original	n	
Matrix Spike/Spike Duplicate Precision	Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration in MS/MSD must be greater than five times reported background concentration.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the Original	n	
Standard Reference Material Accuracy	Organics Percent Difference less than 30% from a range of certified values on average. Analyte concentration must be greater than five times the Method Detection Limit (>5xMDL).	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the MDL	n	
Analytical Duplicate Precision	Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration must be > 5x MDL.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Original is less than 5 times the MDL	n	

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 3: Method Quality Objectives

MQO Application	***Universal_LC***		
MQO:	**Acceptance Criteria**	**Qual:**	**Corrective Action:**
Analytical Triplicate Precision	Organics results less than 30% Relative Standard Deviation (RSD). Analyte concentration must be > 5x MDL.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Original is less than 5 times the MDL	n	
Surrogate Compound Recovery	Recovery results between 50% and 150%.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
Control Oil	RPD < 30% for at least 90% of analytes	N	Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented.
Instrument Calibration	5-371-3: R-squared greater than or equal to 0.995 Mean RSD less than or equal to 15%, Individual RSD less than or equal to 25%	N	Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented.
Independent Calibration Check Solution	5-371-3: Individual PD less than or equal to 20%. Mean Percent Difference less than or equal to 15%.	N	Review with Project Manager; re-analyze or justify in project records.
Continuing Calibration Verification	5-371-3: Individual PD less than or equal to 25%. Mean Percent Difference less than or equal to 20%.	N	Review with Project Manager; re-analyze or justify in project records.

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It can be done

ShpNo SHP-180613-02

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: 112G08005-WE04 **Client:** Tetra Tech

Received by: Schumitz, Matt **Date/Time Received:** Wednesday, June 13, 2018 9:45 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 7724 5597 5123

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal	Container	Therm.	Temp C	Smps
1 of 1	Cooler	7724 5597 5123	Custody Seals	Intact	Intact	Therm_1	1.7	10

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 1.7 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no. individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Custody: Refrigerator - R0119 (NA) **BDO IDs Assigned:** J6737 - J6746

Samples logged in by: Schumitz, Matt **Date/Time:** 06/13/2018 9:45 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

BATTELLE

It can be done

ShpNo SHP-180613-02

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ Authorized ☐

Project Number: 112G08005-WE04 **Client:** Tetra Tech

Received by: Schumitz, Matt **Date/Time Received:** Wednesday, June 13, 2018 9:45 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
J6737	WGNA-061118-RW-3073	06/11/18 11:10	06/13/18 10:22	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6738	WGNA-061118-FRB-3073	06/11/18 11:05	06/13/18 10:22	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6739	WGNA-061118-RW-0437	06/11/18 11:40	06/13/18 10:28	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6740	WGNA-061118-FRB-0437	06/11/18 11:35	06/13/18 10:28	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6741	WGNA-061218-RW-3283	06/12/18 9:10	06/13/18 10:28	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6742	WGNA-061218-FRB-3283	06/12/18 9:05	06/13/18 10:29	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6743	WGNA-061218-RW-3382	06/12/18 9:40	06/13/18 10:29	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6744	WGNA-061218-FRB-3382	06/12/18 9:35	06/13/18 10:29	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6745	NAWC-061218-RW-276	06/12/18 10:10	06/13/18 10:30	2	DW	1.7	NA	NA	NA	R0119 (NA)			
J6746	NAWC-061218-FRB-276	06/12/18 10:05	06/13/18 10:31	2	DW	1.7	NA	NA	NA	R0119 (NA)			

Total Samples: 10

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Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days

Project Name: WE04
Project No.: 112G08005-WE04

Normal ☑
Priority ☐
RUSH ☐
Time Zone: Eastern

Sampling Site: WE04
Site Information: NAS JRB Willow Grove/WGNA Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservativ: Trizma	Analysis: PFAS EPA 537 14 analytes	Comments
WGNA-061118-RW-3073 J6737	6/11/2018	11:10	G	DW	2		X	
WGNA-061118-FRB-3073 J6738	6/11/2018	11:05	G	DW	2		X	Field Reagent Blank
WGNA-061118-RW-0437 J6739	6/11/2018	11:40	G	DW	2		X	
WGNA-061118-FRB-0437 J6740	6/11/2018	11:35	G	DW	2		X	Field Reagent Blank
WGNA-061218-RW-3283 J6741	6/12/2018	09:10	G	DW	2		X	
WGNA-061218-FRB-3283 J6742	6/12/2018	09:05	G	DW	2		X	Field Reagent Blank
WGNA-061218-RW-3382 J6743	6/12/2018	09:40	G	DW	2		X	
WGNA-061218-FRB-3382 J6744	6/12/2018	09:35	G	DW	2		X	Field Reagent Blank
NAWC-061218-RW-276 J6745	6/12/2018	10:10	G	DW	2		X	
NAWC-061218-FRB-276 J6746	6/12/2018	10:05	G	DW	2		X	Field Reagent Blank

Receipt Temperature:(°C) 1.7°
Samples Intact: Yes - No
Samples on Ice: Yes No
Receipt Comments:

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	6/12/2018 16:00	Matt Schumitz	Battelle	6-13-18 9:45

Comments: FedEx Tracking # 7724 5597 5123

Therm. 1

ORIGIN ID:KPDA (610) 382-1530
N. SOMA
TETRA TECH
234 MALL BLVD
SUITE 260
KING OF PRUSSIA, PA 19406
UNITED STATES US

SHIP DATE: 12JUN18
ACTWGT: 44.00 LB
CAD: 111283035/INET3980
DIMS: 24x16x18 IN

BILL SENDER

TO JONATHAN THORN
BATTELLE
141 LONGWATER DRIVE
SUITE 202
NORWELL MA 02061
(781) 681-5565

MDS 6·13
9:45
1·7°

552J2/93DF/DCA5

REF 112G08005-WE04 LT.WS
INV:
PO:
DEPT:

FedEx Express

E

J181118012601uv

WED - 13 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7724 5597 5123

EM XPUA

02061
MA-US BOS

BATTELLE

It can be done

ShpNo SHP-180615-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: 112G08005-WE04 **Client:** Tetra Tech

Received by: Schumitz, Matt **Date/Time Received:** Friday, June 15, 2018 10:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 7724 7437 4685

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal	Container	Therm.	Temp C	Smps
1 of 1	Cooler	7724 7437 4685	Custody Seals	Intact	Intact	Therm_1	2.1	4

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.1 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Custody: Refrigerator - R0119 (NA) **BDO IDs Assigned:** J6758 - J6761

Samples logged in by: Schumitz, Matt **Date/Time:** 06/15/2018 10:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

BATTELLE

It can be done

ShpNo SHP-180615-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ Authorized ☐

Project Number: 112G08005-WE04 **Client:** Tetra Tech

Received by: Schumitz, Matt **Date/Time Received:** Friday, June 15, 2018 10:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
J6758	NAWC-061418-RW-111	06/14/18 9:10	06/15/18 12:06	2	DW	2.1	NA	NA	NA	R0119 (NA)			
J6759	NAWC-061418-FRB-111	06/14/18 9:05	06/15/18 12:06	2	DW	2.1	NA	NA	NA	R0119 (NA)			
J6760	NAWC-061418-RW-056	06/14/18 9:40	06/15/18 12:06	2	DW	2.1	NA	NA	NA	R0119 (NA)			
J6761	NAWC-061418-FRB-056	06/14/18 9:35	06/15/18 12:06	2	DW	2.1	NA	NA	NA	R0119 (NA)			

Total Samples: 4

Battelle

The Business of Innovation

Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days

Project Name: WE04
Project No.: 112G08005-WE04

Normal ☑
Priority ☐
RUSH ☐
Time Zone: Eastern

Sampling Site: WE04
Site Information: NAS JRB Willow Grove/WGNA Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservativ: Trizma	Analysis: PFAS EPA 537 14 analytes	
NAWC-061418-RW-111 J6758	6/14/2018	09:10	G	DW	2		X	
NAWC-061418-FRB-111 J6759	6/14/2018	09:05	G	DW	2		X	Field Reagent Blank
NAWC-061418-RW-056 J6760	6/14/2018	09:40	G	DW	2		X	
NAWC-061418-FRB-056 J6761	6/14/2018	09:35	G	DW	2		X	Field Reagent Blank

Receipt Temperature:(°C)
Samples Intact: Yes - No
Samples on Ice: Yes - No
Receipt Comments:

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	06/14/2018 16:00	Matt Schimitz MS	Battelle	6-15-18 1000

Comments: FedEx Tracking # 7724 7437 4685

Therm-1

ORIGIN ID:KPDA (610) 382-1530
N. SOMA
TETRA TECH
234 MALL BLVD
SUITE 260
KING OF PRUSSIA, PA 19406
UNITED STATES US

SHIP DATE: 14JUN18
ACTWGT: 26.00 LB
CAD: 111283035/INET3980
DIMS: 17x12x18 IN

BILL SENDER

TO JONATHAN THORN
BATTELLE
141 LONGWATER DRIVE
SUITE 202
NORWELL MA 02061
(781) 681-5565
INV:
PO:

10:00 MDS
2.1°

REF 112G08005-WE04 LT WS

DEPT:

552J2/93DF/DCA5

FedEx Express

E

J181118012601uv

TRK# 0201 7724 7437 4685

FRI - 15 JUN 10:30A
PRIORITY OVERNIGHT

EM XPUA

02061
MA-US BOS

Data Tables

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-FRB-3073			
Battelle ID	J6738-FS			
Sample Type	SA			
Collection Date	06/11/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.260			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.48 U	0.21	0.48	2.40
PFHpA	0.96 U	0.33	0.96	2.40
PFOA	0.96 U	0.37	0.96	2.40
PFNA	0.96 U	0.36	0.96	2.40
PFDA	0.96 U	0.38	0.96	2.40
PFUnA	0.96 U	0.37	0.96	2.40
PFDoA	0.96 U	0.40	0.96	2.40
PFTrDA	0.96 U	0.40	0.96	2.40
PFTeDA	1.44 U	0.70	1.44	2.40
NMeFOSAA	0.96 U	0.40	0.96	2.40
NEtFOSAA	0.96 U	0.42	0.96	2.40
PFBS	0.48 U	0.20	0.48	2.40
PFHxS	0.96 U	0.33	0.96	2.40
PFOS	0.96 U	0.29	0.96	2.40
Surrogate Recoveries (%)				
13C2-PFHxA	109			
13C2-PFDA	110			
d5-EtFOSAA	87			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-FRB-0437
Battelle ID	J6740-FS
Sample Type	SA
Collection Date	06/11/2018
Extraction Date	06/25/2018
Analysis Date	06/27/2018
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	DW
Sample Size	0.250
Size Unit-Basis	L

Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	101
13C2-PFDA	104
d5-EtFOSAA	90

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-FRB-3283			
Battelle ID	J6742-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.260			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.48 U	0.21	0.48	2.40
PFHpA	0.96 U	0.33	0.96	2.40
PFOA	0.96 U	0.37	0.96	2.40
PFNA	0.96 U	0.36	0.96	2.40
PFDA	0.96 U	0.38	0.96	2.40
PFUnA	0.96 U	0.37	0.96	2.40
PFDoA	0.96 U	0.40	0.96	2.40
PFTrDA	0.96 U	0.40	0.96	2.40
PFTeDA	1.44 U	0.70	1.44	2.40
NMeFOSAA	0.96 U	0.40	0.96	2.40
NEtFOSAA	0.96 U	0.42	0.96	2.40
PFBS	0.48 U	0.20	0.48	2.40
PFHxS	0.96 U	0.33	0.96	2.40
PFOS	0.96 U	0.29	0.96	2.40
Surrogate Recoveries (%)				
13C2-PFHxA	108			
13C2-PFDA	106			
d5-EtFOSAA	91			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-FRB-3382			
Battelle ID	J6744-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	115
13C2-PFDA	106
d5-EtFOSAA	111

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061218-FRB-276			
Battelle ID	J6746-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	105			
d5-EtFOSAA	88			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-FRB-111			
Battelle ID	J6759-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	101			
13C2-PFDA	99			
d5-EtFOSAA	116			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-FRB-056			
Battelle ID	J6761-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	105			
13C2-PFDA	99			
d5-EtFOSAA	113			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Procedural Blank			
Battelle ID	CR040PB-FS			
Sample Type	PB			
Collection Date	06/25/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	WATER			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	102
13C2-PFDA	105
d5-EtFOSAA	92

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Laboratory Control Sample					
Battelle ID	CR041LCS-FS					
Sample Type	LCS					
Collection Date	06/25/2018					
Extraction Date	06/25/2018					
Analysis Date	06/27/2018					
Analytical Instrument	Sciex 5500 LC/MS/MS					
% Moisture	NA					
Matrix	WATER					
Sample Size	0.250					
Size Unit-Basis	L				Control Limits	
Units	ng/L	Target	Recovery	Qual	Lower	Upper
PFHxA	18.37	15.00	122		70	130
PFHpA	18.22	15.00	121		70	130
PFOA	18.19	15.00	121		70	130
PFNA	17.48	15.00	117		70	130
PFDA	18.70	15.00	125		70	130
PFUnA	17.33	15.00	116		70	130
PFDoA	17.58	15.00	117		70	130
PFTrDA	17.34	15.00	116		70	130
PFTeDA	26.81	15.00	179	N	70	130
NMeFOSAA	16.07	15.00	107		70	130
NEtFOSAA	16.51	15.00	110		70	130
PFBS	14.52	13.28	109		70	130
PFHxS	15.20	14.18	107		70	130
PFOS	16.15	14.33	113		70	130

Surrogate Recoveries (%)

13C2-PFHxA	104
13C2-PFDA	107
d5-EtFOSAA	79

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highers concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the Limit of Quantitation (LOQ)
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Method detection limit (MDL) value, Limit of Detection (LOD) reported

Miscellaneous Documentation

Project:	CTO-WE04 Naval Air Station Joint Reserve Base Willow Grove
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	DW
Data Set:	DP-18-0158
Analytical SOP:	5-371
Method Reference:	USEPA 537 rev. 1.1, QSM 5.1

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
6/11, 12/2018	6/13/2018	1.7
6/14/2018	6/15/2018	2.1

Corrective Actions	None
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	The associated field samples are reported in SDG 18-0372.

	METHOD SUMMARIES
Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with methanol. Extracts were concentrated to dryness under nitrogen with a water bath set between 60 °C and 65 °C, reconstituted with 96:4 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.
Prep comments	None.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on the Sciex 5500. There are no ion ratio exceedences above 50% RPD for any analyte detected above the MDL or the LOQ in this SDG.

Holding Times	Extraction Date(s)	Analysis Date(s)
	6/25/2018	6/27 and 28/2018

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ 1/3 the MRL	No exceedances noted.
	No comments.

Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
70-130% of true value	One exceedance noted.
	PFTeDA is over-recovered, a fresh aliquot was analyzed to verify the recovery. Where this target is over-recovered and not detected in any of the associated samples, no further corrective action was taken.

Matrix Spike (MS) / Duplicate (MSD)	A MS/MSD were prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. The relative percent difference was calculated to measure precision.
70-130% of true value, RPD ≤ 30%	Not applicable.
	MS/MSD samples were not prepared with this batch of FRB samples.

Surrogates Standard Analytes	Labelled surrogate compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
70-130% of true value	No exceedances noted.
	No comments.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
ICAL high and low points RPD ≤20%, 50-150% of average area of the ICAL and 70-140% of most recent CCV	No exceedances noted.
	No comments.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
R^2 >0.99 Target and SIS compounds +/- 30% of true value, Low point 50-150% of true value	No exceedances noted.
	No comments.

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
Target and SIS compounds +/- 30% of true value	No exceedances noted.
	No comments.

Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
Target and SIS compounds +/- 30% of true value Low point 50-150% of true value	No exceedances noted.
	No comments.

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Number: 100117920-WE04
Preparation Batch: 18-0392
Data Set: DP-18-0158
Test Code: Master_371

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	1	PFTeDA over recovered. Sample was re-run to verify the recovery. As this was over recovered, and not detected in any field sample, no additional corrective action was taken.
Matrix Spike / Matrix Spike Duplicate Recovery	NA	NA
Matrix Spike / Matrix Spike Duplicate Precision	NA	NA
Extracted Internal Standard Analytes (Surrogates)	0	None
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	Naval Air Station Joint Reserve Base Wi	**Data Set Number:**	DP-18-0158
Project Number:	100117920-WE04	**Prep Batch Number:**	18-0392
Entered By:	Lauren Griffith	**Entered On:**	06/29/2018
Test Code (Matrix Type):	Master_371(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
LMG 6/29/18

PFTeDA exhibited a high recovery in the LCS. Prep records and integrations were verified. Recoveries were acceptable in the ICC and CCV. It was not detected in any of the authentic samples.
LMG 6/29/18

JX67 is not being used for PFOA, PFNA, PFOS and PFDA. There is no impact on the data once these points are removed from the calibration.
LMG 6/29/18

JX75 is not being used for PFNA and NMeFOSAA. There is no impact on the data once these points are removed from the calibration.
LMG 6/29/18

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.06.29 17:54:22 -04'00'

Example Calculation for PFAS

Calculation of final concentration from area:

$$Concentration = \left[\frac{PA - b}{m}\right] * C_{IS} * PIV * DF/S$$

Where:

PA = Area of target / area of internal standard
b = y intercept from calibration curve
CIS = concentration of internal standard (ng/L)
m = slope of calibration
DF = dilution factor
S = Sample Size
PIV = Pre-injection volume (L)

Sample ID:	CR041LCS-FS(0)
Client Sample ID:	Laboratory Control Sample
Sample Size:	0.25
Units:	L
Dilution Factor:	1.000
PIV (L):	0.001
Target Analyte:	PFTeDA
MRM Transition:	713.0 / 669.0
Data file:	06252018_5-371.wiff
Result table:	18-0392_DW
Area:	1,415,143.90
IS Name:	13C2-PFOA
IS Area:	49,985.92
IS Amount (ng/L):	100
y-intercept:	0.04308
slope:	0.4217

$$\text{Concentration} = \frac{[(1415143.9/49985.92) - 0.04308]}{0.4217} * 100 * 0.001 * 1 / 0.25$$

ng/L = 26.81

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0392
Data Set: DP-18-0158

	CR040PB-FS (Procedural Blank)	CR041LCS-FS (Laboratory Control Sample)	J6738-FS (WGNA-061118-FRB-3073)	J6740-FS (WGNA-061118-FRB-0437)	J6742-FS (WGNA-061218-FRB-3283)	J6744-FS (WGNA-061218-FRB-3382)
PFHxA	-	L	-	-	-	-
PFHpA	-	L	-	-	-	-
PFOA	-	L	-	-	-	-
PFNA	-	L	-	-	-	-
PFDA	-	L	-	-	-	-
PFUnA	-	L	-	-	-	-
PFDoA	-	L	-	-	-	-
PFTrDA	-	L	-	-	-	-
PFTeDA	-	L	-	-	-	-
NMeFOSAA	-	L	-	-	-	-
NEtFOSAA	-	L	-	-	-	-
PFBS	-	L	-	-	-	-
PFHxS	-	L	-	-	-	-
PFOS	-	L	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0392
Data Set: DP-18-0158

	J6746-FS (NAWC-061218-FRB-276)	J6759-FS (NAWC-061418-FRB-111)	J6761-FS (NAWC-061418-FRB-056)
PFHxA	-	-	-
PFHpA	-	-	-
PFOA	-	-	-
PFNA	-	-	-
PFDA	-	-	-
PFUnA	-	-	-
PFDoA	-	-	-
PFTrDA	-	-	-
PFTeDA	-	-	-
NMeFOSAA	-	-	-
NEtFOSAA	-	-	-
PFBS	-	-	-
PFHxS	-	-	-
PFOS	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	13C4-PFOS	195,712.77	-	
JX68	L2	6/27/18 9:14	13C4-PFOS	208,133.24	-	
JX69	L3	6/27/18 9:23	13C4-PFOS	196,602.67	-	
JX70	L4	6/27/18 9:32	13C4-PFOS	221,233.77	-	
JX71	L5	6/27/18 9:41	13C4-PFOS	207,482.97	-	
JX72	L6	6/27/18 9:50	13C4-PFOS	205,389.92	-	
JX73	L7	6/27/18 9:59	13C4-PFOS	210,418.05	-	
JX74	L8	6/27/18 10:08	13C4-PFOS	173,679.17	-	
JX75	L9	6/27/18 10:17	13C4-PFOS	184,387.98	6	PASS

Average	Lower	Upper
200,337.84	100,168.92	300,506.76

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	13C4-PFOS	195,712.77	100,168.92	300,506.76		145,238.08	290,476.16	
JX68	L2	6/27/18 9:14	13C4-PFOS	208,133.24	100,168.92	300,506.76		145,238.08	290,476.16	
JX69	L3	6/27/18 9:23	13C4-PFOS	196,602.67	100,168.92	300,506.76		145,238.08	290,476.16	
JX70	L4	6/27/18 9:32	13C4-PFOS	221,233.77	100,168.92	300,506.76		145,238.08	290,476.16	
JX71	L5	6/27/18 9:41	13C4-PFOS	207,482.97	100,168.92	300,506.76		145,238.08	290,476.16	
JX72	L6	6/27/18 9:50	13C4-PFOS	205,389.92	100,168.92	300,506.76		145,238.08	290,476.16	
JX73	L7	6/27/18 9:59	13C4-PFOS	210,418.05	100,168.92	300,506.76		145,238.08	290,476.16	
JX74	L8	6/27/18 10:08	13C4-PFOS	173,679.17	100,168.92	300,506.76		145,238.08	290,476.16	
JX75	L9	6/27/18 10:17	13C4-PFOS	184,387.98	100,168.92	300,506.76		145,238.08	290,476.16	
JV66 ICC	ICC	6/27/18 10:26	13C4-PFOS	198,955.94	100,168.92	300,506.76		145,238.08	290,476.16	
JX72 CCV	0	6/27/18 20:51	13C4-PFOS	201,048.50	100,168.92	300,506.76		145,238.08	290,476.16	
JX73 CCV	0	6/27/18 22:29	13C4-PFOS	211,286.43	100,168.92	300,506.76		140,733.95	281,467.90	
CR040PB-FS(0)	Procedural Blank	6/27/18 22:47	13C4-PFOS	161,775.16	100,168.92	300,506.76		147,900.50	295,801.00	
CR041LCS-FS(0)	Laboratory Control Sample	6/27/18 22:56	13C4-PFOS	150,091.01	100,168.92	300,506.76		147,900.50	295,801.00	
J6738-FS(0)	WGNA-061118-FRB-3073	6/27/18 23:05	13C4-PFOS	154,129.14	100,168.92	300,506.76		147,900.50	295,801.00	
J6740-FS(0)	WGNA-061118-FRB-0437	6/27/18 23:14	13C4-PFOS	165,781.81	100,168.92	300,506.76		147,900.50	295,801.00	
J6742-FS(0)	WGNA-061218-FRB-3283	6/27/18 23:23	13C4-PFOS	160,393.26	100,168.92	300,506.76		147,900.50	295,801.00	
J6744-FS(0)	WGNA-061218-FRB-3382	6/27/18 23:32	13C4-PFOS	160,854.25	100,168.92	300,506.76		147,900.50	295,801.00	
J6746-FS(0)	NAWC-061218-FRB-276	6/27/18 23:41	13C4-PFOS	167,999.66	100,168.92	300,506.76		147,900.50	295,801.00	
J6759-FS(0)	NAWC-061418-FRB-111	6/27/18 23:50	13C4-PFOS	159,954.30	100,168.92	300,506.76		147,900.50	295,801.00	
J6761-FS(0)	NAWC-061418-FRB-056	6/27/18 23:59	13C4-PFOS	159,344.80	100,168.92	300,506.76		147,900.50	295,801.00	
JX71 CCV	CCV	6/28/18 0:08	13C4-PFOS	207,937.15	100,168.92	300,506.76		147,900.50	295,801.00	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

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Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	13C2-PFOA	62,699.72	-	
JX68	L2	6/27/18 9:14	13C2-PFOA	68,551.10	-	
JX69	L3	6/27/18 9:23	13C2-PFOA	68,688.50	-	
JX70	L4	6/27/18 9:32	13C2-PFOA	68,613.81	-	
JX71	L5	6/27/18 9:41	13C2-PFOA	68,780.04	-	
JX72	L6	6/27/18 9:50	13C2-PFOA	70,145.13	-	
JX73	L7	6/27/18 9:59	13C2-PFOA	68,944.70	-	
JX74	L8	6/27/18 10:08	13C2-PFOA	60,796.66	-	
JX75	L9	6/27/18 10:17	13C2-PFOA	68,647.41	9.1	PASS

Average	Lower	Upper
67,318.56	33,659.28	100,977.84

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	13C2-PFOA	62,699.72	33,659.28	100,977.84		48,146.03	96,292.06	
JX68	L2	6/27/18 9:14	13C2-PFOA	68,551.10	33,659.28	100,977.84		48,146.03	96,292.06	
JX69	L3	6/27/18 9:23	13C2-PFOA	68,688.50	33,659.28	100,977.84		48,146.03	96,292.06	
JX70	L4	6/27/18 9:32	13C2-PFOA	68,613.81	33,659.28	100,977.84		48,146.03	96,292.06	
JX71	L5	6/27/18 9:41	13C2-PFOA	68,780.04	33,659.28	100,977.84		48,146.03	96,292.06	
JX72	L6	6/27/18 9:50	13C2-PFOA	70,145.13	33,659.28	100,977.84		48,146.03	96,292.06	
JX73	L7	6/27/18 9:59	13C2-PFOA	68,944.70	33,659.28	100,977.84		48,146.03	96,292.06	
JX74	L8	6/27/18 10:08	13C2-PFOA	60,796.66	33,659.28	100,977.84		48,146.03	96,292.06	
JX75	L9	6/27/18 10:17	13C2-PFOA	68,647.41	33,659.28	100,977.84		48,146.03	96,292.06	
JV66 ICC	ICC	6/27/18 10:26	13C2-PFOA	64,713.81	33,659.28	100,977.84		48,146.03	96,292.06	
JX72 CCV	0	6/27/18 20:51	13C2-PFOA	65,665.05	33,659.28	100,977.84		48,146.03	96,292.06	
JX73 CCV	0	6/27/18 22:29	13C2-PFOA	67,870.42	33,659.28	100,977.84		45,965.54	91,931.07	
CR040PB-FS(0)	ocedural Bla	6/27/18 22:47	13C2-PFOA	49,941.91	33,659.28	100,977.84		47,509.29	95,018.59	
CR041LCS-FS(0)	tory Control	6/27/18 22:56	13C2-PFOA	49,985.92	33,659.28	100,977.84		47,509.29	95,018.59	
J6738-FS(0)	-061118-FR	6/27/18 23:05	13C2-PFOA	48,519.13	33,659.28	100,977.84		47,509.29	95,018.59	
J6740-FS(0)	-061118-FR	6/27/18 23:14	13C2-PFOA	52,046.47	33,659.28	100,977.84		47,509.29	95,018.59	
J6742-FS(0)	-061218-FR	6/27/18 23:23	13C2-PFOA	51,035.11	33,659.28	100,977.84		47,509.29	95,018.59	
J6744-FS(0)	-061218-FR	6/27/18 23:32	13C2-PFOA	53,345.82	33,659.28	100,977.84		47,509.29	95,018.59	
J6746-FS(0)	C-061218-FR	6/27/18 23:41	13C2-PFOA	53,268.73	33,659.28	100,977.84		47,509.29	95,018.59	
J6759-FS(0)	C-061418-FR	6/27/18 23:50	13C2-PFOA	53,360.11	33,659.28	100,977.84		47,509.29	95,018.59	
J6761-FS(0)	C-061418-FR	6/27/18 23:59	13C2-PFOA	54,039.24	33,659.28	100,977.84		47,509.29	95,018.59	
JX71 CCV	CCV	6/28/18 0:08	13C2-PFOA	72,909.71	33,659.28	100,977.84		47,509.29	95,018.59	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

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It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	d3-MeFOSAA	19,930.79	-	
JX68	L2	6/27/18 9:14	d3-MeFOSAA	21,677.32	-	
JX69	L3	6/27/18 9:23	d3-MeFOSAA	20,129.83	-	
JX70	L4	6/27/18 9:32	d3-MeFOSAA	23,296.23	-	
JX71	L5	6/27/18 9:41	d3-MeFOSAA	21,998.06	-	
JX72	L6	6/27/18 9:50	d3-MeFOSAA	24,086.51	-	
JX73	L7	6/27/18 9:59	d3-MeFOSAA	21,518.81	-	
JX74	L8	6/27/18 10:08	d3-MeFOSAA	18,342.89	-	
JX75	L9	6/27/18 10:17	d3-MeFOSAA	22,175.02	10.7	PASS

Average	Lower	Upper
21,461.72	10,730.86	32,192.58

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	d3-MeFOSAA	19,930.79	10,730.86	32,192.58		15,398.64	30,797.28	
JX68	L2	6/27/18 9:14	d3-MeFOSAA	21,677.32	10,730.86	32,192.58		15,398.64	30,797.28	
JX69	L3	6/27/18 9:23	d3-MeFOSAA	20,129.83	10,730.86	32,192.58		15,398.64	30,797.28	
JX70	L4	6/27/18 9:32	d3-MeFOSAA	23,296.23	10,730.86	32,192.58		15,398.64	30,797.28	
JX71	L5	6/27/18 9:41	d3-MeFOSAA	21,998.06	10,730.86	32,192.58		15,398.64	30,797.28	
JX72	L6	6/27/18 9:50	d3-MeFOSAA	24,086.51	10,730.86	32,192.58		15,398.64	30,797.28	
JX73	L7	6/27/18 9:59	d3-MeFOSAA	21,518.81	10,730.86	32,192.58		15,398.64	30,797.28	
JX74	L8	6/27/18 10:08	d3-MeFOSAA	18,342.89	10,730.86	32,192.58		15,398.64	30,797.28	
JX75	L9	6/27/18 10:17	d3-MeFOSAA	22,175.02	10,730.86	32,192.58		15,398.64	30,797.28	
JV66 ICC	ICC	6/27/18 10:26	d3-MeFOSAA	18,854.41	10,730.86	32,192.58		15,398.64	30,797.28	
JX72 CCV	0	6/27/18 20:51	d3-MeFOSAA	18,208.55	10,730.86	32,192.58		15,398.64	30,797.28	
JX73 CCV	0	6/27/18 22:29	d3-MeFOSAA	19,181.84	10,730.86	32,192.58		12,745.99	25,491.97	
CR040PB-FS(0)	Procedural Blank	6/27/18 22:47	d3-MeFOSAA	14,856.29	10,730.86	32,192.58		13,427.29	26,854.58	
CR041LCS-FS(0)	Laboratory Control Sample	6/27/18 22:56	d3-MeFOSAA	15,725.09	10,730.86	32,192.58		13,427.29	26,854.58	
J6738-FS(0)	WGNA-061118-FRB-3073	6/27/18 23:05	d3-MeFOSAA	14,678.88	10,730.86	32,192.58		13,427.29	26,854.58	
J6740-FS(0)	WGNA-061118-FRB-0437	6/27/18 23:14	d3-MeFOSAA	15,592.22	10,730.86	32,192.58		13,427.29	26,854.58	
J6742-FS(0)	WGNA-061218-FRB-3283	6/27/18 23:23	d3-MeFOSAA	14,821.24	10,730.86	32,192.58		13,427.29	26,854.58	
J6744-FS(0)	WGNA-061218-FRB-3382	6/27/18 23:32	d3-MeFOSAA	14,325.68	10,730.86	32,192.58		13,427.29	26,854.58	
J6746-FS(0)	NAWC-061218-FRB-276	6/27/18 23:41	d3-MeFOSAA	15,597.85	10,730.86	32,192.58		13,427.29	26,854.58	
J6759-FS(0)	NAWC-061418-FRB-111	6/27/18 23:50	d3-MeFOSAA	13,575.22	10,730.86	32,192.58		13,427.29	26,854.58	
J6761-FS(0)	NAWC-061418-FRB-056	6/27/18 23:59	d3-MeFOSAA	13,512.88	10,730.86	32,192.58		13,427.29	26,854.58	
JX71 CCV	CCV	6/28/18 0:08	d3-MeFOSAA	19,579.05	10,730.86	32,192.58		13,427.29	26,854.58	

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Summary Asymmetry Report

Created with Analyst Reporter
Printed: 29/06/2018 1:21:56 PM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 9:59:20 AM	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.50	0.96	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.78	1.40	0.8 – 1.5

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 29/06/2018 1:22:52 PM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 9:59:20 AM	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.50	30	>10
PFBS_2	298.9 / 99.0	1.50	35	>10
PFHxA_1	313.0 / 269.0	1.78	26	>10
PFHxA_2	313.0 / 119.0	1.78	29	>10
PFHpA_1	363.0 / 319.0	2.14	32	>10
PFHpA_2	363.0 / 169.0	2.14	31	>10
PFHxS_1	399.0 / 80.0	2.15	28	>10
PFHxS_2	399.0 / 99.0	2.15	26	>10
PFOA_1	413.0 / 369.0	2.51	35	>10
PFOA_2	413.0 / 169.0	2.51	33	>10
PFNA_1	463.0 / 419.0	2.89	32	>10
PFNA_2	463.0 / 219.0	2.89	25	>10
PFOS_1	499.0 / 80.0	2.88	24	>10
PFOS_2	499.0 / 99.0	2.88	27	>10
PFDA_1	513.0 / 469.0	3.23	27	>10
PFDA_2	513.0 / 219.0	3.23	33	>10
PFUnA_1	563.0 / 519.0	3.55	35	>10
PFUnA_2	563.0 / 269.0	3.55	27	>10
PFDoA_1	613.0 / 569.0	3.84	35	>10
PFDoA_2	613.0 / 319.0	3.84	32	>10
PFTrDA_1	663.0 / 619.0	4.09	31	>10
PFTrDA_2	663.0 / 169.0	4.09	26	>10
PFTeDA_1	713.0 / 669.0	4.31	43	>10
PFTeDA_2	713.0 / 169.0	4.31	37	>10
NMeFOSAA_1	570.0 / 419.0	3.38	26	>10
NMeFOSAA_2	570.0 / 512.0	3.38	25	>10
NEtFOSAA_1	584.0 / 419.0	3.54	24	>10
NEtFOSAA_2	584.0 / 483.0	3.54	15	>10
13C2-PFHxA	315.0 / 270.0	1.77	32	>10
13C2-PFDA	515.0 / 470.0	3.23	35	>10
d5-EtFOSAA	589.0 / 419.0	3.54	12	>10

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Precision and Bias at the LOQ for PFAS in Drinking Water

Analyte	CAS No.	Average (ng/L)	ST DEV	3 Sigma	n
PFHxA	307-24-4	10.80	1.13	3.39	11
PFHpA	375-85-9	11.18	1.28	3.84	11
PFOA	335-67-1	11.23	1.23	3.69	11
PFNA	375-95-1	11.07	1.19	3.57	11
PFDA	335-76-2	11.07	1.26	3.78	11
PFUnA	2058-94-8	10.94	1.46	4.38	11
PFDoA	307-55-1	10.66	1.71	5.13	11
PFTrDA	72629-94-8	10.59	1.66	4.98	11
PFTeDA	376-06-7	11.90	1.38	4.14	11
NMeFOSAA	2355-31-9	10.80	0.92	2.76	11
NEtFOSAA	2991-50-6	10.27	1.03	3.09	11
PFBS	375-73-5	8.92	1.32	3.96	11
PFHxS	355-46-4	10.41	1.33	3.99	11
PFOS	1763-23-1	9.82	1.19	3.57	11

BATTELLE DETECTION LIMITS FOR PFAS IN DRINKING WATER

Battelle SOP 5-371 (EPA Method 537 Version 1.1)

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)	MRL (ng/L)
PFHxA	307-24-4	0.22	0.5	2.5	2.5
PFHpA	375-85-9	0.34	1.0	2.5	2.5
PFOA	335-67-1	0.38	1.0	2.5	2.5
PFNA	375-95-1	0.37	1.0	2.5	2.5
PFDA	335-76-2	0.39	1.0	2.5	2.5
PFUnA	2058-94-8	0.38	1.0	2.5	2.5
PFDoA	307-55-1	0.42	1.0	2.5	2.5
PFTrDA	72629-94-8	0.42	1.0	2.5	2.5
PFTeDA	376-06-7	0.73	1.5	2.5	2.5
NMeFOSAA	2355-31-9	0.42	1.0	2.5	2.5
NEtFOSAA	2991-50-6	0.44	1.0	2.5	2.5
PFBS	375-73-5	0.21	0.5	2.5	2.5
PFHxS	3871-99-6	0.34	1.0	2.5	2.5
PFOS	1763-23-1	0.30	1.0	2.5	2.5

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

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ID 626 04/18

Analytical Transitions for PFAS in drinking water

SOP 5-371 (EPA 537 Version 1.1)

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFBS	375-73-5	Target	298.9.0 / 80.0	298.9.0 / 99.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
13C2-PFHxA	NA	SIS	315.0 / 270.0	NA
13C2-PFDA	NA	SIS	515.0 / 470.0	NA
d5-EtFOSAA	NA	SIS	589.0 / 419.0	NA
$^{13}C_2$-PFOA	NA	IS	415.0 / 270.0	NA
$^{13}C_4$-PFOS	NA	IS	503.0 / 80.0	NA
d3-MeFOSAA	NA	IS	573.0 / 419.0	NA

Drinking Water Calibration to Sample Equivalents

ICAL (ng/L)	PIV (mL)	DF[1]	Sample Size (L)	Sample Equivalent (ng/L)[2]
25	1	1	0.250	0.1
50	1	1	0.250	0.2
100	1	1	0.250	0.4
250	1	1	0.250	1.0
500	1	1	0.250	2.0
1,000	1	1	0.250	4.0
2,500	1	1	0.250	10.0
5,000	1	1	0.250	20.0
10,000	1	1	0.250	40.0

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	22-Feb-2017

Request ID:	3683
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____

Performed By: Kaustubh Dhayagude **Date:** 22-Feb-2017

Approved By :_____ **Date:** _____

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.5	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.9	Read Only
☑ CAD Medium	2.4	Read Only
☑ CAD High	3.4	Read Only
☑ CAD 12	3.4	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.64 e6	Read Only	0.8095	Read Only
Q1 500.380	2.40 e7	Read Only	0.8592	Read Only
Q1 906.673	2.86 e7	Read Only	0.9633	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.26 e6	Read Only	0.6252	Read Only
Q3 500.380	2.19 e7	Read Only	0.7275	Read Only
Q3 906.673	3.02 e7	Read Only	0.7662	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__19.51%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.43 e7	Read Only	0.9981	Read Only
MS/MS 195.1	1.45 e7	Read Only	0.6582	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.43 e7	Read Only	0.7330	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.22 e7	Read Only	0.8138	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.35 e6	Read Only	0.6495	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	2.1	Read Only
☑ CAD Medium	2.6	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.94 e6	≥1.2^{e}6	0.6933	0.6 to 0.8
Q1 500.380	2.25 e7	≥9.0^{e}6	0.7444	0.6 to 0.8
Q1 906.673	2.74 e7	≥1.4^{e}7	0.7347	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7656	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	4.54 e6	≥1.2^{e}6	0.6390	0.6 to 0.8
Q3 500.380	2.13 e7	≥9.0^{e}6	0.7008	0.6 to 0.8
Q3 906.673	3.04 e7	≥1.4^{e}7	0.7683	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.51 e8	≥6.8^{e}7	0.7118	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 16.93% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.74 e7	N/A	0.7667	Read Only
MS/MS 195.1	9.72 e6	N/A	0.6751	Read Only

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LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.31 e7	≥1.0^{e}7	0.6895	0.6 to 0.8
Q1 933.636	1000	50	6.32 e7	≥4.0^{e}7	0.6740	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.70 e7	≥8.0^{e}6	0.7665	0.6 to 0.8
Q3 933.636	1000	50	7.41 e7	≥4.0^{e}7	0.7292	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.08 e6	≥7.2 ^{e}6	0.1302	<0.35
ER 922.010	0.05	3.89 e7	≥2.8 ^{e}6	0.2603	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.55 e7	≥2.4 ^{e}7	0.3740	<0.65
ER 922.010	0.05	2.37 e8	≥6.8 ^{e}7	0.5407	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.05 e8	≥4.4 ^{e}7	0.1840	<0.35
ER 601.978	0.05	7.74 e7	≥5.6 ^{e}7	0.1849	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.43 e8	≥1.2 ^{e}8	0.4382	<0.65
ER 601.978	0.05	2.55 e8	≥1.6 ^{e}8	0.6205	<0.65

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LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.5 e6	≥2.0 e6	> 4.0 e7	≥6.4 e6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	3.2 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	1.19 e8	Fragment Intensity	> 4.4 e6	≥1.6x 10^{e}6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

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BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☐

Standard Laboratory ID Number: JV35

Description: PFAS - 537.1 Internal Standard Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-01	EPA-537IS	Neat	~2.666666	12/13/22	---	---	1000 uL	1	10	~0.3000

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: JV35

Description: PFAS - 537.1 Internal Standard Stock

Stock Id: 180425-01

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	1000	1.00	1	100.000	1	10	0.10000
13C4-PFOS	1000	2.87	1	100.000	1	10	0.28700
d3-MeFOSAA	1000	4.00	1	100.000	1	10	0.40000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFOA	.10000
13C4-PFOS	.28700
d3-MeFOSAA	.40000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-01	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☐

Standard Laboratory ID Number: JV37

Description: PFAS - 537.1 Surrogate Standard Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-02	EPA-537SS	Neat	~2.000000	11/08/22	---	---	1000 uL	1	10	~0.2000

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: JV37

Description: PFAS - 537.1 Surrogate Standard Stock

Stock Id: 180425-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	1000	1.00	1	100.000	1	10	0.10000
13C2-PFHxA	1000	1.00	1	100.000	1	10	0.10000
d5-EtFOSAA	1000	4.00	1	100.000	1	10	0.40000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.10000
13C2-PFHxA	.10000
d5-EtFOSAA	.40000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-02	Pipette	C0982448K

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV41

Description: PFAS - 537.1 Second Source LCS/MS Solution

Assigned Lab ID (from receipt log)	Chemical Name:.	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-04	EPA-537PDS-L (second source)	Neat	~2.000000	03/05/23	---	---	500 uL	1	20	~0.0500

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 mL X 1 Vials	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:26:00 AM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV41

Description: PFAS - 537.1 Second Source LCS/MS Solution

Stock Id: 180425-04

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	500	2.00	1	100.000	1	20	0.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-1-butanesulfonate	500	1.77	1	100.000	1	20	0.04425
Perfluoro-1-hexanesulfonate	500	1.89	1	100.000	1	20	0.04725
Perfluoro-1-octanesulfonate	500	1.91	1	100.000	1	20	0.04775
Perfluoro-n-decanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-dodecanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-heptanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-hexanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-octanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluorononanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-tetradecanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-tridecanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-undecanoic acid	500	2.00	1	100.000	1	20	0.05000

Final Concentrations:

Analyte:	Conc (ug/mL):
N-ethylperfluoro-octanesulfonamidoacetic acid	.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.05000
Perfluoro-1-butanesulfonate	.04425
Perfluoro-1-hexanesulfonate	.04725
Perfluoro-1-octanesulfonate	.04775
Perfluoro-n-decanoic Acid	.05000
Perfluoro-n-dodecanoic acid	.05000
Perfluoro-n-heptanoic Acid	.05000
Perfluoro-n-hexanoic acid	.05000
Perfluoro-n-octanoic Acid	.05000
Perfluorononanoic Acid	.05000
Perfluoro-n-tetradecanoic acid	.05000
Perfluoro-n-tridecanoic acid	.05000
Perfluoro-n-undecanoic acid	.05000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-04	Pipette	B1100330B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:26:00 AM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV42

Description: PFAS - 537.1 High ICAL Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-03	EPA-537PDS (calibration)	Neat	~2.000000	03/05/23	---	---	250 uL	1	10	~0.0500

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV42

Description: PFAS - 537.1 High ICAL Stock

Stock Id: 180425-03

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	10	0.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-1-butanesulfonate	250	1.77	1	100.000	1	10	0.04425
Perfluoro-1-hexanesulfonate	250	1.82	1	100.000	1	10	0.04560
Perfluoro-1-octanesulfonate	250	1.85	1	100.000	1	10	0.04628
Perfluoro-n-decanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-dodecanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-heptanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-hexanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-nonanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-octanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-tetradecanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-tridecanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-undecanoic acid	250	2.00	1	100.000	1	10	0.05000

Final Concentrations:

Analyte:	Conc (ug/mL):
N-ethylperfluoro-octanesulfonamidoacetic acid	.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.05000
Perfluoro-1-butanesulfonate	.04425
Perfluoro-1-hexanesulfonate	.04560
Perfluoro-1-octanesulfonate	.04628
Perfluoro-n-decanoic Acid	.05000
Perfluoro-n-dodecanoic acid	.05000
Perfluoro-n-heptanoic Acid	.05000
Perfluoro-n-hexanoic acid	.05000
Perfluoro-n-nonanoic Acid	.05000
Perfluoro-n-octanoic Acid	.05000
Perfluoro-n-tetradecanoic acid	.05000
Perfluoro-n-tridecanoic acid	.05000
Perfluoro-n-undecanoic acid	.05000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-03	Pipette	B1100330B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV43

Description: PFAS - 537.1 Low ICAL Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-03	EPA-537PDS (calibration)	Neat	~2.000000	03/05/23	---	---	250 uL	1	100	~0.0050

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 mL X 4 Vials	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV43

Description: PFAS - 537.1 Low ICAL Stock

Stock Id: 180425-03

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	100	0.00500
N-methylperfluoro-1-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-1-butanesulfonate	250	1.77	1	100.000	1	100	0.00443
Perfluoro-1-hexanesulfonate	250	1.82	1	100.000	1	100	0.00456
Perfluoro-1-octanesulfonate	250	1.85	1	100.000	1	100	0.00463
Perfluoro-n-decanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-dodecanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-heptanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-hexanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-nonanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-octanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-tetradecanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-tridecanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-undecanoic acid	250	2.00	1	100.000	1	100	0.00500

Final Concentrations:

Analyte:	Conc (ug/mL):
N-ethylperfluoro-octanesulfonamidoacetic acid	.00500
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00500
Perfluoro-1-butanesulfonate	.00443
Perfluoro-1-hexanesulfonate	.00456
Perfluoro-1-octanesulfonate	.00463
Perfluoro-n-decanoic Acid	.00500
Perfluoro-n-dodecanoic acid	.00500
Perfluoro-n-heptanoic Acid	.00500
Perfluoro-n-hexanoic acid	.00500
Perfluoro-n-nonanoic Acid	.00500
Perfluoro-n-octanoic Acid	.00500
Perfluoro-n-tetradecanoic acid	.00500
Perfluoro-n-tridecanoic acid	.00500
Perfluoro-n-undecanoic acid	.00500

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-03	Pipette	B1100330B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 4 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV59

Description: PFAS - 537.1 Internal Standard Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV35	PFAS - 537.1 Internal Standard Stock	Solution	~0	05/02/19	---	---	500 uL	1	25	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV59

Description: PFAS - 537.1 Internal Standard Solution

Stock Id: JV35

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	500	0.10	---	---	1	25	0.00200
13C4-PFOS	500	0.29	---	---	1	25	0.00574
d3-MeFOSAA	500	0.40	---	---	1	25	0.00800

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFOA	.00200
13C4-PFOS	.00574
d3-MeFOSAA	.00800

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV35	Pipette	I0400533B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV60

Description: PFAS - 537.1 Surrogate Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV37	PFAS - 537.1 Surrogate Standard Stock	Solution	~0	05/02/19	---	---	500 uL	1	25	~0.0000

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV60

Description: PFAS - 537.1 Surrogate Solution

Stock Id: JV37

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	500	0.10	---	---	1	25	0.00200
13C2-PFHxA	500	0.10	---	---	1	25	0.00200
d5-EtFOSAA	500	0.40	---	---	1	25	0.00800

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00200
13C2-PFHxA	.00200
d5-EtFOSAA	.00800

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV37	Pipette	I0400533B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JV61**

Description: PFAS - 537.1 Internal Standard Calibration Stock Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV35	PFAS - 537.1 Internal Standard Stock	Solution	~0	05/02/19	---	---	1000 uL	1	5	~0.0000

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 mL X 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV61

Description: PFAS - 537.1 Internal Standard Calibration Stock Solution

Stock Id: JV35

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	1000	0.10	---	---	1	5	0.02000
13C4-PFOS	1000	0.29	---	---	1	5	0.05740
d3-MeFOSAA	1000	0.40	---	---	1	5	0.08000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFOA	.02000
13C4-PFOS	.05740
d3-MeFOSAA	.08000

Syringes/Pipettes:

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV62

Description: PFAS - 537.1 Surrogate Calibration Stock Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV37	PFAS - 537.1 Surrogate Standard Stock	Solution	~0	05/02/19	---	---	1000 uL	1	5	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV62

Description: PFAS - 537.1 Surrogate Calibration Stock Solution

Stock Id: JV37

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	1000	0.10	---	---	1	5	0.02000
13C2-PFHxA	1000	0.10	---	---	1	5	0.02000
d5-EtFOSAA	1000	0.40	---	---	1	5	0.08000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.02000
13C2-PFHxA	.02000
d5-EtFOSAA	.08000

Syringes/Pipettes:

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JV66**

Description: PFAS - 537.1 ICAL L3

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	200 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV66

Description: PFAS - 537.1 ICAL L3

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.01	---	---	1	10	0.00010
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-1-butanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-1-hexanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-1-octanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-n-decanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-dodecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-heptanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-hexanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-nonanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-octanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-tetradecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-tridecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-undecanoic acid	200	0.01	---	---	1	10	0.00010

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV66

Description: PFAS - 537.1 ICAL L3

N-ethylperfluoro-octanesulfonamidoacetic acid	.00010
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00010
Perfluoro-1-butanesulfonate	.00009
Perfluoro-1-hexanesulfonate	.00009
Perfluoro-1-octanesulfonate	.00009
Perfluoro-n-decanoic Acid	.00010
Perfluoro-n-dodecanoic acid	.00010
Perfluoro-n-heptanoic Acid	.00010
Perfluoro-n-hexanoic acid	.00010
Perfluoro-n-nonanoic Acid	.00010
Perfluoro-n-octanoic Acid	.00010
Perfluoro-n-tetradecanoic acid	.00010
Perfluoro-n-tridecanoic acid	.00010
Perfluoro-n-undecanoic acid	.00010

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV43	Pipette	G0792979B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JX67

Description: PFAS - 537.1 ICAL L1

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX67

Description: PFAS - 537.1 ICAL L1

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	50	0.01	---	---	1	10	0.00003
N-methylperfluoro-1-octanesulfonamidoacetic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-1-butanesulfonate	50	0.00	---	---	1	10	0.00002
Perfluoro-1-hexanesulfonate	50	0.00	---	---	1	10	0.00002
Perfluoro-1-octanesulfonate	50	0.00	---	---	1	10	0.00002
Perfluoro-n-decanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-dodecanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-heptanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-hexanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-nonanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-octanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-tetradecanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-tridecanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-undecanoic acid	50	0.01	---	---	1	10	0.00003

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00003

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX67

Description: PFAS - 537.1 ICAL L1

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00003
Perfluoro-1-butanesulfonate	.00002
Perfluoro-1-hexanesulfonate	.00002
Perfluoro-1-octanesulfonate	.00002
Perfluoro-n-decanoic Acid	.00003
Perfluoro-n-dodecanoic acid	.00003
Perfluoro-n-heptanoic Acid	.00003
Perfluoro-n-hexanoic acid	.00003
Perfluoro-n-nonanoic Acid	.00003
Perfluoro-n-octanoic Acid	.00003
Perfluoro-n-tetradecanoic acid	.00003
Perfluoro-n-tridecanoic acid	.00003
Perfluoro-n-undecanoic acid	.00003

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX68**

Description: PFAS - 537.1 ICAL L2

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	100 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX68

Description: PFAS - 537.1 ICAL L2

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	100	0.01	---	---	1	10	0.00005
N-methylperfluoro-1-octanesulfonamidoacetic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-1-butanesulfonate	100	0.00	---	---	1	10	0.00004
Perfluoro-1-hexanesulfonate	100	0.00	---	---	1	10	0.00005
Perfluoro-1-octanesulfonate	100	0.00	---	---	1	10	0.00005
Perfluoro-n-decanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-dodecanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-heptanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-hexanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-nonanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-octanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-tetradecanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-tridecanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-undecanoic acid	100	0.01	---	---	1	10	0.00005

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00005

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: **JX68**

Description: PFAS - 537.1 ICAL L2

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00005
Perfluoro-1-butanesulfonate	.00004
Perfluoro-1-hexanesulfonate	.00005
Perfluoro-1-octanesulfonate	.00005
Perfluoro-n-decanoic Acid	.00005
Perfluoro-n-dodecanoic acid	.00005
Perfluoro-n-heptanoic Acid	.00005
Perfluoro-n-hexanoic acid	.00005
Perfluoro-n-nonanoic Acid	.00005
Perfluoro-n-octanoic Acid	.00005
Perfluoro-n-tetradecanoic acid	.00005
Perfluoro-n-tridecanoic acid	.00005
Perfluoro-n-undecanoic acid	.00005

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX69**

Description: PFAS - 537.1 ICAL L3

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	200 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID: _____

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX69

Description: PFAS - 537.1 ICAL L3

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.01	---	---	1	10	0.00010
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-1-butanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-1-hexanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-1-octanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-n-decanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-dodecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-heptanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-hexanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-nonanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-octanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-tetradecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-tridecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-undecanoic acid	200	0.01	---	---	1	10	0.00010

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00010

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: **JX69**

Description: PFAS - 537.1 ICAL L3

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00010
Perfluoro-1-butanesulfonate	.00009
Perfluoro-1-hexanesulfonate	.00009
Perfluoro-1-octanesulfonate	.00009
Perfluoro-n-decanoic Acid	.00010
Perfluoro-n-dodecanoic acid	.00010
Perfluoro-n-heptanoic Acid	.00010
Perfluoro-n-hexanoic acid	.00010
Perfluoro-n-nonanoic Acid	.00010
Perfluoro-n-octanoic Acid	.00010
Perfluoro-n-tetradecanoic acid	.00010
Perfluoro-n-tridecanoic acid	.00010
Perfluoro-n-undecanoic acid	.00010

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:37:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX70**

Description: PFAS - 537.1 ICAL L4

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	500 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX70

Description: PFAS - 537.1 ICAL L4

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	500	0.01	---	---	1	10	0.00025
N-methylperfluoro-1-octanesulfonamidoacetic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-1-butanesulfonate	500	0.00	---	---	1	10	0.00022
Perfluoro-1-hexanesulfonate	500	0.00	---	---	1	10	0.00023
Perfluoro-1-octanesulfonate	500	0.00	---	---	1	10	0.00023
Perfluoro-n-decanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-dodecanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-heptanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-hexanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-nonanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-octanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-tetradecanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-tridecanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-undecanoic acid	500	0.01	---	---	1	10	0.00025

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00025

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: **JX70**

Description: PFAS - 537.1 ICAL L4

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00025
Perfluoro-1-butanesulfonate	.00022
Perfluoro-1-hexanesulfonate	.00023
Perfluoro-1-octanesulfonate	.00023
Perfluoro-n-decanoic Acid	.00025
Perfluoro-n-dodecanoic acid	.00025
Perfluoro-n-heptanoic Acid	.00025
Perfluoro-n-hexanoic acid	.00025
Perfluoro-n-nonanoic Acid	.00025
Perfluoro-n-octanoic Acid	.00025
Perfluoro-n-tetradecanoic acid	.00025
Perfluoro-n-tridecanoic acid	.00025
Perfluoro-n-undecanoic acid	.00025

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX71**

Description: PFAS - 537.1 ICAL L5

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	1000 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX71

Description: PFAS - 537.1 ICAL L5

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.01	---	---	1	10	0.00050
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-1-butanesulfonate	1000	0.00	---	---	1	10	0.00044
Perfluoro-1-hexanesulfonate	1000	0.00	---	---	1	10	0.00046
Perfluoro-1-octanesulfonate	1000	0.00	---	---	1	10	0.00046
Perfluoro-n-decanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-dodecanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-heptanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-hexanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-nonanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-octanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-tetradecanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-tridecanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-undecanoic acid	1000	0.01	---	---	1	10	0.00050

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00050

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX71

Description: PFAS - 537.1 ICAL L5

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00050
Perfluoro-1-butanesulfonate	.00044
Perfluoro-1-hexanesulfonate	.00046
Perfluoro-1-octanesulfonate	.00046
Perfluoro-n-decanoic Acid	.00050
Perfluoro-n-dodecanoic acid	.00050
Perfluoro-n-heptanoic Acid	.00050
Perfluoro-n-hexanoic acid	.00050
Perfluoro-n-nonanoic Acid	.00050
Perfluoro-n-octanoic Acid	.00050
Perfluoro-n-tetradecanoic acid	.00050
Perfluoro-n-tridecanoic acid	.00050
Perfluoro-n-undecanoic acid	.00050

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX72**

Description: PFAS - 537.1 ICAL L6

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	200 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise	**Date Prepared:** 6/25/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX72

Description: PFAS - 537.1 ICAL L6

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.05	---	---	1	10	0.00100
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-1-butanesulfonate	200	0.04	---	---	1	10	0.00089
Perfluoro-1-hexanesulfonate	200	0.05	---	---	1	10	0.00091
Perfluoro-1-octanesulfonate	200	0.05	---	---	1	10	0.00093
Perfluoro-n-decanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-dodecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-heptanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-hexanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-nonanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-octanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-tetradecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-tridecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-undecanoic acid	200	0.05	---	---	1	10	0.00100

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00100

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX72

Description: PFAS - 537.1 ICAL L6

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00100
Perfluoro-1-butanesulfonate	.00089
Perfluoro-1-hexanesulfonate	.00091
Perfluoro-1-octanesulfonate	.00093
Perfluoro-n-decanoic Acid	.00100
Perfluoro-n-dodecanoic acid	.00100
Perfluoro-n-heptanoic Acid	.00100
Perfluoro-n-hexanoic acid	.00100
Perfluoro-n-nonanoic Acid	.00100
Perfluoro-n-octanoic Acid	.00100
Perfluoro-n-tetradecanoic acid	.00100
Perfluoro-n-tridecanoic acid	.00100
Perfluoro-n-undecanoic acid	.00100

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:38:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX73**

Description: PFAS - 537.1 ICAL L7

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	500 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise	**Date Prepared:** 6/25/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:39:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX73

Description: PFAS - 537.1 ICAL L7

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	500	0.05	---	---	1	10	0.00250
N-methylperfluoro-1-octanesulfonamidoacetic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-1-butanesulfonate	500	0.04	---	---	1	10	0.00221
Perfluoro-1-hexanesulfonate	500	0.05	---	---	1	10	0.00228
Perfluoro-1-octanesulfonate	500	0.05	---	---	1	10	0.00231
Perfluoro-n-decanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-dodecanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-heptanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-hexanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-nonanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-octanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-tetradecanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-tridecanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-undecanoic acid	500	0.05	---	---	1	10	0.00250

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00250

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:39:00 PM

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It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX73

Description: PFAS - 537.1 ICAL L7

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00250
Perfluoro-1-butanesulfonate	.00221
Perfluoro-1-hexanesulfonate	.00228
Perfluoro-1-octanesulfonate	.00231
Perfluoro-n-decanoic Acid	.00250
Perfluoro-n-dodecanoic acid	.00250
Perfluoro-n-heptanoic Acid	.00250
Perfluoro-n-hexanoic acid	.00250
Perfluoro-n-nonanoic Acid	.00250
Perfluoro-n-octanoic Acid	.00250
Perfluoro-n-tetradecanoic acid	.00250
Perfluoro-n-tridecanoic acid	.00250
Perfluoro-n-undecanoic acid	.00250

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:39:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX74**

Description: PFAS - 537.1 ICAL L8

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	1000 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schumitz, Denise	**Date Prepared:**	6/25/2018	**Expiration Date:** 5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:**	LC Laboratory: Refrigerator - R0107	

Balance ID: _____

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:41:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX74

Description: PFAS - 537.1 ICAL L8

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.05	---	---	1	10	0.00500
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-1-butanesulfonate	1000	0.04	---	---	1	10	0.00443
Perfluoro-1-hexanesulfonate	1000	0.05	---	---	1	10	0.00456
Perfluoro-1-octanesulfonate	1000	0.05	---	---	1	10	0.00463
Perfluoro-n-decanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-dodecanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-heptanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-hexanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-nonanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-octanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-tetradecanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-tridecanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-undecanoic acid	1000	0.05	---	---	1	10	0.00500

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040
N-ethylperfluoro-octanesulfonamidoacetic acid	.00500

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:41:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX74

Description: PFAS - 537.1 ICAL L8

N-methylperfluoro-1-octanesulfonamidoacetic acid	.00500
Perfluoro-1-butanesulfonate	.00443
Perfluoro-1-hexanesulfonate	.00456
Perfluoro-1-octanesulfonate	.00463
Perfluoro-n-decanoic Acid	.00500
Perfluoro-n-dodecanoic acid	.00500
Perfluoro-n-heptanoic Acid	.00500
Perfluoro-n-hexanoic acid	.00500
Perfluoro-n-nonanoic Acid	.00500
Perfluoro-n-octanoic Acid	.00500
Perfluoro-n-tetradecanoic acid	.00500
Perfluoro-n-tridecanoic acid	.00500
Perfluoro-n-undecanoic acid	.00500

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:41:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: **JX75**

Description: PFAS - 537.1 ICAL L9

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	1000 uL	1	5	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	25 uL	1	5	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	5	~0.0000

Solution Prepared By: Schumitz, Denise	**Date Prepared:** 6/25/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:40:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX75

Description: PFAS - 537.1 ICAL L9

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.05	---	---	1	5	0.01000
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-1-butanesulfonate	1000	0.04	---	---	1	5	0.00885
Perfluoro-1-hexanesulfonate	1000	0.05	---	---	1	5	0.00912
Perfluoro-1-octanesulfonate	1000	0.05	---	---	1	5	0.00925
Perfluoro-n-decanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-dodecanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-heptanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-hexanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-nonanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-octanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-tetradecanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-tridecanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-undecanoic acid	1000	0.05	---	---	1	5	0.01000

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	25	0.02	---	---	1	5	0.00010
13C4-PFOS	25	0.06	---	---	1	5	0.00029

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	5	0.00020
13C2-PFHxA	50	0.02	---	---	1	5	0.00020
d5-EtFOSAA	50	0.08	---	---	1	5	0.00080

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00020
13C2-PFHxA	.00020
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00080
N-ethylperfluoro-octanesulfonamidoacetic acid	.01000

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:40:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JX75

Description: PFAS - 537.1 ICAL L9

N-methylperfluoro-1-octanesulfonamidoacetic acid	.01000
Perfluoro-1-butanesulfonate	.00885
Perfluoro-1-hexanesulfonate	.00912
Perfluoro-1-octanesulfonate	.00925
Perfluoro-n-decanoic Acid	.01000
Perfluoro-n-dodecanoic acid	.01000
Perfluoro-n-heptanoic Acid	.01000
Perfluoro-n-hexanoic acid	.01000
Perfluoro-n-nonanoic Acid	.01000
Perfluoro-n-octanoic Acid	.01000
Perfluoro-n-tetradecanoic acid	.01000
Perfluoro-n-tridecanoic acid	.01000
Perfluoro-n-undecanoic acid	.01000

Syringes/Pipettes:

Solution Prepared By: Schumitz, Denise **Date Prepared:** 6/25/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 MeOH/MilliQ (RP-180625-2)

Approved By: Thorn, Jonathan **Date:** 6/29/2018 1:40:00 PM

BATTELLE
It can be done

BDO Id: 180425-01

Reagent Receipt Report

Approved: ☐ **Authorized** ☐

Name: EPA-537IS
Vendor: Wellington Laboratories
Catalogue No: EPA-537IS
Type: Solution
Lot No: 537IS1217
Quantity: 1 ea mL
% Moisture:
Description: EPA-537IS

Received: 4/25/2018
Custodian: Schumitz, Matt
Expires: 12/13/2022
Consumed:
Stored In: AgChem Laboratory - R0124

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
d3-N-MeFOSAA	BDO-1838	4.0000	100.00	--	--	☐			
M2PFOA	BDO-1842	1.0000	100.00	--	--	☐			
MPFOS	BDO-1840	2.8700	100.00	--	--	☐			

Total Analytes: 3

Notes:

Approved by: _____ **Approved on:** _____
Authorized by: _____ **Authorized on:** _____

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-537IS

Internal Standard
Primary Dilution Standard

PRODUCT CODE:	EPA-537IS
LOT NUMBER:	537IS1217
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	12/13/2017
LAST TESTED: (mm/dd/yyyy)	12/13/2017
EXPIRY DATE: (mm/dd/yyyy)	12/13/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

EPA-537IS is a solution/mixture of a mass-labelled (^{13}C) perfluoroalkylcarboxylic acid, a mass-labelled (^{13}C) perfluoroalkylsulfonate, and a mass-labelled (^{2}H) perfluorooctanesulfonamidoacetic acid. The components and their concentrations are given in Table A.

The mass-labelled perfluoroalkylcarboxylic acid and the mass-labelled perfluoroalkylsulfonate both have chemical purities of >98% and isotopic purities of ≥99%. The mass-labelled perfluorooctanesulfonamidoacetic acid has a chemical purity of >98% and an isotopic purity of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (TIC)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED PROFICIENT REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

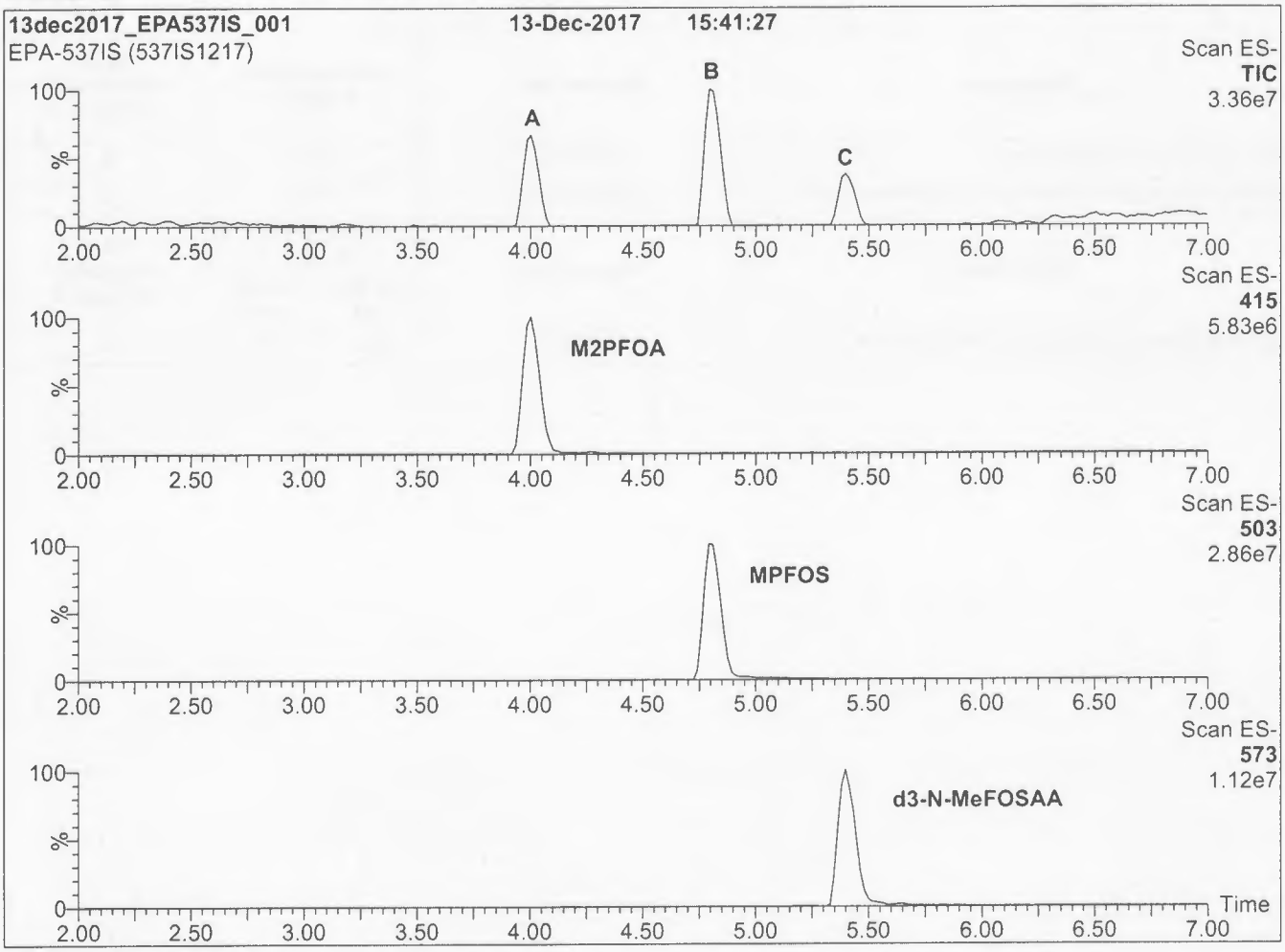
Table A: **EPA-537IS; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid	M2PFOA	1000		A
N-methyl-d_3-perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	4000		C
Compound	**Abbreviation**	**Concentration (ng/ml)**		**Peak Assignment in Figure 1**
		as the salt	**as the anion**	
Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate	MPFOS	3000	2870	B

Certified By: _____ **Date:** 12/22/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **EPA-537IS; LC/MS Data (Total Ion Current Chromatogram)**



Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

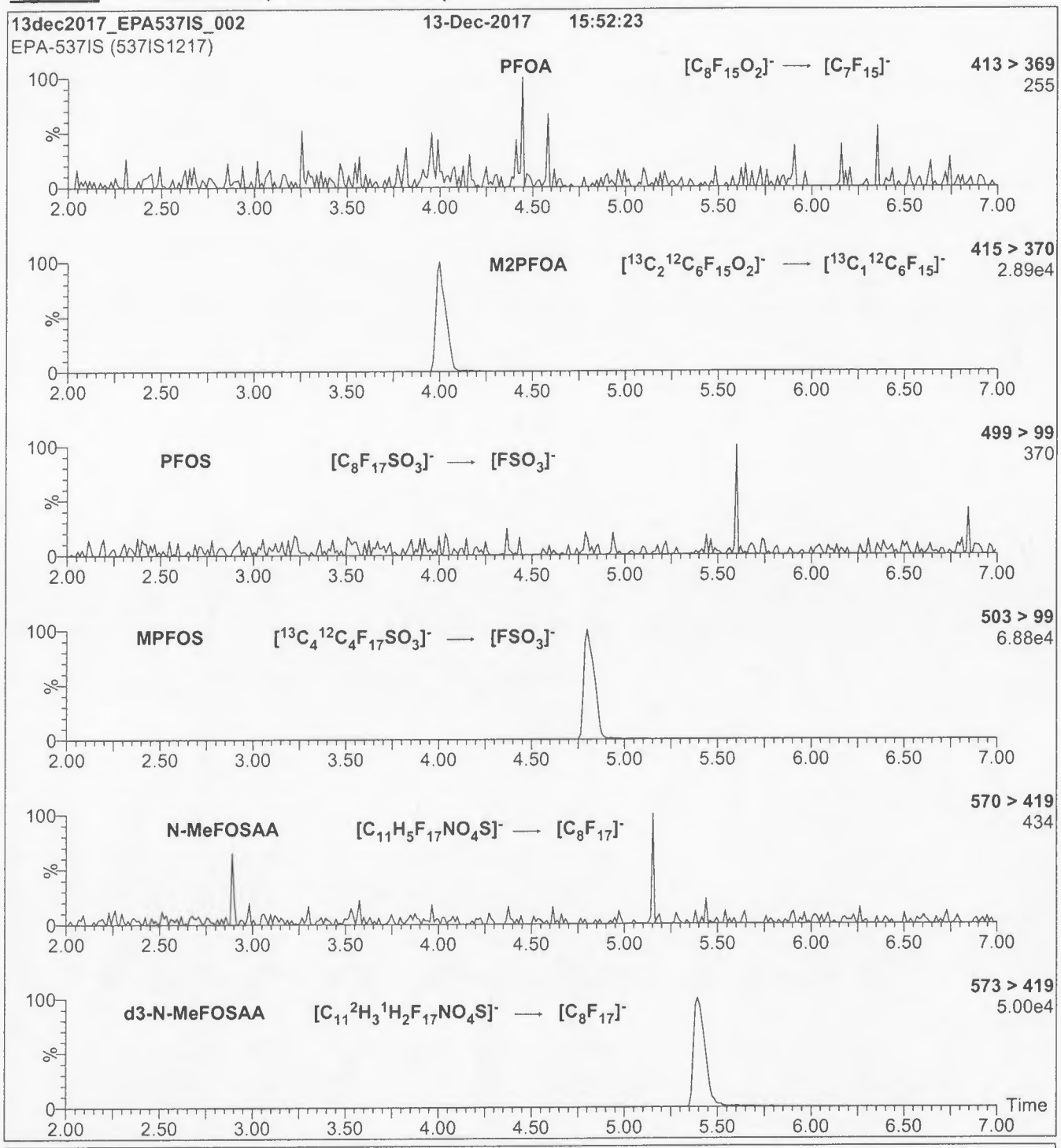
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **EPA-537IS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (EPA-537IS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3

Collision Energy (eV) = 11-40 (variable)

BATTELLE
It can be done

BDO Id: 180425-02

Reagent Receipt Report

Approved: ☑ **Authorized** ☐

Name: EPA-537SS
Vendor: Wellington Laboratories
Catalogue No: EPA-537SS
Type: Solution
Lot No: 537SS1117
Quantity: 1 ea ml
% Moisture:
Description: EPA-537SS

Received: 4/25/2018
Custodian: Schumitz, Matt
Expires: 11/8/2022
Consumed:
Stored In: AgChem Laboratory - R0124

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFDA	BDO-2110	1.0000	100.00	--	--	☐			
13C2-PFHxA	BDO-2106	1.0000	100.00	--	--	☐			
d5-EtFOSAA	BDO-1839	4.0000	100.00	--	--	☐			

Total Analytes: 3

Notes:

Approved by: Thorn, Jonathan
Approved on: 5/2/2018 10:00:00 AM
Authorized by:
Authorized on:

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-537SS

Surrogate Primary Dilution Standard

PRODUCT CODE:	EPA-537SS
LOT NUMBER:	537SS1117
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	11/06/2017
LAST TESTED: (mm/dd/yyyy)	11/08/2017
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

EPA-537SS is a solution/mixture of two mass-labelled (^{13}C) perfluoroalkylcarboxylic acids and a mass-labelled (^{2}H) perfluorooctanesulfonamidoacetic acid. The components and their concentrations are given in Table A.

The mass-labelled perfluoroalkylcarboxylic acids both have chemical purities of >98% and isotopic purities of ≥99%. The mass-labelled perfluorooctanesulfonamidoacetic acid has a chemical purity of >98% and an isotopic purity of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (TIC)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

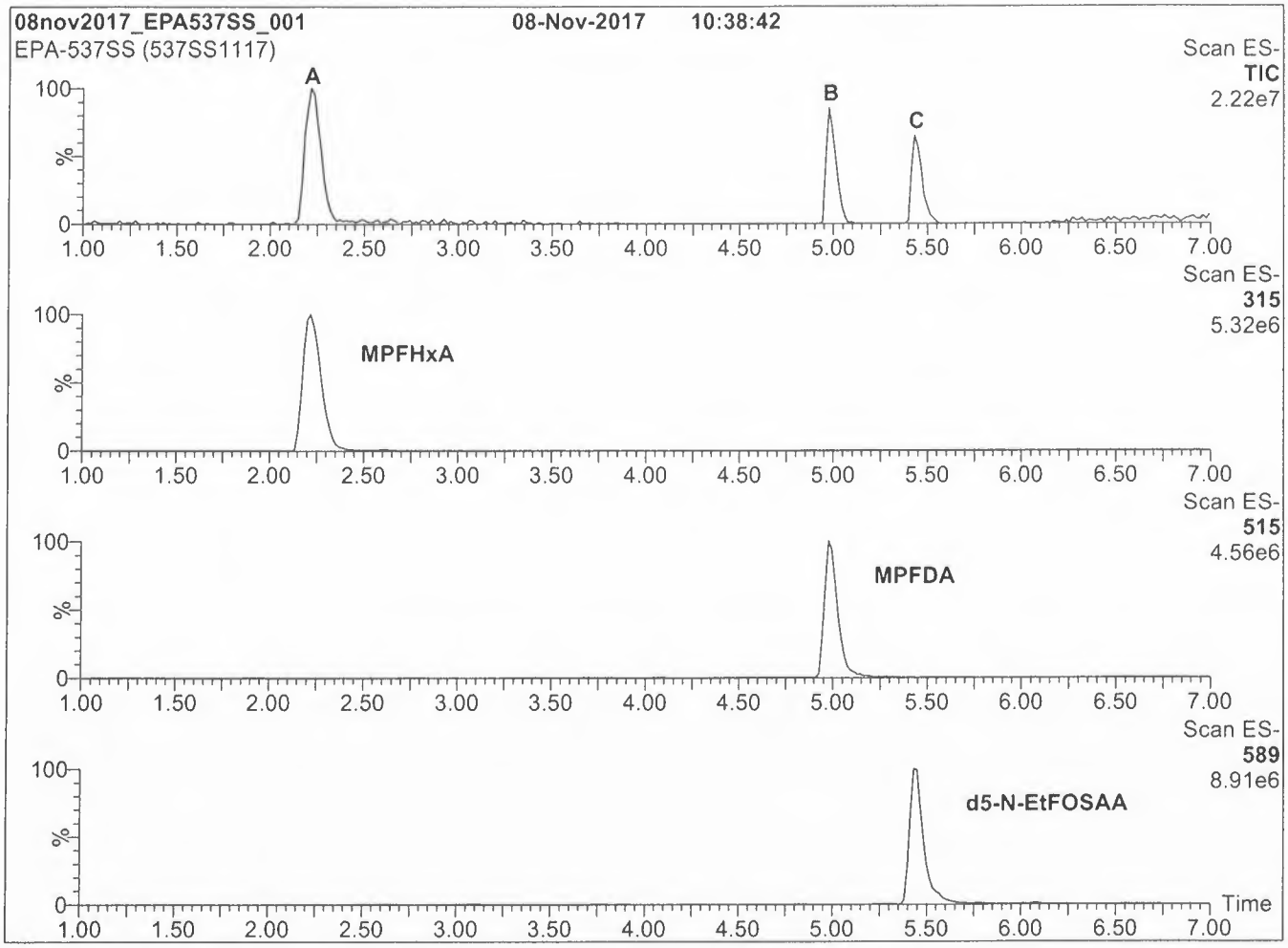
Table A: **EPA-537SS; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration (ng/ml)	Peak Assignment in Figure 1
Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid	MPFHxA	1000	A
Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid	MPFDA	1000	B
N-ethyl-d_5-perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	4000	C

Certified By: _____ **Date:** 11/13/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: EPA-537SS; LC/MS Data (Total Ion Current Chromatogram)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

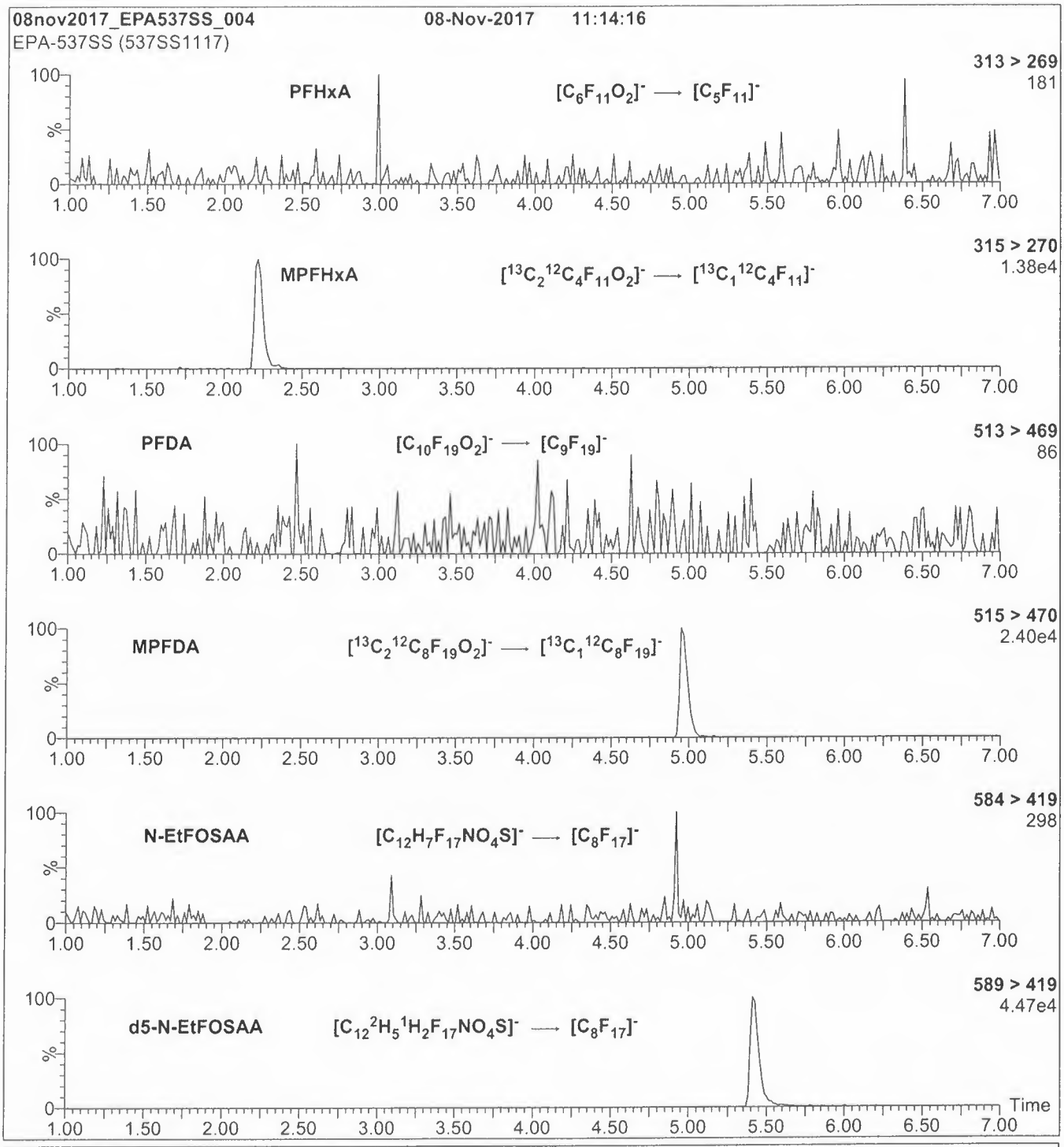
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: EPA-537SS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (EPA-537SS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3

Collision Energy (eV) = 9-40 (variable)

BATTELLE
It can be done

BDO Id: 180425-03

Reagent Receipt Report

Approved: ☑ **Authorized** ☐

Name: EPA-537PDS (calibration)
Vendor: Wellington Laboratories
Catalogue No: EPA-537PDS
Type: Solution
Lot No: 537PDS0318
Quantity: 1 ea ml
% Moisture:
Description: EPA-537PDS

Received: 4/25/2018
Custodian: Schumitz, Matt
Expires: 3/5/2023
Consumed:
Stored In: AgChem Laboratory - R0124

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	2.0000	100.00	--	--	☐			1
N-methylperfluoro-1-octanesulfonami	2355-31-9	2.0000	100.00	--	--	☐			2
Perfluoro-1-butanesulfonate	375-73-5	1.7700	100.00	--	--	☐			3
Perfluoro-1-hexanesulfonate	355-46-4	1.8240	100.00	--	--	☐			4
Perfluoro-1-octanesulfonate	1763-23-1	1.8510	100.00	--	--	☐			5
Perfluoro-n-decanoic Acid	335-76-2	2.0000	100.00	--	--	☐			
Perfluoro-n-dodecanoic acid	307-55-1	2.0000	100.00	--	--	☐			
Perfluoro-n-heptanoic Acid	375-85-9	2.0000	100.00	--	--	☐			
Perfluoro-n-hexanoic acid	307-24-4	2.0000	100.00	--	--	☐			
Perfluoro-n-nonanoic Acid	375-95-1	2.0000	100.00	--	--	☐			
Perfluoro-n-octanoic Acid	335-67-1	2.0000	100.00	--	--	☐			
Perfluoro-n-tetradecanoic acid	376-06-7	2.0000	100.00	--	--	☐			
Perfluoro-n-tridecanoic acid	72629-94-8	2.0000	100.00	--	--	☐			
Perfluoro-n-undecanoic acid	2058-94-8	2.0000	100.00	--	--	☐			

Total Analytes: 14

Notes:

	Analyte:	Comment:
1	N-ethylperfluoro-octanesulfonamidoacetic acid	sum of branched and linear isomers
2	N-methylperfluoro-1-octanesulfonamidoacetic acid	sum of branched and linear isomers
3	Perfluoro-1-butanesulfonate	2000 ng/ml as the salt, 1770 ng/ml as the anion
4	Perfluoro-1-hexanesulfonate	1998 ng/ml as the salt, 1824 ng/ml as the anion. sum of branched and linear isomers.
5	Perfluoro-1-octanesulfonate	2002 ng/ml as the salt, 1851 ng/ml as the anion. sum of branched and linear isomers.

Approved by: Thorn, Jonathan
Approved on: 5/2/2018 10:05:00 AM
Authorized by:
Authorized on:

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-537PDS

Native PFAS Primary Dilution Standard Solution/Mixture

PRODUCT CODE:	EPA-537PDS
LOT NUMBER:	537PDS0318
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	03/02/2018
LAST TESTED: (mm/dd/yyyy)	03/05/2018
EXPIRY DATE: (mm/dd/yyyy)	03/05/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

for calibration
JNT 5/2/2018

DESCRIPTION:

EPA-537PDS is a solution/mixture of nine native linear perfluoroalkylcarboxylic acids (C_6-C_{14}), three native perfluoroalkylsulfonates (C_4 linear; C_6 and C_8 linear and branched), and two native perfluorooctanesulfonamidoacetic acids (linear and branched). The components and their concentrations are given in Table A.

The native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, and native perfluorooctanesulfonamidoacetic acids have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Table B: Isomeric Components and Percent Composition of N-MeFOSAA
Table C: Isomeric Components and Percent Composition of N-EtFOSAA
Table D: Isomeric Components and Percent Composition of PFHxSK
Table E: Isomeric Components and Percent Composition of PFOSK
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-537PDS; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration * (ng/ml)	Peak Assignment in Figure 1
Perfluoro-n-hexanoic acid ✓	PFHxA	2000	B
Perfluoro-n-heptanoic acid ✓	PFHpA	2000	C
Perfluoro-n-octanoic acid ✓	PFOA	2000	F
Perfluoro-n-nonanoic acid ✓	PFNA	2000	G
Perfluoro-n-decanoic acid ✓	PFDA	2000	J
Perfluoro-n-undecanoic acid ✓	PFUdA	2000	O
Perfluoro-n-dodecanoic acid ✓	PFDoA	2000	P
Perfluoro-n-tridecanoic acid ✓	PFTrDA	2000	Q
Perfluoro-n-tetradecanoic acid ✓	PFTeDA	2000	R
N-methylperfluorooctanesulfonamidoacetic acid [a] ✓	N-MeFOSAA: linear isomer ✓	1520	L
	N-MeFOSAA: ∑ branched isomers	480	K
N-ethylperfluorooctanesulfonamidoacetic acid [b] ✓	N-EtFOSAA: linear isomer ✓	1550	N
	N-EtFOSAA: ∑ branched isomers	450	M

Compound	Abbreviation	Concentration * (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate ✓	L-PFBS ✓	2000	1770	A
Potassium perfluorohexanesulfonate [c]	PFHxSK: linear isomer	1620	1480	E
	PFHxSK: ∑ branched isomers	378	344	D
Potassium perfluorooctanesulfonate [d]	PFOSK: linear isomer	1580	1460	I
	PFOSK: ∑ branched isomers	422	391	H

[a] See Table B for percent composition of linear and branched N-MeFOSAA isomers.
[b] See Table C for percent composition of linear and branched N-EtFOSAA isomers.
[c] See Table D for percent composition of linear and branched PFHxSK isomers.
[d] See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Table B: **N-MeFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7	24.0
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0	
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	6.0	
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$	14.0	
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	0.2	
7	Other Unidentified Isomers		1.1	

* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

Table C: **N-EtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3	22.5
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	2.2	
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	5.4	
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(C_2H_5)CH_2CO_2H$	10.4	
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	0.3	
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	0.3	
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF_2CF(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	0.3	
9	Other Unidentified Isomers		1.3	

* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

Table D: **PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9	18.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4	
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0	
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9	
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2	
7	Other Unidentified Isomers		0.5	

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

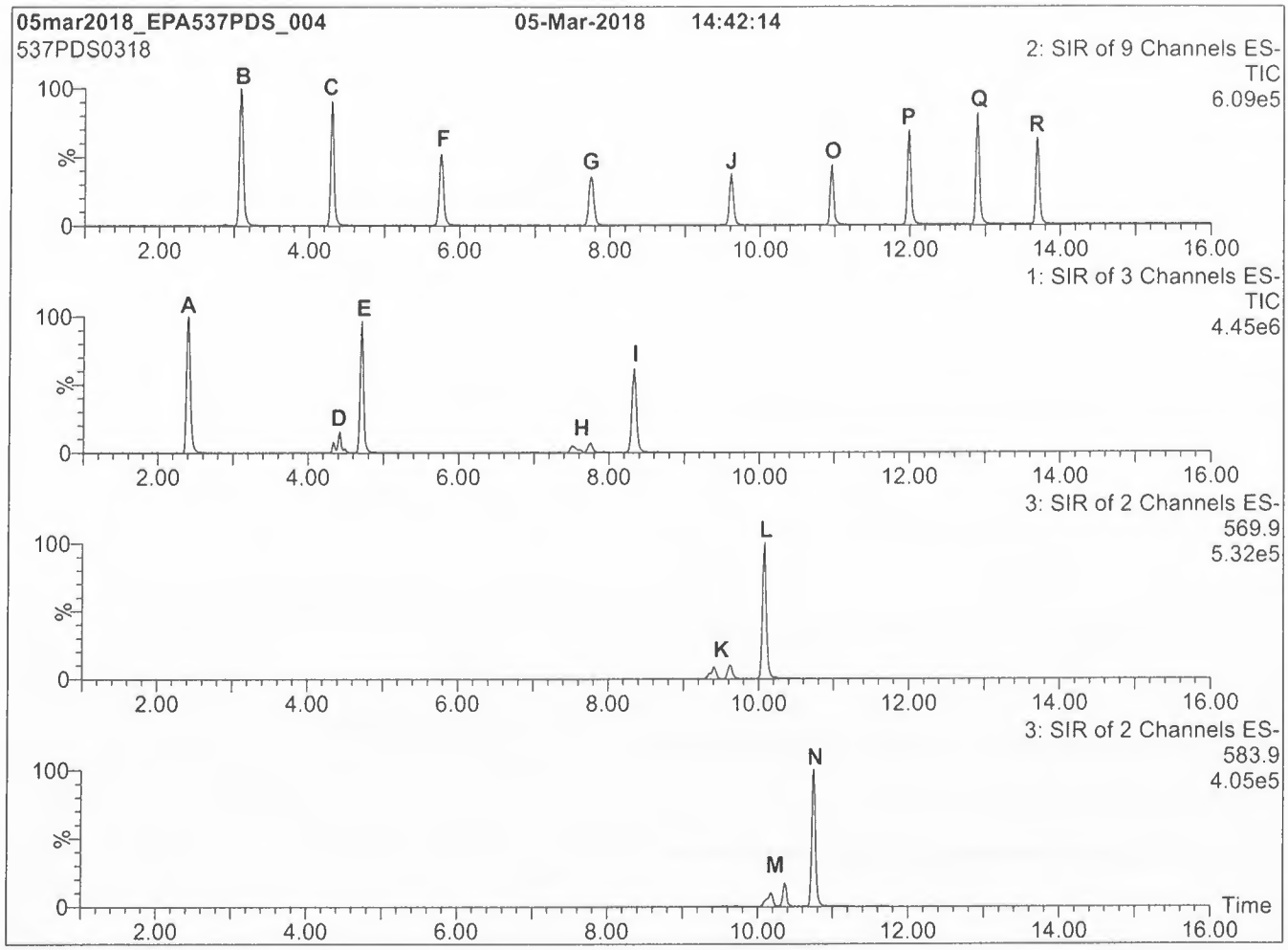
Table E: **PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2	21.1
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6	
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9	
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2	
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5	
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0	
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)_2CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2	
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$	0.03	
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4	
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07	

* Percent of total perfluorooctanesulfonate isomers only.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: _____ **Date:** 04/02/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: EPA-537PDS; LC/MS Data (SIR)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-60)
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: EPA-537PDS; LC/MS/MS Data (Selected MRM Transitions)

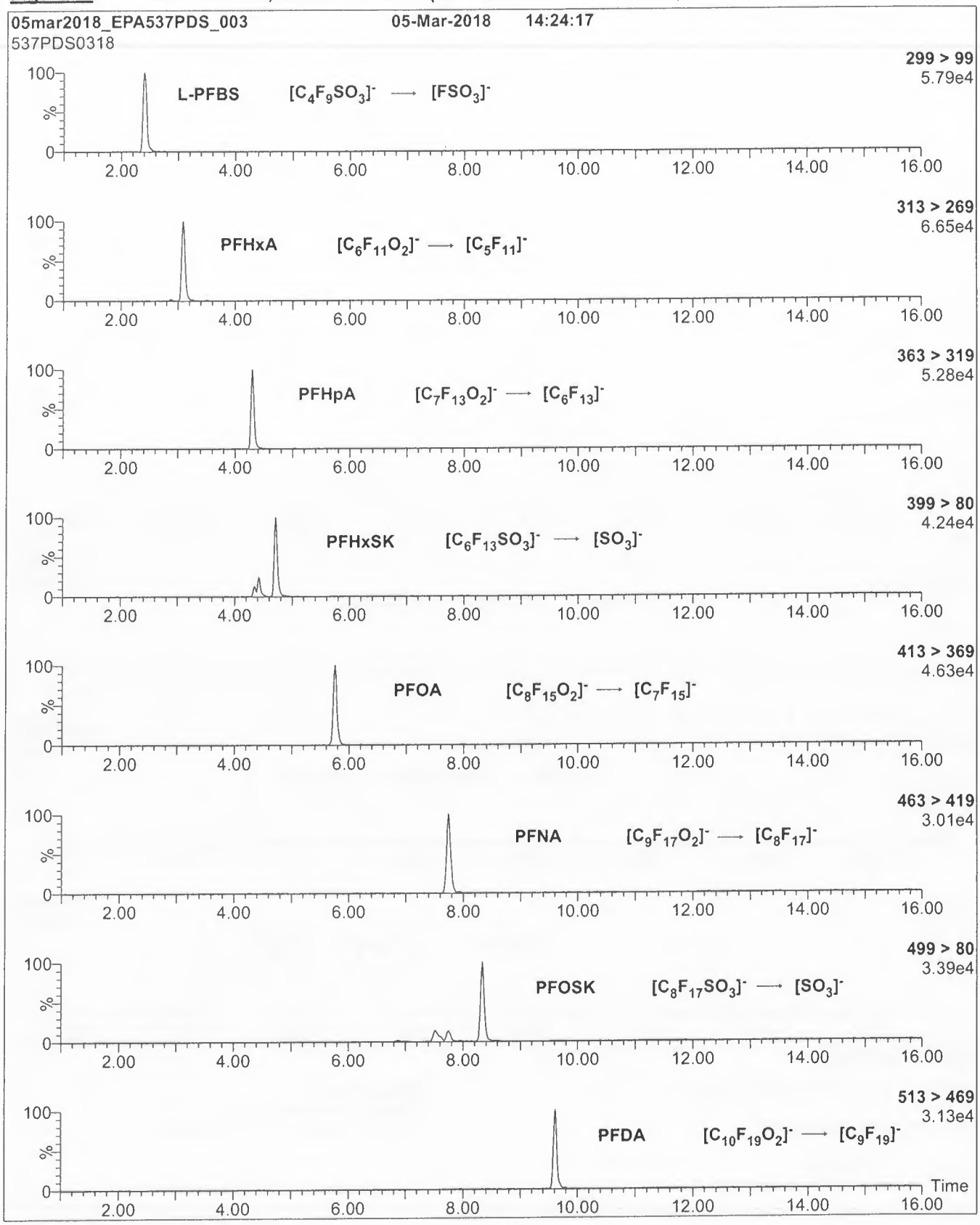
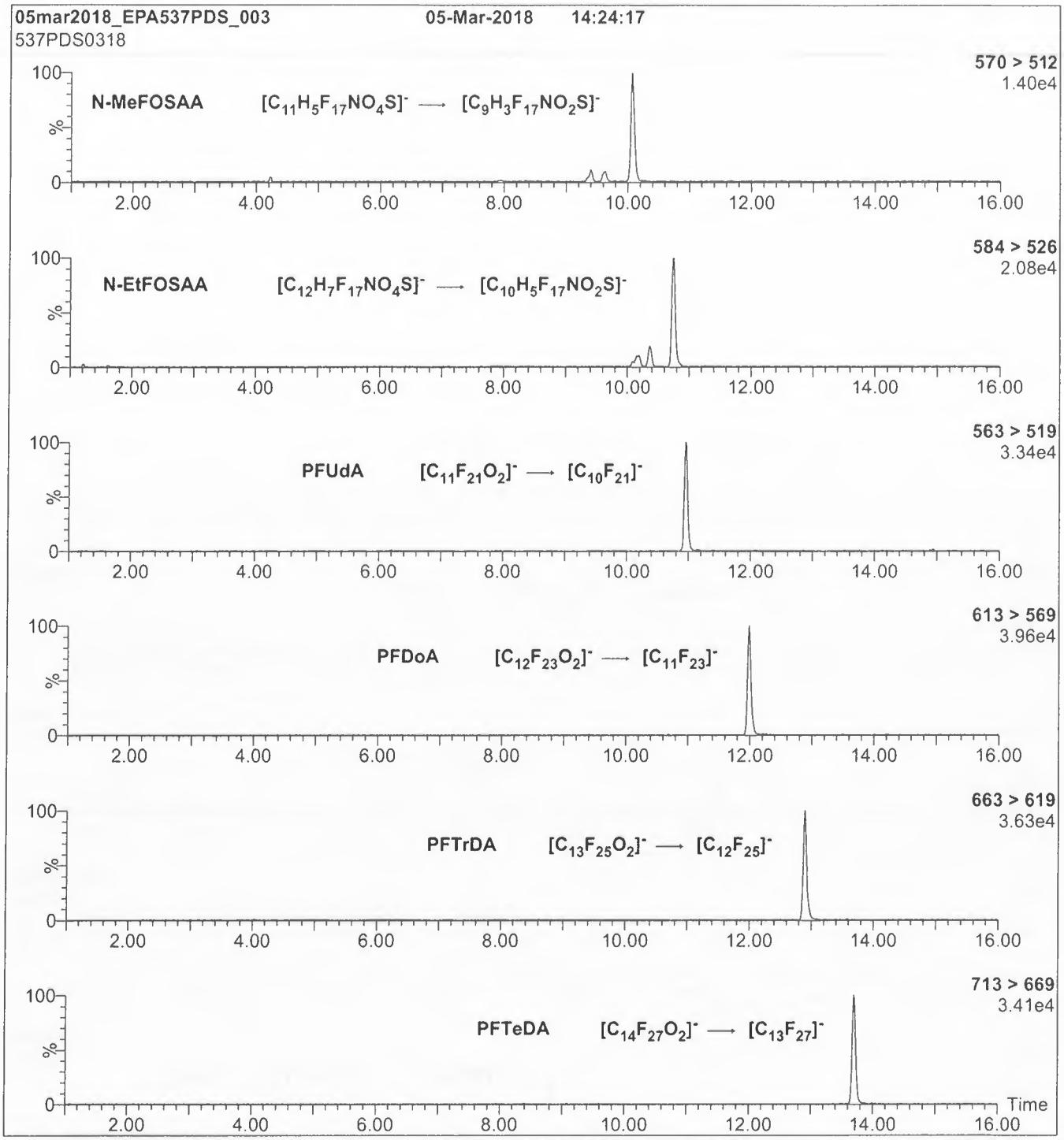


Figure 2: EPA-537PDS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (EPA-537PDS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.10e-3

Collision Energy (eV) = 10-40 (variable)

BATTELLE
It can be done

BDO Id: 180425-04

Reagent Receipt Report

Approved: ☐ **Authorized** ☐

Name: EPA-537PDS-L (second source)
Vendor: Wellington Laboratories
Catalogue No: EPA-537PDS-L
Type: Solution
Lot No: 537PDSL0318
Quantity: 1 ea ml **% Moisture:**
Description: EPA-537PDS-L

Received: 4/25/2018
Custodian: Schumitz, Matt
Expires: 3/5/2023
Consumed:
Stored In: AgChem Laboratory - R0124

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	2.0000	100.00	--	--	☐			
N-methylperfluoro-1-octanesulfonami	2355-31-9	2.0000	100.00	--	--	☐			
Perfluoro-1-butanesulfonic Acid	375-73-5	2.0000	100.00	--	--	☐			1
Perfluoro-n-decanoic Acid	335-76-2	2.0000	100.00	--	--	☐			
Perfluoro-n-dodecanoic acid	307-55-1	2.0000	100.00	--	--	☐			
Perfluoro-n-heptanoic Acid	375-85-9	2.0000	100.00	--	--	☐			
Perfluoro-n-hexanoic acid	307-24-4	2.0000	100.00	--	--	☐			
Perfluoro-n-octanoic Acid	335-67-1	2.0000	100.00	--	--	☐			
Perfluorononanoic Acid	375-95-1	2.0000	100.00	--	--	☐			
Perfluoro-n-tetradecanoic acid	376-06-7	2.0000	100.00	--	--	☐			
Perfluoro-n-tridecanoic acid	72629-94-8	2.0000	100.00	--	--	☐			
Perfluoro-n-undecanoic acid	2058-94-8	2.0000	100.00	--	--	☐			
Sodium perfluoro-1-hexanesulfonate	82382-12-5	1.8900	100.00	--	--	☐			2
Sodium perfluoro-1-octanesulfonate	4021-47-0	1.9100	100.00	--	--	☐			3

Total Analytes: 14

Notes:

	Analyte:	Comment:
1	Perfluoro-1-butanesulfonic Acid	2000 ng/ml as the salt, 1770 ng/ml as the anion
2	Sodium perfluoro-1-hexanesulfonate	2000 ng/ml as the salt, 1890 ng/ml as the anion
3	Sodium perfluoro-1-octanesulfonate	2000 ng/ml as the salt, 1910 ng/ml as the anion

Approved by: **Approved on:**
Authorized by: **Authorized on:**

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-537PDS-L

Native PFAS Linear Primary Dilution Standard Solution/Mixture

PRODUCT CODE:	EPA-537PDS-L
LOT NUMBER:	537PDSL0318
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	03/02/2018
LAST TESTED: (mm/dd/yyyy)	03/05/2018
EXPIRY DATE: (mm/dd/yyyy)	03/05/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

EPA-537PDS-L is a solution/mixture of native linear perfluoroalkylcarboxylic acids (C_6-C_{14}), native linear perfluoroalkylsulfonates (C_4, C_6, and C_8), and native linear perfluorooctanesulfonamidoacetic acids. The components and their concentrations are given in Table A.

The native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, and native perfluorooctanesulfonamidoacetic acids have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-537PDS-L; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration * (ng/ml)	Peak Assignment in Figure 1
Perfluoro-n-hexanoic acid ✓	PFHxA	2000	B
Perfluoro-n-heptanoic acid ✓	PFHpA	2000	C
Perfluoro-n-octanoic acid ✓	PFOA	2000	E
Perfluoro-n-nonanoic acid ✓	PFNA	2000	F
Perfluoro-n-decanoic acid ✓	PFDA	2000	H
Perfluoro-n-undecanoic acid ✓	PFUdA	2000	K
Perfluoro-n-dodecanoic acid ✓	PFDoA	2000	L
Perfluoro-n-tridecanoic acid ✓	PFTrDA	2000	M
Perfluoro-n-tetradecanoic acid ✓	PFTeDA	2000	N
N-methylperfluoro-1-octanesulfonamidoacetic acid ✓	N-MeFOSAA	2000	I
N-ethylperfluoro-1-octanesulfonamidoacetic acid ✓	N-EtFOSAA	2000	J

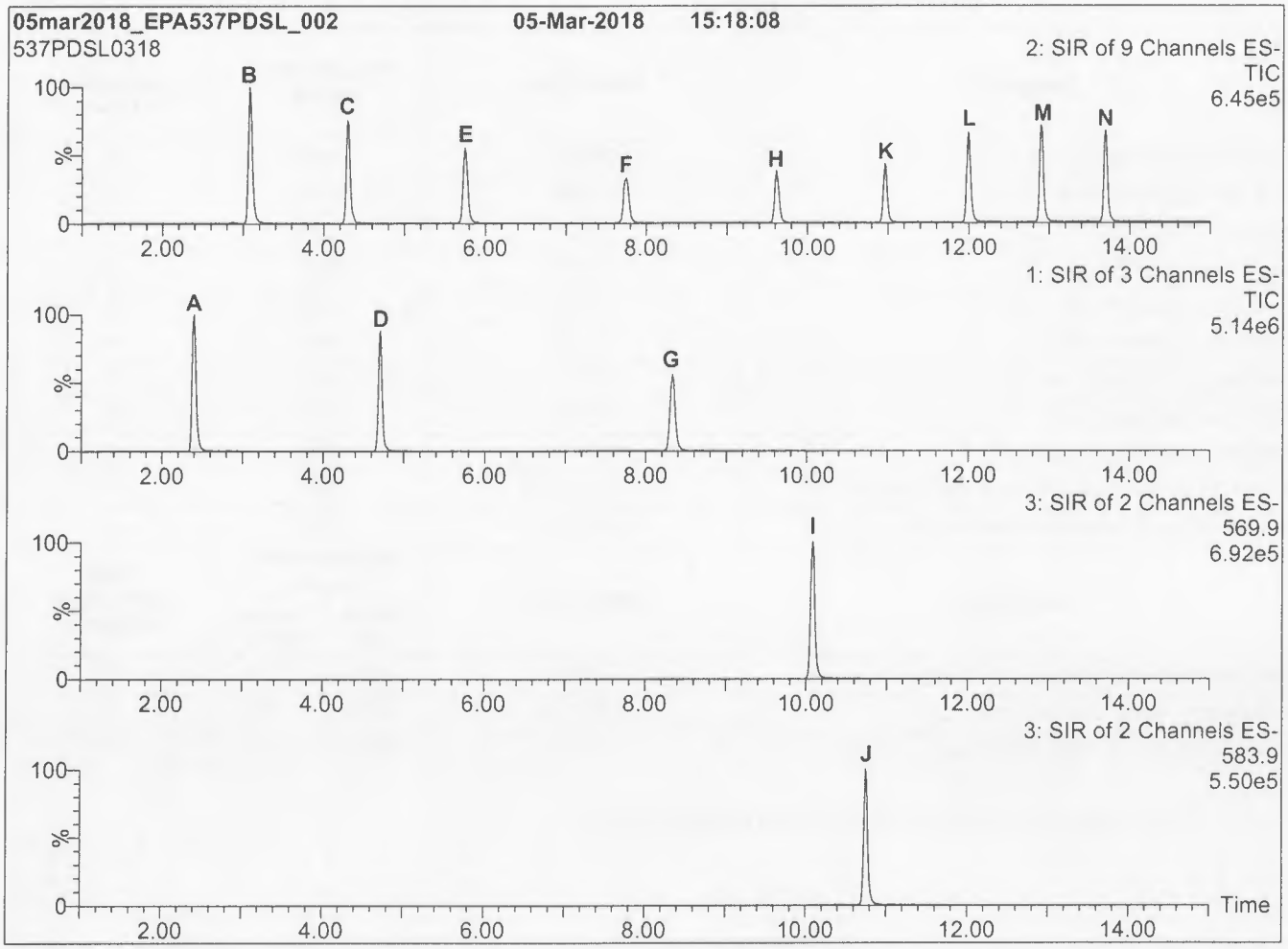
Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate ✓	L-PFBS	2000	1770	A
Sodium perfluoro-1-hexanesulfonate ✓	L-PFHxS	2000	1890	D
Sodium perfluoro-1-octanesulfonate ✓	L-PFOS	2000	1910	G

* Concentrations have been rounded to three significant figures.

Certified By: _____ **Date:** 04/02/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **EPA-537PDS-L; LC/MS Data (SIR)**



Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-60)
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: EPA-537PDS-L; LC/MS/MS Data (Selected MRM Transitions)

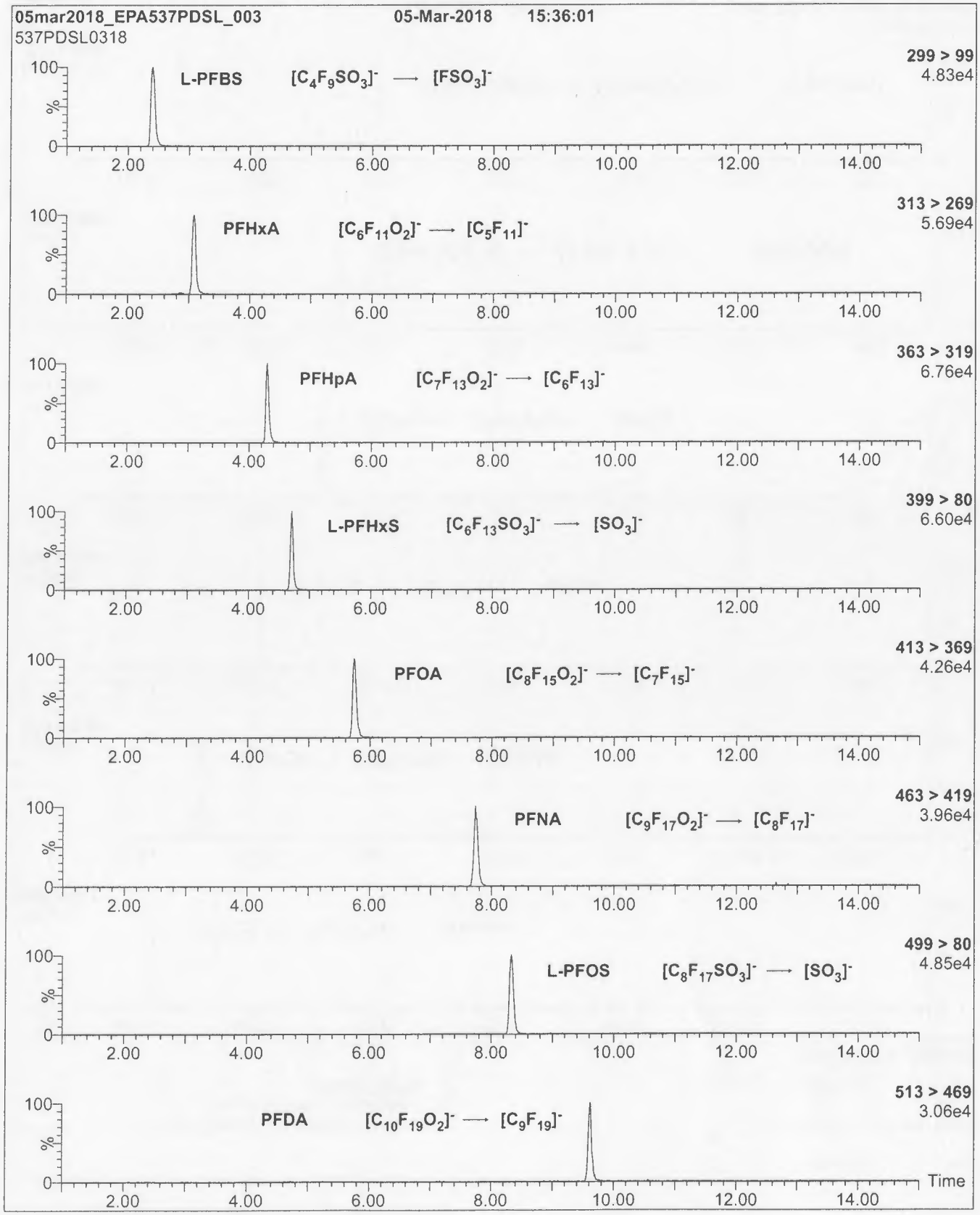
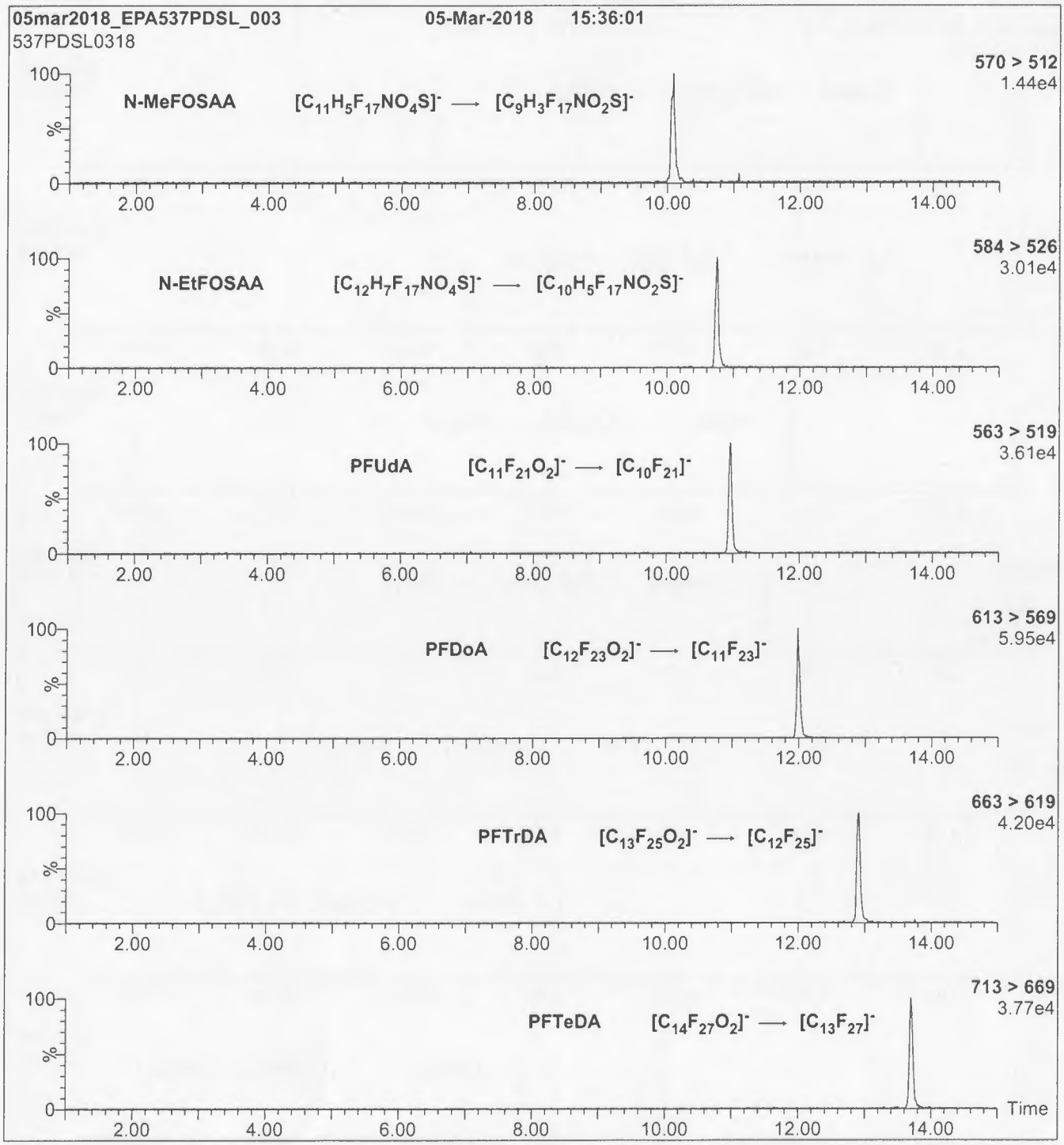


Figure 2: EPA-537PDS-L; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (EPA-537PDS-L)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3

Collision Energy (eV) = 10-40 (variable)

Sample Preparation

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0392

WE04 PFAS Analysis

DW

SOP Numbers (see workplan for modifications)

VOASOP No. 5-371

This Batch Contains The Following Samples:	
CR040PB-FS	J6746-FS
CR041LCS-FS	J6759-FS
J6738-FS	J6761-FS
J6740-FS	
J6742-FS	
J6744-FS	

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

Approved By:	Date	Initials
Denise Schumitz	06/27/2018	DMS

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BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Sample ID	Description
CR040PB-FS	Procedural Blank
CR041LCS-FS	Laboratory Control Sample
J6738-FS	WGNA-061118-FRB-3073
J6740-FS	WGNA-061118-FRB-0437
J6742-FS	WGNA-061218-FRB-3283
J6744-FS	WGNA-061218-FRB-3382
J6746-FS	NAWC-061218-FRB-276
J6759-FS	NAWC-061418-FRB-111
J6761-FS	NAWC-061418-FRB-056

Samples Assigned By: Jonathan Thorn Date : June 21, 2018

Comments:

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BATTELLE - NORWELL OPERATIONS
SAMPLE CUSTODY LOG

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392
WE04 PFAS Analysis
DW

Requested On/By:	06/25/2018 SAS	**Purpose:**	Sample Preparation
Relinquished On/By:	06/25/2018 MDS	**Last Activity:**	Transfer

Accepted On/By:	06/25/2018 SAS	**Returned On/To:**	
Stored In Facility:	Sample Preparation	**Returned To Facility:**	
Stored Until	06/25/2018		
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	J6738	1	C	Consumed	NA
2	J6740	1	C	Consumed	NA
3	J6742	1	C	Consumed	NA
4	J6744	1	C	Consumed	NA
5	J6746	1	C	Consumed	NA
6	J6759	1	C	Consumed	NA
7	J6761	1	C	Consumed	NA
Total Samples	7	* "C" = Consumed Container			

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BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CR040PB-FS	Procedural Blank	250.0	NA	--	06/25/18 SAS
CR041LCS-FS	Laboratory Control Sample	250.0	NA	--	06/25/18 SAS
J6738-FS	WGNA-061118-FRB-3073	260.0	1	C	06/26/18 LMG
J6740-FS	WGNA-061118-FRB-0437	250.0	1	C	06/26/18 LMG
J6742-FS	WGNA-061218-FRB-3283	260.0	1	C	06/26/18 LMG
J6744-FS	WGNA-061218-FRB-3382	250.0	1	C	06/26/18 LMG
J6746-FS	NAWC-061218-FRB-276	250.0	1	C	06/26/18 LMG
J6759-FS	NAWC-061418-FRB-111	250.0	1	C	06/26/18 LMG
J6761-FS	NAWC-061418-FRB-056	250.0	1	C	06/26/18 LMG

Comments:

Sample ID:	Comments:
CR040PB-FS	1.25g Trizma(180502-01) weighed on BAL-009
CR041LCS-FS	1.27g Trizma(180502-01) weighed on BAL-009

Samples Assigned By Jonathan Thorn Date : June 21, 2018

* - "C" = Sample is Consumed

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SURROGATE SPIKE FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392
WE04 PFAS Analysis
DW

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CR040PB-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
CR041LCS-FS	JV41	LCS/MS	1	75	06/25/18 SAS	LMG	NA
CR041LCS-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6738-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6740-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6742-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6744-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6746-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6759-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6761-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV41	Pipette	I0793912B
JV60	Pipette	I0793912B

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It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Sample ID	1st Extraction	2nd Extraction	3rd Extraction	Conc. ID	Turbo °C	Turbo PSI	KD °C	Comment
CR040PB-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
CR041LCS-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6738-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6740-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6742-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6744-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6746-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6759-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6761-FS	06/25/18 SAS	NA	NA	NA	NA	NA	NA	NA

Solvents/Reagent Preparations:

Name	ID	Expires	Lot No	Procedure	Comments
Pre-packed SPE Column	RP-180625-8	06/26/18	S214-0071/S18-002364	Pre-packed SPE Column	

Solvents/Reagents:

Name	Lot No	Comments
Methanol (HPLC) (180531-01)	179315	

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392
WE04 PFAS Analysis
DW

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CR040PB-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
CR041LCS-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6738-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6740-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6742-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6744-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6746-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6759-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6761-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV59	Pipette	D1075429B

Extract Id:	Comments:
CR040PB-FS	Samples reconstituted in 96/4 methanol/milli-q water

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
CR040PB-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
CR041LCS-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6738-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6740-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6742-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6744-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6746-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6759-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6761-FS	0	--	6/25/2018 3:43:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392
WE04 PFAS Analysis
DW

Purpose:	LC-MS/MS TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Jun 27 2018 8:26AM SAS	**Received On/By:**	Jun 27 2018 8:43AM DMS
Relinquished From:	Sample Preparation: NA	**Received Location:**	LC Laboratory: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	CR040PB-FS(0)	1000	1	Intact	NA
2	CR041LCS-FS(0)	1000	1	Intact	NA
3	J6738-FS(0)	1000	1	Intact	NA
4	J6740-FS(0)	1000	1	Intact	NA
5	J6742-FS(0)	1000	1	Intact	NA
6	J6744-FS(0)	1000	1	Intact	NA
7	J6746-FS(0)	1000	1	Intact	NA
8	J6759-FS(0)	1000	1	Intact	NA
9	J6761-FS(0)	1000	1	Intact	NA

Total Extracts: 9

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Entered By:	On:

Task Leader Approval:	On:
SupervisorApproval:	On:
PM Approval:	On:

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It can be done

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SAMPLE SPECIFIC COMMENTS

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Sample ID:	Comment:	Date/Initials:
CR040PB-FS	Sample extraction began at 3:43pm for all samples.	06/25/18 SAS
CR040PB-FS	Sample extraction ended at 4:15pm	06/25/18 SAS
CR041LCS-FS	Sample extraction ended at 4:07pm	06/25/18 SAS
J6738-FS	Sample extraction ended at 4:11pm	06/25/18 SAS
J6740-FS	Sample extraction ended at 4:09pm	06/25/18 SAS
J6742-FS	Sample extraction ended at 4:19pm	06/25/18 SAS
J6744-FS	Sample extraction ended at 4:11pm	06/25/18 SAS
J6746-FS	Sample extraction ended at 4:07pm	06/25/18 SAS
J6759-FS	Sample extraction ended at 4:09pm	06/25/18 SAS
J6761-FS	Sample extraction ended at 4:08pm	06/25/18 SAS

Analytical Calibrations

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Sequence Report

Created with Analyst Reporter
Printed: 29/06/2018 1:23:52 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MeOH	Solvent	6/27/2018 8:56:44 AM	5-0371.dam	06252018_5-371.wiff
2	JX67	L1	6/27/2018 9:05:43 AM	5-0371.dam	06252018_5-371.wiff
3	JX68	L2	6/27/2018 9:14:41 AM	5-0371.dam	06252018_5-371.wiff
4	JX69	L3	6/27/2018 9:23:38 AM	5-0371.dam	06252018_5-371.wiff
5	JX70	L4	6/27/2018 9:32:34 AM	5-0371.dam	06252018_5-371.wiff
6	JX71	L5	6/27/2018 9:41:29 AM	5-0371.dam	06252018_5-371.wiff
7	JX72	L6	6/27/2018 9:50:24 AM	5-0371.dam	06252018_5-371.wiff
8	JX73	L7	6/27/2018 9:59:20 AM	5-0371.dam	06252018_5-371.wiff
9	JX74	L8	6/27/2018 10:08:14 AM	5-0371.dam	06252018_5-371.wiff
10	JX75	L9	6/27/2018 10:17:08 AM	5-0371.dam	06252018_5-371.wiff
11	JV66 ICC	ICC	6/27/2018 10:26:04 AM	5-0371.dam	06252018_5-371.wiff
31	JX72 CCV	CCV	6/27/2018 8:51:24 PM	5-0371.dam	06252018_5-371.wiff
5	MeOH	Solvent	6/27/2018 9:00:24 PM	5-0371.dam	06252018_5-371.wiff
41	JX73 CCV	CCV	6/27/2018 10:29:51 PM	5-0371.dam	06252018_5-371.wiff
54	MeOH	Solvent	6/27/2018 10:38:48 PM	5-0371.dam	06252018_5-371.wiff
42	CR040PB-FS(0)	Procedural Blank	6/27/2018 10:47:46 PM	5-0371.dam	06252018_5-371.wiff
43	CR041LCS-FS(0)	Laboratory Control Sample	6/27/2018 10:56:42 PM	5-0371.dam	06252018_5-371.wiff
44	J6738-FS(0)	WGNA-061118-FRB-3073	6/27/2018 11:05:37 PM	5-0371.dam	06252018_5-371.wiff
45	J6740-FS(0)	WGNA-061118-FRB-0437	6/27/2018 11:14:33 PM	5-0371.dam	06252018_5-371.wiff
46	J6742-FS(0)	WGNA-061218-FRB-3283	6/27/2018 11:23:30 PM	5-0371.dam	06252018_5-371.wiff
47	J6744-FS(0)	WGNA-061218-FRB-3382	6/27/2018 11:32:26 PM	5-0371.dam	06252018_5-371.wiff
48	J6746-FS(0)	NAWC-061218-FRB-276	6/27/2018 11:41:23 PM	5-0371.dam	06252018_5-371.wiff
49	J6759-FS(0)	NAWC-061418-FRB-111	6/27/2018 11:50:19 PM	5-0371.dam	06252018_5-371.wiff
50	J6761-FS(0)	NAWC-061418-FRB-056	6/27/2018 11:59:16 PM	5-0371.dam	06252018_5-371.wiff
51	JX71 CCV	CCV	6/28/2018 12:08:12 AM	5-0371.dam	06252018_5-371.wiff

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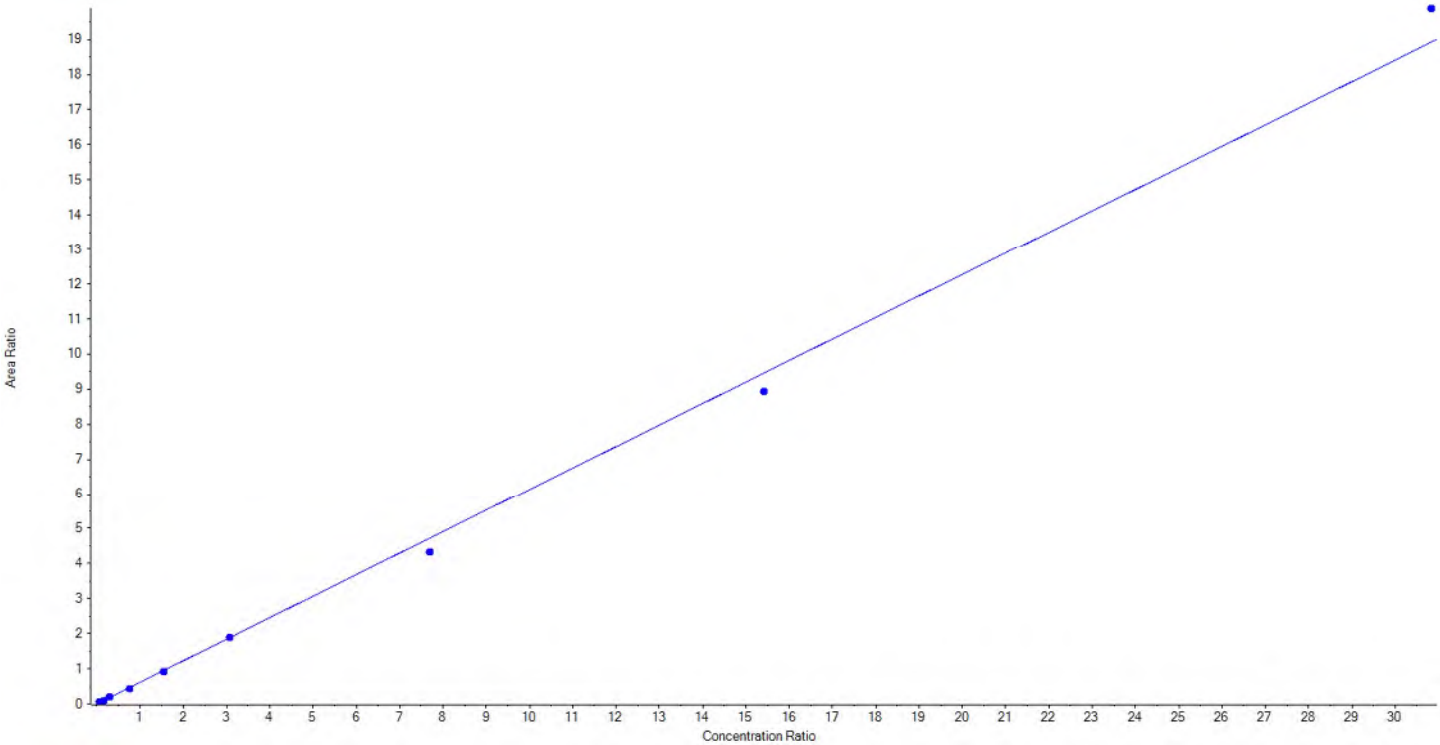
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFBS_1	**Data File**	06252018_5-371.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.61363 x + -0.00126 (r = 0.99834) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	23.830433	107.6
3	JX68	L2	True	44.30	46.278541	104.5
4	JX69	L3	True	88.60	93.683891	105.7
5	JX70	L4	True	221.50	206.327632	93.2
6	JX71	L5	True	443.00	432.516100	97.6
7	JX72	L6	True	885.00	888.747710	100.4
8	JX73	L7	True	2212.50	2024.674722	91.5
9	JX74	L8	True	4425.00	4178.992960	94.4
10	JX75	L9	True	8850.00	9296.998012	105.1



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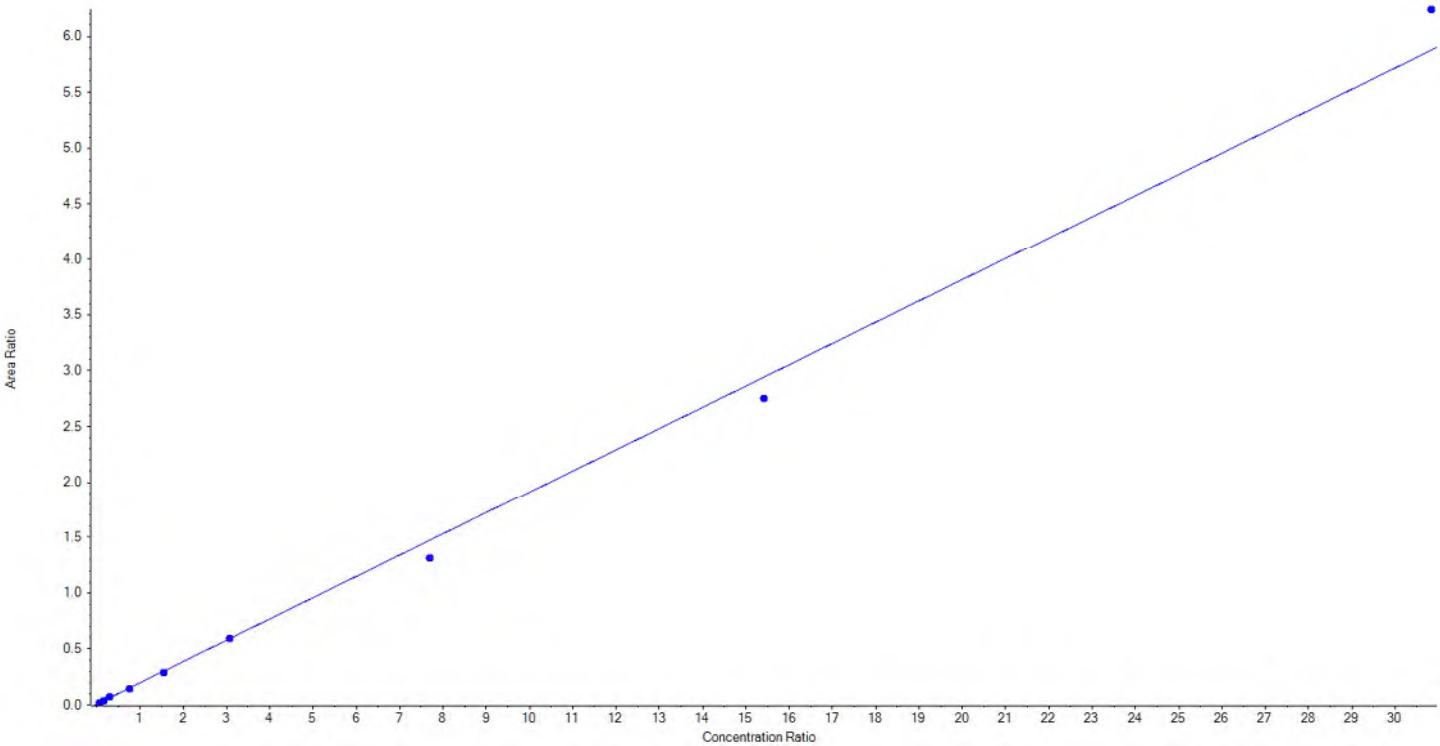
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFBS_2	**Data File**	06252018_5-371.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19036 x + 0.00658 (r = 0.99747) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	22.983577	103.8
3	JX68	L2	True	44.30	49.356949	111.4
4	JX69	L3	True	88.60	93.887974	106.0
5	JX70	L4	True	221.50	205.818634	92.9
6	JX71	L5	True	443.00	429.643049	97.0
7	JX72	L6	True	885.00	889.170002	100.5
8	JX73	L7	True	2212.50	1962.210653	88.7
9	JX74	L8	True	4425.00	4142.359203	93.6
10	JX75	L9	True	8850.00	9396.619960	106.2



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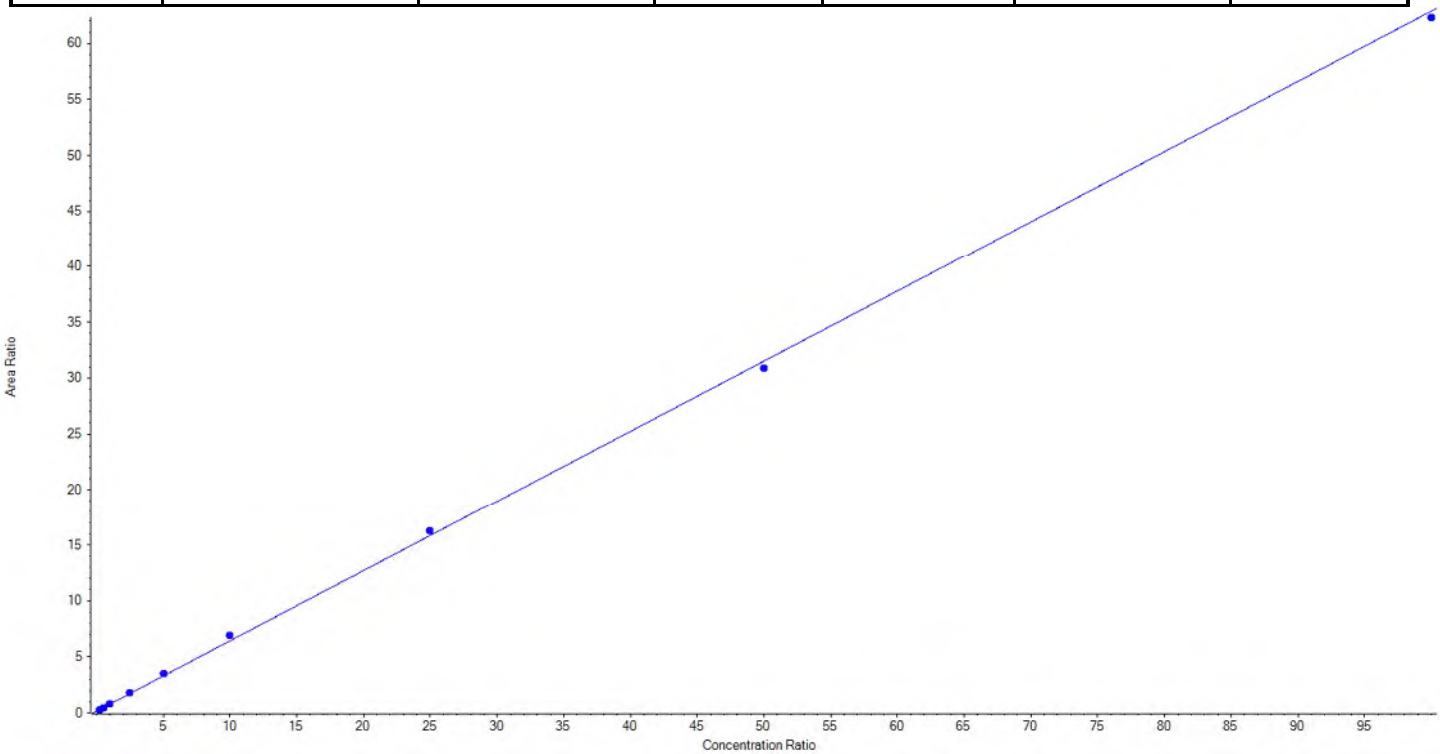
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFHxA_1	**Data File**	06252018_5-371.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.62713 x + 0.16053 (r = 0.99957) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.791994	75.2
3	JX68	L2	True	50.00	51.402415	102.8
4	JX69	L3	True	100.00	104.015969	104.0
5	JX70	L4	True	250.00	256.894451	102.8
6	JX71	L5	True	500.00	536.593763	107.3
7	JX72	L6	True	1000.00	1083.560155	108.4
8	JX73	L7	True	2500.00	2559.637674	102.4
9	JX74	L8	True	5000.00	4905.213315	98.1
10	JX75	L9	True	10000.00	9908.890264	99.1



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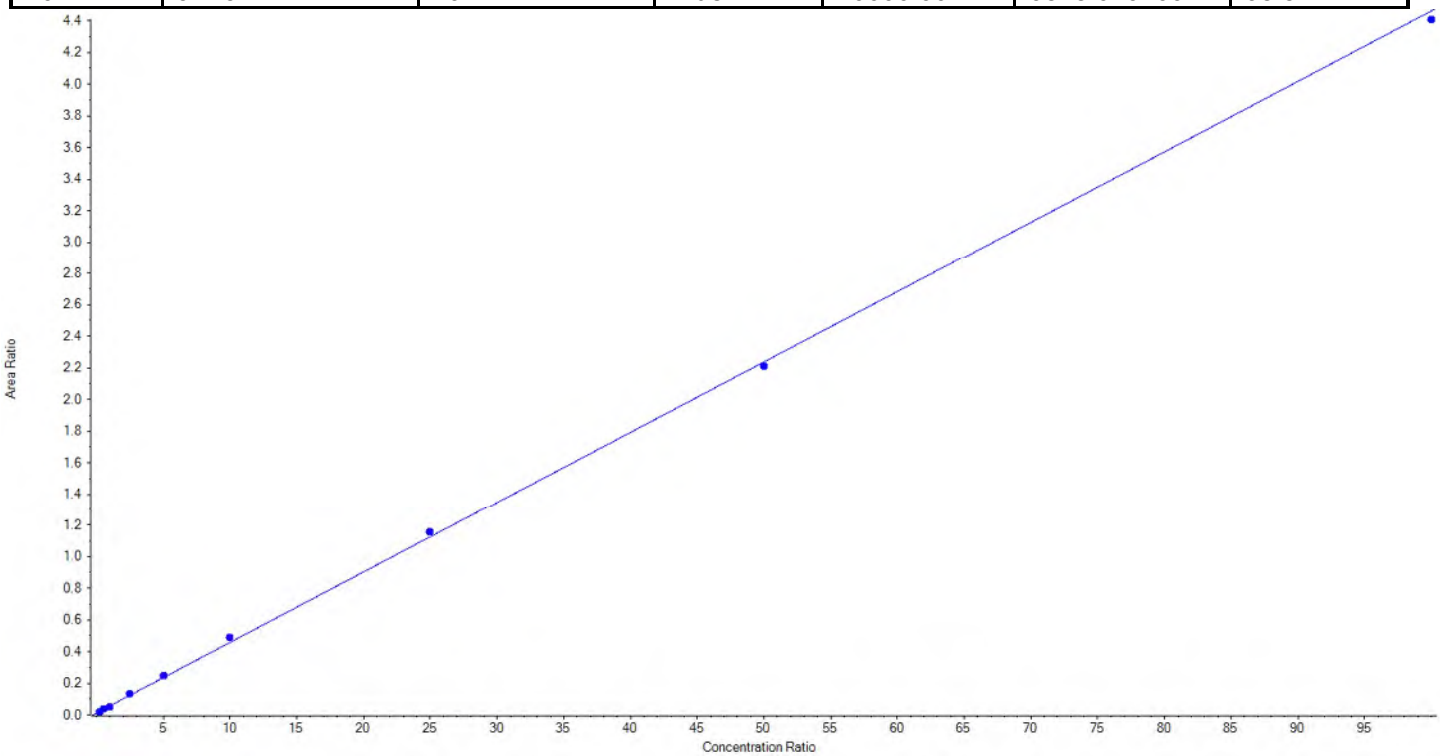
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFHxA_2	**Data File**	06252018_5-371.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.04450 x + 0.01264 (r = 0.99956) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.296701	81.2
3	JX68	L2	True	50.00	53.760551	107.5
4	JX69	L3	True	100.00	88.961255	89.0
5	JX70	L4	True	250.00	271.044383	108.4
6	JX71	L5	True	500.00	529.040331	105.8
7	JX72	L6	True	1000.00	1077.865222	107.8
8	JX73	L7	True	2500.00	2570.917958	102.8
9	JX74	L8	True	5000.00	4935.064490	98.7
10	JX75	L9	True	10000.00	9878.049109	98.8



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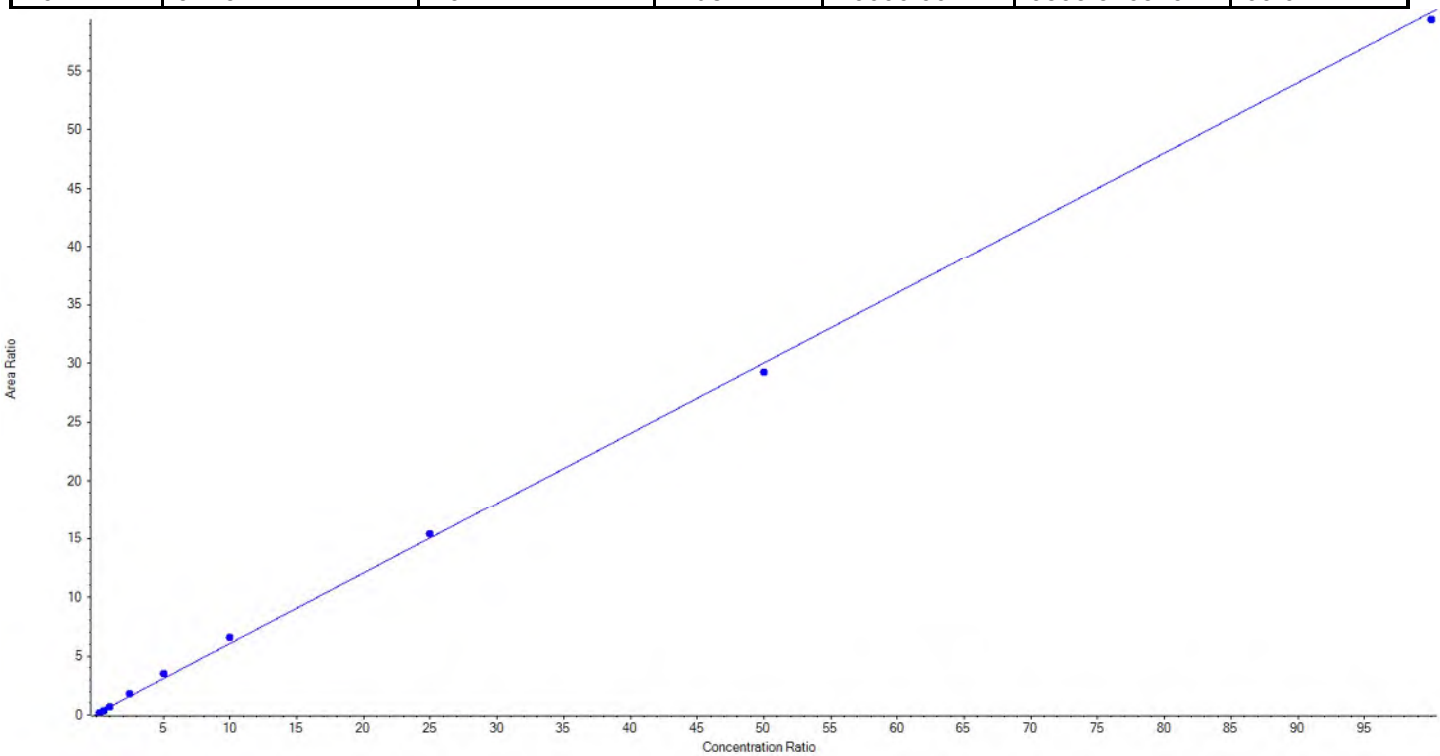
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFHpA_1	**Data File**	06252018_5-371.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.59900 x + 0.08720 (r = 0.99924) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.302340	73.2
3	JX68	L2	True	50.00	44.691384	89.4
4	JX69	L3	True	100.00	104.066690	104.1
5	JX70	L4	True	250.00	283.179151	113.3
6	JX71	L5	True	500.00	564.092719	112.8
7	JX72	L6	True	1000.00	1085.640666	108.6
8	JX73	L7	True	2500.00	2557.091682	102.3
9	JX74	L8	True	5000.00	4872.389047	97.5
10	JX75	L9	True	10000.00	9895.546320	99.0



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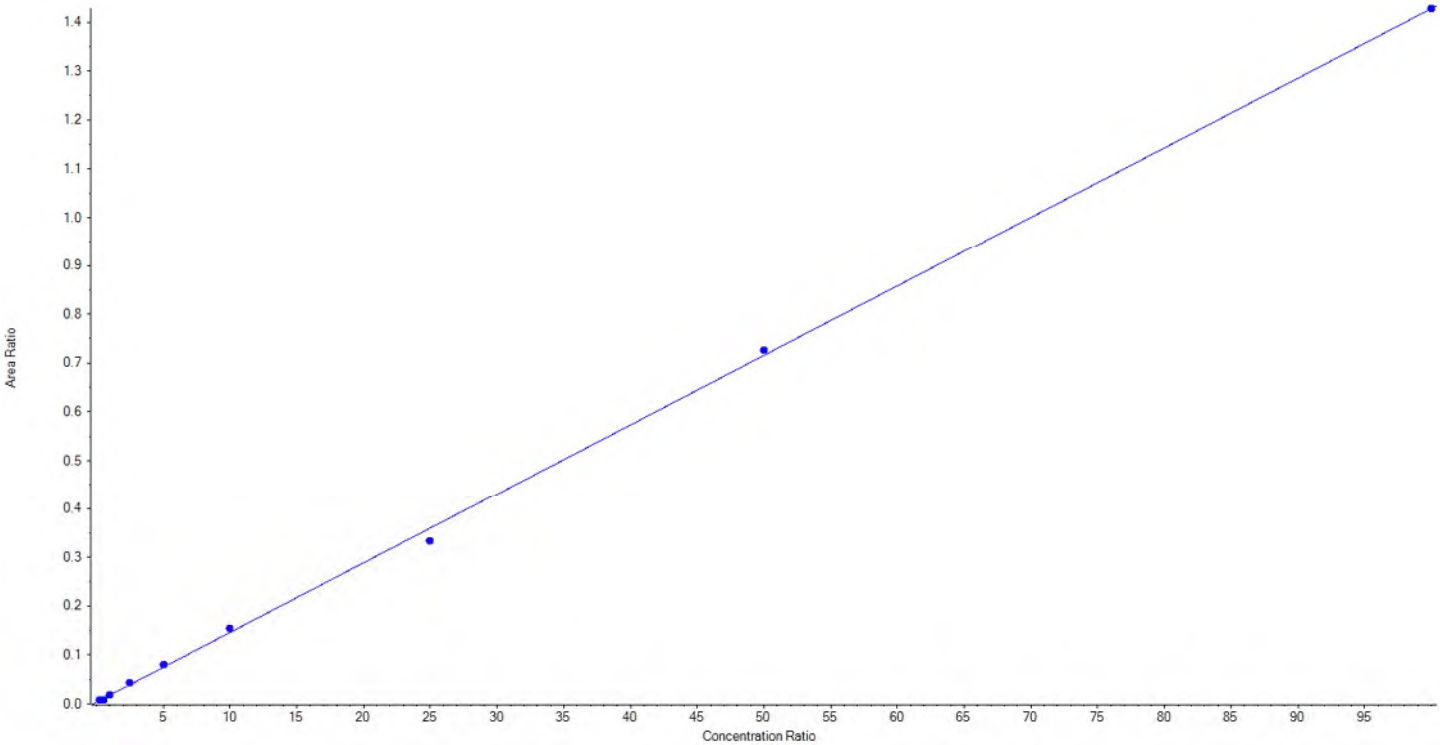
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFHpA_2	**Data File**	06252018_5-371.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.01424 x + 0.00368 (r = 0.99920) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	25.182337	100.7
3	JX68	L2	True	50.00	37.004714	74.0
4	JX69	L3	True	100.00	106.084205	106.1
5	JX70	L4	True	250.00	279.413504	111.8
6	JX71	L5	True	500.00	537.484438	107.5
7	JX72	L6	True	1000.00	1062.086999	106.2
8	JX73	L7	True	2500.00	2307.985347	92.3
9	JX74	L8	True	5000.00	5068.903345	101.4
10	JX75	L9	True	10000.00	10000.855110	100.0



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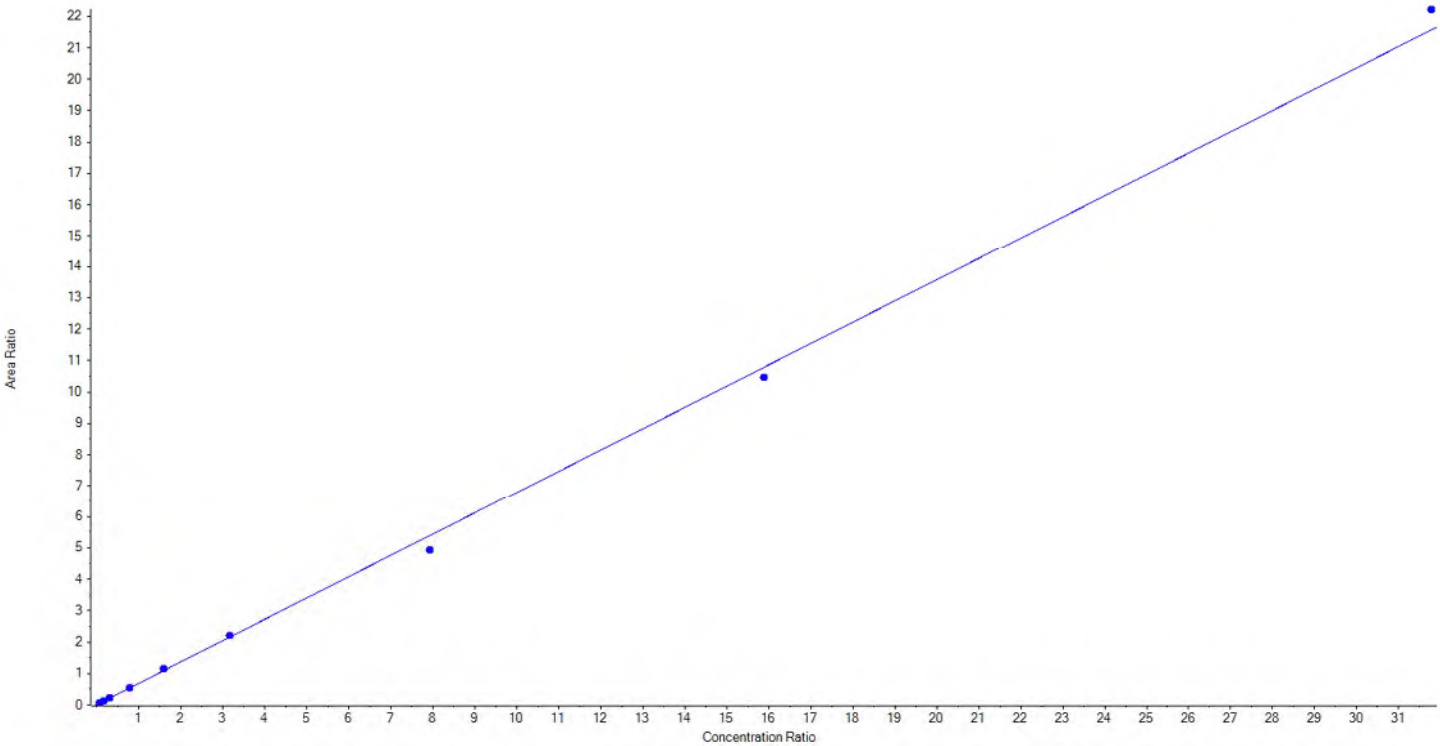
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFHxS_1	**Data File**	06252018_5-371.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.67844 x + 0.00634 (r = 0.99904) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.80	21.160059	92.8
3	JX68	L2	True	45.60	45.485656	99.8
4	JX69	L3	True	91.20	95.245598	104.4
5	JX70	L4	True	228.00	232.577181	102.0
6	JX71	L5	True	456.00	490.689497	107.6
7	JX72	L6	True	912.00	929.472519	101.9
8	JX73	L7	True	2280.00	2087.335538	91.6
9	JX74	L8	True	4560.00	4419.706890	96.9
10	JX75	L9	True	9120.00	9393.927062	103.0



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Calibration Summary Report

Created with Analyst Reporter
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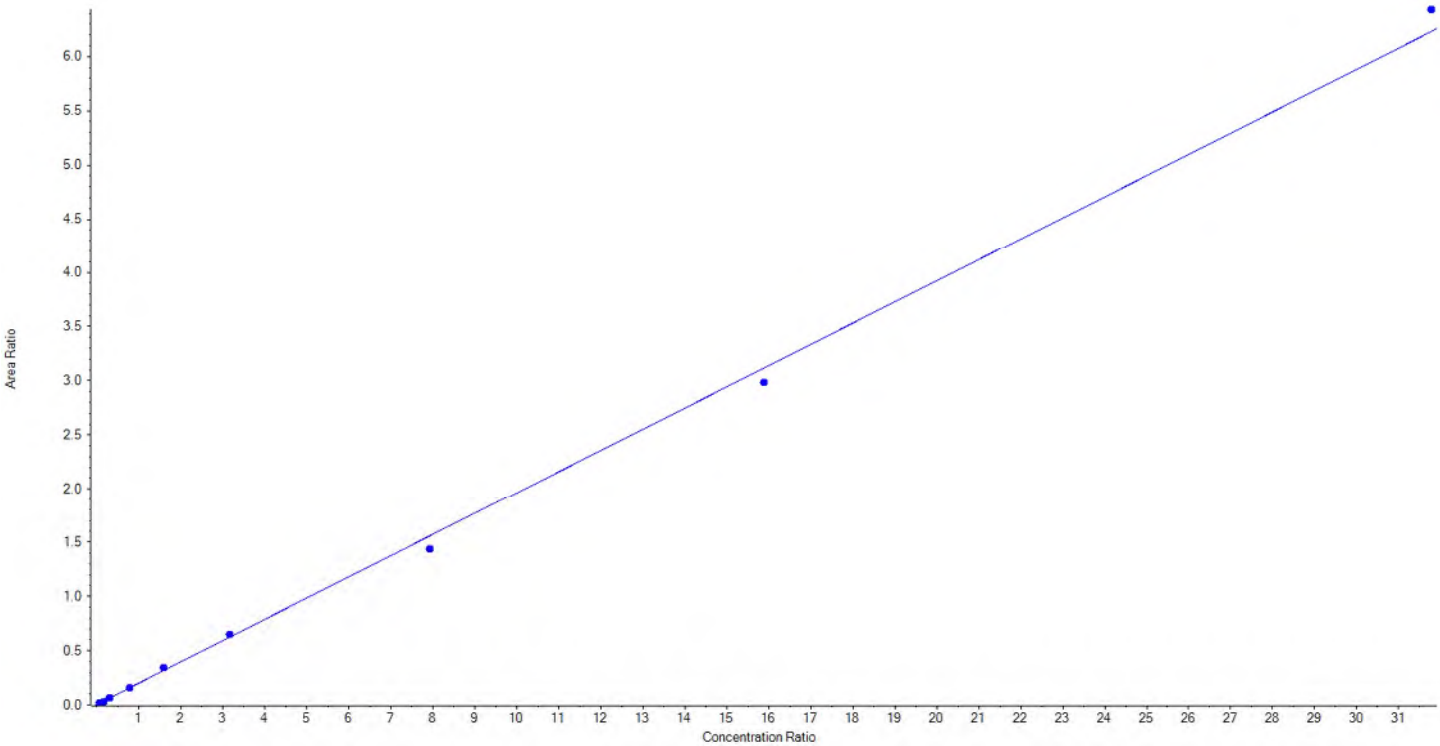
Analyte Name	PFHxS_2	**Data File**	06252018_5-371.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19595 x + 0.00351 (r = 0.99884) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.80	23.177641	101.7
3	JX68	L2	True	45.60	41.676123	91.4
4	JX69	L3	True	91.20	94.514379	103.6
5	JX70	L4	True	228.00	224.141632	98.3
6	JX71	L5	True	456.00	499.794260	109.6
7	JX72	L6	True	912.00	951.728157	104.4
8	JX73	L7	True	2280.00	2099.884695	92.1
9	JX74	L8	True	4560.00	4363.227328	95.7
10	JX75	L9	True	9120.00	9417.455786	103.3



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Calibration Summary Report

Created with Analyst Reporter
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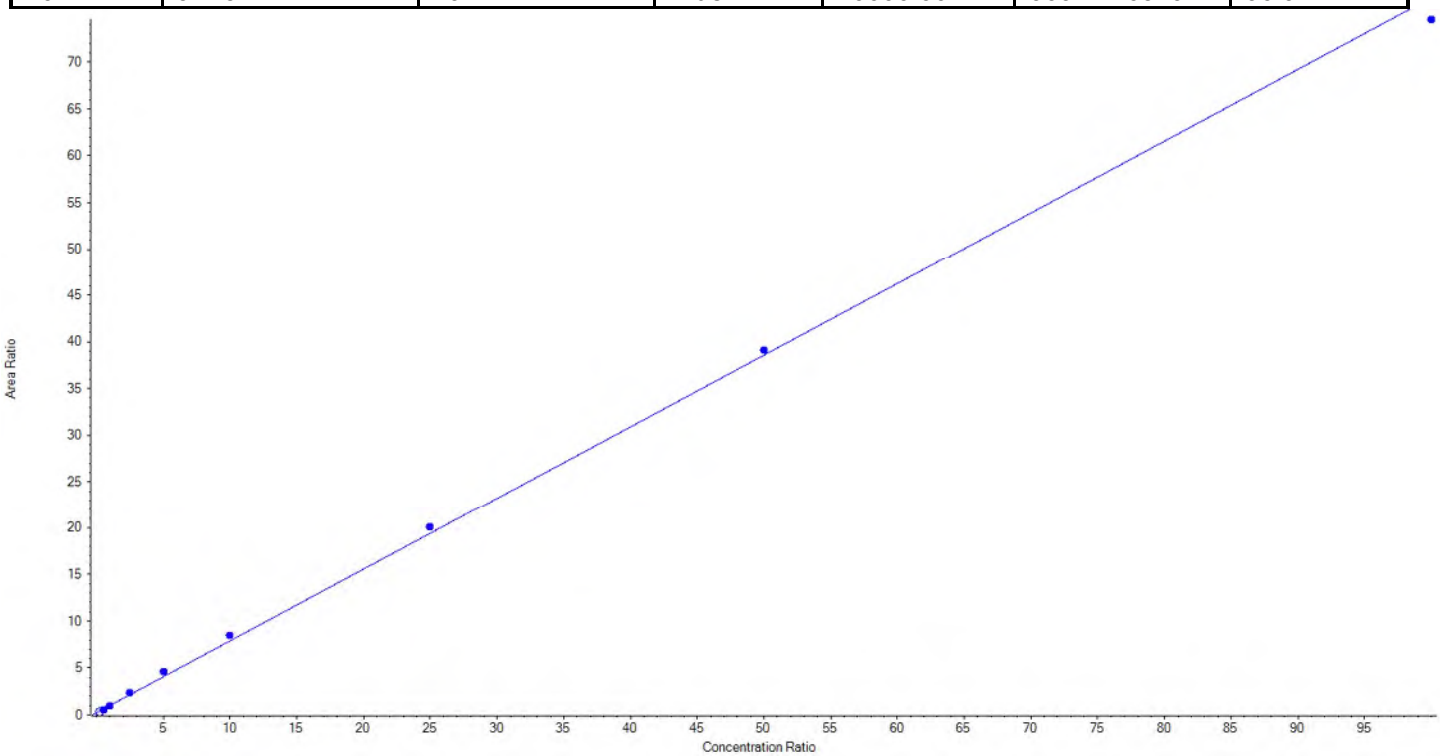
Analyte Name	PFOA_1	**Data File**	06252018_5-371.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.76657 x + 0.23682 (r = 0.99897) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	5.415311	21.7
3	JX68	L2	True	50.00	36.683792	73.4
4	JX69	L3	True	100.00	92.235736	92.2
5	JX70	L4	True	250.00	275.902665	110.4
6	JX71	L5	True	500.00	572.330827	114.5
7	JX72	L6	True	1000.00	1079.143229	107.9
8	JX73	L7	True	2500.00	2586.190651	103.5
9	JX74	L8	True	5000.00	5063.236772	101.3
10	JX75	L9	True	10000.00	9694.276329	96.9



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Calibration Summary Report

Created with Analyst Reporter
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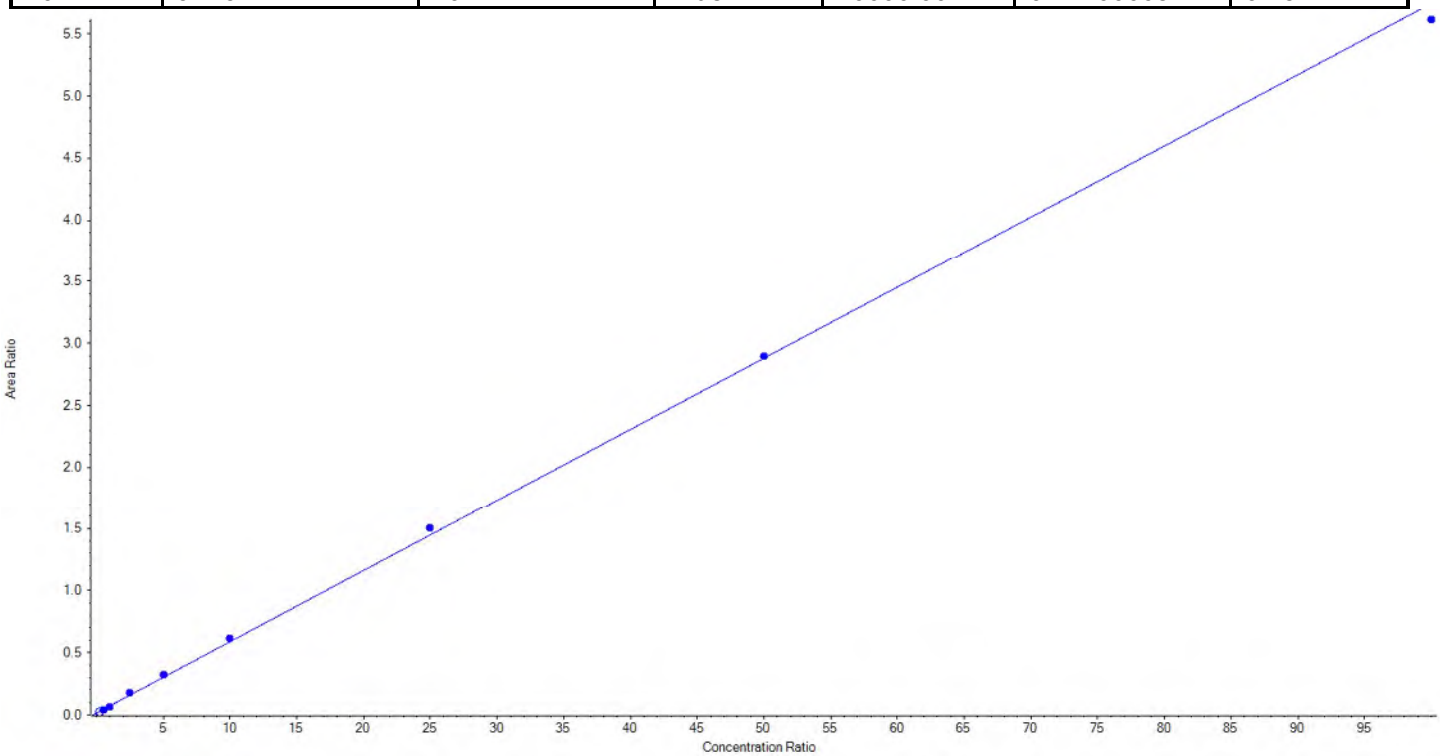
Analyte Name	PFOA_2	**Data File**	06252018_5-371.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05729 x + 0.01572 (r = 0.99941) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	12.318640	49.3
3	JX68	L2	True	50.00	43.335566	86.7
4	JX69	L3	True	100.00	86.590381	86.6
5	JX70	L4	True	250.00	279.024584	111.6
6	JX71	L5	True	500.00	542.178268	108.4
7	JX72	L6	True	1000.00	1042.123910	104.2
8	JX73	L7	True	2500.00	2604.616479	104.2
9	JX74	L8	True	5000.00	5027.464128	100.6
10	JX75	L9	True	10000.00	9774.666684	97.8



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Calibration Summary Report

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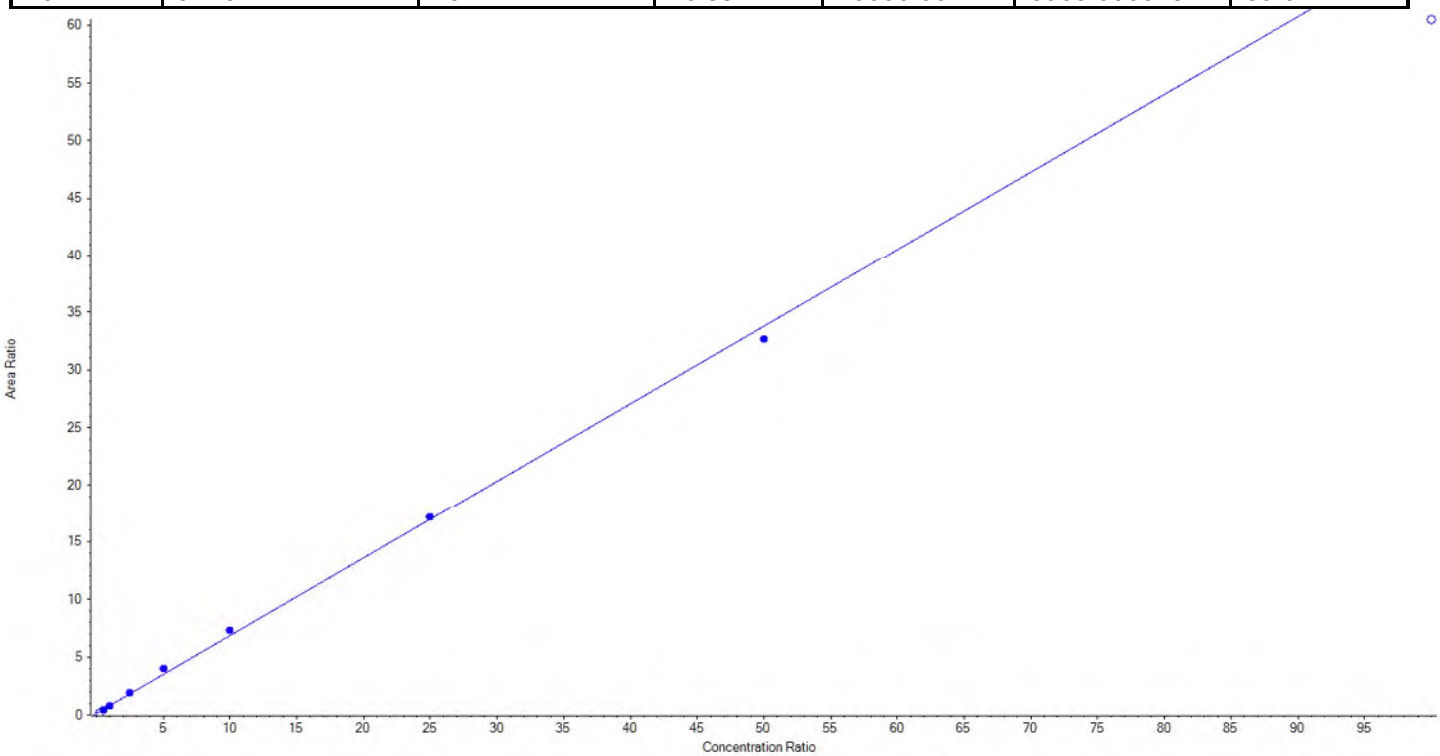
Analyte Name	PFNA_1	**Data File**	06252018_5-371.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.67314 x + 0.14207 (r = 0.99841) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	7.876482	31.5
3	JX68	L2	True	50.00	38.471445	76.9
4	JX69	L3	True	100.00	96.355173	96.4
5	JX70	L4	True	250.00	268.580288	107.4
6	JX71	L5	True	500.00	575.970800	115.2
7	JX72	L6	True	1000.00	1064.317609	106.4
8	JX73	L7	True	2500.00	2525.890341	101.0
9	JX74	L8	True	5000.00	4830.414344	96.6
10	JX75	L9	False	10000.00	8963.600323	89.6



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Calibration Summary Report

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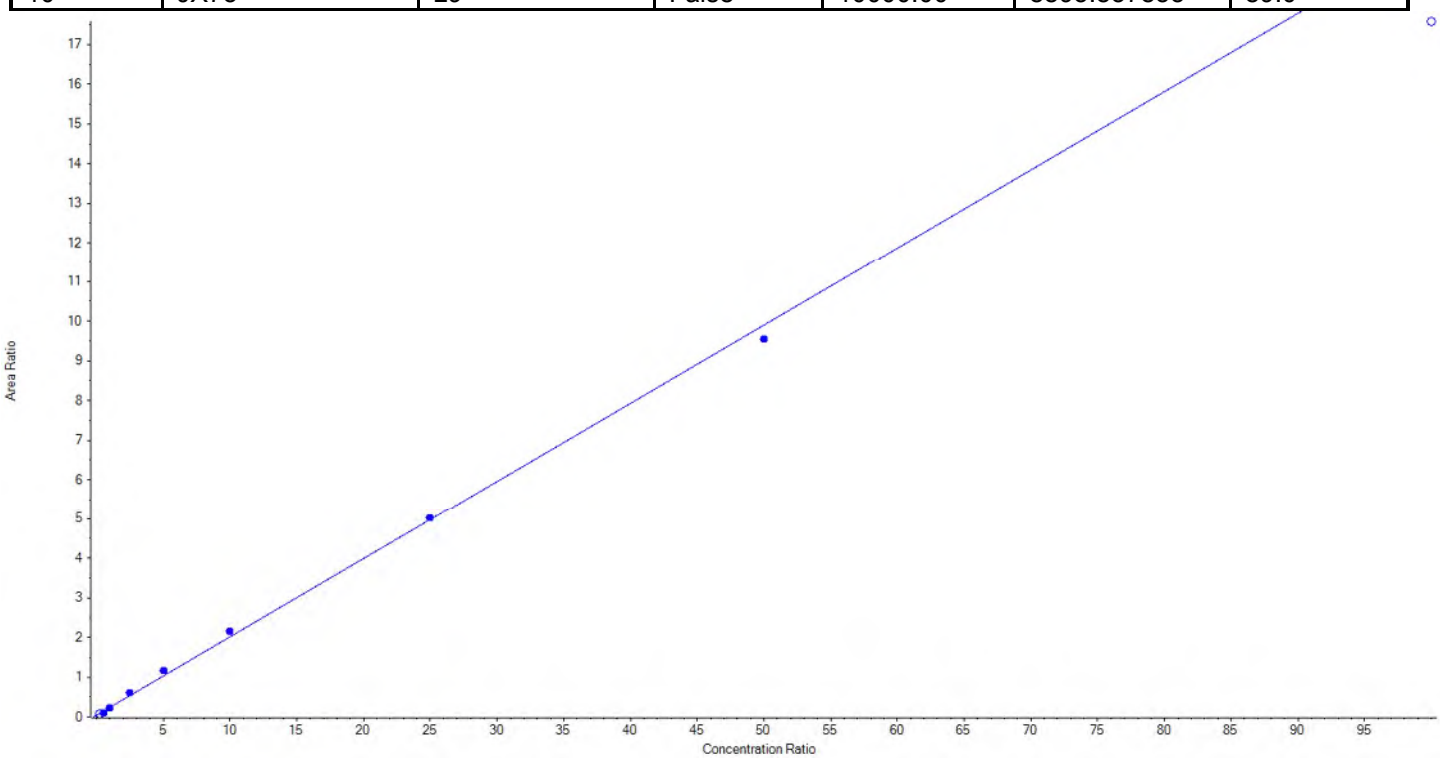
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFNA_2	**Data File**	06252018_5-371.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19709 x + 0.04473 (r = 0.99821) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	17.483575	69.9
3	JX68	L2	True	50.00	35.058175	70.1
4	JX69	L3	True	100.00	99.127432	99.1
5	JX70	L4	True	250.00	282.168603	112.9
6	JX71	L5	True	500.00	566.768331	113.4
7	JX72	L6	True	1000.00	1073.450506	107.4
8	JX73	L7	True	2500.00	2516.076067	100.6
9	JX74	L8	True	5000.00	4827.350887	96.6
10	JX75	L9	False	10000.00	8895.837853	89.0



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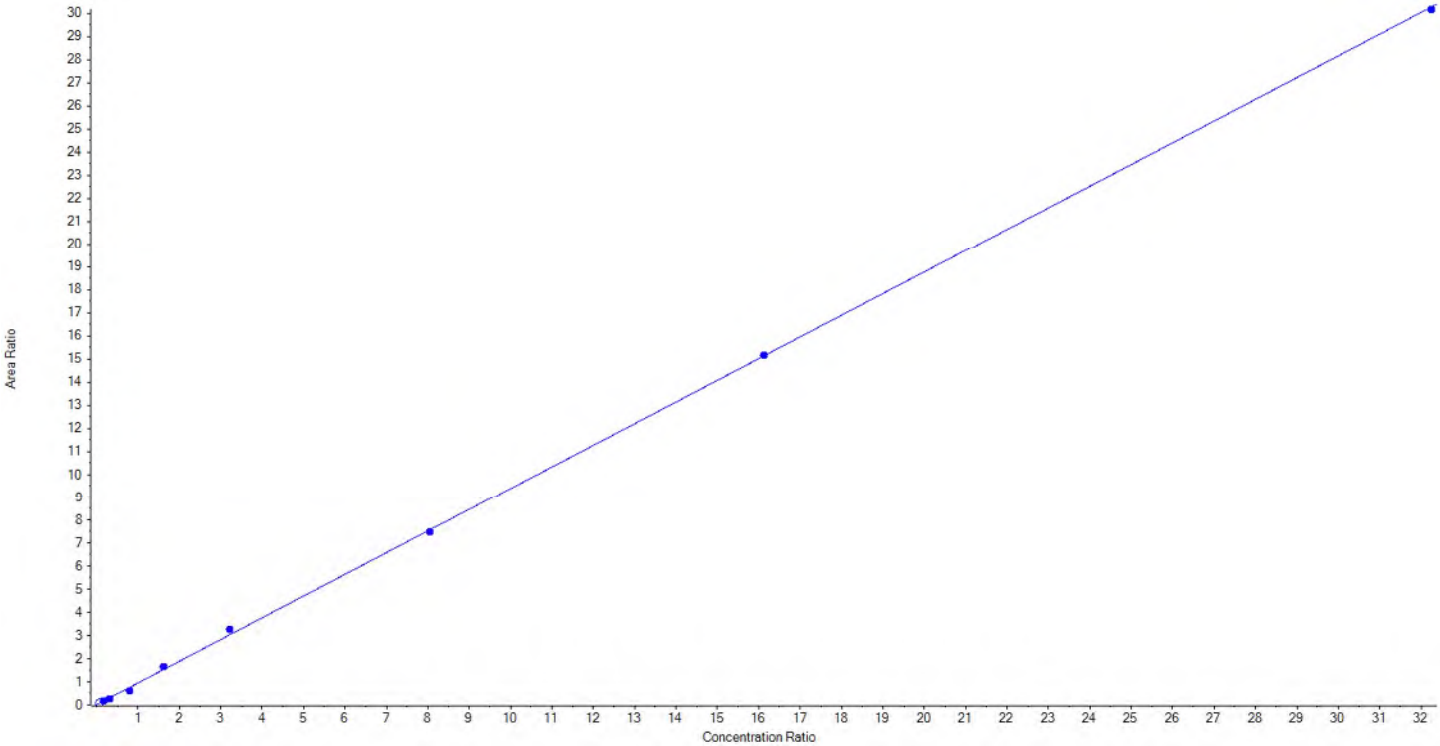
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFOS_1	**Data File**	06252018_5-371.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.93825 x + 0.00796 (r = 0.99940) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	23.15	29.069233	125.6
3	JX68	L2	True	46.30	53.663362	115.9
4	JX69	L3	True	92.60	82.064517	88.6
5	JX70	L4	True	231.50	187.779233	81.1
6	JX71	L5	True	463.00	503.551777	108.8
7	JX72	L6	True	925.60	993.508190	107.3
8	JX73	L7	True	2314.00	2278.640714	98.5
9	JX74	L8	True	4628.00	4635.010053	100.2
10	JX75	L9	True	9256.00	9222.782154	99.6



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Calibration Summary Report

Created with Analyst Reporter
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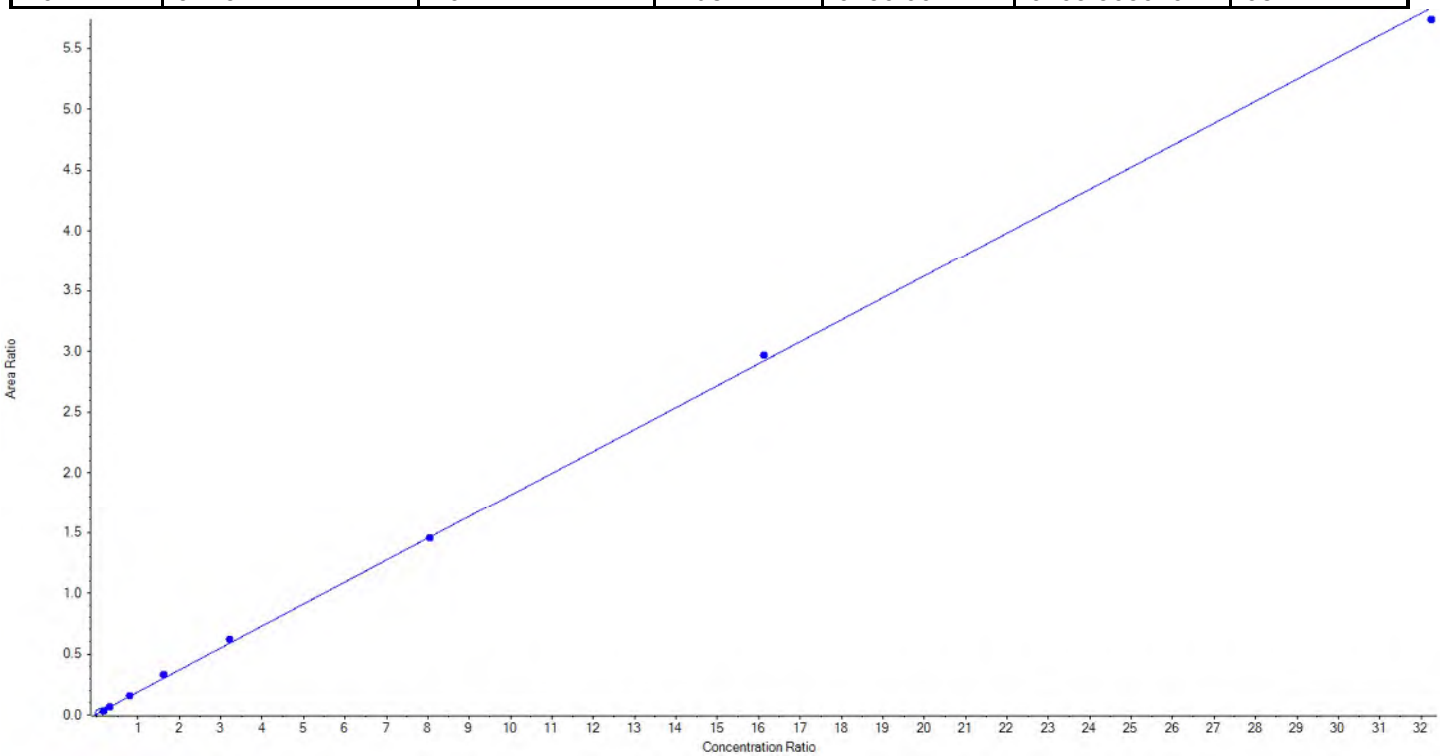
Analyte Name	PFOS_2	**Data File**	06252018_5-371.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.18064 x + 0.00767 (r = 0.99961) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	23.15	18.518216	80.0
3	JX68	L2	True	46.30	36.983718	79.9
4	JX69	L3	True	92.60	93.580776	101.1
5	JX70	L4	True	231.50	243.435530	105.2
6	JX71	L5	True	463.00	507.358334	109.6
7	JX72	L6	True	925.60	972.613478	105.1
8	JX73	L7	True	2314.00	2297.795932	99.3
9	JX74	L8	True	4628.00	4701.867193	101.6
10	JX75	L9	True	9256.00	9103.365040	98.4



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Calibration Summary Report

Created with Analyst Reporter
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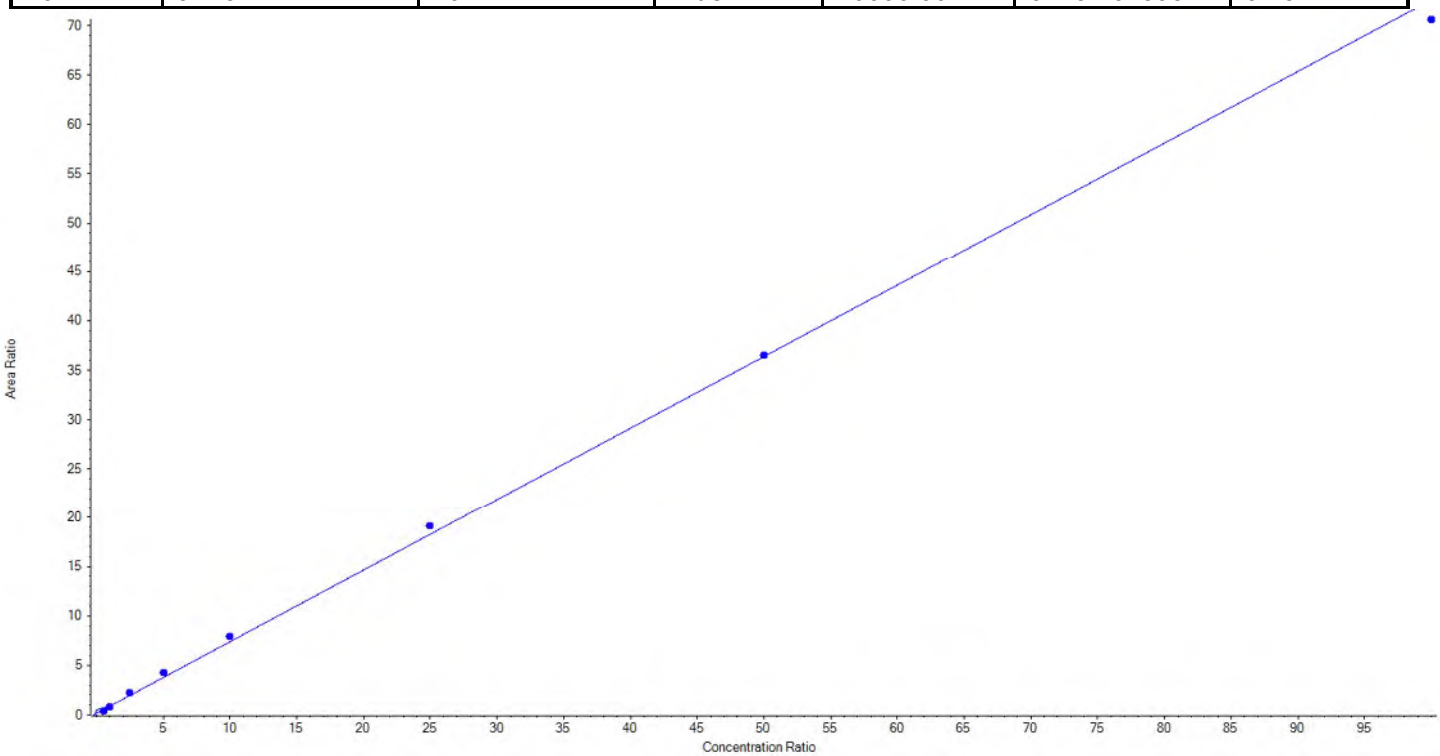
Analyte Name	PFDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.72444 x + 0.16011 (r = 0.99902) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	4.293986	17.2
3	JX68	L2	True	50.00	38.400405	76.8
4	JX69	L3	True	100.00	87.838796	87.8
5	JX70	L4	True	250.00	283.367571	113.4
6	JX71	L5	True	500.00	562.746141	112.6
7	JX72	L6	True	1000.00	1073.347869	107.3
8	JX73	L7	True	2500.00	2614.798969	104.6
9	JX74	L8	True	5000.00	5014.238853	100.3
10	JX75	L9	True	10000.00	9725.261395	97.3



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Calibration Summary Report

Created with Analyst Reporter
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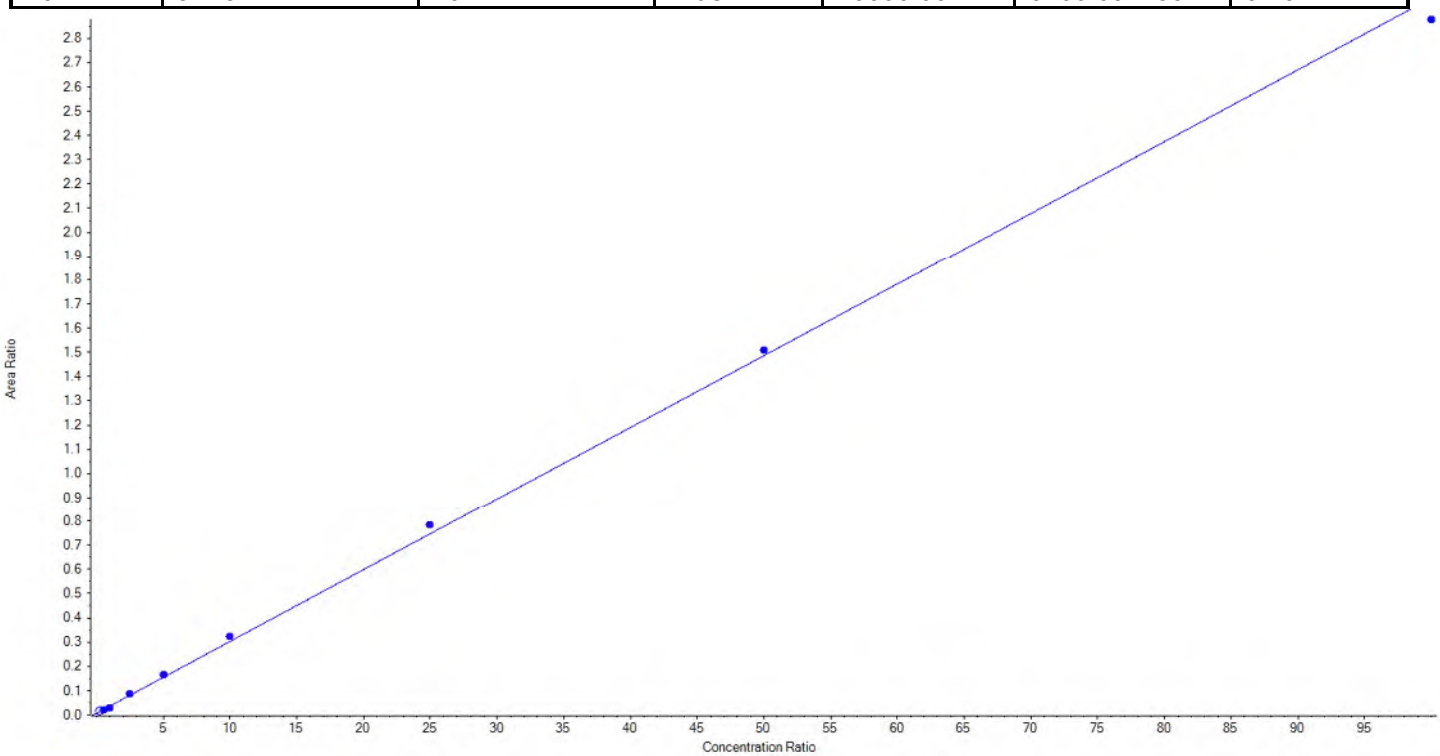
Analyte Name	PFDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.02959 x + 0.00688 (r = 0.99915) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	27.987541	112.0
3	JX68	L2	True	50.00	48.305605	96.6
4	JX69	L3	True	100.00	78.774590	78.8
5	JX70	L4	True	250.00	266.338265	106.5
6	JX71	L5	True	500.00	536.324707	107.3
7	JX72	L6	True	1000.00	1073.774687	107.4
8	JX73	L7	True	2500.00	2625.689392	105.0
9	JX74	L8	True	5000.00	5070.098049	101.4
10	JX75	L9	True	10000.00	9700.694705	97.0



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Calibration Summary Report

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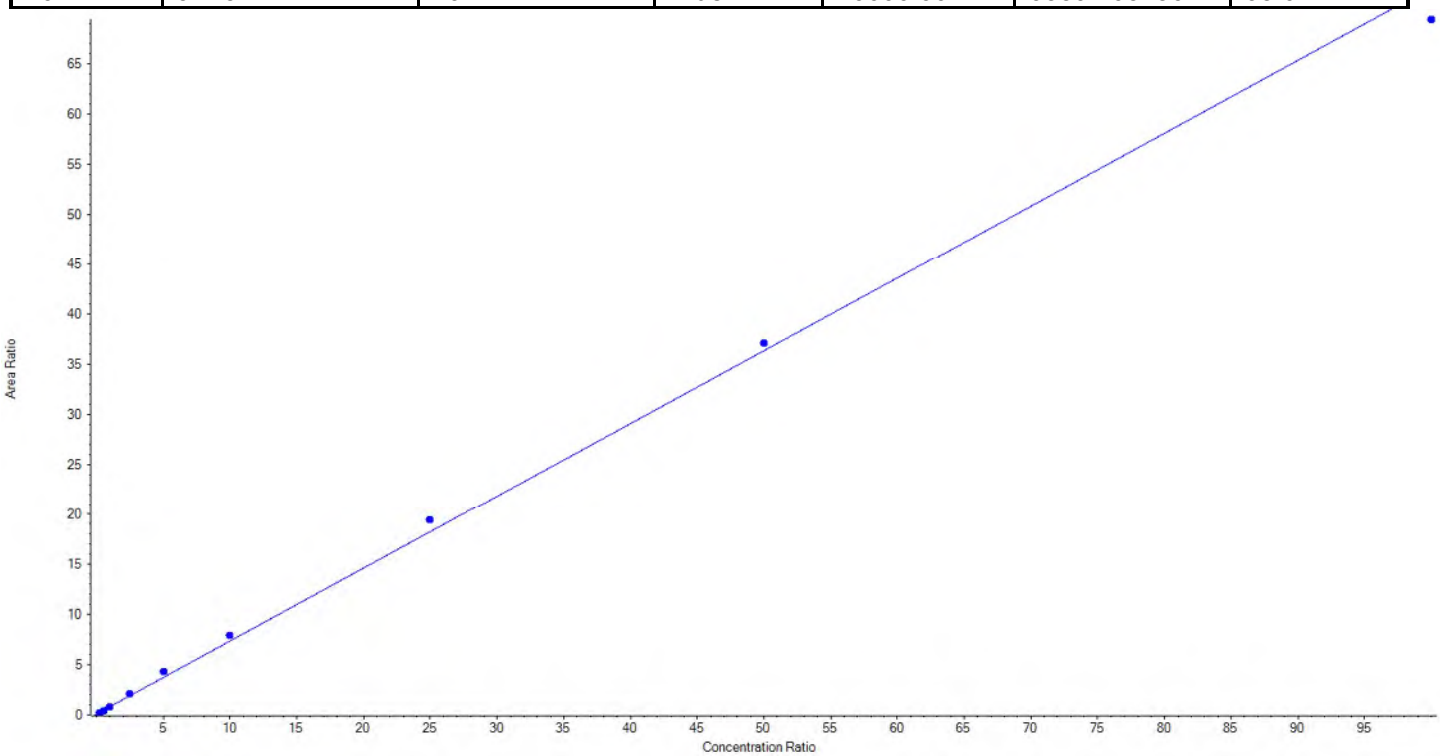
Analyte Name	PFUnA_1	**Data File**	06252018_5-371.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.72537 x + 0.09471 (r = 0.99844) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.073088	80.3
3	JX68	L2	True	50.00	42.388703	84.8
4	JX69	L3	True	100.00	95.029236	95.0
5	JX70	L4	True	250.00	279.090767	111.6
6	JX71	L5	True	500.00	579.829398	116.0
7	JX72	L6	True	1000.00	1079.142455	107.9
8	JX73	L7	True	2500.00	2669.633957	106.8
9	JX74	L8	True	5000.00	5100.109139	102.0
10	JX75	L9	True	10000.00	9559.703256	95.6



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Calibration Summary Report

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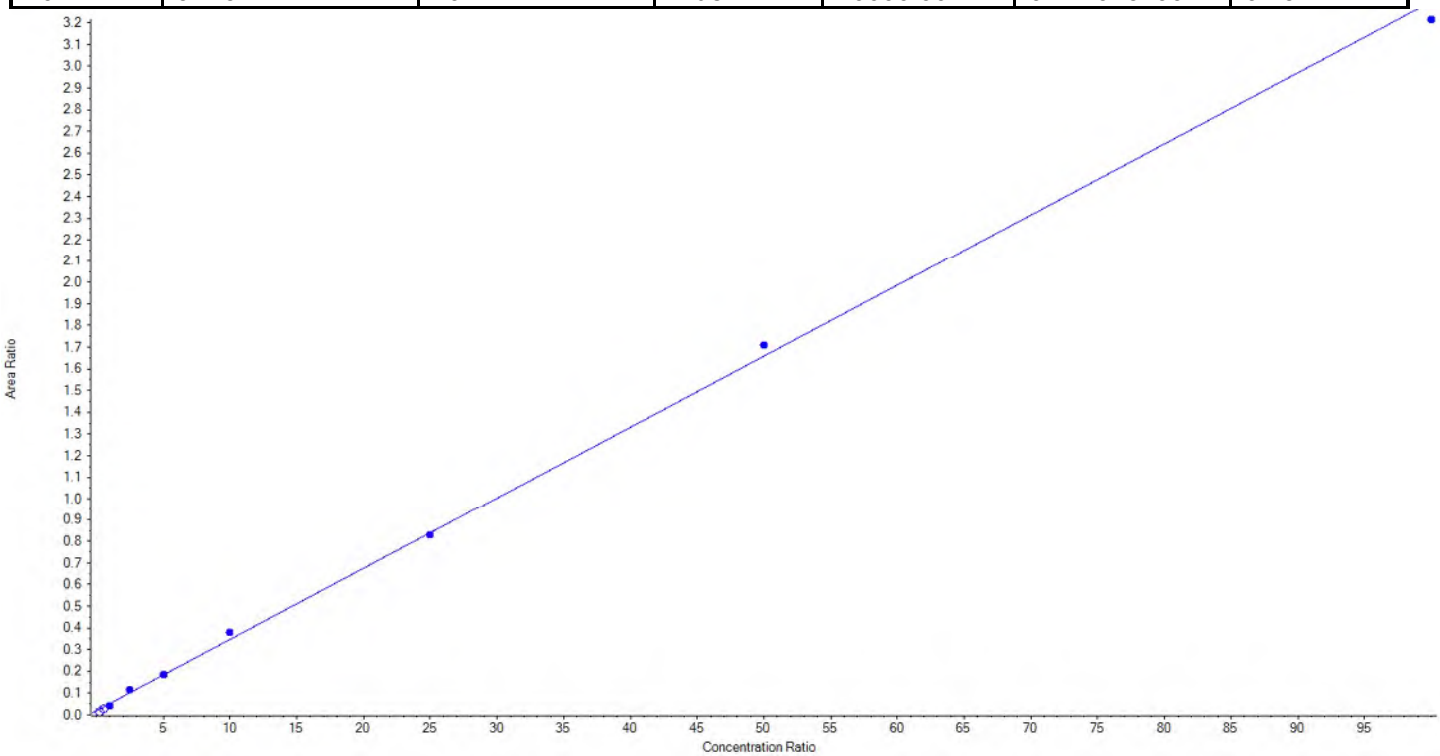
Analyte Name	PFUnA_2	**Data File**	06252018_5-371.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.03278 x + 0.01985 (r = 0.99876) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	< 0	N/A
3	JX68	L2	False	50.00	25.569843	51.1
4	JX69	L3	True	100.00	70.257455	70.3
5	JX70	L4	True	250.00	299.570771	119.8
6	JX71	L5	True	500.00	500.697313	100.1
7	JX72	L6	True	1000.00	1103.433343	110.3
8	JX73	L7	True	2500.00	2469.487594	98.8
9	JX74	L8	True	5000.00	5158.640024	103.2
10	JX75	L9	True	10000.00	9747.913499	97.5



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Calibration Summary Report

Created with Analyst Reporter
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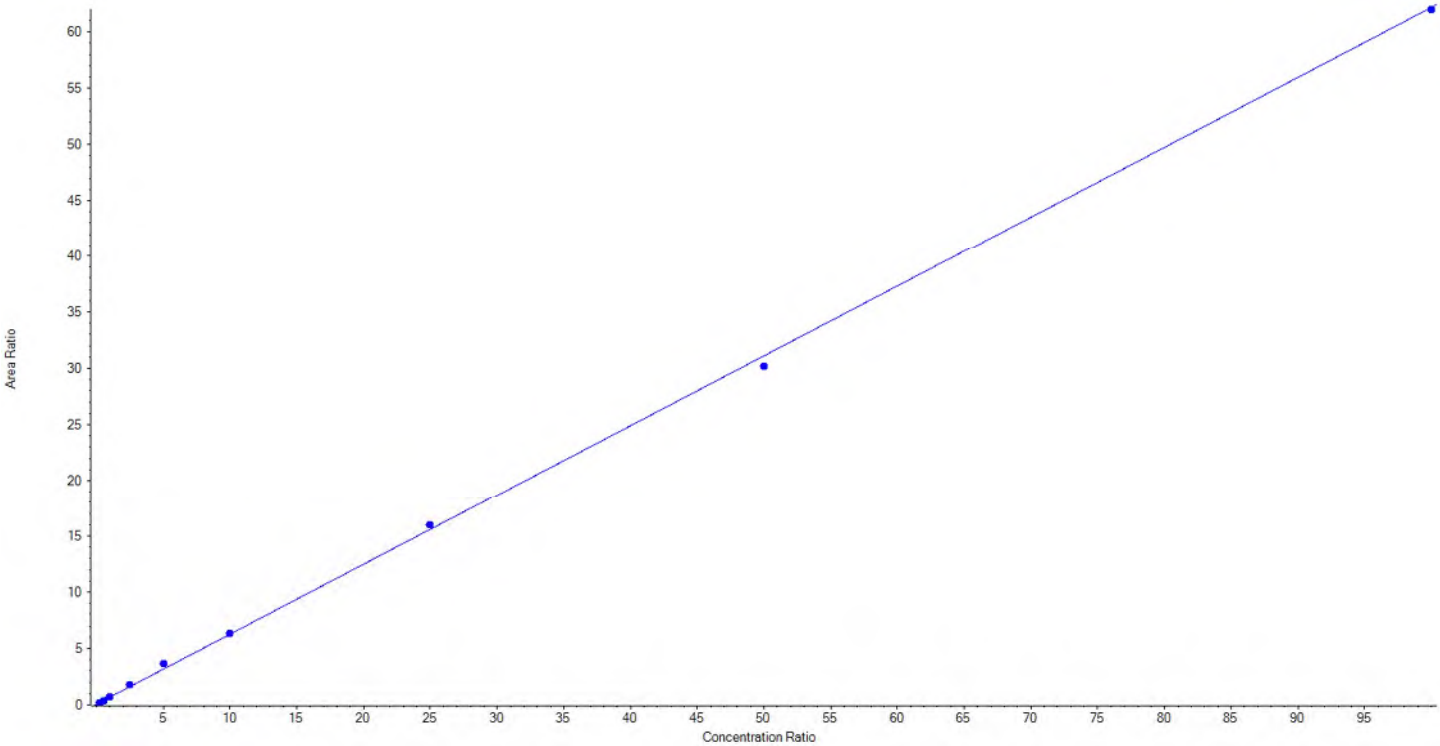
Analyte Name	PFDoA_1	**Data File**	06252018_5-371.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.62092 x + 0.06665 (r = 0.99942) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.731070	74.9
3	JX68	L2	True	50.00	47.819194	95.6
4	JX69	L3	True	100.00	102.981838	103.0
5	JX70	L4	True	250.00	277.158464	110.9
6	JX71	L5	True	500.00	573.374778	114.7
7	JX72	L6	True	1000.00	1016.155480	101.6
8	JX73	L7	True	2500.00	2561.606452	102.5
9	JX74	L8	True	5000.00	4856.561924	97.1
10	JX75	L9	True	10000.00	9970.610800	99.7



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Calibration Summary Report

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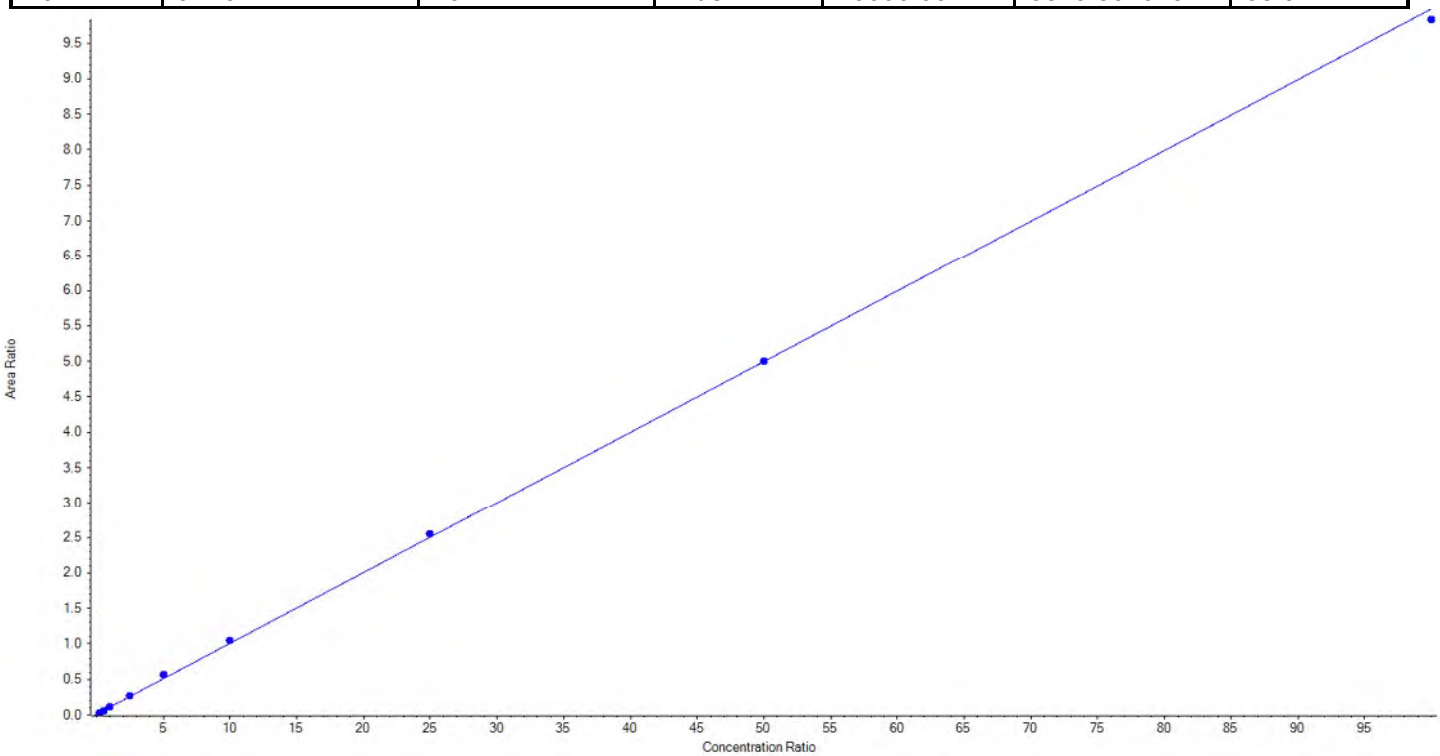
Analyte Name	PFDoA_2	**Data File**	06252018_5-371.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.09973 x + 0.01082 (r = 0.99967) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.603828	82.4
3	JX68	L2	True	50.00	49.166918	98.3
4	JX69	L3	True	100.00	98.860597	98.9
5	JX70	L4	True	250.00	262.630095	105.1
6	JX71	L5	True	500.00	555.711859	111.1
7	JX72	L6	True	1000.00	1035.902153	103.6
8	JX73	L7	True	2500.00	2553.060598	102.1
9	JX74	L8	True	5000.00	4999.256910	100.0
10	JX75	L9	True	10000.00	9849.807043	98.5



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Calibration Summary Report

Created with Analyst Reporter
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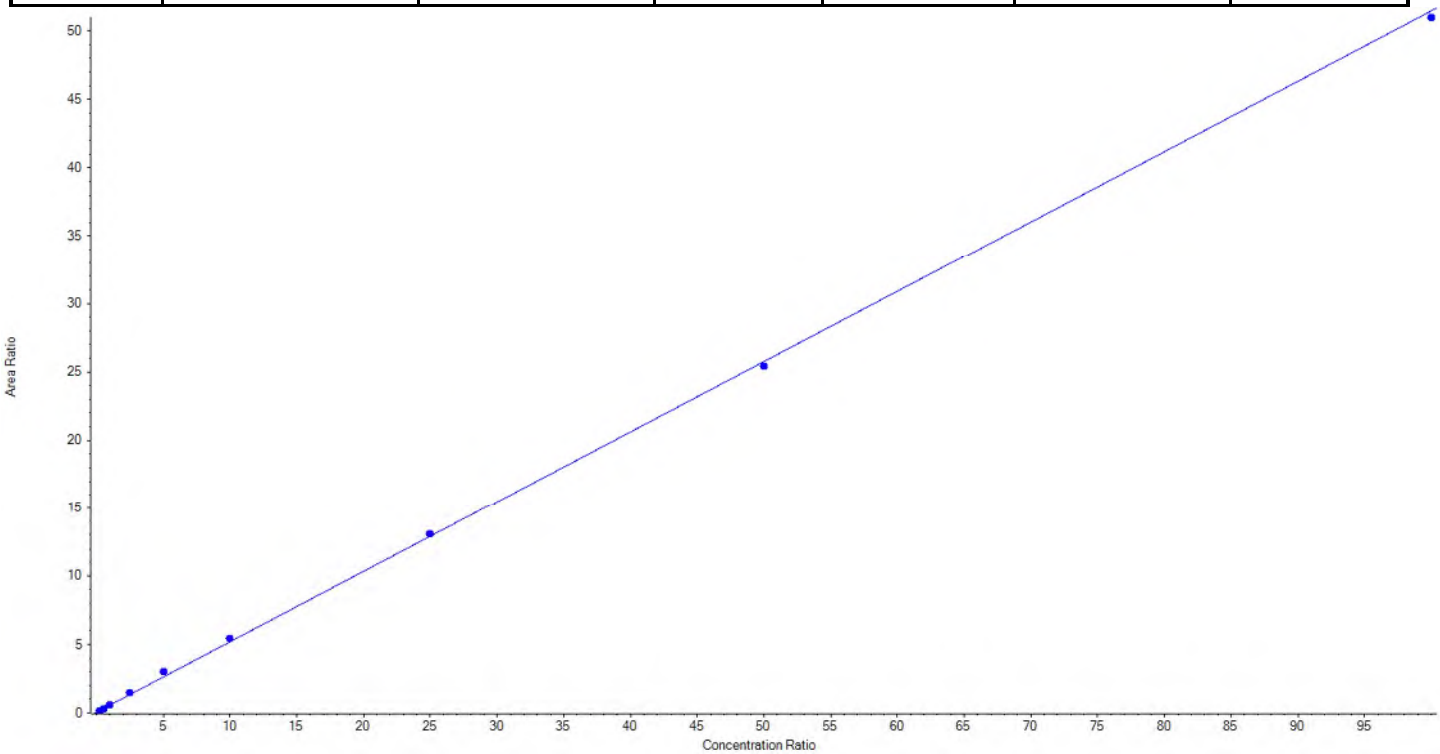
Analyte Name	PFTrDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.51402 x + 0.05199 (r = 0.99946) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	21.244818	85.0
3	JX68	L2	True	50.00	43.984299	88.0
4	JX69	L3	True	100.00	100.101285	100.1
5	JX70	L4	True	250.00	268.672318	107.5
6	JX71	L5	True	500.00	581.148596	116.2
7	JX72	L6	True	1000.00	1043.469036	104.4
8	JX73	L7	True	2500.00	2531.653493	101.3
9	JX74	L8	True	5000.00	4929.189379	98.6
10	JX75	L9	True	10000.00	9905.536776	99.1



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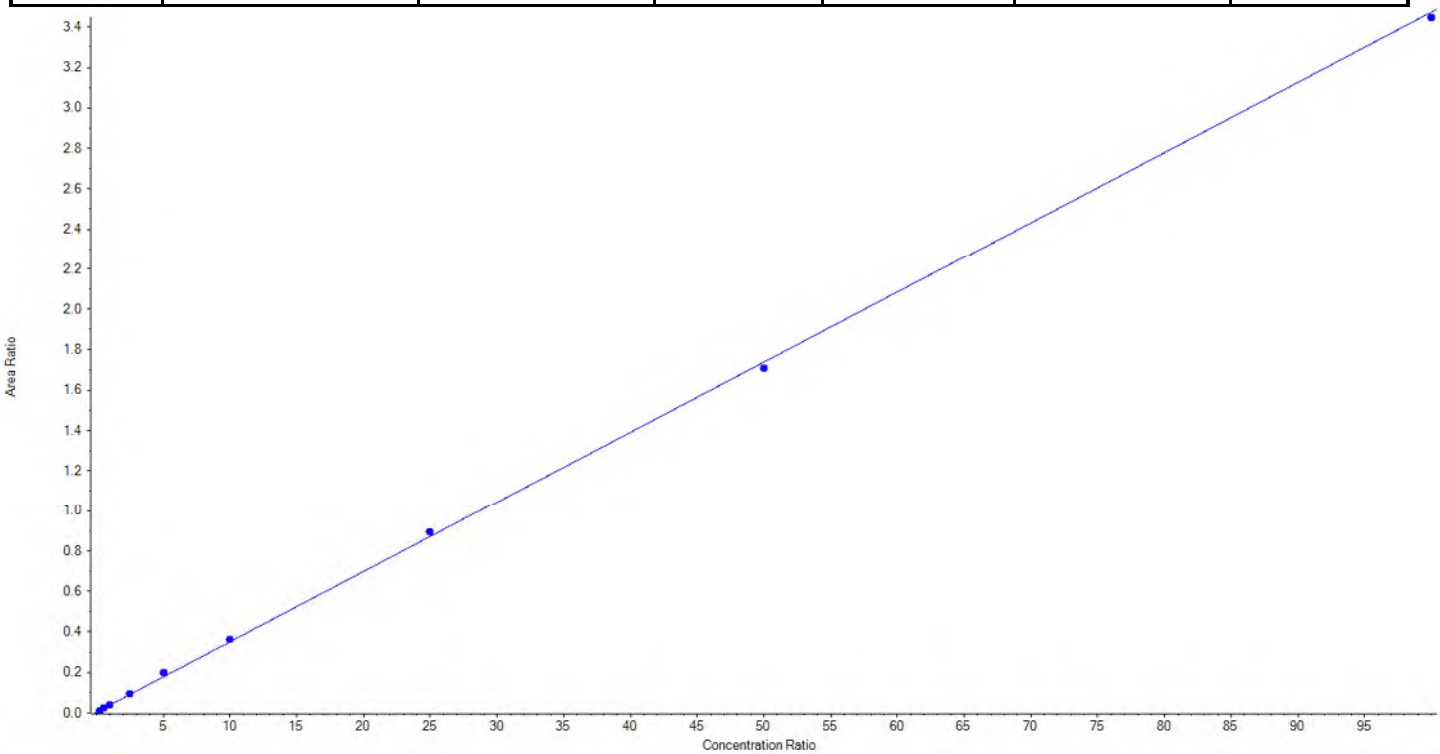
Analyte Name	PFTrDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.03468 x + 0.00436 (r = 0.99956) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	17.673504	70.7
3	JX68	L2	True	50.00	57.354613	114.7
4	JX69	L3	True	100.00	96.213165	96.2
5	JX70	L4	True	250.00	256.853828	102.7
6	JX71	L5	True	500.00	557.870213	111.6
7	JX72	L6	True	1000.00	1038.781670	103.9
8	JX73	L7	True	2500.00	2570.884235	102.8
9	JX74	L8	True	5000.00	4906.079605	98.1
10	JX75	L9	True	10000.00	9923.289167	99.2



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Calibration Summary Report

Created with Analyst Reporter
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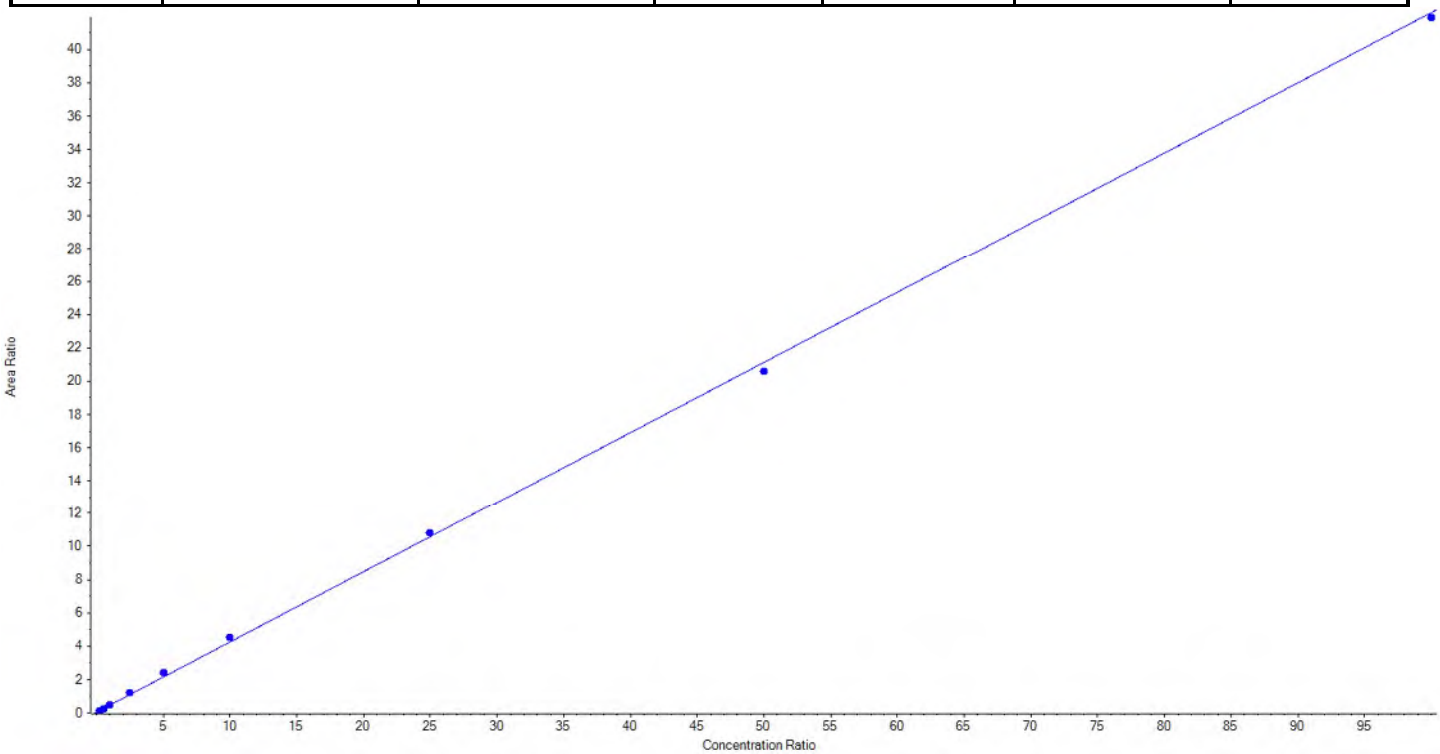
Analyte Name	PFTeDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.42170 x + 0.04308 (r = 0.99948) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	19.470091	77.9
3	JX68	L2	True	50.00	48.535619	97.1
4	JX69	L3	True	100.00	98.698359	98.7
5	JX70	L4	True	250.00	273.044662	109.2
6	JX71	L5	True	500.00	559.263909	111.9
7	JX72	L6	True	1000.00	1060.622970	106.1
8	JX73	L7	True	2500.00	2560.163872	102.4
9	JX74	L8	True	5000.00	4875.853328	97.5
10	JX75	L9	True	10000.00	9929.347190	99.3



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Calibration Summary Report

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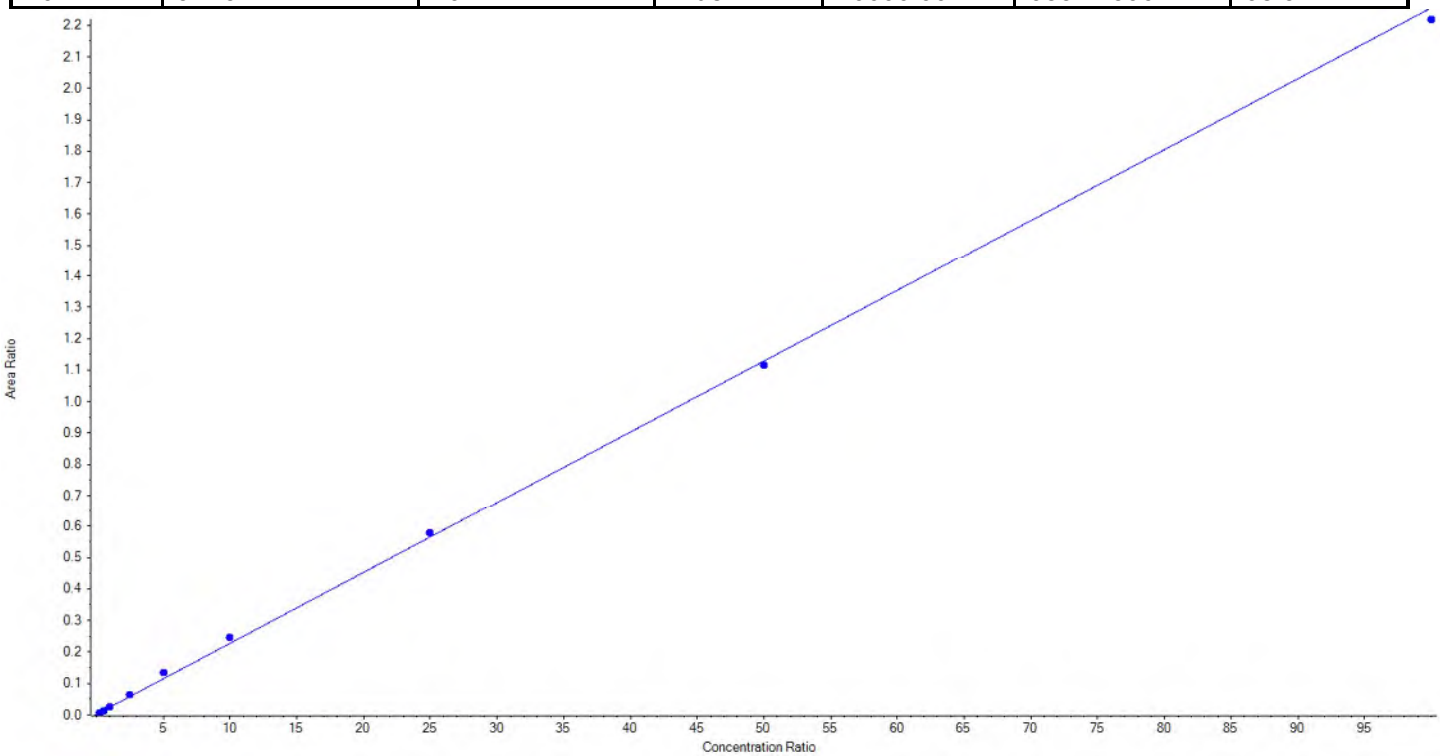
Analyte Name	PFTeDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.02254 x + 0.00202 (r = 0.99919) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	17.926807	71.7
3	JX68	L2	True	50.00	48.266278	96.5
4	JX69	L3	True	100.00	99.954762	100.0
5	JX70	L4	True	250.00	267.694654	107.1
6	JX71	L5	True	500.00	588.228040	117.7
7	JX72	L6	True	1000.00	1078.884415	107.9
8	JX73	L7	True	2500.00	2552.861984	102.1
9	JX74	L8	True	5000.00	4936.723449	98.7
10	JX75	L9	True	10000.00	9834.459611	98.3



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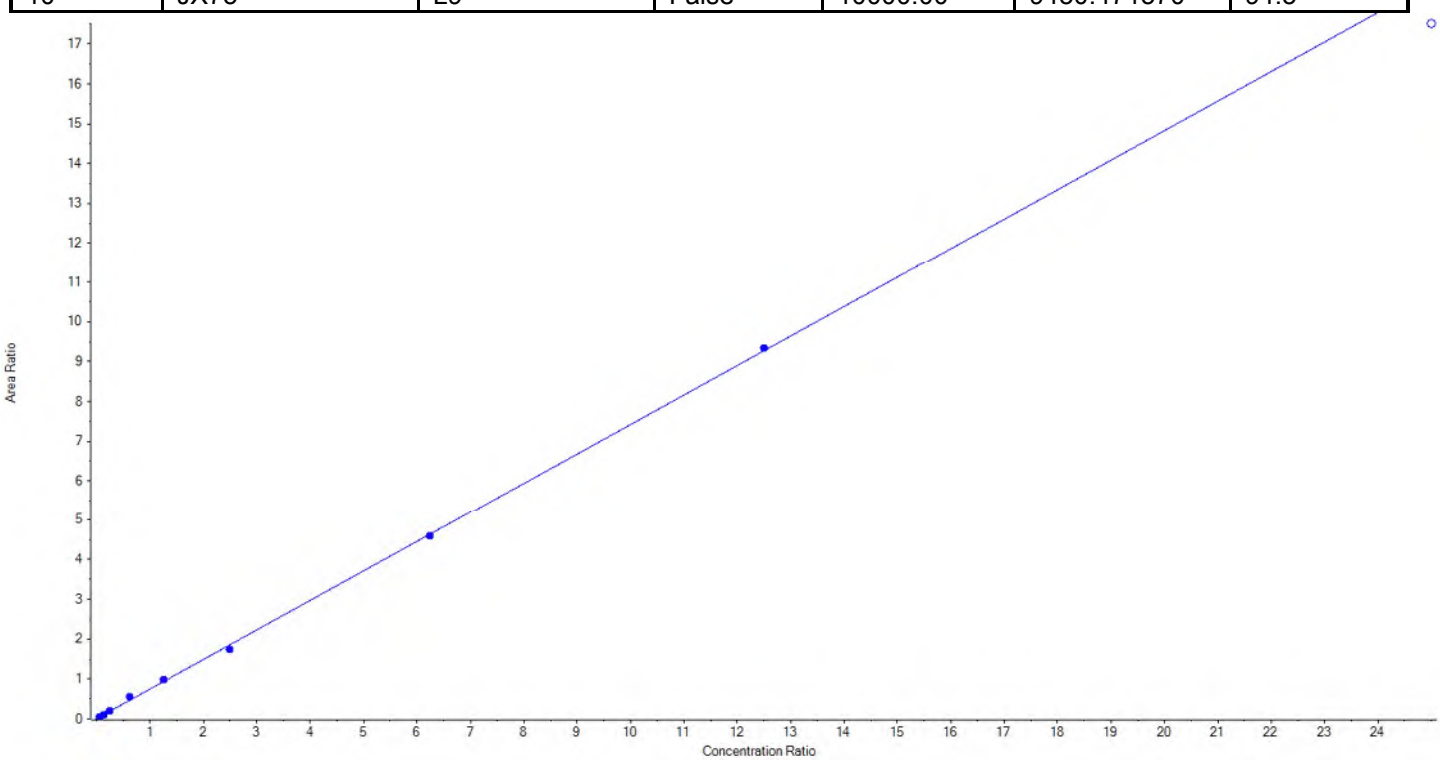
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	NMeFOSAA_1	**Data File**	06252018_5-371.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.74089 x + 0.00821 (r = 0.99912) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.085431	72.3
3	JX68	L2	True	50.00	53.174009	106.4
4	JX69	L3	True	100.00	108.624579	108.6
5	JX70	L4	True	250.00	289.199456	115.7
6	JX71	L5	True	500.00	521.787284	104.4
7	JX72	L6	True	1000.00	931.699689	93.2
8	JX73	L7	True	2500.00	2471.493884	98.9
9	JX74	L8	True	5000.00	5030.935668	100.6
10	JX75	L9	False	10000.00	9450.471370	94.5



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Calibration Summary Report

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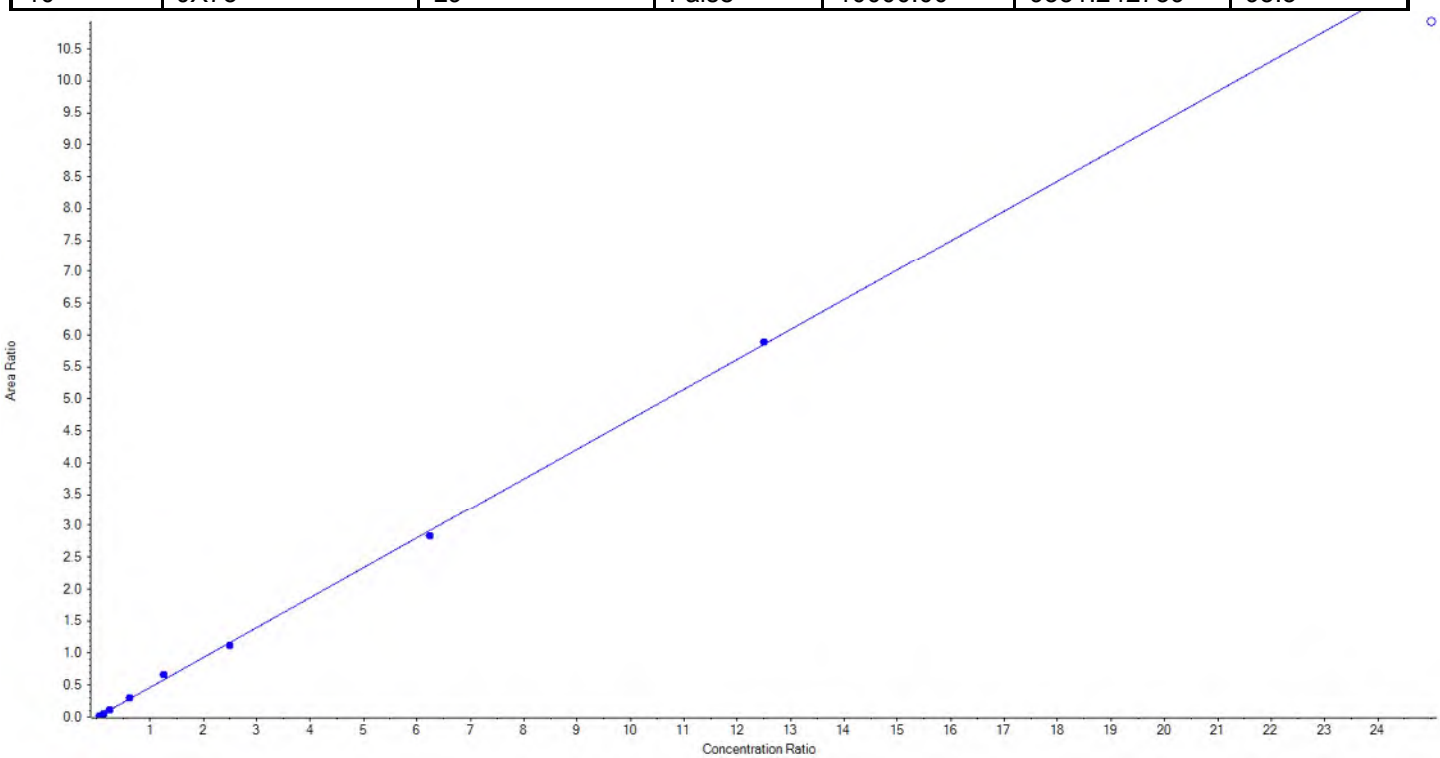
Analyte Name	NMeFOSAA_2	**Data File**	06252018_5-371.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.46874 x + -0.00848 (r = 0.99905) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	22.560963	90.2
3	JX68	L2	True	50.00	45.110155	90.2
4	JX69	L3	True	100.00	105.366291	105.4
5	JX70	L4	True	250.00	268.284285	107.3
6	JX71	L5	True	500.00	568.429090	113.7
7	JX72	L6	True	1000.00	954.871996	95.5
8	JX73	L7	True	2500.00	2423.763413	97.0
9	JX74	L8	True	5000.00	5036.613806	100.7
10	JX75	L9	False	10000.00	9331.242739	93.3



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Calibration Summary Report

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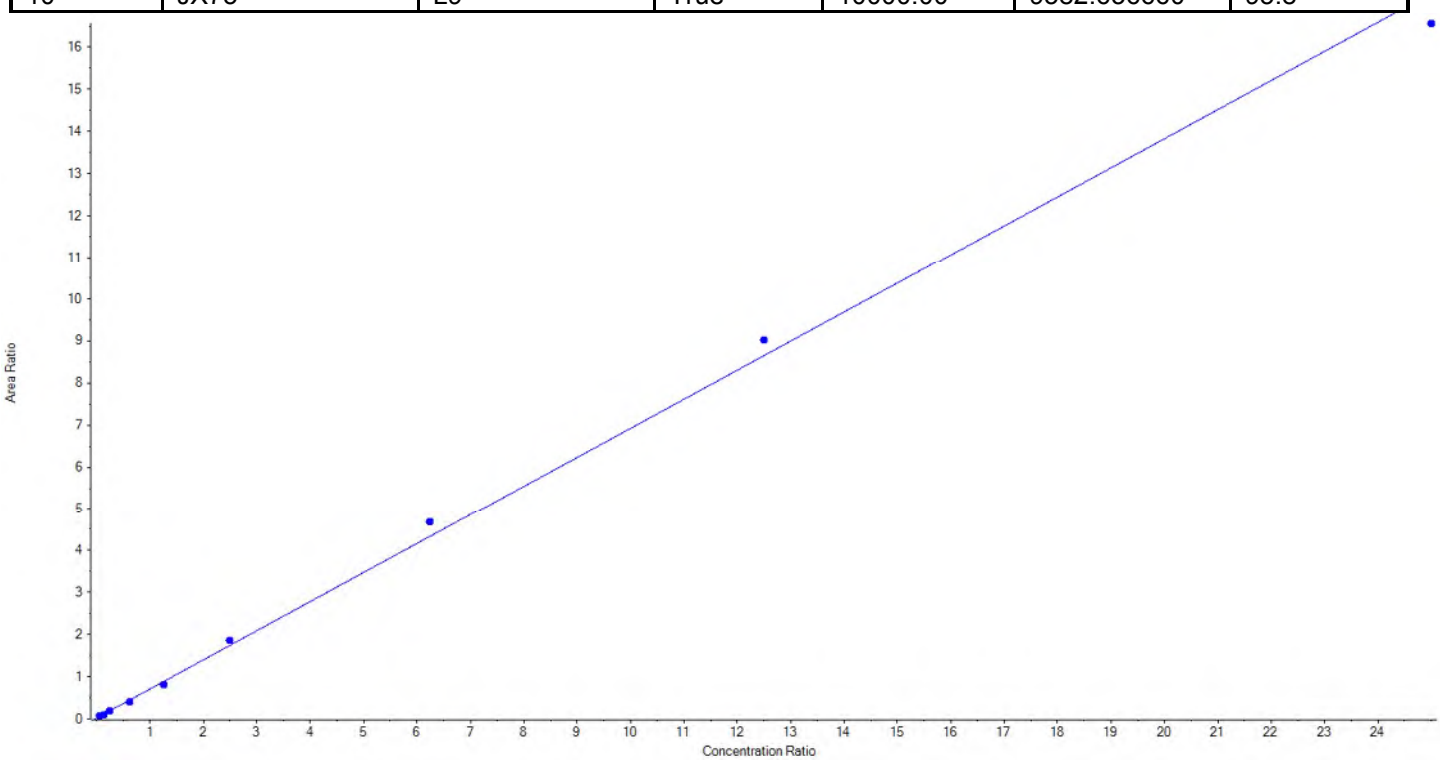
Analyte Name	NEtFOSAA_1	**Data File**	06252018_5-371.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.69046 x + 0.01938 (r = 0.99850) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	29.137375	116.6
3	JX68	L2	True	50.00	42.544115	85.1
4	JX69	L3	True	100.00	102.925433	102.9
5	JX70	L4	True	250.00	220.439748	88.2
6	JX71	L5	True	500.00	463.522155	92.7
7	JX72	L6	True	1000.00	1063.269684	106.3
8	JX73	L7	True	2500.00	2699.633799	108.0
9	JX74	L8	True	5000.00	5220.891030	104.4
10	JX75	L9	True	10000.00	9582.636660	95.8



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Calibration Summary Report

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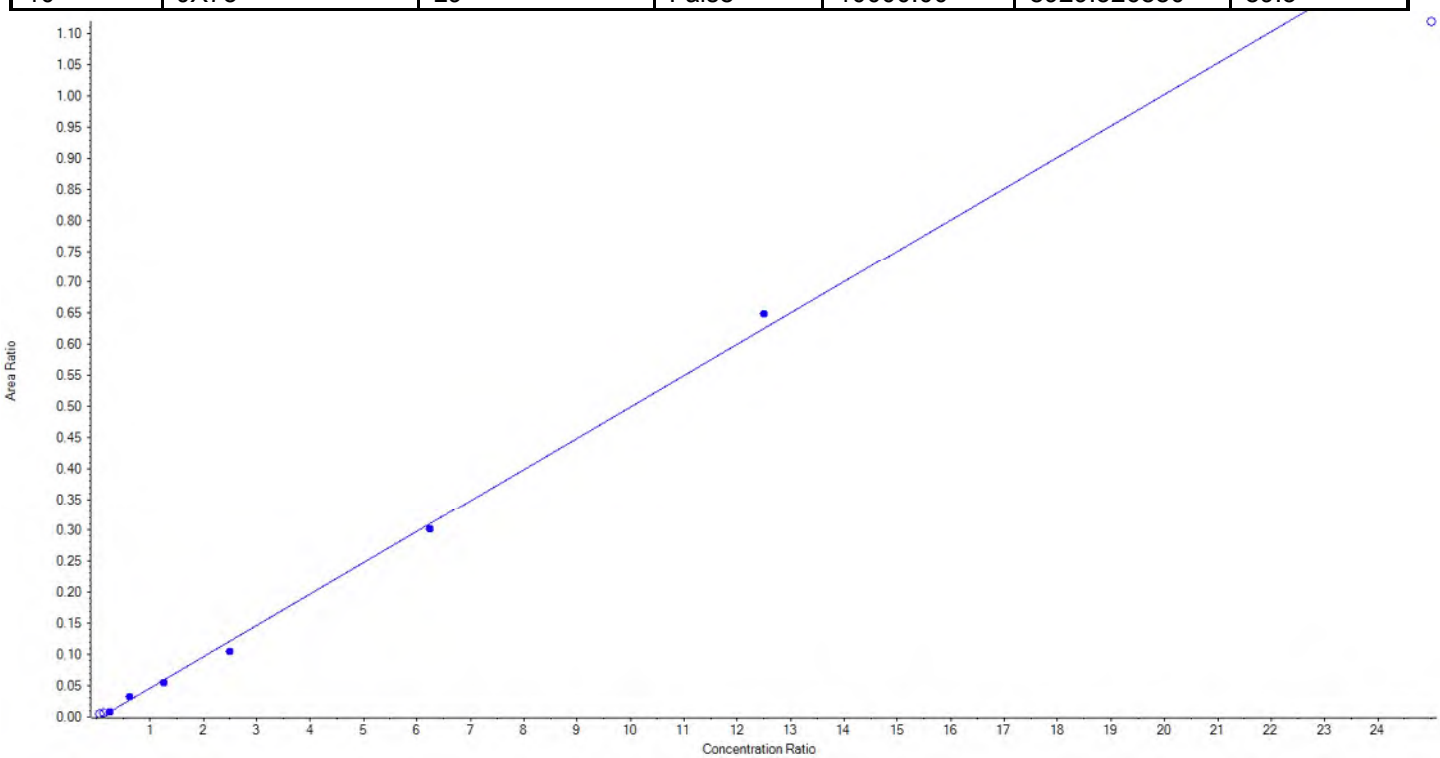
Analyte Name	NEtFOSAA_2	**Data File**	06252018_5-371.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05035 x + -0.00432 (r = 0.99783) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	76.800150	307.2
3	JX68	L2	False	50.00	88.632373	177.3
4	JX69	L3	True	100.00	104.202597	104.2
5	JX70	L4	True	250.00	285.076246	114.0
6	JX71	L5	True	500.00	466.286361	93.3
7	JX72	L6	True	1000.00	873.862370	87.4
8	JX73	L7	True	2500.00	2435.597359	97.4
9	JX74	L8	True	5000.00	5184.975067	103.7
10	JX75	L9	False	10000.00	8929.526880	89.3



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Calibration Summary Report

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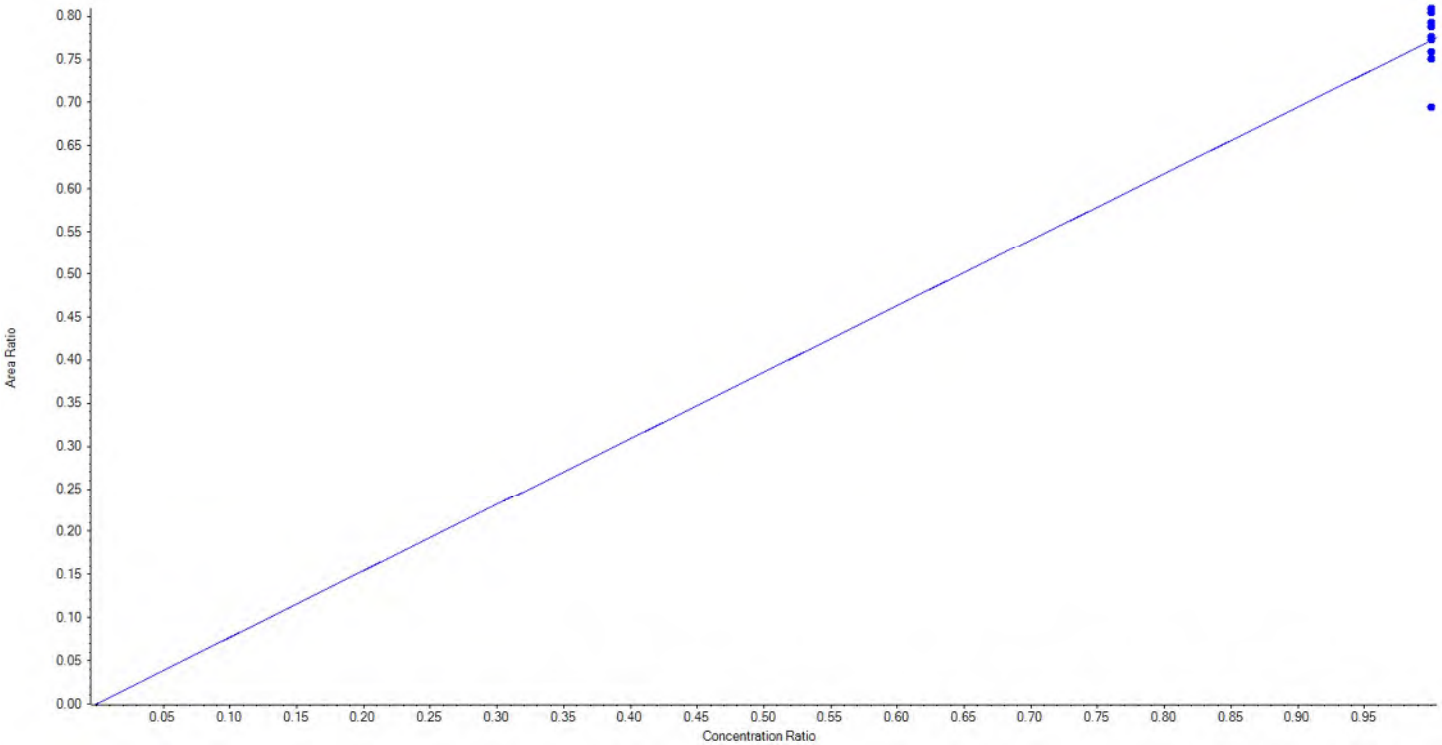
Analyte Name	13C2-PFHxA	**Data File**	06252018_5-371.wiff
MRM Transition	315.0 / 270.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.77198 x (std. dev. = 0.03460) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	100.00	100.522490	100.5
3	JX68	L2	True	100.00	102.130076	102.1
4	JX69	L3	True	100.00	90.053805	90.1
5	JX70	L4	True	100.00	104.133528	104.1
6	JX71	L5	True	100.00	104.788803	104.8
7	JX72	L6	True	100.00	97.310023	97.3
8	JX73	L7	True	100.00	102.653028	102.7
9	JX74	L8	True	100.00	100.046313	100.1
10	JX75	L9	True	100.00	98.361935	98.4



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Calibration Summary Report

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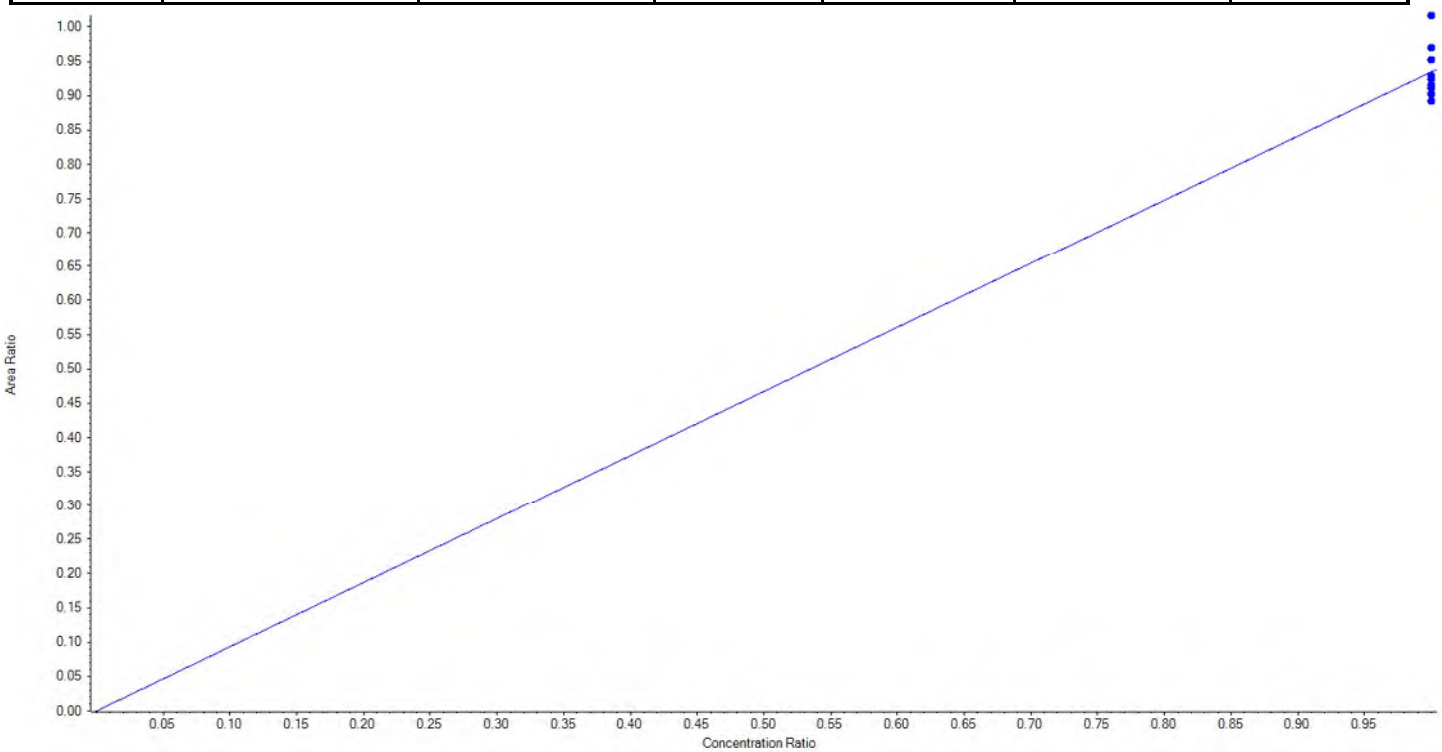
Analyte Name	13C2-PFDA	**Data File**	06252018_5-371.wiff
MRM Transition	515.0 / 470.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.93480 x (std. dev. = 0.03885) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	100.00	99.317491	99.3
3	JX68	L2	True	100.00	98.862375	98.9
4	JX69	L3	True	100.00	95.522050	95.5
5	JX70	L4	True	100.00	108.772082	108.8
6	JX71	L5	True	100.00	103.707342	103.7
7	JX72	L6	True	100.00	96.563890	96.6
8	JX73	L7	True	100.00	101.824457	101.8
9	JX74	L8	True	100.00	97.535816	97.5
10	JX75	L9	True	100.00	97.894498	97.9



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Calibration Summary Report

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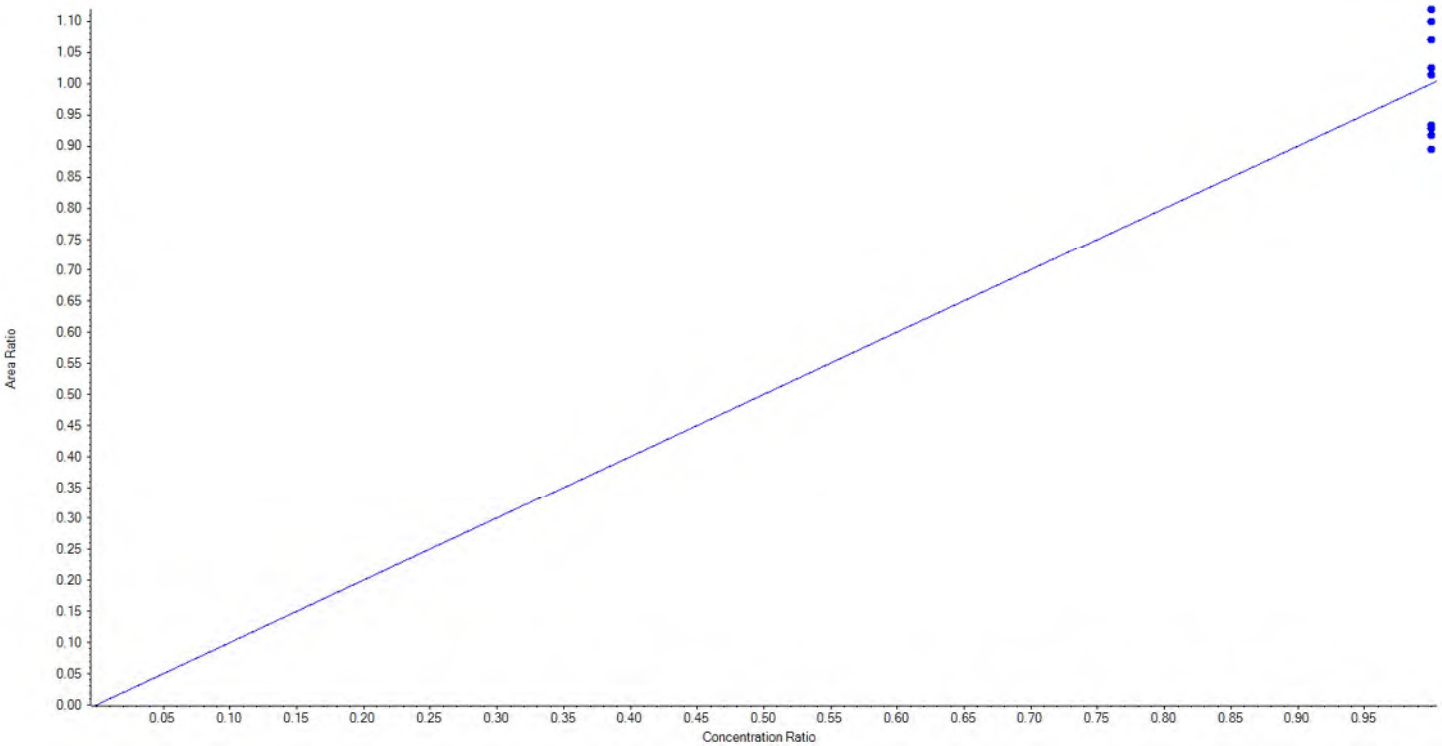
Analyte Name	d5-EtFOSAA	**Data File**	06252018_5-371.wiff
MRM Transition	589.0 / 419.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.00028 x (std. dev. = 0.08460) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	400.00	439.534644	109.9
3	JX68	L2	True	400.00	405.703042	101.4
4	JX69	L3	True	400.00	409.873741	102.5
5	JX70	L4	True	400.00	373.030387	93.3
6	JX71	L5	True	400.00	428.176363	107.0
7	JX72	L6	True	400.00	366.606184	91.7
8	JX73	L7	True	400.00	447.506012	111.9
9	JX74	L8	True	400.00	358.080702	89.5
10	JX75	L9	True	400.00	371.488924	92.9



	Drinking Water Calibration Curve Concentrations (ng/L)								
	JX67	**JX68**	**JX69**	**JX70**	**JX71**	**JX72**	**JX73**	**JX74**	**JX75**
PFHxA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFHpA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFOA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFNA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFUnA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDoA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTrDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTeDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NMeFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NEtFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFBS	22.15	44.30	88.60	221.50	443.00	885.00	2,212.50	4,425.00	8,850.00
PFHxS (branched)	22.80	45.60	91.20	228.00	456.00	912.00	2,280.00	4,560.00	9,120.00
PFOS (branched)	23.15	46.30	92.60	231.50	463.00	925.60	2,314.00	4,628.00	9,256.00
	Surrogates								
13C2-PFHxA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00
13C2-PFDA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00
d5-EtFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	800.00
	Internal Standards								
13C2-PFOA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C4-PFOS	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00
d3-MeFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00

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Summary Quant Report

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Sample Name	JX67	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:05:43	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	9724.81	23.830433	224.5	false
PFBS_2	298.9 / 99.0	1.50	4271.95	22.983577	140.0	false
PFHxA_1	313.0 / 269.0	1.79	17454.52	18.791994	29.6	true
PFHxA_2	313.0 / 119.0	1.79	1358.55	20.296701	18.1	true
PFHpA_1	363.0 / 319.0	2.15	12341.36	18.302340	45.1	true
PFHpA_2	363.0 / 169.0	2.15	455.87	25.182337	25.8	true
PFHxS_1	399.0 / 80.0	2.16	11030.52	21.160059	79.4	false
PFHxS_2	399.0 / 99.0	2.16	3783.63	23.177641	39.1	false
PFOA_1	413.0 / 369.0	2.52	17451.54	5.415311	49.0	true
PFOA_2	413.0 / 169.0	2.52	1428.21	12.318640	28.8	true
PFNA_1	463.0 / 419.0	2.90	12231.96	7.876482	71.5	false
PFNA_2	463.0 / 219.0	2.90	4965.37	17.483575	52.8	false
PFOS_1	499.0 / 80.0	2.89	20156.49	29.069233	52.2	true
PFOS_2	499.0 / 99.0	2.89	3781.93	18.518216	35.6	true
PFDA_1	513.0 / 469.0	3.25	11989.32	4.293986	109.1	false
PFDA_2	513.0 / 219.0	3.25	950.52	27.987541	62.5	false
PFUnA_1	563.0 / 519.0	3.56	15067.92	20.073088	142.8	false
PFUnA_2	563.0 / 269.0	3.56	883.16	< 0	41.4	false
PFDoA_1	613.0 / 569.0	3.85	11471.29	18.731070	146.8	false
PFDoA_2	613.0 / 319.0	3.85	1966.61	20.603828	185.4	false
PFTrDA_1	663.0 / 619.0	4.10	10106.46	21.244818	192.0	false
PFTrDA_2	663.0 / 169.0	4.10	657.90	17.673504	73.3	true
PFTeDA_1	713.0 / 669.0	4.32	7848.82	19.470091	248.9	false
PFTeDA_2	713.0 / 169.0	4.32	379.90	17.926807	75.3	false
NMeFOSAA_1	570.0 / 419.0	3.39	831.30	18.085431	20.3	false
NMeFOSAA_2	570.0 / 512.0	3.39	357.87	22.560963	11.3	false
NEtFOSAA_1	584.0 / 419.0	3.56	1388.69	29.137375	24.0	false
NEtFOSAA_2	584.0 / 483.0	3.55	106.50	76.800150	7.8	false
13C2-PFHxA	315.0 / 270.0	1.78	48655.59	100.522490	911.0	false
13C2-PFDA	515.0 / 470.0	3.23	58211.49	99.317491	1235.6	false
d5-EtFOSAA	589.0 / 419.0	3.54	21906.72	439.534644	266.6	false

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Summary Quant Report

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Sample Name	JX68	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:14:41	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	20331.48	46.278541	379.8	false
PFBS_2	298.9 / 99.0	1.50	8183.81	49.356949	234.3	true
PFHxA_1	313.0 / 269.0	1.78	33102.86	51.402415	46.1	false
PFHxA_2	313.0 / 119.0	1.77	2506.07	53.760551	24.7	false
PFHpA_1	363.0 / 319.0	2.14	24329.04	44.691384	68.8	false
PFHpA_2	363.0 / 169.0	2.15	613.84	37.004714	31.3	true
PFHxS_1	399.0 / 80.0	2.16	23698.89	45.485656	211.9	false
PFHxS_2	399.0 / 99.0	2.15	6652.50	41.676123	59.5	false
PFOA_1	413.0 / 369.0	2.52	35511.56	36.683792	73.3	false
PFOA_2	413.0 / 169.0	2.52	2779.57	43.335566	54.8	true
PFNA_1	463.0 / 419.0	2.90	27491.42	38.471445	126.3	false
PFNA_2	463.0 / 219.0	2.89	7803.23	35.058175	71.8	false
PFOS_1	499.0 / 80.0	2.89	38169.99	53.663362	79.7	true
PFOS_2	499.0 / 99.0	2.89	6440.93	36.983718	62.2	true
PFDA_1	513.0 / 469.0	3.24	30045.95	38.400405	205.8	false
PFDA_2	513.0 / 219.0	3.24	1451.37	48.305605	153.4	false
PFUnA_1	563.0 / 519.0	3.56	27570.53	42.388703	180.1	false
PFUnA_2	563.0 / 269.0	3.55	1935.39	25.569843	97.6	false
PFDoA_1	613.0 / 569.0	3.85	24923.14	47.819194	254.2	false
PFDoA_2	613.0 / 319.0	3.84	4102.80	49.166918	258.5	false
PFTrDA_1	663.0 / 619.0	4.10	19062.23	43.984299	279.9	false
PFTrDA_2	663.0 / 169.0	4.10	1662.69	57.354613	204.7	false
PFTeDA_1	713.0 / 669.0	4.32	16983.52	48.535619	302.8	false
PFTeDA_2	713.0 / 169.0	4.32	884.05	48.266278	193.7	false
NMeFOSAA_1	570.0 / 419.0	3.39	2312.99	53.174009	41.0	false
NMeFOSAA_2	570.0 / 512.0	3.38	962.04	45.110155	41.5	false
NEtFOSAA_1	584.0 / 419.0	3.56	2012.04	42.544115	37.4	false
NEtFOSAA_2	584.0 / 483.0	3.55	148.12	88.632373	10.6	false
13C2-PFHxA	315.0 / 270.0	1.77	54047.05	102.130076	804.0	false
13C2-PFDA	515.0 / 470.0	3.23	63352.37	98.862375	922.7	false
d5-EtFOSAA	589.0 / 419.0	3.54	21992.44	405.703042	227.0	false

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Summary Quant Report

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Sample Name	JX69	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:23:38	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	39132.01	93.683891	658.7	false
PFBS_2	298.9 / 99.0	1.50	13537.21	93.887974	303.8	false
PFHxA_1	313.0 / 269.0	1.78	55833.42	104.015969	60.4	false
PFHxA_2	313.0 / 119.0	1.78	3586.96	88.961255	38.2	true
PFHpA_1	363.0 / 319.0	2.14	48807.51	104.066690	93.6	false
PFHpA_2	363.0 / 169.0	2.15	1290.83	106.084205	53.0	false
PFHxS_1	399.0 / 80.0	2.16	45511.85	95.245598	272.0	false
PFHxS_2	399.0 / 99.0	2.16	13376.63	94.514379	113.7	false
PFOA_1	413.0 / 369.0	2.52	64833.40	92.235736	97.1	false
PFOA_2	413.0 / 169.0	2.52	4487.21	86.590381	82.2	false
PFNA_1	463.0 / 419.0	2.90	54310.27	96.355173	176.0	false
PFNA_2	463.0 / 219.0	2.89	16492.51	99.127432	131.3	false
PFOS_1	499.0 / 80.0	2.89	54309.46	82.064517	108.2	false
PFOS_2	499.0 / 99.0	2.90	13087.61	93.580776	145.1	false
PFDA_1	513.0 / 469.0	3.24	54707.20	87.838796	273.3	false
PFDA_2	513.0 / 219.0	3.25	2073.56	78.774590	199.1	false
PFUnA_1	563.0 / 519.0	3.56	53853.69	95.029236	193.6	false
PFUnA_2	563.0 / 269.0	3.55	2945.52	70.257455	111.8	false
PFDoA_1	613.0 / 569.0	3.85	48500.01	102.981838	322.2	false
PFDoA_2	613.0 / 319.0	3.85	7515.03	98.860597	362.0	false
PFTrDA_1	663.0 / 619.0	4.10	38913.73	100.101285	329.7	false
PFTrDA_2	663.0 / 169.0	4.10	2591.70	96.213165	282.4	false
PFTeDA_1	713.0 / 669.0	4.32	31547.60	98.698359	497.2	false
PFTeDA_2	713.0 / 169.0	4.32	1685.94	99.954762	308.9	false
NMeFOSAA_1	570.0 / 419.0	3.38	4215.33	108.624579	52.7	false
NMeFOSAA_2	570.0 / 512.0	3.38	2314.74	105.366291	26.8	false
NEtFOSAA_1	584.0 / 419.0	3.55	3966.49	102.925433	63.7	false
NEtFOSAA_2	584.0 / 483.0	3.55	177.00	104.202597	13.6	false
13C2-PFHxA	315.0 / 270.0	1.77	47751.83	90.053805	797.4	false
13C2-PFDA	515.0 / 470.0	3.23	61334.53	95.522050	1220.4	false
d5-EtFOSAA	589.0 / 419.0	3.54	20632.40	409.873741	219.1	false

BATTELLE

Summary Quant Report

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Sample Name	JX70	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:32:34	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	97316.72	206.327632	1084.3	false
PFBS_2	298.9 / 99.0	1.49	31657.39	205.818634	524.9	false
PFHxA_1	313.0 / 269.0	1.78	121556.21	256.894451	101.0	false
PFHxA_2	313.0 / 119.0	1.78	9142.19	271.044383	81.0	false
PFHpA_1	363.0 / 319.0	2.14	122369.32	283.179151	130.7	false
PFHpA_2	363.0 / 169.0	2.15	2983.14	279.413504	94.7	false
PFHxS_1	399.0 / 80.0	2.15	123034.62	232.577181	457.5	false
PFHxS_2	399.0 / 99.0	2.15	34632.83	224.141632	214.1	false
PFOA_1	413.0 / 369.0	2.52	161366.89	275.902665	157.6	false
PFOA_2	413.0 / 169.0	2.52	12046.34	279.024584	119.7	false
PFNA_1	463.0 / 419.0	2.89	133796.53	268.580288	259.8	false
PFNA_2	463.0 / 219.0	2.89	41227.59	282.168603	185.1	false
PFOS_1	499.0 / 80.0	2.89	137571.33	187.779233	153.1	false
PFOS_2	499.0 / 99.0	2.88	35594.00	243.435530	174.9	false
PFDA_1	513.0 / 469.0	3.24	151838.94	283.367571	441.7	false
PFDA_2	513.0 / 219.0	3.24	5879.40	266.338265	290.5	false
PFUnA_1	563.0 / 519.0	3.56	145403.24	279.090767	302.8	false
PFUnA_2	563.0 / 269.0	3.55	8100.22	299.570771	408.0	true
PFDoA_1	613.0 / 569.0	3.84	122653.02	277.158464	506.4	false
PFDoA_2	613.0 / 319.0	3.84	18712.86	262.630095	336.4	false
PFTrDA_1	663.0 / 619.0	4.09	98324.28	268.672318	466.6	false
PFTrDA_2	663.0 / 169.0	4.09	6411.48	256.853828	343.6	false
PFTeDA_1	713.0 / 669.0	4.31	81959.20	273.044662	806.4	false
PFTeDA_2	713.0 / 169.0	4.31	4277.82	267.694654	506.8	false
NMeFOSAA_1	570.0 / 419.0	3.39	12670.13	289.199456	147.5	false
NMeFOSAA_2	570.0 / 512.0	3.39	7126.43	268.284285	37.1	false
NEtFOSAA_1	584.0 / 419.0	3.55	9316.02	220.439748	142.0	false
NEtFOSAA_2	584.0 / 483.0	3.55	735.23	285.076246	24.5	false
13C2-PFHxA	315.0 / 270.0	1.77	55157.68	104.133528	856.7	false
13C2-PFDA	515.0 / 470.0	3.23	69766.41	108.772082	1351.4	false
d5-EtFOSAA	589.0 / 419.0	3.54	21731.48	373.030387	252.3	false

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Summary Quant Report

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Sample Name	JX71	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:41:29	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	191608.38	432.516100	1596.9	false
PFBS_2	298.9 / 99.0	1.50	60491.34	429.643049	679.7	false
PFHxA_1	313.0 / 269.0	1.78	242496.69	536.593763	125.9	true
PFHxA_2	313.0 / 119.0	1.78	17060.21	529.040331	113.9	false
PFHpA_1	363.0 / 319.0	2.14	238400.44	564.092719	191.0	false
PFHpA_2	363.0 / 169.0	2.14	5518.27	537.484438	137.9	false
PFHxS_1	399.0 / 80.0	2.16	241983.42	490.689497	543.5	false
PFHxS_2	399.0 / 99.0	2.15	71529.83	499.794260	360.5	false
PFOA_1	413.0 / 369.0	2.52	318049.00	572.330827	212.1	false
PFOA_2	413.0 / 169.0	2.51	22444.38	542.178268	153.7	false
PFNA_1	463.0 / 419.0	2.89	276438.53	575.970800	355.3	false
PFNA_2	463.0 / 219.0	2.89	79907.67	566.768331	264.5	false
PFOS_1	499.0 / 80.0	2.88	343206.83	503.551777	195.7	true
PFOS_2	499.0 / 99.0	2.88	67847.71	507.358334	265.8	false
PFDA_1	513.0 / 469.0	3.24	291413.56	562.746141	613.6	false
PFDA_2	513.0 / 219.0	3.24	11388.45	536.324707	560.6	false
PFUnA_1	563.0 / 519.0	3.56	295796.83	579.829398	399.9	false
PFUnA_2	563.0 / 269.0	3.55	12654.71	500.697313	244.8	false
PFDoA_1	613.0 / 569.0	3.84	249455.11	573.374778	597.6	false
PFDoA_2	613.0 / 319.0	3.84	38861.01	555.711859	505.6	false
PFTrDA_1	663.0 / 619.0	4.09	209035.89	581.148596	594.6	false
PFTrDA_2	663.0 / 169.0	4.09	13607.33	557.870213	562.6	false
PFTeDA_1	713.0 / 669.0	4.31	165173.95	559.263909	943.4	false
PFTeDA_2	713.0 / 169.0	4.31	9256.50	588.228040	702.7	false
NMeFOSAA_1	570.0 / 419.0	3.39	21440.91	521.787284	70.1	false
NMeFOSAA_2	570.0 / 512.0	3.39	14466.52	568.429090	53.0	false
NEtFOSAA_1	584.0 / 419.0	3.55	18027.27	463.522155	153.2	false
NEtFOSAA_2	584.0 / 483.0	3.53	1196.03	466.286361	18.3	false
13C2-PFHxA	315.0 / 270.0	1.77	55639.24	104.788803	928.7	false
13C2-PFDA	515.0 / 470.0	3.23	66679.04	103.707342	971.5	false
d5-EtFOSAA	589.0 / 419.0	3.54	23554.11	428.176363	306.5	false

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Summary Quant Report

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Sample Name	JX72	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:50:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	390024.57	888.747710	2194.0	false
PFBS_2	298.9 / 99.0	1.50	122481.02	889.170002	917.6	false
PFHxA_1	313.0 / 269.0	1.78	487921.52	1083.560155	155.4	false
PFHxA_2	313.0 / 119.0	1.78	34528.76	1077.865222	140.8	false
PFHpA_1	363.0 / 319.0	2.14	462271.21	1085.640666	247.6	false
PFHpA_2	363.0 / 169.0	2.14	10868.45	1062.086999	194.5	false
PFHxS_1	399.0 / 80.0	2.16	452580.73	929.472519	735.5	false
PFHxS_2	399.0 / 99.0	2.16	134184.46	951.728157	469.8	false
PFOA_1	413.0 / 369.0	2.51	596880.69	1079.143229	263.0	false
PFOA_2	413.0 / 169.0	2.51	42979.79	1042.123910	223.3	false
PFNA_1	463.0 / 419.0	2.89	512510.77	1064.317609	464.6	false
PFNA_2	463.0 / 219.0	2.89	151542.42	1073.450506	318.2	false
PFOS_1	499.0 / 80.0	2.88	668726.06	993.508190	224.0	true
PFOS_2	499.0 / 99.0	2.88	127308.70	972.613478	410.7	false
PFDA_1	513.0 / 469.0	3.24	556665.80	1073.347869	709.3	false
PFDA_2	513.0 / 219.0	3.24	22769.82	1073.774687	822.3	false
PFUnA_1	563.0 / 519.0	3.55	555723.73	1079.142455	488.1	false
PFUnA_2	563.0 / 269.0	3.55	26765.68	1103.433343	402.3	false
PFDoA_1	613.0 / 569.0	3.84	447257.26	1016.155480	632.3	false
PFDoA_2	613.0 / 319.0	3.84	73222.82	1035.902153	489.1	false
PFTrDA_1	663.0 / 619.0	4.09	379878.25	1043.469036	699.2	false
PFTrDA_2	663.0 / 169.0	4.09	25576.54	1038.781670	659.9	false
PFTeDA_1	713.0 / 669.0	4.31	316754.50	1060.622970	1200.3	false
PFTeDA_2	713.0 / 169.0	4.31	17196.41	1078.884415	965.4	false
NMeFOSAA_1	570.0 / 419.0	3.39	41764.03	931.699689	339.8	false
NMeFOSAA_2	570.0 / 512.0	3.39	26747.52	954.871996	228.8	false
NEtFOSAA_1	584.0 / 419.0	3.55	44674.54	1063.269684	315.8	false
NEtFOSAA_2	584.0 / 483.0	3.55	2545.29	873.862370	30.4	false
13C2-PFHxA	315.0 / 270.0	1.77	52693.74	97.310023	981.3	false
13C2-PFDA	515.0 / 470.0	3.23	63318.36	96.563890	7483.6	false
d5-EtFOSAA	589.0 / 419.0	3.54	22081.74	366.606184	253.3	false

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Summary Quant Report

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Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:59:20	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	910614.39	2024.674722	3776.8	false
PFBS_2	298.9 / 99.0	1.50	275234.96	1962.210653	1531.7	false
PFHxA_1	313.0 / 269.0	1.78	1117789.54	2559.637674	194.1	false
PFHxA_2	313.0 / 119.0	1.78	79741.59	2570.917958	216.2	false
PFHpA_1	363.0 / 319.0	2.14	1062040.19	2557.091682	312.0	false
PFHpA_2	363.0 / 169.0	2.14	22915.70	2307.985347	270.2	false
PFHxS_1	399.0 / 80.0	2.15	1039589.49	2087.335538	893.6	false
PFHxS_2	399.0 / 99.0	2.15	302420.92	2099.884695	748.0	false
PFOA_1	413.0 / 369.0	2.51	1383155.99	2586.190651	483.5	false
PFOA_2	413.0 / 169.0	2.51	103957.38	2604.616479	354.2	false
PFNA_1	463.0 / 419.0	2.89	1182049.30	2525.890341	615.9	false
PFNA_2	463.0 / 219.0	2.89	344978.81	2516.076067	498.4	false
PFOS_1	499.0 / 80.0	2.88	1569124.43	2278.640714	307.4	false
PFOS_2	499.0 / 99.0	2.88	305930.92	2297.795932	615.0	false
PFDA_1	513.0 / 469.0	3.23	1317041.32	2614.798969	1030.8	false
PFDA_2	513.0 / 219.0	3.23	54040.54	2625.689392	883.2	false
PFUnA_1	563.0 / 519.0	3.55	1341624.21	2669.633957	686.3	false
PFUnA_2	563.0 / 269.0	3.55	57182.23	2469.487594	549.3	false
PFDoA_1	613.0 / 569.0	3.84	1101198.09	2561.606452	888.5	false
PFDoA_2	613.0 / 319.0	3.84	176282.53	2553.060598	785.2	false
PFTrDA_1	663.0 / 619.0	4.09	900772.07	2531.653493	1009.4	false
PFTrDA_2	663.0 / 169.0	4.09	61772.48	2570.884235	908.7	false
PFTeDA_1	713.0 / 669.0	4.31	747307.86	2560.163872	1555.8	false
PFTeDA_2	713.0 / 169.0	4.31	39803.70	2552.861984	1267.0	false
NMeFOSAA_1	570.0 / 419.0	3.38	98684.09	2471.493884	460.6	false
NMeFOSAA_2	570.0 / 512.0	3.38	60936.68	2423.763413	416.6	false
NEtFOSAA_1	584.0 / 419.0	3.54	100694.70	2699.633799	389.3	false
NEtFOSAA_2	584.0 / 483.0	3.54	6504.17	2435.597359	65.6	true
13C2-PFHxA	315.0 / 270.0	1.77	54635.70	102.653028	882.5	false
13C2-PFDA	515.0 / 470.0	3.23	65625.16	101.824457	1943.0	false
d5-EtFOSAA	589.0 / 419.0	3.54	24081.13	447.506012	231.5	false

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Summary Quant Report

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Sample Name	JX74	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:08:14	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	1551604.07	4178.992960	4821.9	false
PFBS_2	298.9 / 99.0	1.50	478319.95	4142.359203	1852.1	false
PFHxA_1	313.0 / 269.0	1.78	1879996.99	4905.213315	233.8	false
PFHxA_2	313.0 / 119.0	1.78	134273.21	4935.064490	257.2	false
PFHpA_1	363.0 / 319.0	2.14	1779695.28	4872.389047	459.3	false
PFHpA_2	363.0 / 169.0	2.14	44112.63	5068.903345	395.0	false
PFHxS_1	399.0 / 80.0	2.15	1815656.09	4419.706890	1208.9	false
PFHxS_2	399.0 / 99.0	2.15	518010.78	4363.227328	893.2	false
PFOA_1	413.0 / 369.0	2.51	2374118.28	5063.236772	484.3	false
PFOA_2	413.0 / 169.0	2.51	176056.33	5027.464128	429.8	false
PFNA_1	463.0 / 419.0	2.89	1985473.25	4830.414344	825.8	false
PFNA_2	463.0 / 219.0	2.89	581156.90	4827.350887	654.1	false
PFOS_1	499.0 / 80.0	2.88	2633063.01	4635.010053	342.6	true
PFOS_2	499.0 / 99.0	2.88	515316.74	4701.867193	627.9	false
PFDA_1	513.0 / 469.0	3.23	2218194.46	5014.238853	1056.0	false
PFDA_2	513.0 / 219.0	3.23	91628.43	5070.098049	953.0	false
PFUnA_1	563.0 / 519.0	3.55	2254908.71	5100.109139	826.3	false
PFUnA_2	563.0 / 269.0	3.55	104019.73	5158.640024	567.1	false
PFDoA_1	613.0 / 569.0	3.84	1837399.50	4856.561924	981.5	false
PFDoA_2	613.0 / 319.0	3.84	303761.27	4999.256910	736.5	false
PFTrDA_1	663.0 / 619.0	4.09	1543560.56	4929.189379	1156.1	false
PFTrDA_2	663.0 / 169.0	4.09	103709.38	4906.079605	1122.3	false
PFTeDA_1	713.0 / 669.0	4.31	1252681.91	4875.853328	1727.7	false
PFTeDA_2	713.0 / 169.0	4.30	67760.99	4936.723449	1580.4	false
NMeFOSAA_1	570.0 / 419.0	3.38	171076.32	5030.935668	518.5	false
NMeFOSAA_2	570.0 / 512.0	3.38	108106.26	5036.613806	445.2	false
NEtFOSAA_1	584.0 / 419.0	3.54	165663.27	5220.891030	729.2	false
NEtFOSAA_2	584.0 / 483.0	3.55	11892.25	5184.975067	87.3	false
13C2-PFHxA	315.0 / 270.0	1.77	46955.31	100.046313	737.0	false
13C2-PFDA	515.0 / 470.0	3.23	55432.09	97.535816	1130.6	false
d5-EtFOSAA	589.0 / 419.0	3.54	16425.11	358.080702	211.0	false

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Summary Quant Report

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Sample Name	JX75	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:17:08	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.50	3664972.03	9296.998012	6123.2	false
PFBS_2	298.9 / 99.0	1.49	1150393.40	9396.619960	3295.1	false
PFHxA_1	313.0 / 269.0	1.78	4276895.65	9908.890264	315.9	false
PFHxA_2	313.0 / 119.0	1.77	302598.61	9878.049109	308.6	false
PFHpA_1	363.0 / 319.0	2.14	4075028.27	9895.546320	586.7	false
PFHpA_2	363.0 / 169.0	2.14	98026.05	10000.855110	565.9	false
PFHxS_1	399.0 / 80.0	2.15	4095742.93	9393.927062	1167.9	false
PFHxS_2	399.0 / 99.0	2.15	1186247.29	9417.455786	1197.5	false
PFOA_1	413.0 / 369.0	2.51	5117688.66	9694.276329	730.6	false
PFOA_2	413.0 / 169.0	2.51	385480.47	9774.666684	670.8	false
PFNA_1	463.0 / 419.0	2.89	4151781.39	8963.600323	1005.4	false
PFNA_2	463.0 / 219.0	2.89	1206660.92	8895.837853	963.2	false
PFOS_1	499.0 / 80.0	2.88	5560885.89	9222.782154	493.2	true
PFOS_2	499.0 / 99.0	2.88	1057907.51	9103.365040	825.6	false
PFDA_1	513.0 / 469.0	3.23	4847480.47	9725.261395	1739.6	false
PFDA_2	513.0 / 219.0	3.23	197521.30	9700.694705	1103.4	false
PFUnA_1	563.0 / 519.0	3.55	4766730.52	9559.703256	929.9	false
PFUnA_2	563.0 / 269.0	3.55	220728.21	9747.913499	783.2	false
PFDoA_1	613.0 / 569.0	3.84	4254507.22	9970.610800	1179.7	false
PFDoA_2	613.0 / 319.0	3.83	675049.65	9849.807043	1037.9	false
PFTrDA_1	663.0 / 619.0	4.09	3498835.96	9905.536776	1237.0	false
PFTrDA_2	663.0 / 169.0	4.08	236549.17	9923.289167	1361.0	false
PFTeDA_1	713.0 / 669.0	4.30	2877351.40	9929.347190	1785.6	false
PFTeDA_2	713.0 / 169.0	4.30	152280.34	9834.459611	2016.5	false
NMeFOSAA_1	570.0 / 419.0	3.38	388340.05	9450.471370	757.9	false
NMeFOSAA_2	570.0 / 512.0	3.38	242290.11	9331.242739	969.7	false
NEtFOSAA_1	584.0 / 419.0	3.54	367230.42	9582.636660	1360.2	false
NEtFOSAA_2	584.0 / 483.0	3.54	24828.76	8929.526880	195.3	true
13C2-PFHxA	315.0 / 270.0	1.77	52126.08	98.361935	1066.4	false
13C2-PFDA	515.0 / 470.0	3.22	62820.27	97.894498	1510.3	false
d5-EtFOSAA	589.0 / 419.0	3.53	20600.11	371.488924	211.6	false

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Summary Ion Ratio Report

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Sample Name	JX67	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:05:43	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.439	0.341	ü
PFHxA_1	313.0 / 269.0	1.79	PFHxA			
PFHxA_2	313.0 / 119.0	1.79	PFHxA	0.078	0.072	ü
PFHpA_1	363.0 / 319.0	2.15	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.037	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.343	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.082	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.90	PFNA	0.406	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.89	PFOS	0.188	0.205	ü
PFDA_1	513.0 / 469.0	3.25	PFDA			
PFDA_2	513.0 / 219.0	3.25	PFDA	0.079	0.041	
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.56	PFUnA	0.059	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.85	PFDoA	0.171	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.048	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.431	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.56	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.077	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.78				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX68	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:14:41	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.403	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.076	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.025	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.281	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.078	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.284	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.89	PFOS	0.169	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.048	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.070	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.165	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.087	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.052	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.416	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.56	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.074	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX69	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:23:38	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.346	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.064	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.026	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.294	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.069	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.304	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.90	PFOS	0.241	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.25	PFDA	0.038	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.055	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.85	PFDoA	0.155	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.549	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.045	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX70	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:32:34	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.325	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.075	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.282	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.308	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.259	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.056	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.153	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.052	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.563	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.079	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX71	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:41:29	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.316	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.070	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.023	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.296	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.071	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.289	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.198	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.043	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.156	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.056	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.675	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSAA	0.066	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX72	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:50:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.314	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.297	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.072	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.296	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.190	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.048	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.164	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.640	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.057	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:59:20	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.302	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.022	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.291	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.292	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.195	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.043	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.069	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.618	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.065	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX74	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:08:14	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.308	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.025	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.285	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.074	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.293	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.196	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.046	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.165	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.632	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.072	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX75	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:17:08	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.314	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.290	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.291	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.190	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.046	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.83	PFDoA	0.159	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.068	0.069	ü
PFTeDA_1	713.0 / 669.0	4.30	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.624	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.068	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.22		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.53		N/A	N/A	ü

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Summary Internal Standard Report

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Sample Name	JX67	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:05:43	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	195712.77	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	195712.77	287.00
PFHxA_1	313.0 / 269.0	1.79	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFHxA_2	313.0 / 119.0	1.79	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFHpA_1	363.0 / 319.0	2.15	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFHpA_2	363.0 / 169.0	2.15	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFHxS_1	399.0 / 80.0	2.16	13C4-PFOS	503.0 / 80.0	195712.77	287.00
PFHxS_2	399.0 / 99.0	2.16	13C4-PFOS	503.0 / 80.0	195712.77	287.00
PFOA_1	413.0 / 369.0	2.52	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFOA_2	413.0 / 169.0	2.52	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFNA_1	463.0 / 419.0	2.90	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFNA_2	463.0 / 219.0	2.90	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFOS_1	499.0 / 80.0	2.89	13C4-PFOS	503.0 / 80.0	195712.77	287.00
PFOS_2	499.0 / 99.0	2.89	13C4-PFOS	503.0 / 80.0	195712.77	287.00
PFDA_1	513.0 / 469.0	3.25	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFDA_2	513.0 / 219.0	3.25	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFUnA_1	563.0 / 519.0	3.56	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFUnA_2	563.0 / 269.0	3.56	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFDoA_1	613.0 / 569.0	3.85	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFDoA_2	613.0 / 319.0	3.85	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFTrDA_1	663.0 / 619.0	4.10	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFTrDA_2	663.0 / 169.0	4.10	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFTeDA_1	713.0 / 669.0	4.32	13C2-PFOA	415.0 / 370.0	62699.72	100.00
PFTeDA_2	713.0 / 169.0	4.32	13C2-PFOA	415.0 / 370.0	62699.72	100.00
NMeFOSAA_1	570.0 / 419.0	3.39	d3-MeFOSAA	573.0 / 419.0	19930.79	400.00
NMeFOSAA_2	570.0 / 512.0	3.39	d3-MeFOSAA	573.0 / 419.0	19930.79	400.00
NEtFOSAA_1	584.0 / 419.0	3.56	d3-MeFOSAA	573.0 / 419.0	19930.79	400.00
NEtFOSAA_2	584.0 / 483.0	3.55	d3-MeFOSAA	573.0 / 419.0	19930.79	400.00
13C2-PFHxA	315.0 / 270.0	1.78	13C2-PFOA	415.0 / 370.0	62699.72	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	62699.72	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	19930.79	400.00

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Summary Internal Standard Report

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Sample Name	JX68	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:14:41	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	208133.24	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	208133.24	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFHpA_2	363.0 / 169.0	2.15	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFHxS_1	399.0 / 80.0	2.16	13C4-PFOS	503.0 / 80.0	208133.24	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	208133.24	287.00
PFOA_1	413.0 / 369.0	2.52	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFOA_2	413.0 / 169.0	2.52	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFNA_1	463.0 / 419.0	2.90	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFOS_1	499.0 / 80.0	2.89	13C4-PFOS	503.0 / 80.0	208133.24	287.00
PFOS_2	499.0 / 99.0	2.89	13C4-PFOS	503.0 / 80.0	208133.24	287.00
PFDA_1	513.0 / 469.0	3.24	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFDA_2	513.0 / 219.0	3.24	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFUnA_1	563.0 / 519.0	3.56	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFDoA_1	613.0 / 569.0	3.85	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFDoA_2	613.0 / 319.0	3.84	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFTrDA_1	663.0 / 619.0	4.10	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFTrDA_2	663.0 / 169.0	4.10	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFTeDA_1	713.0 / 669.0	4.32	13C2-PFOA	415.0 / 370.0	68551.10	100.00
PFTeDA_2	713.0 / 169.0	4.32	13C2-PFOA	415.0 / 370.0	68551.10	100.00
NMeFOSAA_1	570.0 / 419.0	3.39	d3-MeFOSAA	573.0 / 419.0	21677.32	400.00
NMeFOSAA_2	570.0 / 512.0	3.38	d3-MeFOSAA	573.0 / 419.0	21677.32	400.00
NEtFOSAA_1	584.0 / 419.0	3.56	d3-MeFOSAA	573.0 / 419.0	21677.32	400.00
NEtFOSAA_2	584.0 / 483.0	3.55	d3-MeFOSAA	573.0 / 419.0	21677.32	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	68551.10	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	68551.10	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	21677.32	400.00

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Summary Internal Standard Report

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Sample Name	JX69	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:23:38	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	196602.67	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	196602.67	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFHxA_2	313.0 / 119.0	1.78	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFHpA_2	363.0 / 169.0	2.15	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFHxS_1	399.0 / 80.0	2.16	13C4-PFOS	503.0 / 80.0	196602.67	287.00
PFHxS_2	399.0 / 99.0	2.16	13C4-PFOS	503.0 / 80.0	196602.67	287.00
PFOA_1	413.0 / 369.0	2.52	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFOA_2	413.0 / 169.0	2.52	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFNA_1	463.0 / 419.0	2.90	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFOS_1	499.0 / 80.0	2.89	13C4-PFOS	503.0 / 80.0	196602.67	287.00
PFOS_2	499.0 / 99.0	2.90	13C4-PFOS	503.0 / 80.0	196602.67	287.00
PFDA_1	513.0 / 469.0	3.24	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFDA_2	513.0 / 219.0	3.25	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFUnA_1	563.0 / 519.0	3.56	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFDoA_1	613.0 / 569.0	3.85	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFDoA_2	613.0 / 319.0	3.85	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFTrDA_1	663.0 / 619.0	4.10	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFTrDA_2	663.0 / 169.0	4.10	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFTeDA_1	713.0 / 669.0	4.32	13C2-PFOA	415.0 / 370.0	68688.50	100.00
PFTeDA_2	713.0 / 169.0	4.32	13C2-PFOA	415.0 / 370.0	68688.50	100.00
NMeFOSAA_1	570.0 / 419.0	3.38	d3-MeFOSAA	573.0 / 419.0	20129.83	400.00
NMeFOSAA_2	570.0 / 512.0	3.38	d3-MeFOSAA	573.0 / 419.0	20129.83	400.00
NEtFOSAA_1	584.0 / 419.0	3.55	d3-MeFOSAA	573.0 / 419.0	20129.83	400.00
NEtFOSAA_2	584.0 / 483.0	3.55	d3-MeFOSAA	573.0 / 419.0	20129.83	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	68688.50	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	68688.50	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	20129.83	400.00

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Summary Internal Standard Report

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Sample Name	JX70	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:32:34	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	221233.77	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	221233.77	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFHxA_2	313.0 / 119.0	1.78	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFHpA_2	363.0 / 169.0	2.15	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	221233.77	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	221233.77	287.00
PFOA_1	413.0 / 369.0	2.52	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFOA_2	413.0 / 169.0	2.52	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFNA_1	463.0 / 419.0	2.89	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFOS_1	499.0 / 80.0	2.89	13C4-PFOS	503.0 / 80.0	221233.77	287.00
PFOS_2	499.0 / 99.0	2.88	13C4-PFOS	503.0 / 80.0	221233.77	287.00
PFDA_1	513.0 / 469.0	3.24	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFDA_2	513.0 / 219.0	3.24	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFUnA_1	563.0 / 519.0	3.56	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFDoA_1	613.0 / 569.0	3.84	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFDoA_2	613.0 / 319.0	3.84	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFTrDA_1	663.0 / 619.0	4.09	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFTrDA_2	663.0 / 169.0	4.09	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFTeDA_1	713.0 / 669.0	4.31	13C2-PFOA	415.0 / 370.0	68613.81	100.00
PFTeDA_2	713.0 / 169.0	4.31	13C2-PFOA	415.0 / 370.0	68613.81	100.00
NMeFOSAA_1	570.0 / 419.0	3.39	d3-MeFOSAA	573.0 / 419.0	23296.23	400.00
NMeFOSAA_2	570.0 / 512.0	3.39	d3-MeFOSAA	573.0 / 419.0	23296.23	400.00
NEtFOSAA_1	584.0 / 419.0	3.55	d3-MeFOSAA	573.0 / 419.0	23296.23	400.00
NEtFOSAA_2	584.0 / 483.0	3.55	d3-MeFOSAA	573.0 / 419.0	23296.23	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	68613.81	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	68613.81	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	23296.23	400.00

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Summary Internal Standard Report

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Sample Name	JX71	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:41:29	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	207482.97	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	207482.97	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFHxA_2	313.0 / 119.0	1.78	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFHpA_2	363.0 / 169.0	2.14	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFHxS_1	399.0 / 80.0	2.16	13C4-PFOS	503.0 / 80.0	207482.97	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	207482.97	287.00
PFOA_1	413.0 / 369.0	2.52	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFOA_2	413.0 / 169.0	2.51	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFNA_1	463.0 / 419.0	2.89	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFOS_1	499.0 / 80.0	2.88	13C4-PFOS	503.0 / 80.0	207482.97	287.00
PFOS_2	499.0 / 99.0	2.88	13C4-PFOS	503.0 / 80.0	207482.97	287.00
PFDA_1	513.0 / 469.0	3.24	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFDA_2	513.0 / 219.0	3.24	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFUnA_1	563.0 / 519.0	3.56	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFDoA_1	613.0 / 569.0	3.84	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFDoA_2	613.0 / 319.0	3.84	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFTrDA_1	663.0 / 619.0	4.09	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFTrDA_2	663.0 / 169.0	4.09	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFTeDA_1	713.0 / 669.0	4.31	13C2-PFOA	415.0 / 370.0	68780.04	100.00
PFTeDA_2	713.0 / 169.0	4.31	13C2-PFOA	415.0 / 370.0	68780.04	100.00
NMeFOSAA_1	570.0 / 419.0	3.39	d3-MeFOSAA	573.0 / 419.0	21998.06	400.00
NMeFOSAA_2	570.0 / 512.0	3.39	d3-MeFOSAA	573.0 / 419.0	21998.06	400.00
NEtFOSAA_1	584.0 / 419.0	3.55	d3-MeFOSAA	573.0 / 419.0	21998.06	400.00
NEtFOSAA_2	584.0 / 483.0	3.53	d3-MeFOSAA	573.0 / 419.0	21998.06	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	68780.04	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	68780.04	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	21998.06	400.00

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Summary Internal Standard Report

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Sample Name	JX72	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:50:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	205389.92	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	205389.92	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFHxA_2	313.0 / 119.0	1.78	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFHpA_2	363.0 / 169.0	2.14	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFHxS_1	399.0 / 80.0	2.16	13C4-PFOS	503.0 / 80.0	205389.92	287.00
PFHxS_2	399.0 / 99.0	2.16	13C4-PFOS	503.0 / 80.0	205389.92	287.00
PFOA_1	413.0 / 369.0	2.51	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFOA_2	413.0 / 169.0	2.51	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFNA_1	463.0 / 419.0	2.89	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFOS_1	499.0 / 80.0	2.88	13C4-PFOS	503.0 / 80.0	205389.92	287.00
PFOS_2	499.0 / 99.0	2.88	13C4-PFOS	503.0 / 80.0	205389.92	287.00
PFDA_1	513.0 / 469.0	3.24	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFDA_2	513.0 / 219.0	3.24	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFUnA_1	563.0 / 519.0	3.55	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFDoA_1	613.0 / 569.0	3.84	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFDoA_2	613.0 / 319.0	3.84	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFTrDA_1	663.0 / 619.0	4.09	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFTrDA_2	663.0 / 169.0	4.09	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFTeDA_1	713.0 / 669.0	4.31	13C2-PFOA	415.0 / 370.0	70145.13	100.00
PFTeDA_2	713.0 / 169.0	4.31	13C2-PFOA	415.0 / 370.0	70145.13	100.00
NMeFOSAA_1	570.0 / 419.0	3.39	d3-MeFOSAA	573.0 / 419.0	24086.51	400.00
NMeFOSAA_2	570.0 / 512.0	3.39	d3-MeFOSAA	573.0 / 419.0	24086.51	400.00
NEtFOSAA_1	584.0 / 419.0	3.55	d3-MeFOSAA	573.0 / 419.0	24086.51	400.00
NEtFOSAA_2	584.0 / 483.0	3.55	d3-MeFOSAA	573.0 / 419.0	24086.51	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	70145.13	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	70145.13	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	24086.51	400.00

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Summary Internal Standard Report

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Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:59:20	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	210418.05	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	210418.05	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFHxA_2	313.0 / 119.0	1.78	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFHpA_2	363.0 / 169.0	2.14	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	210418.05	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	210418.05	287.00
PFOA_1	413.0 / 369.0	2.51	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFOA_2	413.0 / 169.0	2.51	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFNA_1	463.0 / 419.0	2.89	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFOS_1	499.0 / 80.0	2.88	13C4-PFOS	503.0 / 80.0	210418.05	287.00
PFOS_2	499.0 / 99.0	2.88	13C4-PFOS	503.0 / 80.0	210418.05	287.00
PFDA_1	513.0 / 469.0	3.23	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFDA_2	513.0 / 219.0	3.23	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFUnA_1	563.0 / 519.0	3.55	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFDoA_1	613.0 / 569.0	3.84	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFDoA_2	613.0 / 319.0	3.84	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFTrDA_1	663.0 / 619.0	4.09	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFTrDA_2	663.0 / 169.0	4.09	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFTeDA_1	713.0 / 669.0	4.31	13C2-PFOA	415.0 / 370.0	68944.70	100.00
PFTeDA_2	713.0 / 169.0	4.31	13C2-PFOA	415.0 / 370.0	68944.70	100.00
NMeFOSAA_1	570.0 / 419.0	3.38	d3-MeFOSAA	573.0 / 419.0	21518.81	400.00
NMeFOSAA_2	570.0 / 512.0	3.38	d3-MeFOSAA	573.0 / 419.0	21518.81	400.00
NEtFOSAA_1	584.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	21518.81	400.00
NEtFOSAA_2	584.0 / 483.0	3.54	d3-MeFOSAA	573.0 / 419.0	21518.81	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	68944.70	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	68944.70	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	21518.81	400.00

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Summary Internal Standard Report

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Sample Name	JX74	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:08:14	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	173679.17	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	173679.17	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFHxA_2	313.0 / 119.0	1.78	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFHpA_2	363.0 / 169.0	2.14	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	173679.17	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	173679.17	287.00
PFOA_1	413.0 / 369.0	2.51	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFOA_2	413.0 / 169.0	2.51	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFNA_1	463.0 / 419.0	2.89	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFOS_1	499.0 / 80.0	2.88	13C4-PFOS	503.0 / 80.0	173679.17	287.00
PFOS_2	499.0 / 99.0	2.88	13C4-PFOS	503.0 / 80.0	173679.17	287.00
PFDA_1	513.0 / 469.0	3.23	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFDA_2	513.0 / 219.0	3.23	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFUnA_1	563.0 / 519.0	3.55	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFDoA_1	613.0 / 569.0	3.84	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFDoA_2	613.0 / 319.0	3.84	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFTrDA_1	663.0 / 619.0	4.09	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFTrDA_2	663.0 / 169.0	4.09	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFTeDA_1	713.0 / 669.0	4.31	13C2-PFOA	415.0 / 370.0	60796.66	100.00
PFTeDA_2	713.0 / 169.0	4.30	13C2-PFOA	415.0 / 370.0	60796.66	100.00
NMeFOSAA_1	570.0 / 419.0	3.38	d3-MeFOSAA	573.0 / 419.0	18342.89	400.00
NMeFOSAA_2	570.0 / 512.0	3.38	d3-MeFOSAA	573.0 / 419.0	18342.89	400.00
NEtFOSAA_1	584.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	18342.89	400.00
NEtFOSAA_2	584.0 / 483.0	3.55	d3-MeFOSAA	573.0 / 419.0	18342.89	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	60796.66	100.00
13C2-PFDA	515.0 / 470.0	3.23	13C2-PFOA	415.0 / 370.0	60796.66	100.00
d5-EtFOSAA	589.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	18342.89	400.00

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Summary Internal Standard Report

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Sample Name	JX75	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:17:08	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.50	13C4-PFOS	503.0 / 80.0	184387.98	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	184387.98	287.00
PFHxA_1	313.0 / 269.0	1.78	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFHpA_2	363.0 / 169.0	2.14	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	184387.98	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	184387.98	287.00
PFOA_1	413.0 / 369.0	2.51	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFOA_2	413.0 / 169.0	2.51	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFNA_1	463.0 / 419.0	2.89	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFNA_2	463.0 / 219.0	2.89	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFOS_1	499.0 / 80.0	2.88	13C4-PFOS	503.0 / 80.0	184387.98	287.00
PFOS_2	499.0 / 99.0	2.88	13C4-PFOS	503.0 / 80.0	184387.98	287.00
PFDA_1	513.0 / 469.0	3.23	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFDA_2	513.0 / 219.0	3.23	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFUnA_1	563.0 / 519.0	3.55	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFDoA_1	613.0 / 569.0	3.84	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFDoA_2	613.0 / 319.0	3.83	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFTrDA_1	663.0 / 619.0	4.09	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFTrDA_2	663.0 / 169.0	4.08	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFTeDA_1	713.0 / 669.0	4.30	13C2-PFOA	415.0 / 370.0	68647.41	100.00
PFTeDA_2	713.0 / 169.0	4.30	13C2-PFOA	415.0 / 370.0	68647.41	100.00
NMeFOSAA_1	570.0 / 419.0	3.38	d3-MeFOSAA	573.0 / 419.0	22175.02	400.00
NMeFOSAA_2	570.0 / 512.0	3.38	d3-MeFOSAA	573.0 / 419.0	22175.02	400.00
NEtFOSAA_1	584.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	22175.02	400.00
NEtFOSAA_2	584.0 / 483.0	3.54	d3-MeFOSAA	573.0 / 419.0	22175.02	400.00
13C2-PFHxA	315.0 / 270.0	1.77	13C2-PFOA	415.0 / 370.0	68647.41	100.00
13C2-PFDA	515.0 / 470.0	3.22	13C2-PFOA	415.0 / 370.0	68647.41	100.00
d5-EtFOSAA	589.0 / 419.0	3.53	d3-MeFOSAA	573.0 / 419.0	22175.02	400.00

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QC Summary Report

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Sample Name	JV66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:26:04	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	805.276200	885.00	90.99
PFBS_2	298.9 / 99.0	1.49	795.986368	885.00	89.94
PFHxA_1	313.0 / 269.0	1.77	996.404291	1000.00	99.64
PFHxA_2	313.0 / 119.0	1.77	997.489769	1000.00	99.75
PFHpA_1	363.0 / 319.0	2.14	1031.124835	1000.00	103.11
PFHpA_2	363.0 / 169.0	2.14	1161.534315	1000.00	116.15
PFHxS_1	399.0 / 80.0	2.15	919.917034	912.00	100.87
PFHxS_2	399.0 / 99.0	2.15	869.821102	912.00	95.38
PFOA_1	413.0 / 369.0	2.51	1050.976678	1000.00	105.10
PFOA_2	413.0 / 169.0	2.51	1048.582291	1000.00	104.86
PFNA_1	463.0 / 419.0	2.88	1000.643194	1000.00	100.06
PFNA_2	463.0 / 219.0	2.88	1035.420136	1000.00	103.54
PFOS_1	499.0 / 80.0	2.88	865.237465	925.60	93.48
PFOS_2	499.0 / 99.0	2.88	972.796760	925.60	105.10
PFDA_1	513.0 / 469.0	3.23	1068.328726	1000.00	106.83
PFDA_2	513.0 / 219.0	3.23	1022.246333	1000.00	102.22
PFUnA_1	563.0 / 519.0	3.55	1036.138808	1000.00	103.61
PFUnA_2	563.0 / 269.0	3.55	1023.503647	1000.00	102.35
PFDoA_1	613.0 / 569.0	3.83	1033.267977	1000.00	103.33
PFDoA_2	613.0 / 319.0	3.83	1036.887732	1000.00	103.69
PFTrDA_1	663.0 / 619.0	4.08	1007.914002	1000.00	100.79
PFTrDA_2	663.0 / 169.0	4.08	1068.145164	1000.00	106.81
PFTeDA_1	713.0 / 669.0	4.30	1002.952208	1000.00	100.30
PFTeDA_2	713.0 / 169.0	4.30	990.767060	1000.00	99.08
NMeFOSAA_1	570.0 / 419.0	3.38	1291.690021	1000.00	129.17
NMeFOSAA_2	570.0 / 512.0	3.38	1107.023361	1000.00	110.70
NEtFOSAA_1	584.0 / 419.0	3.54	1252.908845	1000.00	125.29
NEtFOSAA_2	584.0 / 483.0	3.54	1298.760705	1000.00	129.88
13C2-PFHxA	315.0 / 270.0	1.76	102.268470	100.00	102.27
13C2-PFDA	515.0 / 470.0	3.22	104.026718	100.00	104.03
d5-EtFOSAA	589.0 / 419.0	3.53	462.843644	400.00	115.71

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QC Summary Report

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Sample Name	JX72 CCV	**Injection Vial**	31
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T20:51:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	866.166863	885.00	97.87
PFBS_2	298.9 / 99.0	1.49	845.929656	885.00	95.59
PFHxA_1	313.0 / 269.0	1.77	1110.146700	1000.00	111.01
PFHxA_2	313.0 / 119.0	1.77	1114.367468	1000.00	111.44
PFHpA_1	363.0 / 319.0	2.13	1084.675205	1000.00	108.47
PFHpA_2	363.0 / 169.0	2.13	1081.069510	1000.00	108.11
PFHxS_1	399.0 / 80.0	2.15	866.313670	912.00	94.99
PFHxS_2	399.0 / 99.0	2.15	854.899584	912.00	93.74
PFOA_1	413.0 / 369.0	2.50	1121.579020	1000.00	112.16
PFOA_2	413.0 / 169.0	2.50	1136.830502	1000.00	113.68
PFNA_1	463.0 / 419.0	2.88	1114.289558	1000.00	111.43
PFNA_2	463.0 / 219.0	2.88	1056.803545	1000.00	105.68
PFOS_1	499.0 / 80.0	2.87	939.943210	925.60	101.55
PFOS_2	499.0 / 99.0	2.87	905.590378	925.60	97.84
PFDA_1	513.0 / 469.0	3.22	1177.384628	1000.00	117.74
PFDA_2	513.0 / 219.0	3.22	1216.292183	1000.00	121.63
PFUnA_1	563.0 / 519.0	3.54	1158.866697	1000.00	115.89
PFUnA_2	563.0 / 269.0	3.53	1038.065993	1000.00	103.81
PFDoA_1	613.0 / 569.0	3.82	1145.412871	1000.00	114.54
PFDoA_2	613.0 / 319.0	3.82	1080.836127	1000.00	108.08
PFTrDA_1	663.0 / 619.0	4.07	1124.100491	1000.00	112.41
PFTrDA_2	663.0 / 169.0	4.07	1090.798917	1000.00	109.08
PFTeDA_1	713.0 / 669.0	4.29	1113.837517	1000.00	111.38
PFTeDA_2	713.0 / 169.0	4.28	1179.494860	1000.00	117.95
NMeFOSAA_1	570.0 / 419.0	3.37	1155.620735	1000.00	115.56
NMeFOSAA_2	570.0 / 512.0	3.37	885.062762	1000.00	88.51
NEtFOSAA_1	584.0 / 419.0	3.53	978.588302	1000.00	97.86
NEtFOSAA_2	584.0 / 483.0	3.53	1072.935513	1000.00	107.29
13C2-PFHxA	315.0 / 270.0	1.76	102.897180	100.00	102.90
13C2-PFDA	515.0 / 470.0	3.21	110.292007	100.00	110.29
d5-EtFOSAA	589.0 / 419.0	3.52	411.937240	400.00	102.98

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QC Summary Report

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Sample Name	JX73 CCV	**Injection Vial**	41
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:29:51	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	1987.104482	2212.50	89.81
PFBS_2	298.9 / 99.0	1.49	1986.528803	2212.50	89.79
PFHxA_1	313.0 / 269.0	1.77	2500.520078	2500.00	100.02
PFHxA_2	313.0 / 119.0	1.77	2511.176079	2500.00	100.45
PFHpA_1	363.0 / 319.0	2.13	2561.587938	2500.00	102.46
PFHpA_2	363.0 / 169.0	2.13	2446.244001	2500.00	97.85
PFHxS_1	399.0 / 80.0	2.15	2085.070400	2280.00	91.45
PFHxS_2	399.0 / 99.0	2.15	2086.686160	2280.00	91.52
PFOA_1	413.0 / 369.0	2.50	2634.075491	2500.00	105.36
PFOA_2	413.0 / 169.0	2.50	2683.560009	2500.00	107.34
PFNA_1	463.0 / 419.0	2.87	2518.780588	2500.00	100.75
PFNA_2	463.0 / 219.0	2.87	2575.921082	2500.00	103.04
PFOS_1	499.0 / 80.0	2.87	2287.448690	2314.00	98.85
PFOS_2	499.0 / 99.0	2.87	2278.767955	2314.00	98.48
PFDA_1	513.0 / 469.0	3.22	2810.068457	2500.00	112.40
PFDA_2	513.0 / 219.0	3.22	2735.099313	2500.00	109.40
PFUnA_1	563.0 / 519.0	3.53	2761.223316	2500.00	110.45
PFUnA_2	563.0 / 269.0	3.53	2703.959603	2500.00	108.16
PFDoA_1	613.0 / 569.0	3.82	2696.755918	2500.00	107.87
PFDoA_2	613.0 / 319.0	3.82	2681.823361	2500.00	107.27
PFTrDA_1	663.0 / 619.0	4.07	2613.711884	2500.00	104.55
PFTrDA_2	663.0 / 169.0	4.07	2563.005769	2500.00	102.52
PFTeDA_1	713.0 / 669.0	4.28	2731.936668	2500.00	109.28
PFTeDA_2	713.0 / 169.0	4.28	2755.246976	2500.00	110.21
NMeFOSAA_1	570.0 / 419.0	3.37	2720.879044	2500.00	108.84
NMeFOSAA_2	570.0 / 512.0	3.36	2628.484657	2500.00	105.14
NEtFOSAA_1	584.0 / 419.0	3.52	2806.356825	2500.00	112.25
NEtFOSAA_2	584.0 / 483.0	3.52	2035.702806	2500.00	81.43
13C2-PFHxA	315.0 / 270.0	1.76	105.333931	100.00	105.33
13C2-PFDA	515.0 / 470.0	3.21	113.722041	100.00	113.72
d5-EtFOSAA	589.0 / 419.0	3.52	448.447996	400.00	112.11

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QC Summary Report

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Sample Name	JX71 CCV	**Injection Vial**	51
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-28T00:08:12	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	403.820637	443.00	91.16
PFBS_2	298.9 / 99.0	1.49	396.315350	443.00	89.46
PFHxA_1	313.0 / 269.0	1.77	472.768443	500.00	94.55
PFHxA_2	313.0 / 119.0	1.77	453.875187	500.00	90.78
PFHpA_1	363.0 / 319.0	2.13	490.217908	500.00	98.04
PFHpA_2	363.0 / 169.0	2.13	484.699709	500.00	96.94
PFHxS_1	399.0 / 80.0	2.14	429.156931	456.00	94.11
PFHxS_2	399.0 / 99.0	2.14	418.584466	456.00	91.79
PFOA_1	413.0 / 369.0	2.50	549.680457	500.00	109.94
PFOA_2	413.0 / 169.0	2.50	534.782583	500.00	106.96
PFNA_1	463.0 / 419.0	2.87	560.325417	500.00	112.07
PFNA_2	463.0 / 219.0	2.87	516.070101	500.00	103.21
PFOS_1	499.0 / 80.0	2.87	516.162709	463.00	111.48
PFOS_2	499.0 / 99.0	2.87	517.783110	463.00	111.83
PFDA_1	513.0 / 469.0	3.22	570.087391	500.00	114.02
PFDA_2	513.0 / 219.0	3.22	513.815927	500.00	102.76
PFUnA_1	563.0 / 519.0	3.53	563.935685	500.00	112.79
PFUnA_2	563.0 / 269.0	3.53	581.104836	500.00	116.22
PFDoA_1	613.0 / 569.0	3.82	555.617224	500.00	111.12
PFDoA_2	613.0 / 319.0	3.82	544.527339	500.00	108.91
PFTrDA_1	663.0 / 619.0	4.07	534.530683	500.00	106.91
PFTrDA_2	663.0 / 169.0	4.07	536.931422	500.00	107.39
PFTeDA_1	713.0 / 669.0	4.29	550.872725	500.00	110.17
PFTeDA_2	713.0 / 169.0	4.29	543.665961	500.00	108.73
NMeFOSAA_1	570.0 / 419.0	3.36	495.893406	500.00	99.18
NMeFOSAA_2	570.0 / 512.0	3.36	531.463404	500.00	106.29
NEtFOSAA_1	584.0 / 419.0	3.53	607.561759	500.00	121.51
NEtFOSAA_2	584.0 / 483.0	3.54	479.133448	500.00	95.83
13C2-PFHxA	315.0 / 270.0	1.76	92.492481	100.00	92.49
13C2-PFDA	515.0 / 470.0	3.21	96.317278	100.00	96.32
d5-EtFOSAA	589.0 / 419.0	3.52	430.698550	400.00	107.67

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Summary Quant Report

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Sample Name	JV66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:26:04	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	342299.45	805.276200	2068.6	false
PFBS_2	298.9 / 99.0	1.49	106347.76	795.986368	985.2	false
PFHxA_1	313.0 / 269.0	1.77	414770.42	996.404291	138.3	false
PFHxA_2	313.0 / 119.0	1.77	29540.77	997.489769	118.7	false
PFHpA_1	363.0 / 319.0	2.14	405345.28	1031.124835	251.2	false
PFHpA_2	363.0 / 169.0	2.14	10943.44	1161.534315	235.4	false
PFHxS_1	399.0 / 80.0	2.15	433909.26	919.917034	958.6	false
PFHxS_2	399.0 / 99.0	2.15	118854.75	869.821102	557.8	false
PFOA_1	413.0 / 369.0	2.51	536691.54	1050.976678	282.2	false
PFOA_2	413.0 / 169.0	2.51	39891.30	1048.582291	267.6	false
PFNA_1	463.0 / 419.0	2.88	445089.58	1000.643194	539.0	false
PFNA_2	463.0 / 219.0	2.88	134957.92	1035.420136	354.9	false
PFOS_1	499.0 / 80.0	2.88	564348.32	865.237465	501.0	false
PFOS_2	499.0 / 99.0	2.88	123343.62	972.796760	537.9	false
PFDA_1	513.0 / 469.0	3.23	511210.21	1068.328726	615.0	false
PFDA_2	513.0 / 219.0	3.23	20020.05	1022.246333	640.7	false
PFUnA_1	563.0 / 519.0	3.55	492507.62	1036.138808	601.1	false
PFUnA_2	563.0 / 269.0	3.55	22997.56	1023.503647	412.3	false
PFDoA_1	613.0 / 569.0	3.83	419502.38	1033.267977	624.6	false
PFDoA_2	613.0 / 319.0	3.83	67616.79	1036.887732	714.9	false
PFTrDA_1	663.0 / 619.0	4.08	338637.30	1007.914002	674.8	false
PFTrDA_2	663.0 / 169.0	4.08	24255.17	1068.145164	629.4	false
PFTeDA_1	713.0 / 669.0	4.30	276490.09	1002.952208	1244.3	false
PFTeDA_2	713.0 / 169.0	4.30	14579.81	990.767060	1075.3	false
NMeFOSAA_1	570.0 / 419.0	3.38	45263.72	1291.690021	251.5	false
NMeFOSAA_2	570.0 / 512.0	3.38	24299.09	1107.023361	211.1	false
NEtFOSAA_1	584.0 / 419.0	3.54	41142.23	1252.908845	451.7	false
NEtFOSAA_2	584.0 / 483.0	3.54	3000.80	1298.760705	62.3	false
13C2-PFHxA	315.0 / 270.0	1.76	51090.79	102.268470	1076.0	false
13C2-PFDA	515.0 / 470.0	3.22	62930.22	104.026718	1897.8	false
d5-EtFOSAA	589.0 / 419.0	3.53	21822.62	462.843644	260.1	false

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Summary Quant Report

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Sample Name	JX72 CCV	**Injection Vial**	31
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T20:51:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	372073.91	866.166863	1731.8	false
PFBS_2	298.9 / 99.0	1.49	114126.10	845.929656	598.0	false
PFHxA_1	313.0 / 269.0	1.77	467707.07	1110.146700	134.0	false
PFHxA_2	313.0 / 119.0	1.77	33389.99	1114.367468	115.7	false
PFHpA_1	363.0 / 319.0	2.13	432366.75	1084.675205	253.8	false
PFHpA_2	363.0 / 169.0	2.13	10351.82	1081.069510	199.5	false
PFHxS_1	399.0 / 80.0	2.15	412997.55	866.313670	771.9	false
PFHxS_2	399.0 / 99.0	2.15	118056.56	854.899584	563.8	false
PFOA_1	413.0 / 369.0	2.50	580119.51	1121.579020	251.5	false
PFOA_2	413.0 / 169.0	2.50	43797.37	1136.830502	220.3	false
PFNA_1	463.0 / 419.0	2.88	501865.86	1114.289558	423.5	false
PFNA_2	463.0 / 219.0	2.88	139709.14	1056.803545	340.5	false
PFOS_1	499.0 / 80.0	2.87	619384.89	939.943210	214.4	true
PFOS_2	499.0 / 99.0	2.87	116136.51	905.590378	380.0	true
PFDA_1	513.0 / 469.0	3.22	570603.18	1177.384628	683.1	false
PFDA_2	513.0 / 219.0	3.22	24084.71	1216.292183	814.1	false
PFUnA_1	563.0 / 519.0	3.54	558204.11	1158.866697	508.9	false
PFUnA_2	563.0 / 269.0	3.53	23649.08	1038.065993	562.4	false
PFDoA_1	613.0 / 569.0	3.82	471393.31	1145.412871	594.2	false
PFDoA_2	613.0 / 319.0	3.82	71488.65	1080.836127	532.6	false
PFTrDA_1	663.0 / 619.0	4.07	382831.42	1124.100491	720.6	false
PFTrDA_2	663.0 / 169.0	4.07	25127.60	1090.798917	650.1	false
PFTeDA_1	713.0 / 669.0	4.29	311259.31	1113.837517	1139.8	false
PFTeDA_2	713.0 / 169.0	4.28	17586.95	1179.494860	1171.8	false
NMeFOSAA_1	570.0 / 419.0	3.37	39124.12	1155.620735	369.1	false
NMeFOSAA_2	570.0 / 512.0	3.37	18730.63	885.062762	187.9	false
NEtFOSAA_1	584.0 / 419.0	3.53	31110.76	978.588302	232.1	false
NEtFOSAA_2	584.0 / 483.0	3.53	2380.42	1072.935513	55.9	false
13C2-PFHxA	315.0 / 270.0	1.76	52160.48	102.897180	1209.0	false
13C2-PFDA	515.0 / 470.0	3.21	67701.09	110.292007	2356.5	false
d5-EtFOSAA	589.0 / 419.0	3.52	18757.12	411.937240	240.3	false

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Summary Quant Report

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Sample Name	JX73 CCV	**Injection Vial**	41
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:29:51	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	897400.19	1987.104482	2842.6	false
PFBS_2	298.9 / 99.0	1.49	279778.72	1986.528803	1018.9	false
PFHxA_1	313.0 / 269.0	1.77	1075209.72	2500.520078	178.0	false
PFHxA_2	313.0 / 119.0	1.77	76694.87	2511.176079	172.6	false
PFHpA_1	363.0 / 319.0	2.13	1047319.62	2561.587938	378.2	false
PFHpA_2	363.0 / 169.0	2.13	23895.02	2446.244001	303.7	false
PFHxS_1	399.0 / 80.0	2.15	1042748.43	2085.070400	1150.5	false
PFHxS_2	399.0 / 99.0	2.15	301764.97	2086.686160	838.9	false
PFOA_1	413.0 / 369.0	2.50	1386517.22	2634.075491	362.0	false
PFOA_2	413.0 / 169.0	2.50	105406.95	2683.560009	309.9	false
PFNA_1	463.0 / 419.0	2.87	1160382.65	2518.780588	692.7	false
PFNA_2	463.0 / 219.0	2.87	347608.69	2575.921082	458.6	false
PFOS_1	499.0 / 80.0	2.87	1581683.96	2287.448690	370.3	true
PFOS_2	499.0 / 99.0	2.87	304663.03	2278.767955	561.3	false
PFDA_1	513.0 / 469.0	3.22	1392530.17	2810.068457	1054.2	false
PFDA_2	513.0 / 219.0	3.22	55395.77	2735.099313	1093.5	false
PFUnA_1	563.0 / 519.0	3.53	1365809.76	2761.223316	629.5	false
PFUnA_2	563.0 / 269.0	3.53	61508.02	2703.959603	706.8	false
PFDoA_1	613.0 / 569.0	3.82	1140994.32	2696.755918	840.2	false
PFDoA_2	613.0 / 319.0	3.82	182250.91	2681.823361	697.3	false
PFTrDA_1	663.0 / 619.0	4.07	915363.81	2613.711884	805.2	false
PFTrDA_2	663.0 / 169.0	4.07	60624.51	2563.005769	900.9	false
PFTeDA_1	713.0 / 669.0	4.28	784826.24	2731.936668	1724.1	false
PFTeDA_2	713.0 / 169.0	4.28	42279.00	2755.246976	1547.9	false
NMeFOSAA_1	570.0 / 419.0	3.37	96827.20	2720.879044	468.7	false
NMeFOSAA_2	570.0 / 512.0	3.36	58920.60	2628.484657	492.3	false
NEtFOSAA_1	584.0 / 419.0	3.52	93292.78	2806.356825	322.0	false
NEtFOSAA_2	584.0 / 483.0	3.52	4832.26	2035.702806	49.6	false
13C2-PFHxA	315.0 / 270.0	1.76	55189.02	105.333931	1097.5	false
13C2-PFDA	515.0 / 470.0	3.21	72151.04	113.722041	1466.1	false
d5-EtFOSAA	589.0 / 419.0	3.52	21511.06	448.447996	177.8	false

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Summary Quant Report

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Sample Name	JX71 CCV	**Injection Vial**	51
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-28T00:08:12	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	179270.24	403.820637	1395.1	false
PFBS_2	298.9 / 99.0	1.49	56027.32	396.315350	431.6	false
PFHxA_1	313.0 / 269.0	1.77	227873.09	472.768443	100.4	false
PFHxA_2	313.0 / 119.0	1.77	15646.01	453.875187	98.7	false
PFHpA_1	363.0 / 319.0	2.13	220451.01	490.217908	172.7	false
PFHpA_2	363.0 / 169.0	2.13	5301.51	484.699709	133.1	false
PFHxS_1	399.0 / 80.0	2.14	212267.26	429.156931	702.8	false
PFHxS_2	399.0 / 99.0	2.14	60156.86	418.584466	403.7	false
PFOA_1	413.0 / 369.0	2.50	324485.79	549.680457	195.1	false
PFOA_2	413.0 / 169.0	2.50	23483.07	534.782583	165.4	false
PFNA_1	463.0 / 419.0	2.87	285357.83	560.325417	337.9	false
PFNA_2	463.0 / 219.0	2.87	77420.19	516.070101	241.0	false
PFOS_1	499.0 / 80.0	2.87	352530.75	516.162709	212.4	true
PFOS_2	499.0 / 99.0	2.87	69360.60	517.783110	314.3	true
PFDA_1	513.0 / 469.0	3.22	312788.10	570.087391	448.5	false
PFDA_2	513.0 / 219.0	3.22	11586.62	513.815927	374.7	false
PFUnA_1	563.0 / 519.0	3.53	305151.35	563.935685	396.2	false
PFUnA_2	563.0 / 269.0	3.53	15336.35	581.104836	291.9	false
PFDoA_1	613.0 / 569.0	3.82	256393.76	555.617224	531.5	false
PFDoA_2	613.0 / 319.0	3.82	40381.07	544.527339	564.3	false
PFTrDA_1	663.0 / 619.0	4.07	204115.81	534.530683	607.4	false
PFTrDA_2	663.0 / 169.0	4.07	13894.89	536.931422	481.6	false
PFTeDA_1	713.0 / 669.0	4.29	172511.32	550.872725	893.3	false
PFTeDA_2	713.0 / 169.0	4.29	9080.08	543.665961	737.4	false
NMeFOSAA_1	570.0 / 419.0	3.36	18144.14	495.893406	241.5	false
NMeFOSAA_2	570.0 / 512.0	3.36	12027.59	531.463404	62.9	false
NEtFOSAA_1	584.0 / 419.0	3.53	20912.95	607.561759	180.1	false
NEtFOSAA_2	584.0 / 483.0	3.54	1096.17	479.133448	13.0	true
13C2-PFHxA	315.0 / 270.0	1.76	52058.98	92.492481	903.4	false
13C2-PFDA	515.0 / 470.0	3.21	65645.80	96.317278	951.4	false
d5-EtFOSAA	589.0 / 419.0	3.52	21087.48	430.698550	258.0	false

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Summary Ion Ratio Report

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Sample Name	JV66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:26:04	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.311	0.341	ü
PFHxA_1	313.0 / 269.0	1.77	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.027	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.274	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.074	0.074	ü
PFNA_1	463.0 / 419.0	2.88	PFNA			
PFNA_2	463.0 / 219.0	2.88	PFNA	0.303	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.219	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.047	0.048	ü
PFDoA_1	613.0 / 569.0	3.83	PFDoA			
PFDoA_2	613.0 / 319.0	3.83	PFDoA	0.161	0.161	ü
PFTrDA_1	663.0 / 619.0	4.08	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.072	0.069	ü
PFTeDA_1	713.0 / 669.0	4.30	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.537	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.073	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.22		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.53		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX72 CCV	**Injection Vial**	31
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T20:51:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.307	0.341	ü
PFHxA_1	313.0 / 269.0	1.77	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.13	PFHpA			
PFHpA_2	363.0 / 169.0	2.13	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.286	0.295	ü
PFOA_1	413.0 / 369.0	2.50	PFOA			
PFOA_2	413.0 / 169.0	2.50	PFOA	0.076	0.074	ü
PFNA_1	463.0 / 419.0	2.88	PFNA			
PFNA_2	463.0 / 219.0	2.88	PFNA	0.278	0.295	ü
PFOS_1	499.0 / 80.0	2.87	PFOS			
PFOS_2	499.0 / 99.0	2.87	PFOS	0.188	0.205	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.22	PFDA	0.042	0.041	ü
PFUnA_1	563.0 / 519.0	3.54	PFUnA			
PFUnA_2	563.0 / 269.0	3.53	PFUnA	0.042	0.048	ü
PFDoA_1	613.0 / 569.0	3.82	PFDoA			
PFDoA_2	613.0 / 319.0	3.82	PFDoA	0.152	0.161	ü
PFTrDA_1	663.0 / 619.0	4.07	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.07	PFTrDA	0.066	0.069	ü
PFTeDA_1	713.0 / 669.0	4.29	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.28	PFTeDA	0.057	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.37	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.37	NMeFOSAA	0.479	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.53	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSAA	0.077	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX73 CCV	**Injection Vial**	41
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:29:51	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.312	0.341	ü
PFHxA_1	313.0 / 269.0	1.77	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.13	PFHpA			
PFHpA_2	363.0 / 169.0	2.13	PFHpA	0.023	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.289	0.295	ü
PFOA_1	413.0 / 369.0	2.50	PFOA			
PFOA_2	413.0 / 169.0	2.50	PFOA	0.076	0.074	ü
PFNA_1	463.0 / 419.0	2.87	PFNA			
PFNA_2	463.0 / 219.0	2.87	PFNA	0.300	0.295	ü
PFOS_1	499.0 / 80.0	2.87	PFOS			
PFOS_2	499.0 / 99.0	2.87	PFOS	0.193	0.205	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.22	PFDA	0.040	0.041	ü
PFUnA_1	563.0 / 519.0	3.53	PFUnA			
PFUnA_2	563.0 / 269.0	3.53	PFUnA	0.045	0.048	ü
PFDoA_1	613.0 / 569.0	3.82	PFDoA			
PFDoA_2	613.0 / 319.0	3.82	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.07	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.07	PFTrDA	0.066	0.069	ü
PFTeDA_1	713.0 / 669.0	4.28	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.28	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.37	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.36	NMeFOSAA	0.609	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.52	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.52	NEtFOSAA	0.052	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX71 CCV	**Injection Vial**	51
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-28T00:08:12	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.313	0.341	ü
PFHxA_1	313.0 / 269.0	1.77	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.069	0.072	ü
PFHpA_1	363.0 / 319.0	2.13	PFHpA			
PFHpA_2	363.0 / 169.0	2.13	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.14	PFHxS			
PFHxS_2	399.0 / 99.0	2.14	PFHxS	0.283	0.295	ü
PFOA_1	413.0 / 369.0	2.50	PFOA			
PFOA_2	413.0 / 169.0	2.50	PFOA	0.072	0.074	ü
PFNA_1	463.0 / 419.0	2.87	PFNA			
PFNA_2	463.0 / 219.0	2.87	PFNA	0.271	0.295	ü
PFOS_1	499.0 / 80.0	2.87	PFOS			
PFOS_2	499.0 / 99.0	2.87	PFOS	0.197	0.205	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.22	PFDA	0.037	0.041	ü
PFUnA_1	563.0 / 519.0	3.53	PFUnA			
PFUnA_2	563.0 / 269.0	3.53	PFUnA	0.050	0.048	ü
PFDoA_1	613.0 / 569.0	3.82	PFDoA			
PFDoA_2	613.0 / 319.0	3.82	PFDoA	0.158	0.161	ü
PFTrDA_1	663.0 / 619.0	4.07	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.07	PFTrDA	0.068	0.069	ü
PFTeDA_1	713.0 / 669.0	4.29	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.29	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.36	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.36	NMeFOSAA	0.663	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.53	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.052	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Internal Standard Report

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Sample Name	JV66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:26:04	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	198955.94	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	198955.94	287.00
PFHxA_1	313.0 / 269.0	1.77	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFHpA_1	363.0 / 319.0	2.14	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFHpA_2	363.0 / 169.0	2.14	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	198955.94	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	198955.94	287.00
PFOA_1	413.0 / 369.0	2.51	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFOA_2	413.0 / 169.0	2.51	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFNA_1	463.0 / 419.0	2.88	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFNA_2	463.0 / 219.0	2.88	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFOS_1	499.0 / 80.0	2.88	13C4-PFOS	503.0 / 80.0	198955.94	287.00
PFOS_2	499.0 / 99.0	2.88	13C4-PFOS	503.0 / 80.0	198955.94	287.00
PFDA_1	513.0 / 469.0	3.23	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFDA_2	513.0 / 219.0	3.23	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFUnA_1	563.0 / 519.0	3.55	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFUnA_2	563.0 / 269.0	3.55	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFDoA_1	613.0 / 569.0	3.83	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFDoA_2	613.0 / 319.0	3.83	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFTrDA_1	663.0 / 619.0	4.08	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFTrDA_2	663.0 / 169.0	4.08	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFTeDA_1	713.0 / 669.0	4.30	13C2-PFOA	415.0 / 370.0	64713.81	100.00
PFTeDA_2	713.0 / 169.0	4.30	13C2-PFOA	415.0 / 370.0	64713.81	100.00
NMeFOSAA_1	570.0 / 419.0	3.38	d3-MeFOSAA	573.0 / 419.0	18854.41	400.00
NMeFOSAA_2	570.0 / 512.0	3.38	d3-MeFOSAA	573.0 / 419.0	18854.41	400.00
NEtFOSAA_1	584.0 / 419.0	3.54	d3-MeFOSAA	573.0 / 419.0	18854.41	400.00
NEtFOSAA_2	584.0 / 483.0	3.54	d3-MeFOSAA	573.0 / 419.0	18854.41	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	64713.81	100.00
13C2-PFDA	515.0 / 470.0	3.22	13C2-PFOA	415.0 / 370.0	64713.81	100.00
d5-EtFOSAA	589.0 / 419.0	3.53	d3-MeFOSAA	573.0 / 419.0	18854.41	400.00

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Summary Internal Standard Report

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Sample Name	JX72 CCV	**Injection Vial**	31
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T20:51:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	201048.50	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	201048.50	287.00
PFHxA_1	313.0 / 269.0	1.77	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFHpA_1	363.0 / 319.0	2.13	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFHpA_2	363.0 / 169.0	2.13	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	201048.50	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	201048.50	287.00
PFOA_1	413.0 / 369.0	2.50	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFOA_2	413.0 / 169.0	2.50	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFNA_1	463.0 / 419.0	2.88	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFNA_2	463.0 / 219.0	2.88	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFOS_1	499.0 / 80.0	2.87	13C4-PFOS	503.0 / 80.0	201048.50	287.00
PFOS_2	499.0 / 99.0	2.87	13C4-PFOS	503.0 / 80.0	201048.50	287.00
PFDA_1	513.0 / 469.0	3.22	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFDA_2	513.0 / 219.0	3.22	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFUnA_1	563.0 / 519.0	3.54	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFUnA_2	563.0 / 269.0	3.53	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFDoA_1	613.0 / 569.0	3.82	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFDoA_2	613.0 / 319.0	3.82	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFTrDA_1	663.0 / 619.0	4.07	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFTrDA_2	663.0 / 169.0	4.07	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFTeDA_1	713.0 / 669.0	4.29	13C2-PFOA	415.0 / 370.0	65665.05	100.00
PFTeDA_2	713.0 / 169.0	4.28	13C2-PFOA	415.0 / 370.0	65665.05	100.00
NMeFOSAA_1	570.0 / 419.0	3.37	d3-MeFOSAA	573.0 / 419.0	18208.55	400.00
NMeFOSAA_2	570.0 / 512.0	3.37	d3-MeFOSAA	573.0 / 419.0	18208.55	400.00
NEtFOSAA_1	584.0 / 419.0	3.53	d3-MeFOSAA	573.0 / 419.0	18208.55	400.00
NEtFOSAA_2	584.0 / 483.0	3.53	d3-MeFOSAA	573.0 / 419.0	18208.55	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	65665.05	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	65665.05	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	18208.55	400.00

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Summary Internal Standard Report

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Sample Name	JX73 CCV	**Injection Vial**	41
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:29:51	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	211286.43	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	211286.43	287.00
PFHxA_1	313.0 / 269.0	1.77	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFHpA_1	363.0 / 319.0	2.13	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFHpA_2	363.0 / 169.0	2.13	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	211286.43	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	211286.43	287.00
PFOA_1	413.0 / 369.0	2.50	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFOA_2	413.0 / 169.0	2.50	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFNA_1	463.0 / 419.0	2.87	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFNA_2	463.0 / 219.0	2.87	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFOS_1	499.0 / 80.0	2.87	13C4-PFOS	503.0 / 80.0	211286.43	287.00
PFOS_2	499.0 / 99.0	2.87	13C4-PFOS	503.0 / 80.0	211286.43	287.00
PFDA_1	513.0 / 469.0	3.22	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFDA_2	513.0 / 219.0	3.22	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFUnA_1	563.0 / 519.0	3.53	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFUnA_2	563.0 / 269.0	3.53	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFDoA_1	613.0 / 569.0	3.82	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFDoA_2	613.0 / 319.0	3.82	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFTrDA_1	663.0 / 619.0	4.07	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFTrDA_2	663.0 / 169.0	4.07	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFTeDA_1	713.0 / 669.0	4.28	13C2-PFOA	415.0 / 370.0	67870.42	100.00
PFTeDA_2	713.0 / 169.0	4.28	13C2-PFOA	415.0 / 370.0	67870.42	100.00
NMeFOSAA_1	570.0 / 419.0	3.37	d3-MeFOSAA	573.0 / 419.0	19181.84	400.00
NMeFOSAA_2	570.0 / 512.0	3.36	d3-MeFOSAA	573.0 / 419.0	19181.84	400.00
NEtFOSAA_1	584.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	19181.84	400.00
NEtFOSAA_2	584.0 / 483.0	3.52	d3-MeFOSAA	573.0 / 419.0	19181.84	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	67870.42	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	67870.42	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	19181.84	400.00

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Summary Internal Standard Report

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Sample Name	JX71 CCV	**Injection Vial**	51
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-28T00:08:12	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	207937.15	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	207937.15	287.00
PFHxA_1	313.0 / 269.0	1.77	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFHpA_1	363.0 / 319.0	2.13	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFHpA_2	363.0 / 169.0	2.13	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFHxS_1	399.0 / 80.0	2.14	13C4-PFOS	503.0 / 80.0	207937.15	287.00
PFHxS_2	399.0 / 99.0	2.14	13C4-PFOS	503.0 / 80.0	207937.15	287.00
PFOA_1	413.0 / 369.0	2.50	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFOA_2	413.0 / 169.0	2.50	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFNA_1	463.0 / 419.0	2.87	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFNA_2	463.0 / 219.0	2.87	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFOS_1	499.0 / 80.0	2.87	13C4-PFOS	503.0 / 80.0	207937.15	287.00
PFOS_2	499.0 / 99.0	2.87	13C4-PFOS	503.0 / 80.0	207937.15	287.00
PFDA_1	513.0 / 469.0	3.22	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFDA_2	513.0 / 219.0	3.22	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFUnA_1	563.0 / 519.0	3.53	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFUnA_2	563.0 / 269.0	3.53	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFDoA_1	613.0 / 569.0	3.82	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFDoA_2	613.0 / 319.0	3.82	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFTrDA_1	663.0 / 619.0	4.07	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFTrDA_2	663.0 / 169.0	4.07	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFTeDA_1	713.0 / 669.0	4.29	13C2-PFOA	415.0 / 370.0	72909.71	100.00
PFTeDA_2	713.0 / 169.0	4.29	13C2-PFOA	415.0 / 370.0	72909.71	100.00
NMeFOSAA_1	570.0 / 419.0	3.36	d3-MeFOSAA	573.0 / 419.0	19579.05	400.00
NMeFOSAA_2	570.0 / 512.0	3.36	d3-MeFOSAA	573.0 / 419.0	19579.05	400.00
NEtFOSAA_1	584.0 / 419.0	3.53	d3-MeFOSAA	573.0 / 419.0	19579.05	400.00
NEtFOSAA_2	584.0 / 483.0	3.54	d3-MeFOSAA	573.0 / 419.0	19579.05	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	72909.71	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	72909.71	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	19579.05	400.00

Raw Analytical Data

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It can be done

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Summary Quant Report

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Sample Name	CR040PB-FS(0)	**Injection Vial**	42
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:47:46	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	867.63	3.098706	18.6	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	2.87	28664.45	51.765277	62.2	true
PFOS_2	499.0 / 99.0	2.87	6120.90	47.929950	44.4	true
PFDA_1	513.0 / 469.0	3.22	1063.76	< 0	18.4	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	39212.89	101.709109	895.7	false
13C2-PFDA	515.0 / 470.0	3.21	48880.85	104.702311	2167.8	false
d5-EtFOSAA	589.0 / 419.0	3.52	13714.06	369.144251	164.6	false

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Summary Quant Report

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Sample Name	CR041LCS-FS(0)	**Injection Vial**	43
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:56:42	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	1165041.91	3631.069623	3465.1	false
PFBS_2	298.9 / 99.0	1.49	366408.10	3670.743170	962.9	false
PFHxA_1	313.0 / 269.0	1.77	1447920.90	4593.297691	201.4	false
PFHxA_2	313.0 / 119.0	1.77	102254.94	4568.996135	201.3	false
PFHpA_1	363.0 / 319.0	2.13	1368142.78	4554.803266	409.6	false
PFHpA_2	363.0 / 169.0	2.13	29387.99	4102.360500	340.4	false
PFHxS_1	399.0 / 80.0	2.15	1349246.32	3800.154189	1524.7	false
PFHxS_2	399.0 / 99.0	2.15	399441.15	3892.719915	1111.8	false
PFOA_1	413.0 / 369.0	2.50	1754241.87	4547.248399	420.1	false
PFOA_2	413.0 / 169.0	2.50	129814.50	4505.881598	352.4	false
PFNA_1	463.0 / 419.0	2.88	1477779.64	4370.825800	658.4	false
PFNA_2	463.0 / 219.0	2.87	439349.78	4436.895022	561.9	false
PFOS_1	499.0 / 80.0	2.87	1982412.78	4037.781714	551.7	false
PFOS_2	499.0 / 99.0	2.87	410073.82	4328.669478	592.8	false
PFDA_1	513.0 / 469.0	3.22	1700790.16	4674.657525	985.7	false
PFDA_2	513.0 / 219.0	3.22	74121.95	4988.068742	682.4	false
PFUnA_1	563.0 / 519.0	3.53	1575834.95	4333.083349	656.9	false
PFUnA_2	563.0 / 269.0	3.53	78139.18	4708.021502	760.8	false
PFDoA_1	613.0 / 569.0	3.82	1367116.13	4394.019913	802.1	false
PFDoA_2	613.0 / 319.0	3.82	226823.38	4539.392141	638.5	false
PFTrDA_1	663.0 / 619.0	4.07	1116377.85	4334.841471	826.0	false
PFTrDA_2	663.0 / 169.0	4.07	80246.59	4616.421857	925.7	false
PFTeDA_1	713.0 / 669.0	4.29	1415143.90	6703.322480	1874.2	false
PFTeDA_2	713.0 / 169.0	4.28	76925.82	6819.940243	1913.8	false
NMeFOSAA_1	570.0 / 419.0	3.37	117110.22	4016.350105	620.4	false
NMeFOSAA_2	570.0 / 512.0	3.37	67463.32	3668.286297	530.7	false
NEtFOSAA_1	584.0 / 419.0	3.52	112350.14	4127.810923	399.8	false
NEtFOSAA_2	584.0 / 483.0	3.52	7256.94	3700.616811	127.7	false
13C2-PFHxA	315.0 / 270.0	1.76	40251.37	104.310761	909.6	false
13C2-PFDA	515.0 / 470.0	3.21	49784.74	106.544541	953.9	false
d5-EtFOSAA	589.0 / 419.0	3.52	12394.91	315.203291	175.4	false

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Summary Quant Report

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Sample Name	J6738-FS(0)	**Injection Vial**	44
Sample ID	WGNA-061118-FRB-3073	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:05:37	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	3671.54	11.731688	55.0	true
PFBS_2	298.9 / 99.0	1.49	2112.02	10.733942	36.1	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	40743.15	108.777172	793.5	false
13C2-PFDA	515.0 / 470.0	3.21	49815.90	109.834194	1502.5	false
d5-EtFOSAA	589.0 / 419.0	3.52	12844.65	349.920727	129.4	false

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Summary Quant Report

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Sample Name	J6740-FS(0)	**Injection Vial**	45
Sample ID	WGNA-061118-FRB-0437	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:14:33	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	1559.11	4.988912	27.7	true
PFBS_2	298.9 / 99.0	1.49	1840.87	6.815769	29.7	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	40608.41	101.069656	887.9	false
13C2-PFDA	515.0 / 470.0	3.20	50505.94	103.808708	1922.0	false
d5-EtFOSAA	589.0 / 419.0	3.52	13969.32	358.267702	142.6	false

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Summary Quant Report

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Sample Name	J6742-FS(0)	**Injection Vial**	46
Sample ID	WGNA-061218-FRB-3283	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:23:30	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	1109.85	3.826630	27.7	true
PFBS_2	298.9 / 99.0	1.49	1099.63	0.410526	23.0	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	42598.05	108.122680	933.8	false
13C2-PFDA	515.0 / 470.0	3.21	50623.86	106.113042	977.3	false
d5-EtFOSAA	589.0 / 419.0	3.52	13485.04	363.837988	185.5	false

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Summary Quant Report

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Sample Name	J6744-FS(0)	**Injection Vial**	47
Sample ID	WGNA-061218-FRB-3382	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:32:26	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	1183.44	4.031322	20.9	true
PFBS_2	298.9 / 99.0	1.50	1331.36	2.552880	22.0	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	47248.16	114.730965	846.4	false
13C2-PFDA	515.0 / 470.0	3.21	52616.25	105.512057	41409.1	false
d5-EtFOSAA	589.0 / 419.0	3.51	15924.69	444.525118	181.4	false

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Summary Quant Report

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Sample Name	J6746-FS(0)	**Injection Vial**	48
Sample ID	NAWC-061218-FRB-276	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:41:23	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	1606.61	5.063066	33.3	true
PFBS_2	298.9 / 99.0	1.50	1087.83	< 0	19.9	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	47201.72	114.784059	635.4	false
13C2-PFDA	515.0 / 470.0	3.21	52310.30	105.050345	1716.2	false
d5-EtFOSAA	589.0 / 419.0	3.52	13681.04	350.747754	194.1	false

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Summary Quant Report

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Sample Name	J6759-FS(0)	**Injection Vial**	49
Sample ID	NAWC-061418-FRB-111	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:50:19	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	1631.80	5.361712	35.1	true
PFBS_2	298.9 / 99.0	1.50	1777.29	6.826427	31.6	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	41418.79	100.548776	896.7	false
13C2-PFDA	515.0 / 470.0	3.21	49247.70	98.730608	948.5	false
d5-EtFOSAA	589.0 / 419.0	3.52	15684.01	462.009192	222.1	false

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Summary Quant Report

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Sample Name	J6761-FS(0)	**Injection Vial**	50
Sample ID	NAWC-061418-FRB-056	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:59:16	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	1841.92	5.996706	33.8	true
PFBS_2	298.9 / 99.0	1.49	1531.32	4.563155	27.6	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	true
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	43594.61	104.500814	975.1	false
13C2-PFDA	515.0 / 470.0	3.21	50019.58	99.017832	1023.4	false
d5-EtFOSAA	589.0 / 419.0	3.51	15239.22	450.977829	195.1	false

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Summary Ion Ratio Report

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Sample Name	CR040PB-FS(0)	**Injection Vial**	42
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:47:46	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	2.87	PFOS			
PFOS_2	499.0 / 99.0	2.87	PFOS	0.214	0.205	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	CR041LCS-FS(0)	**Injection Vial**	43
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:56:42	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.315	0.341	ü
PFHxA_1	313.0 / 269.0	1.77	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.13	PFHpA			
PFHpA_2	363.0 / 169.0	2.13	PFHpA	0.022	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.296	0.295	ü
PFOA_1	413.0 / 369.0	2.50	PFOA			
PFOA_2	413.0 / 169.0	2.50	PFOA	0.074	0.074	ü
PFNA_1	463.0 / 419.0	2.88	PFNA			
PFNA_2	463.0 / 219.0	2.87	PFNA	0.297	0.295	ü
PFOS_1	499.0 / 80.0	2.87	PFOS			
PFOS_2	499.0 / 99.0	2.87	PFOS	0.207	0.205	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.22	PFDA	0.044	0.041	ü
PFUnA_1	563.0 / 519.0	3.53	PFUnA			
PFUnA_2	563.0 / 269.0	3.53	PFUnA	0.050	0.048	ü
PFDoA_1	613.0 / 569.0	3.82	PFDoA			
PFDoA_2	613.0 / 319.0	3.82	PFDoA	0.166	0.161	ü
PFTrDA_1	663.0 / 619.0	4.07	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.07	PFTrDA	0.072	0.069	ü
PFTeDA_1	713.0 / 669.0	4.29	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.28	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.37	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.37	NMeFOSAA	0.576	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.52	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.52	NEtFOSAA	0.065	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	J6738-FS(0)	**Injection Vial**	44
Sample ID	WGNA-061118-FRB-3073	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:05:37	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.575	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.205	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	J6740-FS(0)	**Injection Vial**	45
Sample ID	WGNA-061118-FRB-0437	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:14:33	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	1.181	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.205	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.20		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	J6742-FS(0)	**Injection Vial**	46
Sample ID	WGNA-061218-FRB-3283	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:23:30	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.991	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.205	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	J6744-FS(0)	**Injection Vial**	47
Sample ID	WGNA-061218-FRB-3382	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:32:26	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	1.125	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.205	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.51		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	J6746-FS(0)	**Injection Vial**	48
Sample ID	NAWC-061218-FRB-276	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:41:23	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.677	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.205	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	J6759-FS(0)	**Injection Vial**	49
Sample ID	NAWC-061418-FRB-111	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:50:19	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	1.089	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.205	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.52		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	J6761-FS(0)	**Injection Vial**	50
Sample ID	NAWC-061418-FRB-056	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:59:16	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.831	0.341	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.072	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.026	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.295	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.074	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.295	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.205	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.048	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.069	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.053	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.565	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.76				
13C2-PFDA	515.0 / 470.0	3.21		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.51		N/A	N/A	ü

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Summary Internal Standard Report

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Sample Name	CR040PB-FS(0)	**Injection Vial**	42
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:47:46	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	161775.16	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	161775.16	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	161775.16	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	161775.16	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFOS_1	499.0 / 80.0	2.87	13C4-PFOS	503.0 / 80.0	161775.16	287.00
PFOS_2	499.0 / 99.0	2.87	13C4-PFOS	503.0 / 80.0	161775.16	287.00
PFDA_1	513.0 / 469.0	3.22	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	49941.91	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14856.29	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	14856.29	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14856.29	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	14856.29	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	49941.91	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	49941.91	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	14856.29	400.00

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Summary Internal Standard Report

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Sample Name	CR041LCS-FS(0)	**Injection Vial**	43
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:56:42	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	150091.01	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	150091.01	287.00
PFHxA_1	313.0 / 269.0	1.77	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFHpA_1	363.0 / 319.0	2.13	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFHpA_2	363.0 / 169.0	2.13	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	150091.01	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	150091.01	287.00
PFOA_1	413.0 / 369.0	2.50	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFOA_2	413.0 / 169.0	2.50	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFNA_1	463.0 / 419.0	2.88	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFNA_2	463.0 / 219.0	2.87	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFOS_1	499.0 / 80.0	2.87	13C4-PFOS	503.0 / 80.0	150091.01	287.00
PFOS_2	499.0 / 99.0	2.87	13C4-PFOS	503.0 / 80.0	150091.01	287.00
PFDA_1	513.0 / 469.0	3.22	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFDA_2	513.0 / 219.0	3.22	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFUnA_1	563.0 / 519.0	3.53	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFUnA_2	563.0 / 269.0	3.53	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFDoA_1	613.0 / 569.0	3.82	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFDoA_2	613.0 / 319.0	3.82	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFTrDA_1	663.0 / 619.0	4.07	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFTrDA_2	663.0 / 169.0	4.07	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFTeDA_1	713.0 / 669.0	4.29	13C2-PFOA	415.0 / 370.0	49985.92	100.00
PFTeDA_2	713.0 / 169.0	4.28	13C2-PFOA	415.0 / 370.0	49985.92	100.00
NMeFOSAA_1	570.0 / 419.0	3.37	d3-MeFOSAA	573.0 / 419.0	15725.09	400.00
NMeFOSAA_2	570.0 / 512.0	3.37	d3-MeFOSAA	573.0 / 419.0	15725.09	400.00
NEtFOSAA_1	584.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	15725.09	400.00
NEtFOSAA_2	584.0 / 483.0	3.52	d3-MeFOSAA	573.0 / 419.0	15725.09	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	49985.92	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	49985.92	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	15725.09	400.00

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Summary Internal Standard Report

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Sample Name	J6738-FS(0)	**Injection Vial**	44
Sample ID	WGNA-061118-FRB-3073	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:05:37	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	154129.14	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	154129.14	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	154129.14	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	154129.14	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	154129.14	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	154129.14	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	48519.13	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14678.88	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	14678.88	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14678.88	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	14678.88	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	48519.13	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	48519.13	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	14678.88	400.00

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Summary Internal Standard Report

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Sample Name	J6740-FS(0)	**Injection Vial**	45
Sample ID	WGNA-061118-FRB-0437	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:14:33	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	165781.81	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	165781.81	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	165781.81	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	165781.81	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	165781.81	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	165781.81	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	52046.47	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	15592.22	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	15592.22	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	15592.22	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	15592.22	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	52046.47	100.00
13C2-PFDA	515.0 / 470.0	3.20	13C2-PFOA	415.0 / 370.0	52046.47	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	15592.22	400.00

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Summary Internal Standard Report

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Sample Name	J6742-FS(0)	**Injection Vial**	46
Sample ID	WGNA-061218-FRB-3283	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:23:30	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	160393.26	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	160393.26	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	160393.26	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	160393.26	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	160393.26	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	160393.26	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	51035.11	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14821.24	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	14821.24	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14821.24	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	14821.24	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	51035.11	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	51035.11	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	14821.24	400.00

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Sample Name	J6744-FS(0)	**Injection Vial**	47
Sample ID	WGNA-061218-FRB-3382	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:32:26	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	160854.25	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	160854.25	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	160854.25	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	160854.25	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	160854.25	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	160854.25	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53345.82	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14325.68	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	14325.68	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14325.68	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	14325.68	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	53345.82	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	53345.82	100.00
d5-EtFOSAA	589.0 / 419.0	3.51	d3-MeFOSAA	573.0 / 419.0	14325.68	400.00

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Sample Name	J6746-FS(0)	**Injection Vial**	48
Sample ID	NAWC-061218-FRB-276	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:41:23	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	167999.66	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	167999.66	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	167999.66	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	167999.66	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	167999.66	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	167999.66	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53268.73	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	15597.85	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	15597.85	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	15597.85	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	15597.85	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	53268.73	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	53268.73	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	15597.85	400.00

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Sample Name	J6759-FS(0)	**Injection Vial**	49
Sample ID	NAWC-061418-FRB-111	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:50:19	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	159954.30	287.00
PFBS_2	298.9 / 99.0	1.50	13C4-PFOS	503.0 / 80.0	159954.30	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	159954.30	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	159954.30	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	159954.30	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	159954.30	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	53360.11	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13575.22	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	13575.22	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13575.22	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	13575.22	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	53360.11	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	53360.11	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	13575.22	400.00

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Summary Internal Standard Report

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Sample Name	J6761-FS(0)	**Injection Vial**	50
Sample ID	NAWC-061418-FRB-056	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:59:16	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	159344.80	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	159344.80	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	159344.80	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	159344.80	287.00
PFOA_1	413.0 / 369.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFOA_2	413.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	159344.80	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	159344.80	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	54039.24	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13512.88	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	13512.88	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13512.88	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	13512.88	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	54039.24	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	54039.24	100.00
d5-EtFOSAA	589.0 / 419.0	3.51	d3-MeFOSAA	573.0 / 419.0	13512.88	400.00

Chromatograms

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Chromatogram Report

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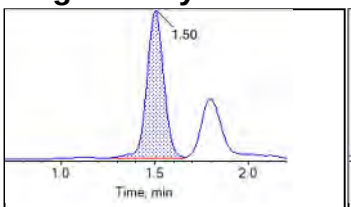
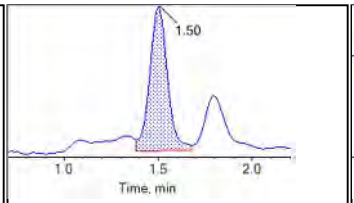
Sample Name	JX67	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:05:43	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

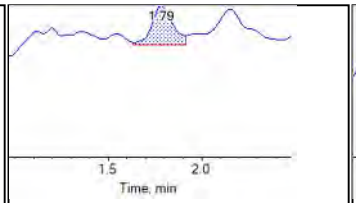
Target Analytes:



PFBS_1



PFBS_2



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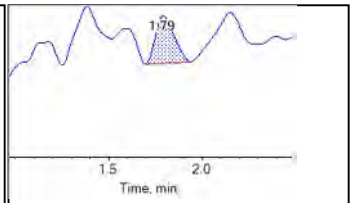

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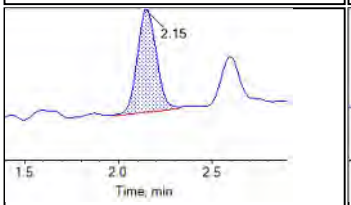

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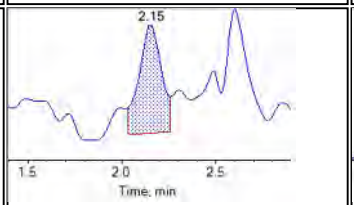

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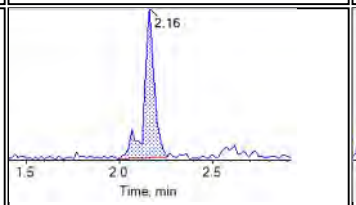

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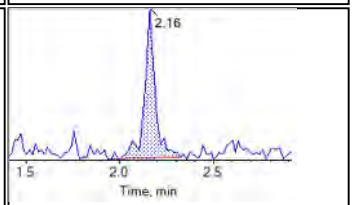

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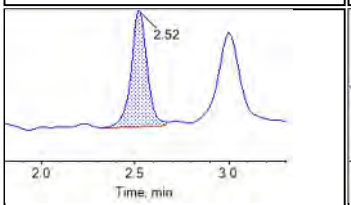

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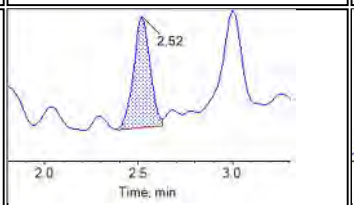

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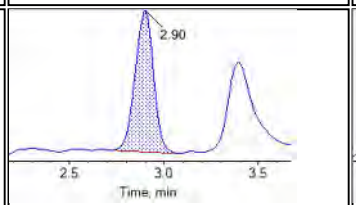

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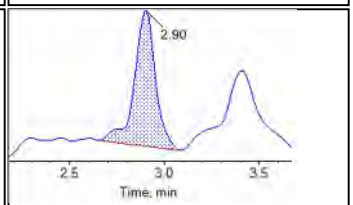

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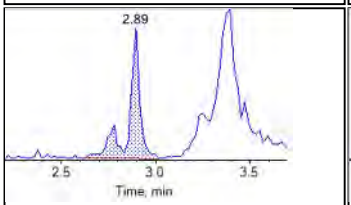

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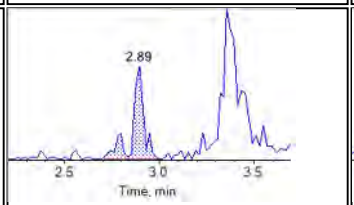

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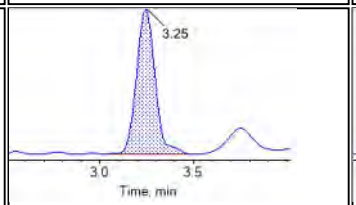

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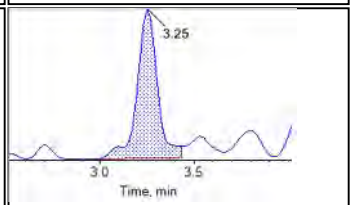

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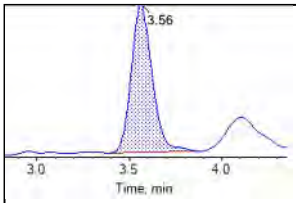

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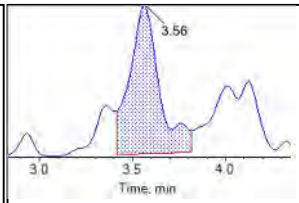

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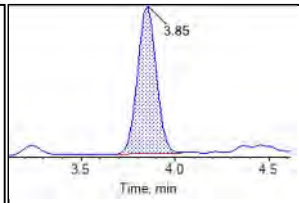

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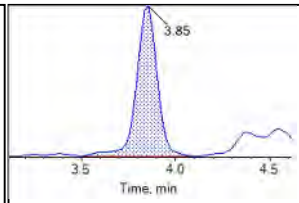

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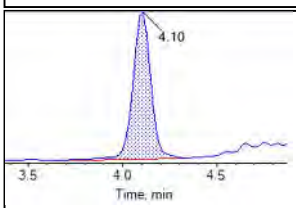

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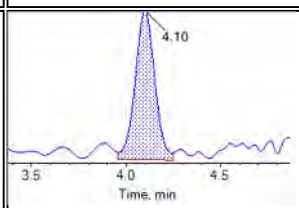

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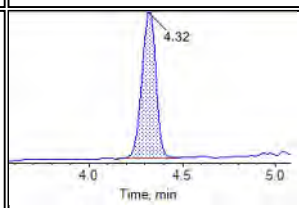

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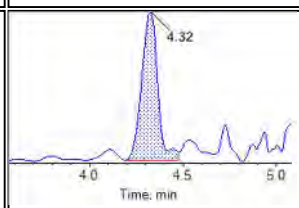

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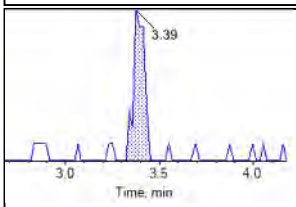

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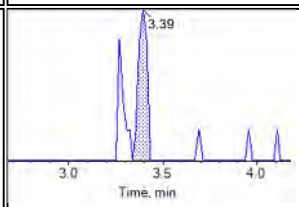

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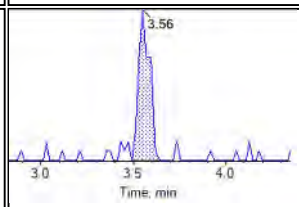

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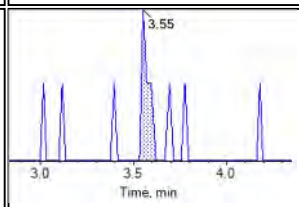

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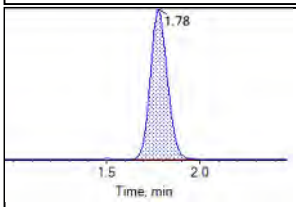

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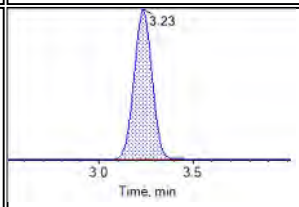

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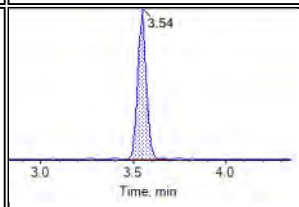

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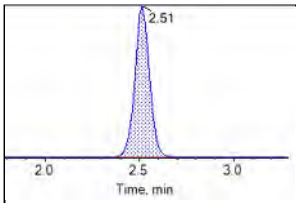

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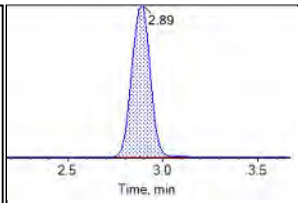

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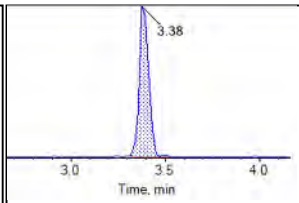

d3-MeFOSAA

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Chromatogram Report

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Sample Name	JX68	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:14:41	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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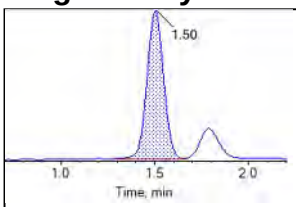

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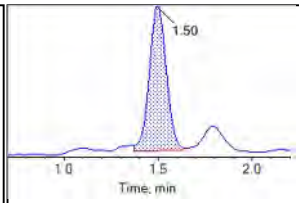

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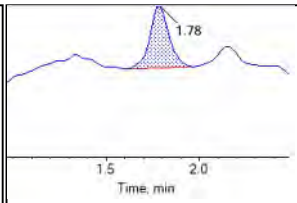

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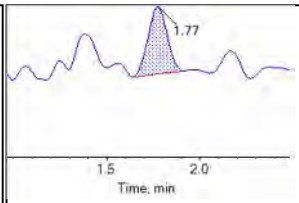

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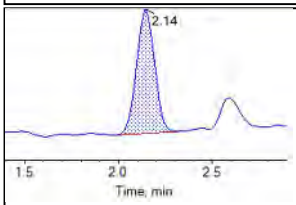

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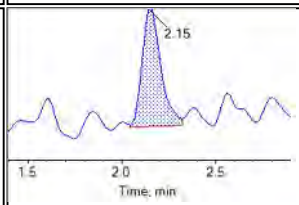

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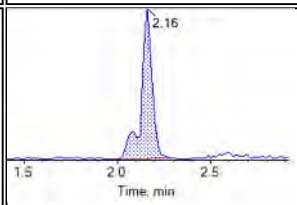

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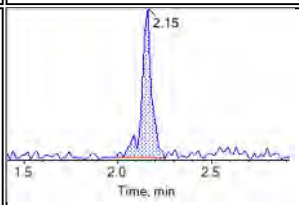

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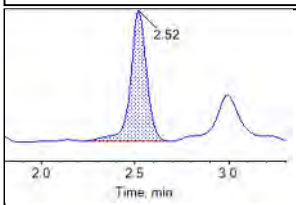

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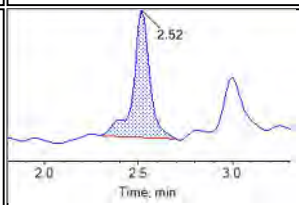

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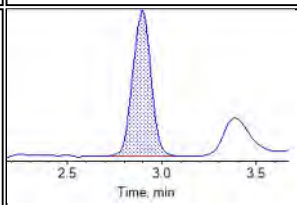

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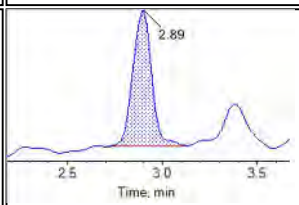

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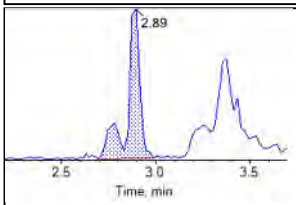

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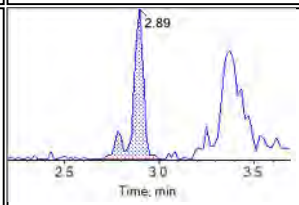

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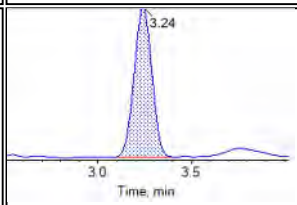

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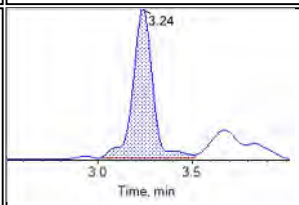

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Chromatogram Report

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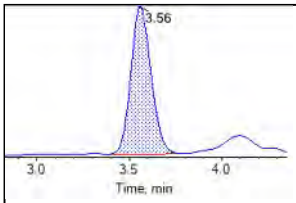

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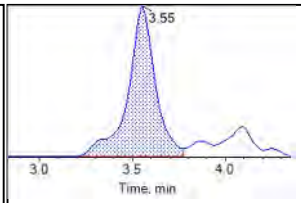

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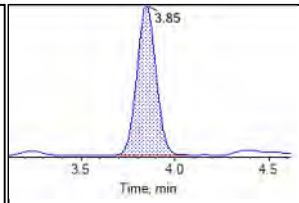

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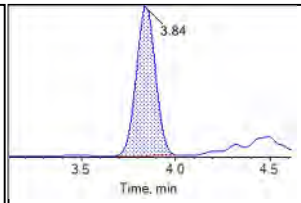

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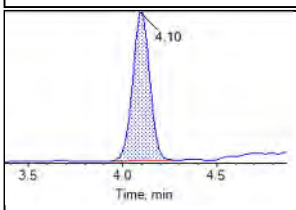

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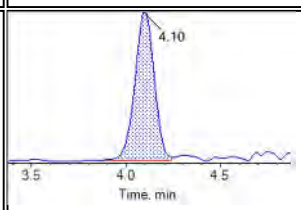

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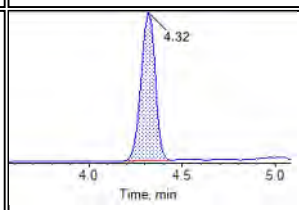

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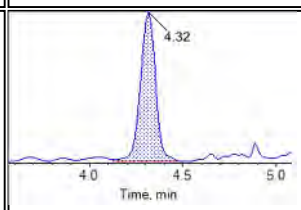

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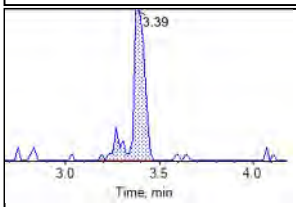

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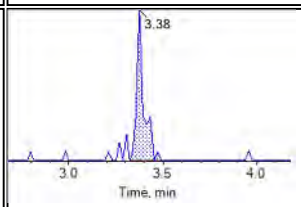

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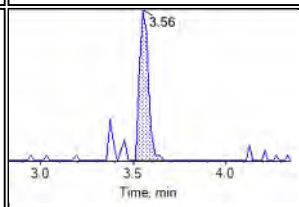

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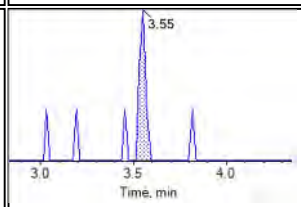

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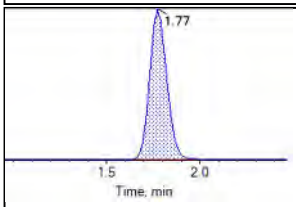
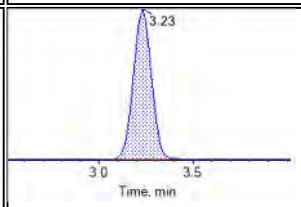


13C2-PFHxA



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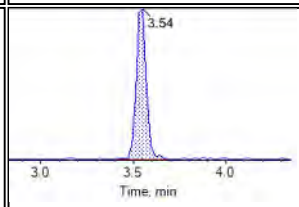

d5-EtFOSAA

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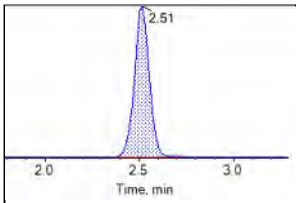

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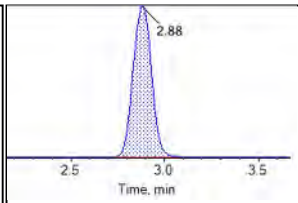

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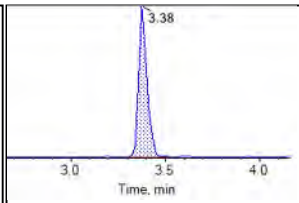

d3-MeFOSAA

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Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:32:09 PM

Sample Name	JX69	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:23:38	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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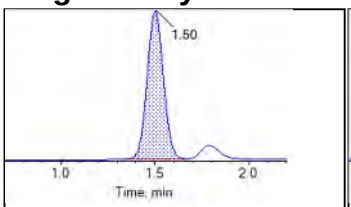

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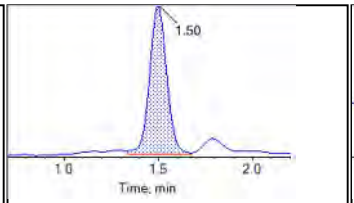

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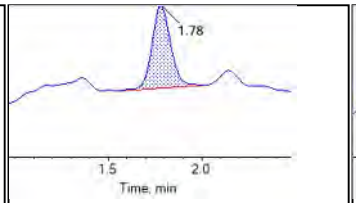

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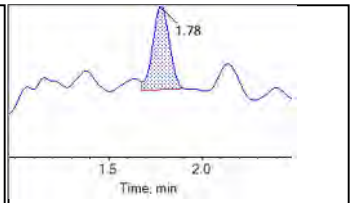

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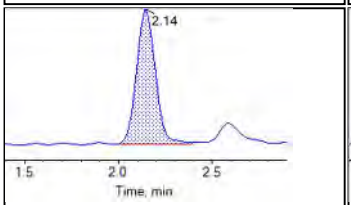

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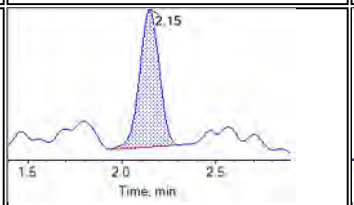

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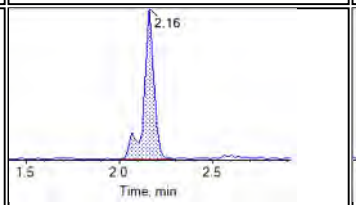

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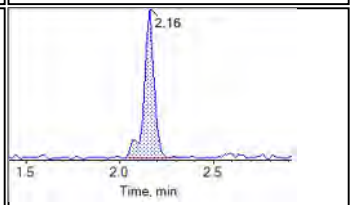

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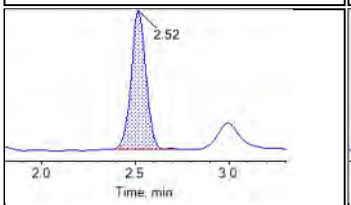

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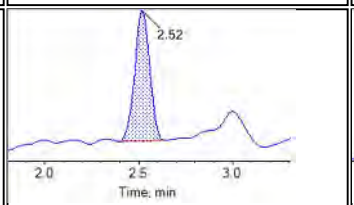

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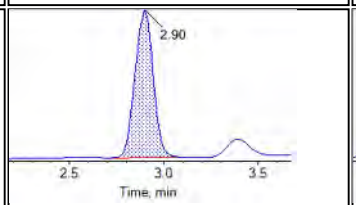

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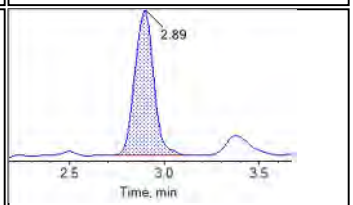

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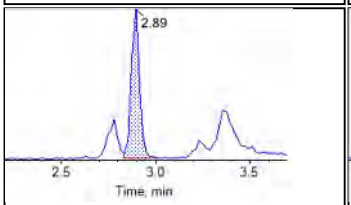

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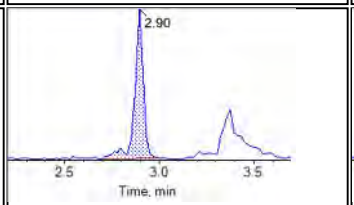

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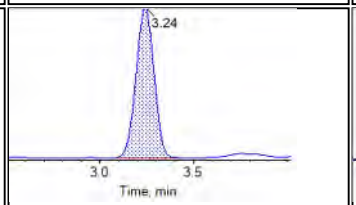

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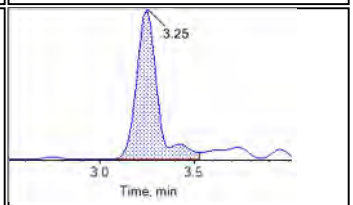

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Chromatogram Report

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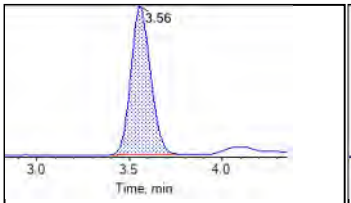

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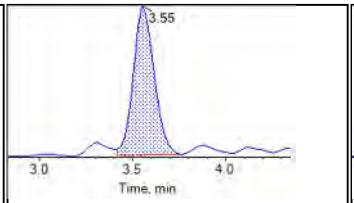

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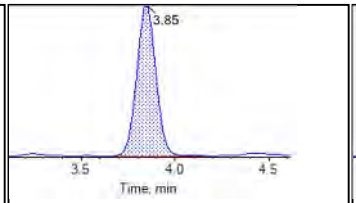

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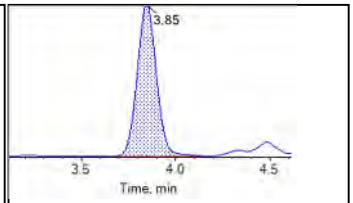

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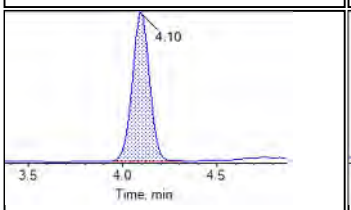

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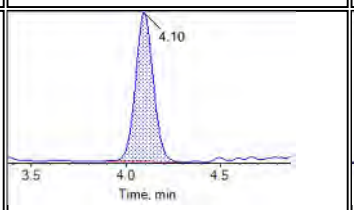

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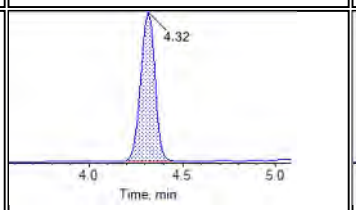

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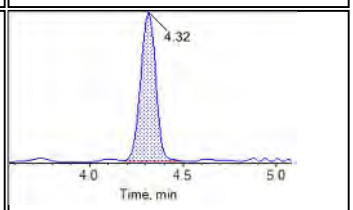

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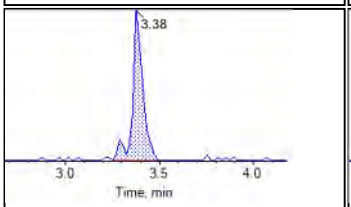

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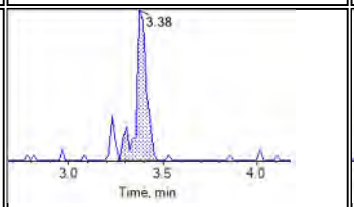

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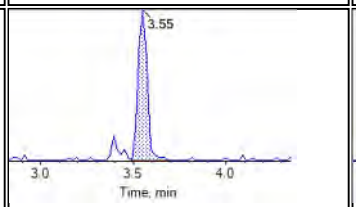

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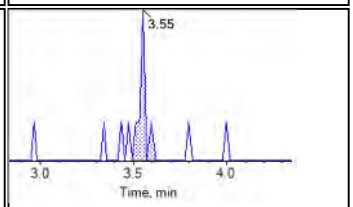

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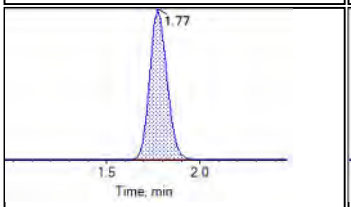

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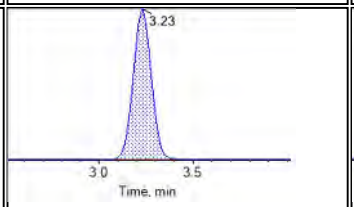

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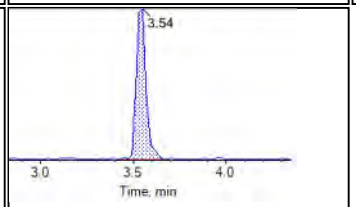
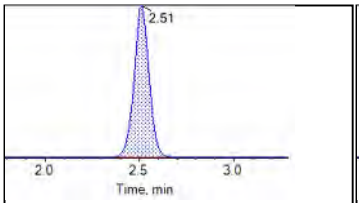


d5-EtFOSAA

Internal Standards:



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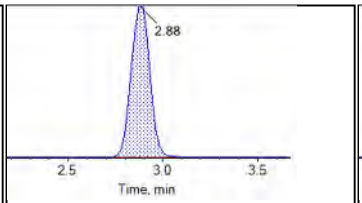

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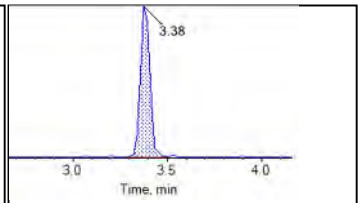

d3-MeFOSAA

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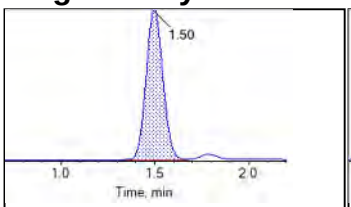
Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:32:13 PM

Sample Name	JX70	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:32:34	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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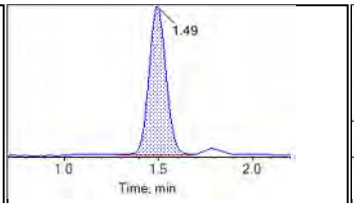

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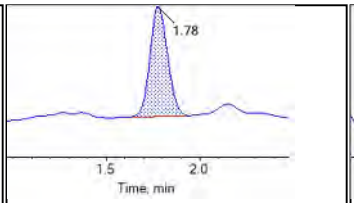

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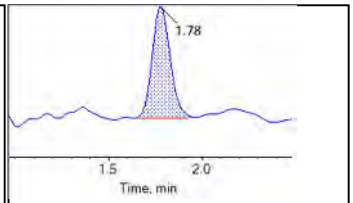

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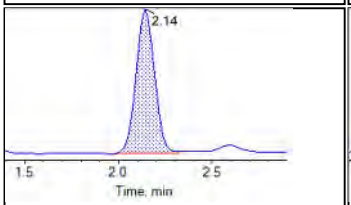

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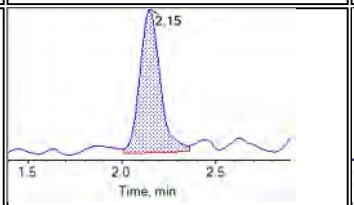

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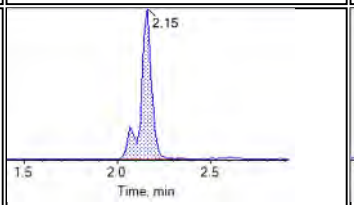

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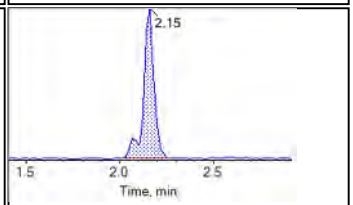

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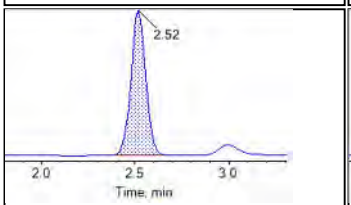

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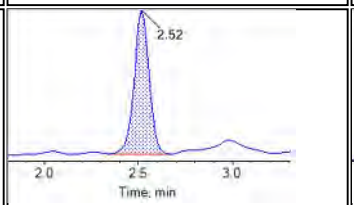

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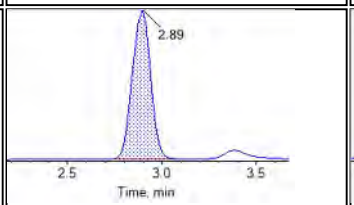

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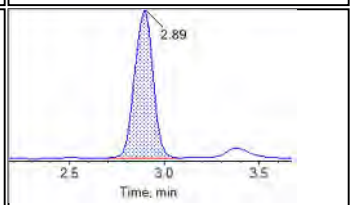

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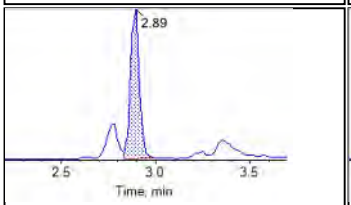

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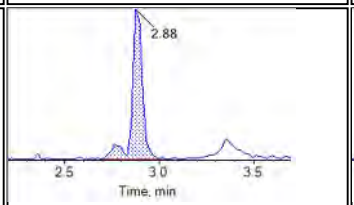

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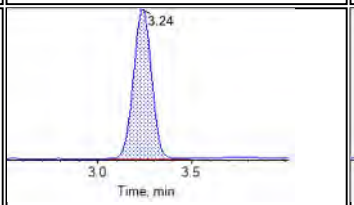

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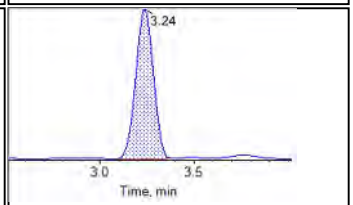

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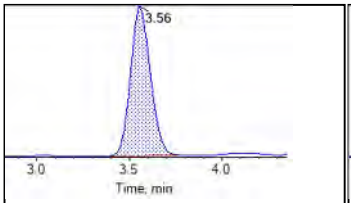

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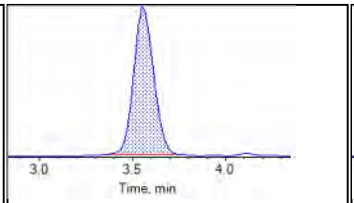

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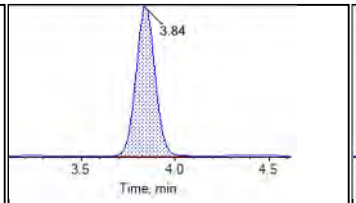

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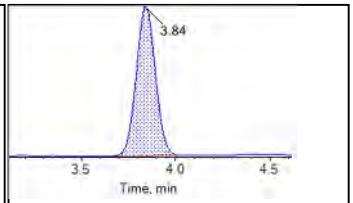

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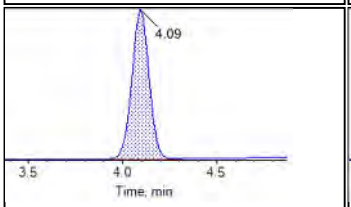

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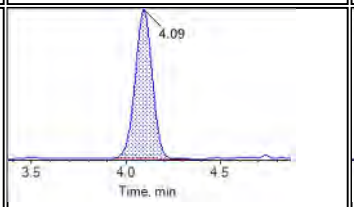

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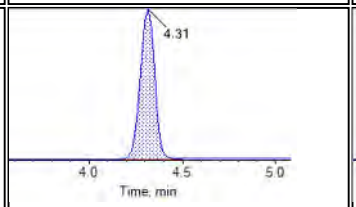

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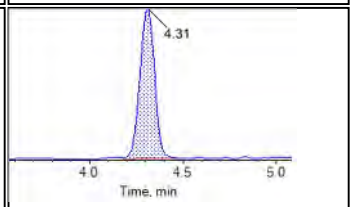

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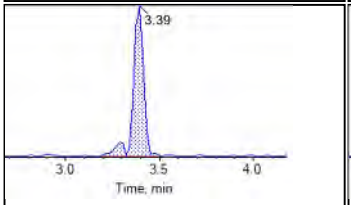

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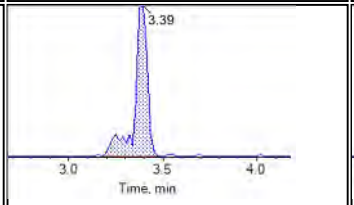

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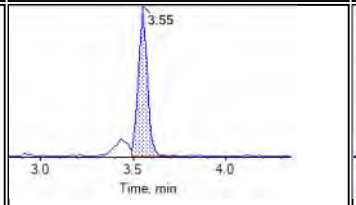

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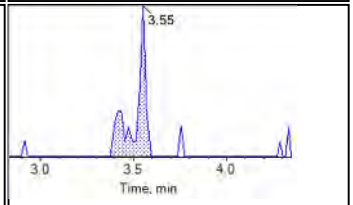

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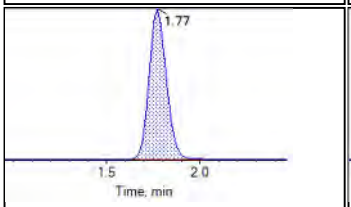

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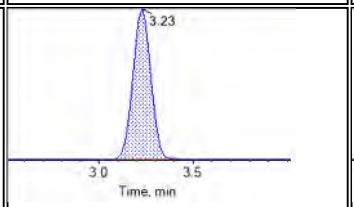

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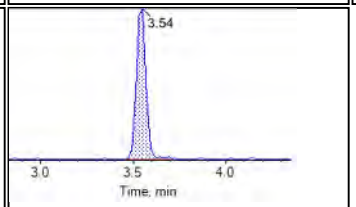

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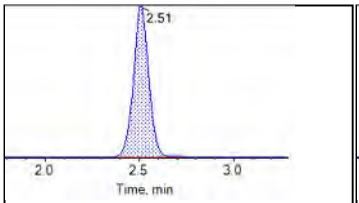

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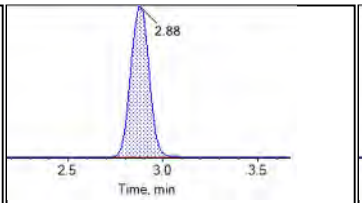

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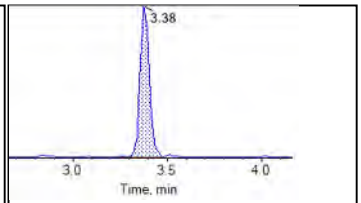

d3-MeFOSAA

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Sample Name	JX71	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:41:29	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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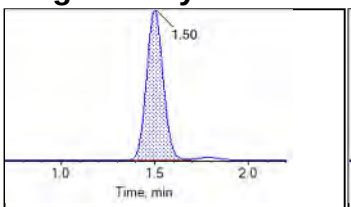

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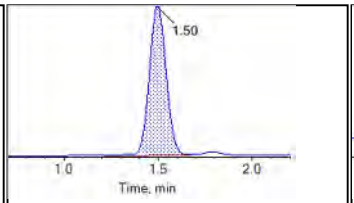

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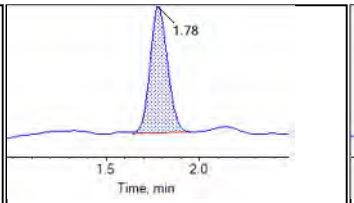

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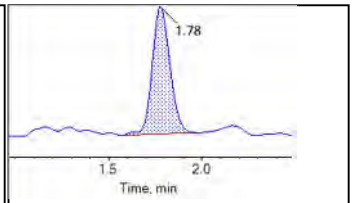

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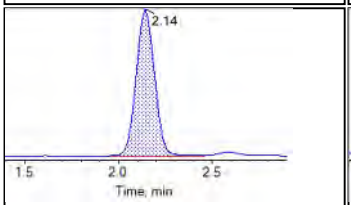

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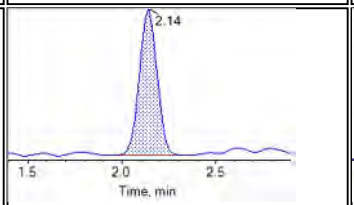

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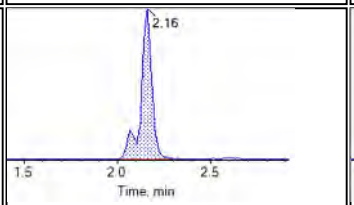

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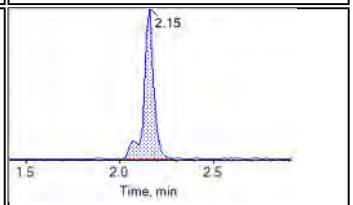

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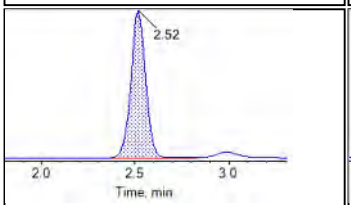

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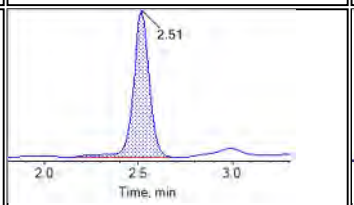

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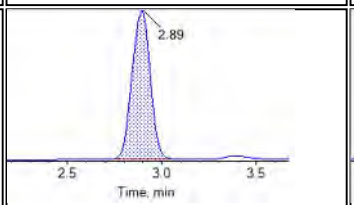

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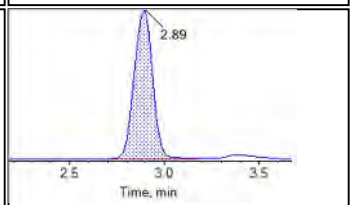

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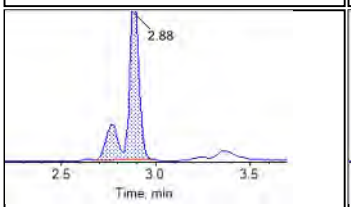

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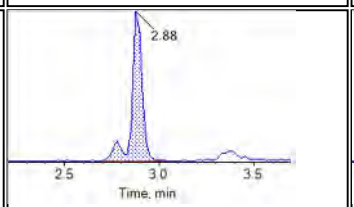

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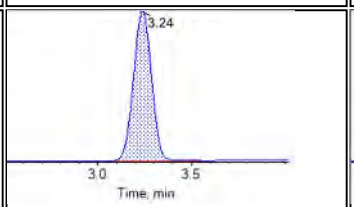

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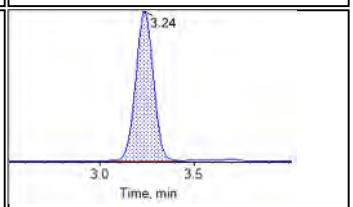

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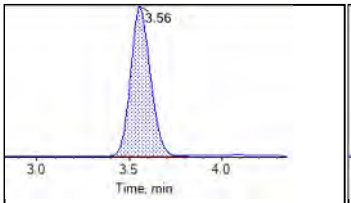

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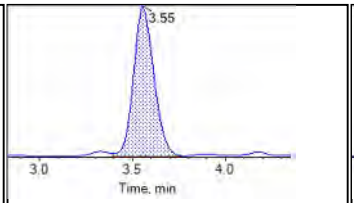

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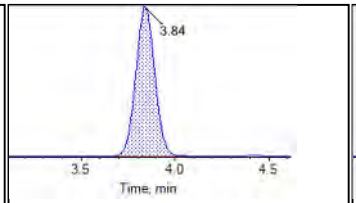

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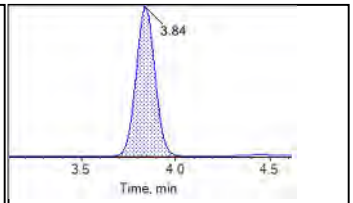

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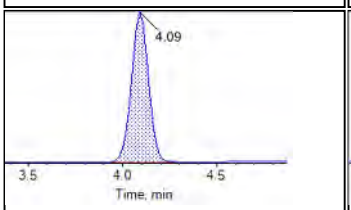

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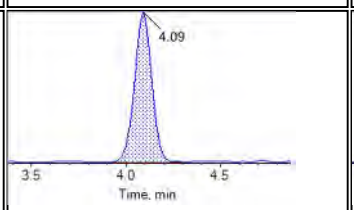

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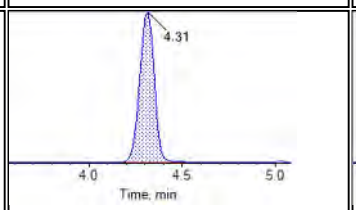

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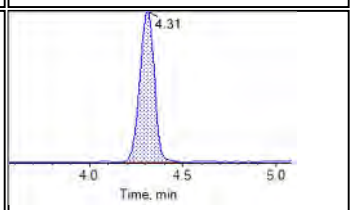

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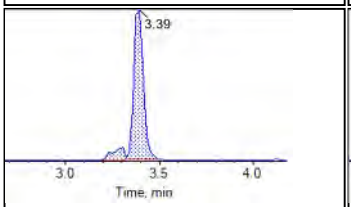

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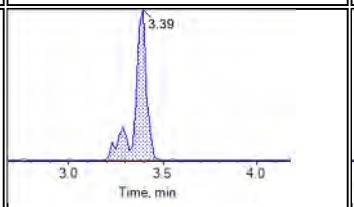

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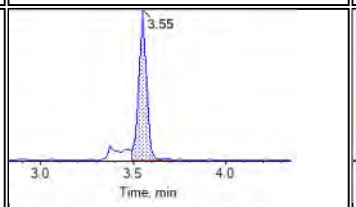

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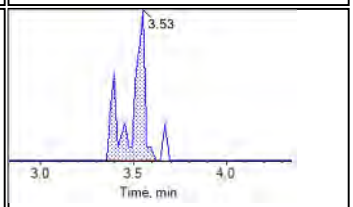

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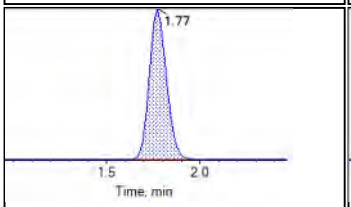

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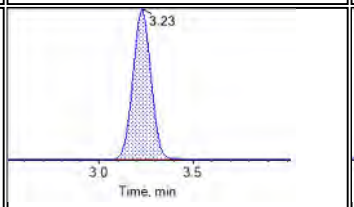

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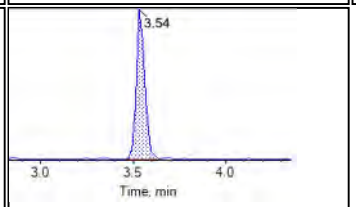

d5-EtFOSAA

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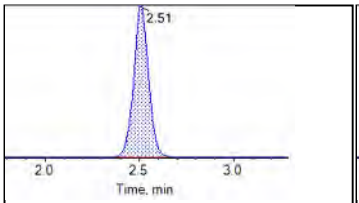

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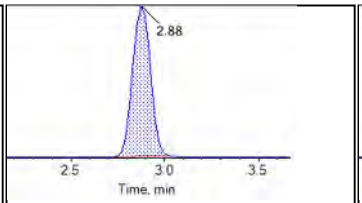

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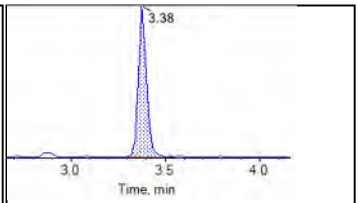

d3-MeFOSAA

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Chromatogram Report

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Printed: 29/06/2018 1:32:19 PM

Sample Name	JX72	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:50:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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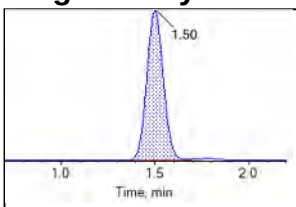

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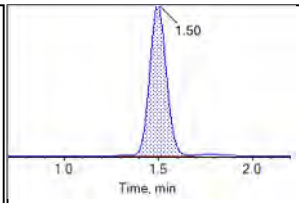

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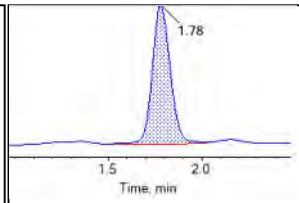

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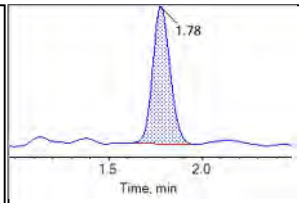

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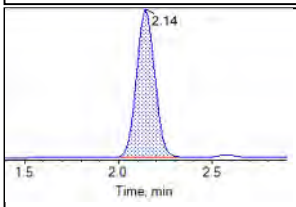

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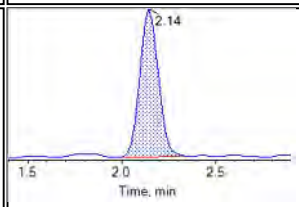

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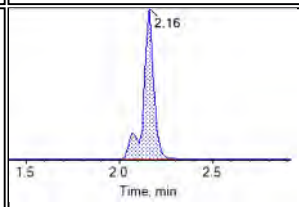

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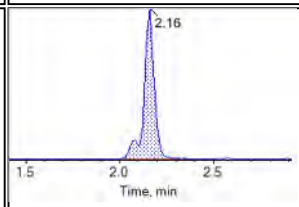

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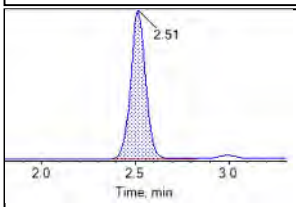

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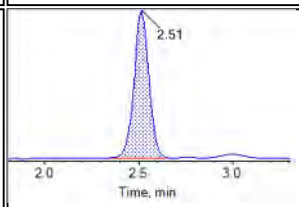

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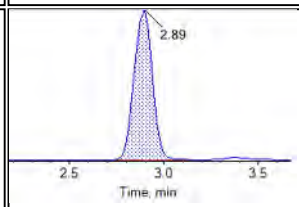

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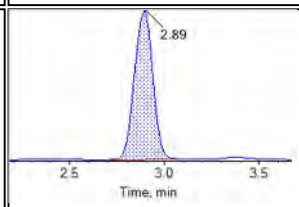

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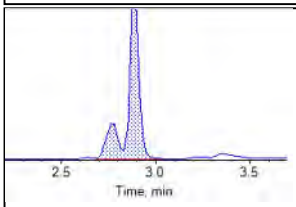

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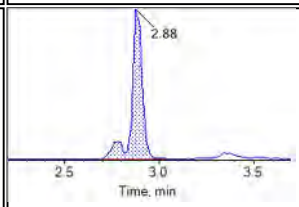

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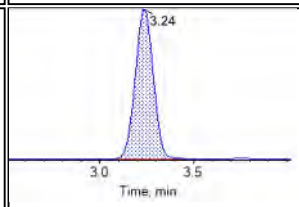

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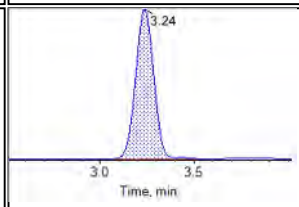

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Chromatogram Report

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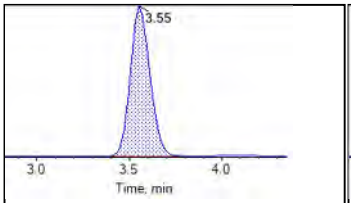

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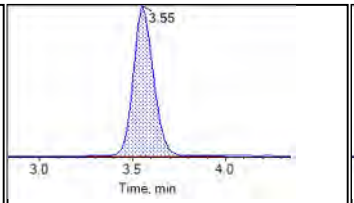

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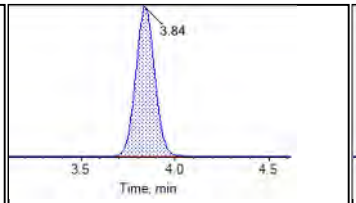

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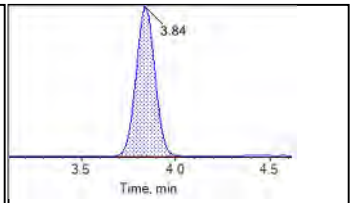

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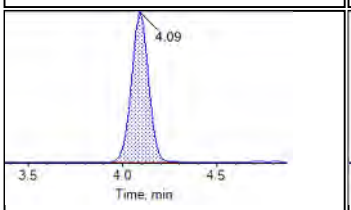

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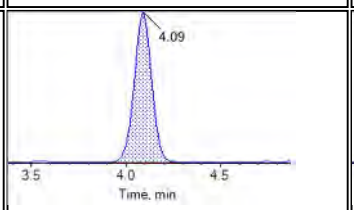

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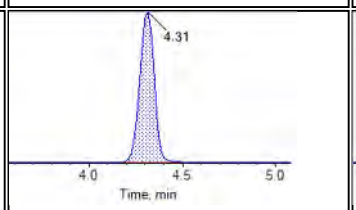

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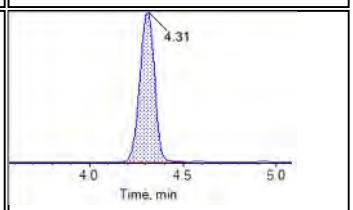

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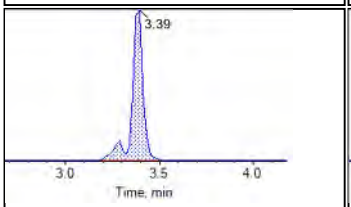

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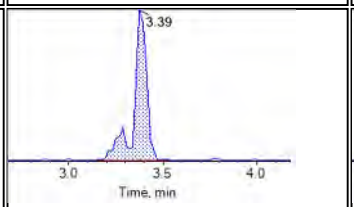

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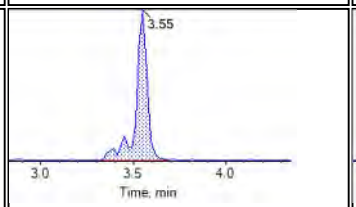

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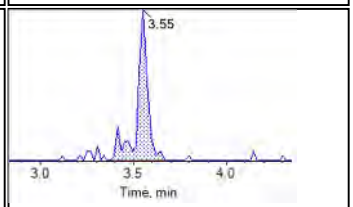

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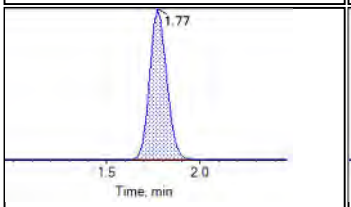

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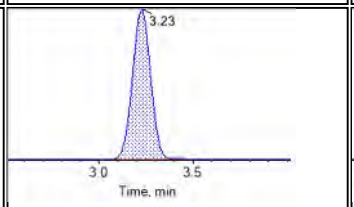

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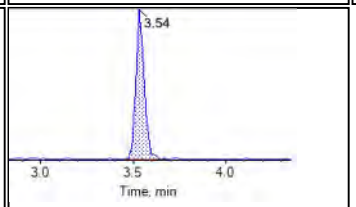
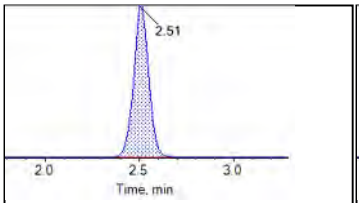


d5-EtFOSAA

Internal Standards:



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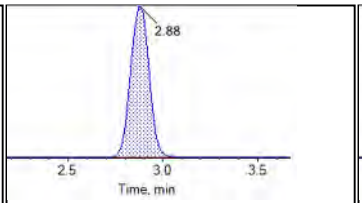

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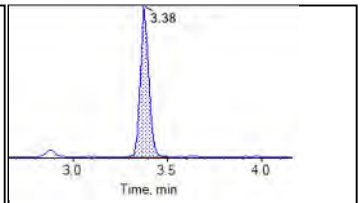

d3-MeFOSAA

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Chromatogram Report

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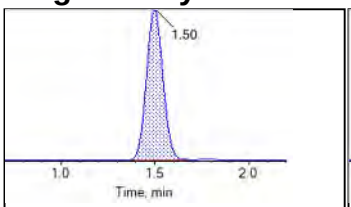
Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:59:20	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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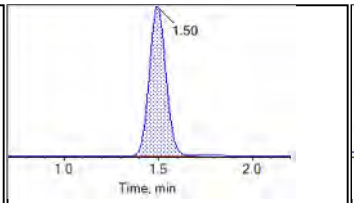

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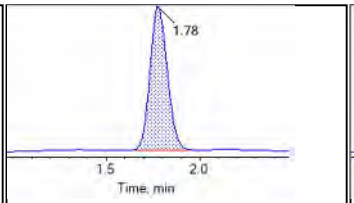

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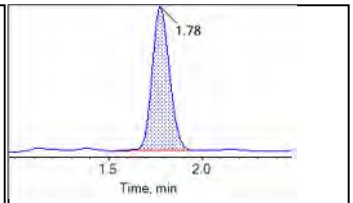
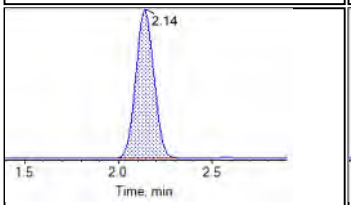


PFHxA_2



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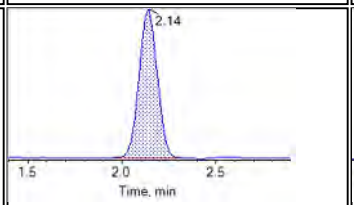

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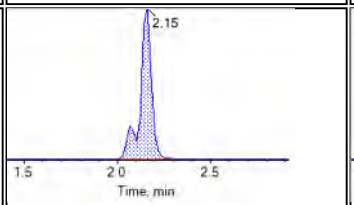

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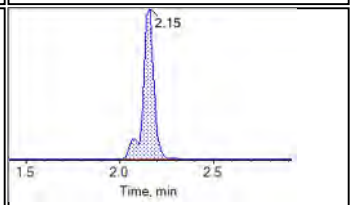

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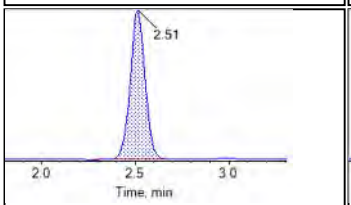

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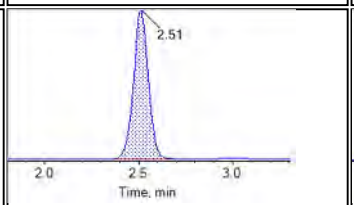

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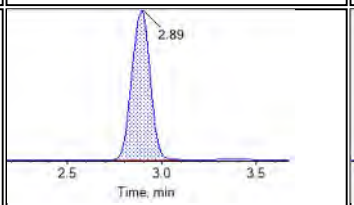

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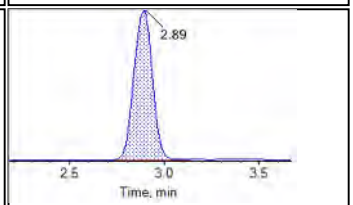

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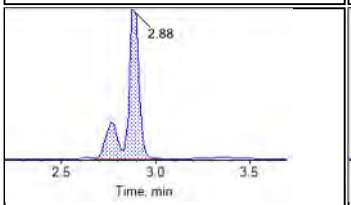

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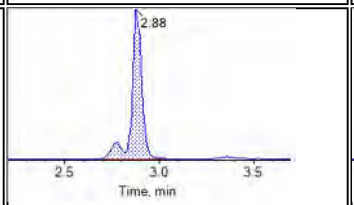

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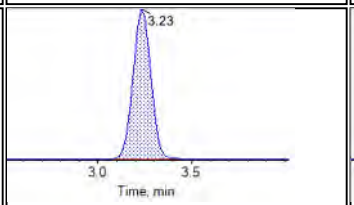

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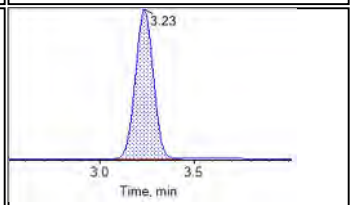

PFDA_2

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Chromatogram Report

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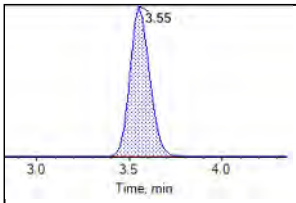

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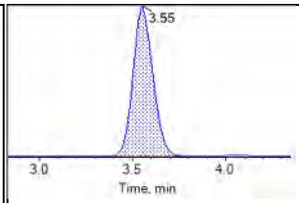

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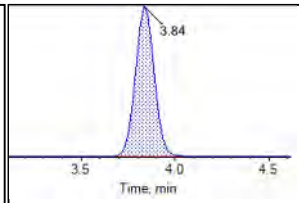

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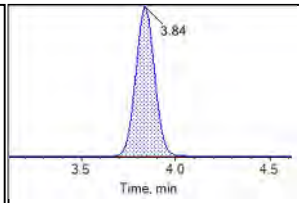

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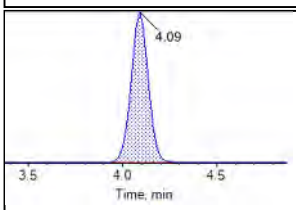

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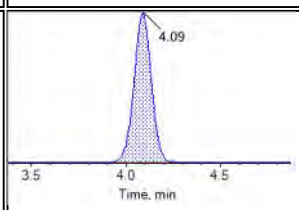

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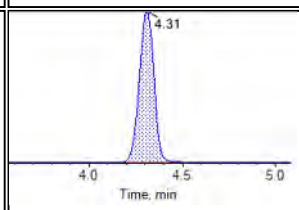

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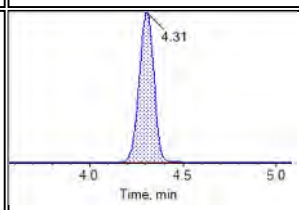

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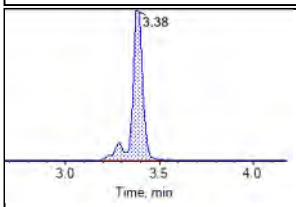

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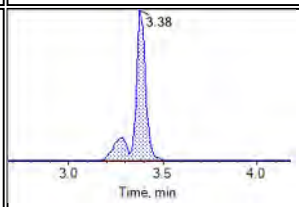

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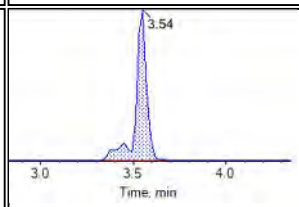

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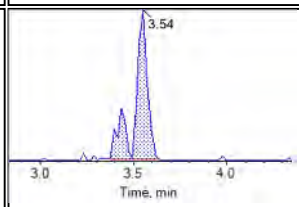

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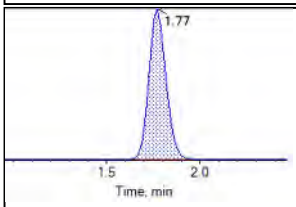
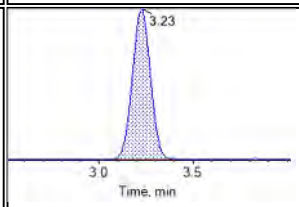


13C2-PFHxA



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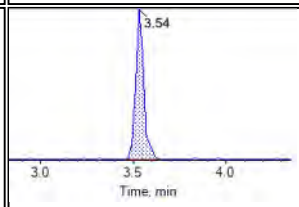

d5-EtFOSAA

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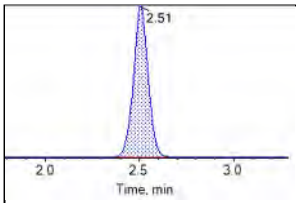

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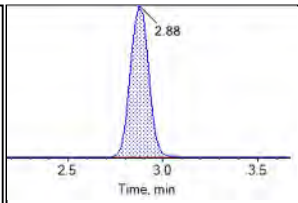
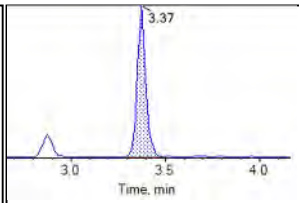


13C4-PFOS



d3-MeFOSAA

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Chromatogram Report

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Sample Name	JX74	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:08:14	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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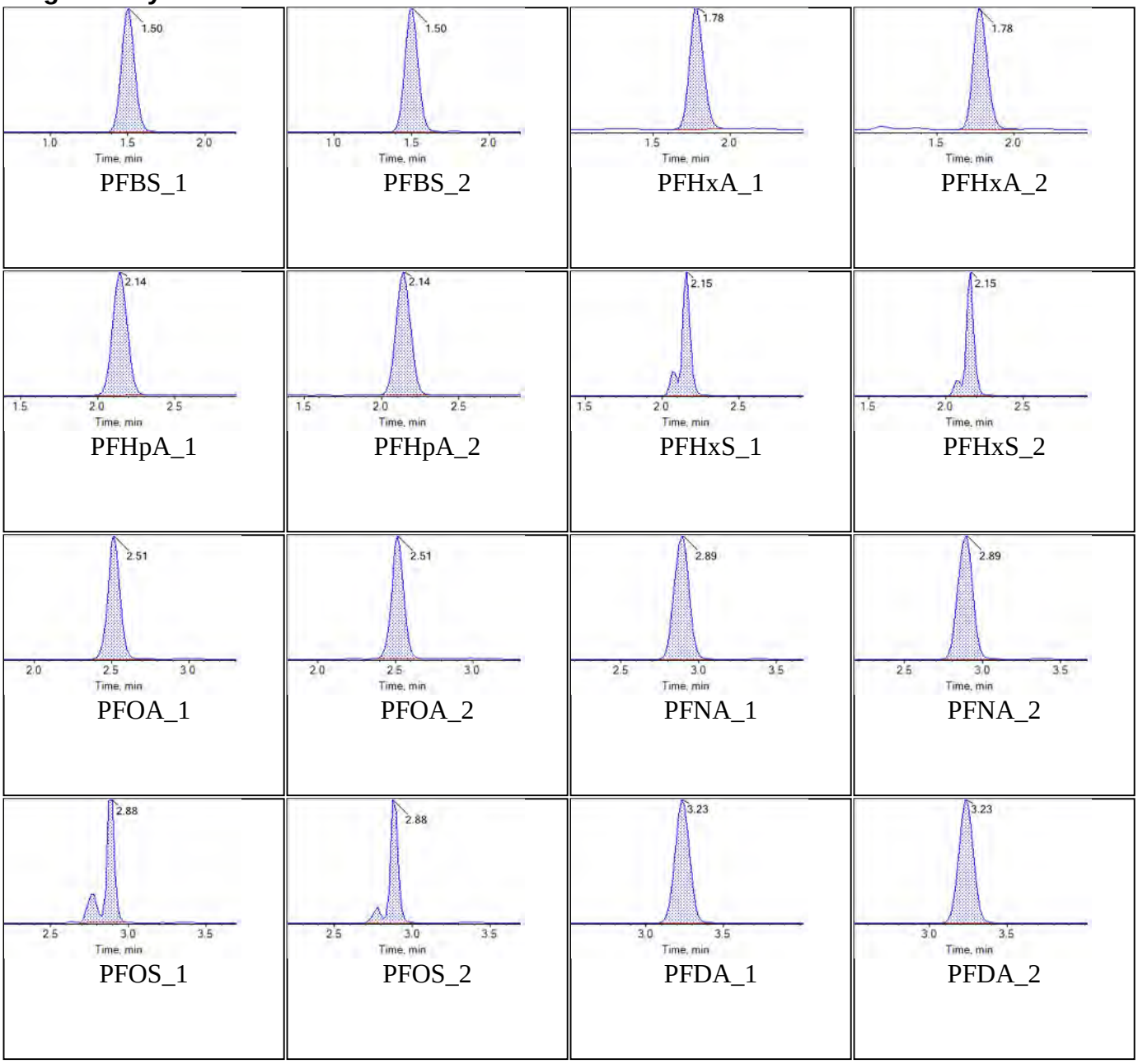

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Chromatogram Report

Created with Analyst Reporter
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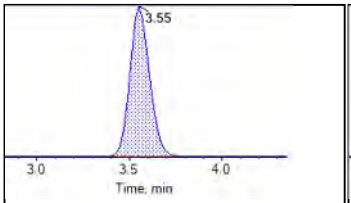

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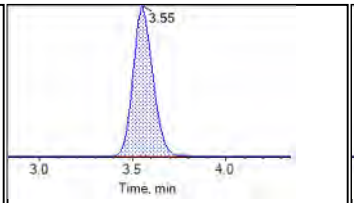

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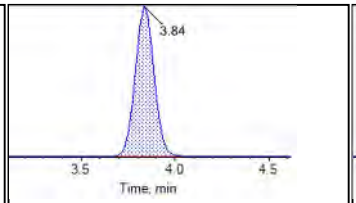

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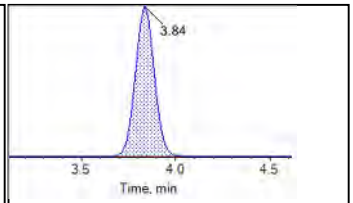

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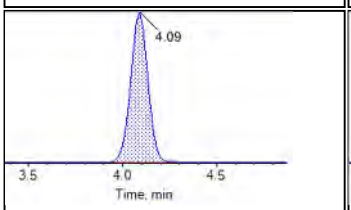

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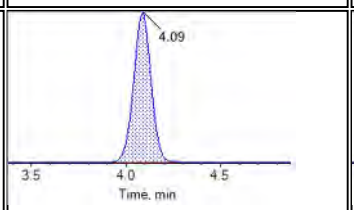

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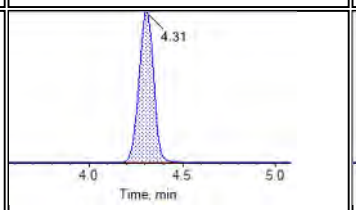

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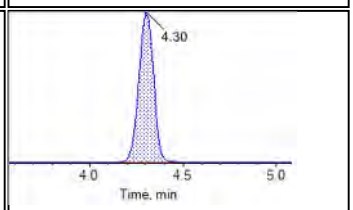

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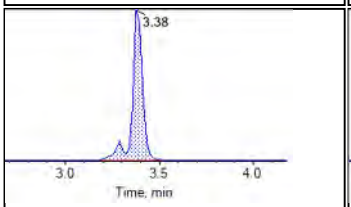

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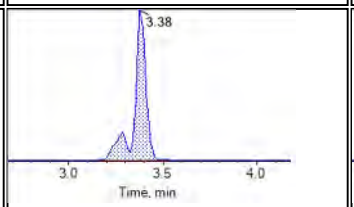

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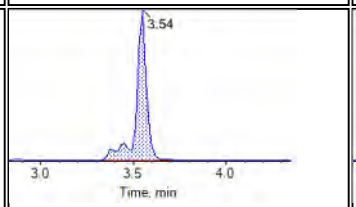

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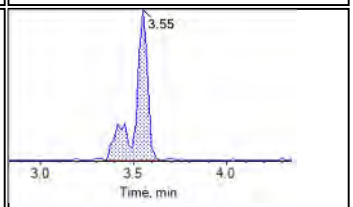

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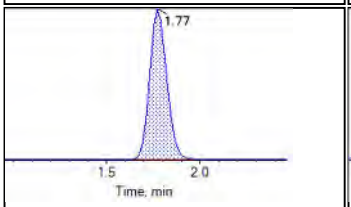
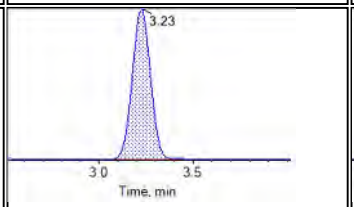


13C2-PFHxA



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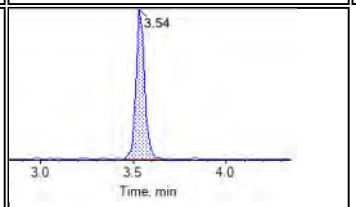
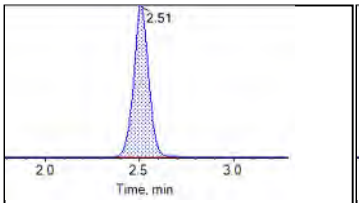


d5-EtFOSAA

Internal Standards:



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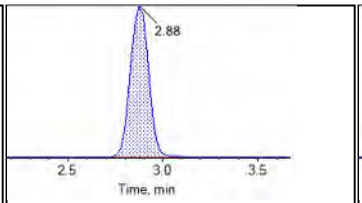
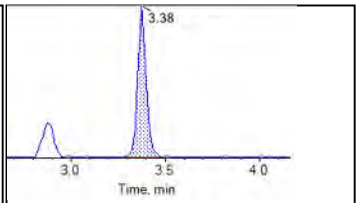


13C4-PFOS



d3-MeFOSAA

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Chromatogram Report

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Sample Name	JX75	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:17:08	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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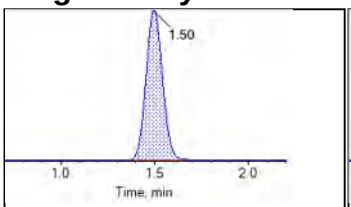

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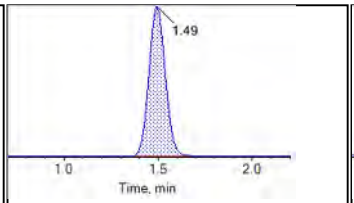
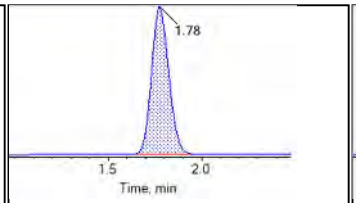


PFBS_2



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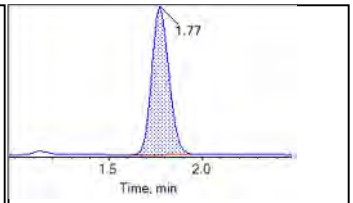

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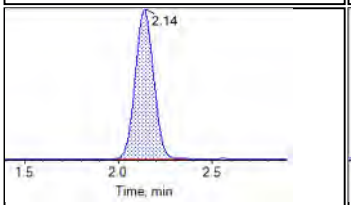

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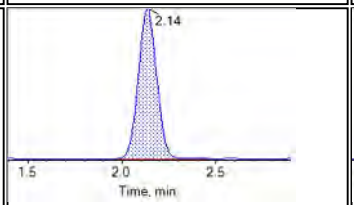

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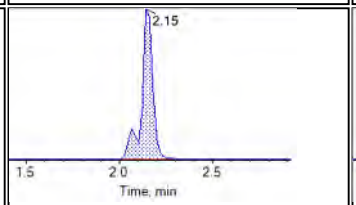

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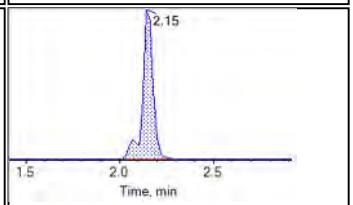

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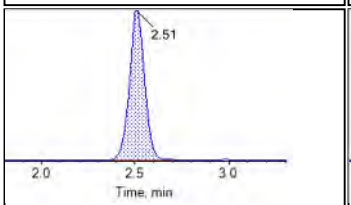

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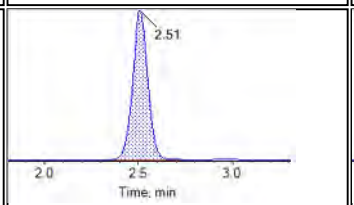

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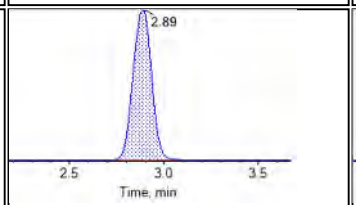

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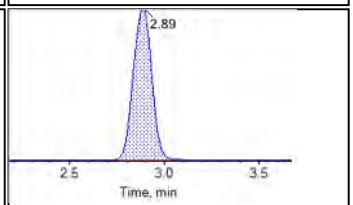

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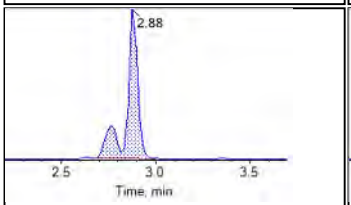

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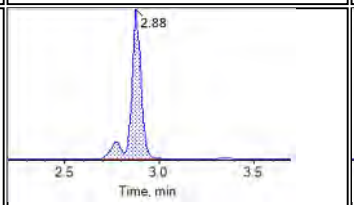

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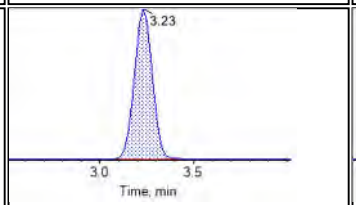

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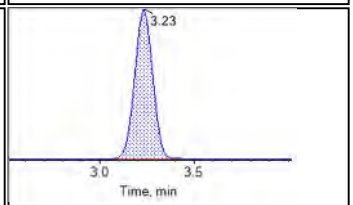

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Chromatogram Report

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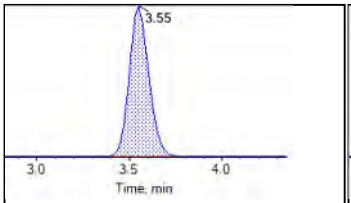

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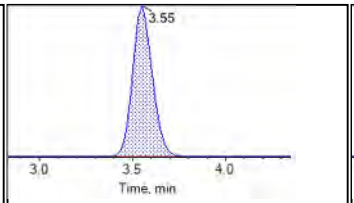

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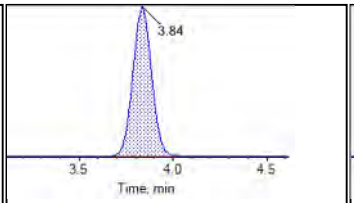

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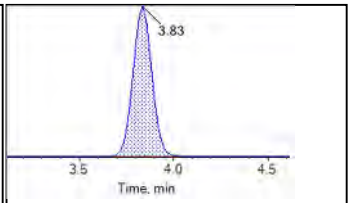

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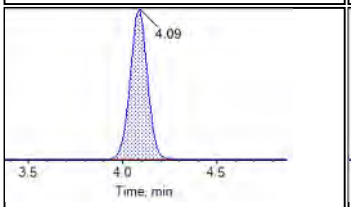

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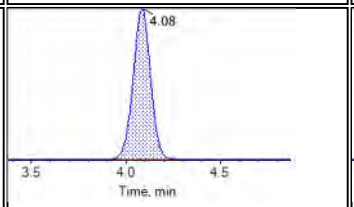

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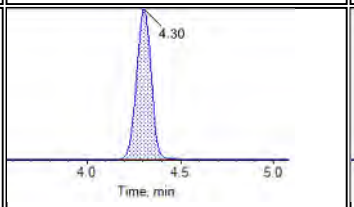

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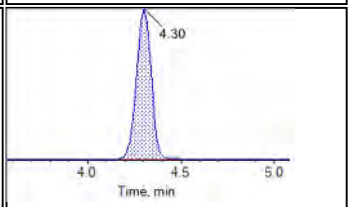

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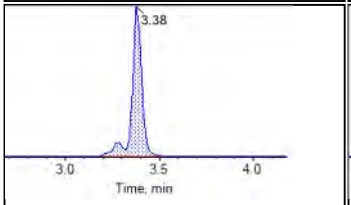

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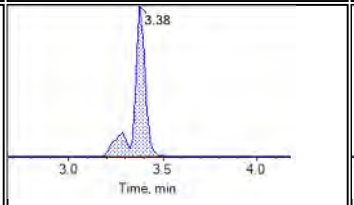

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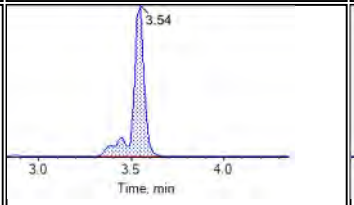

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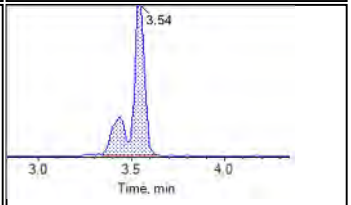

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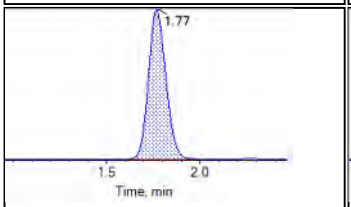
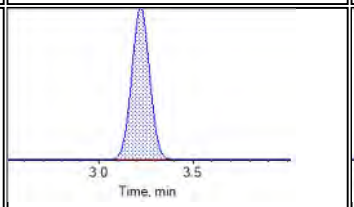


13C2-PFHxA



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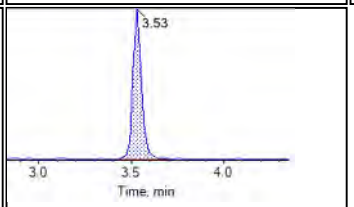

d5-EtFOSAA

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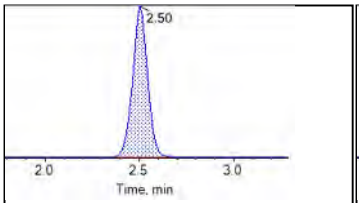

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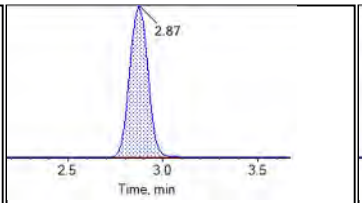

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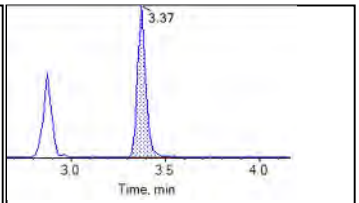

d3-MeFOSAA

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Chromatogram Report

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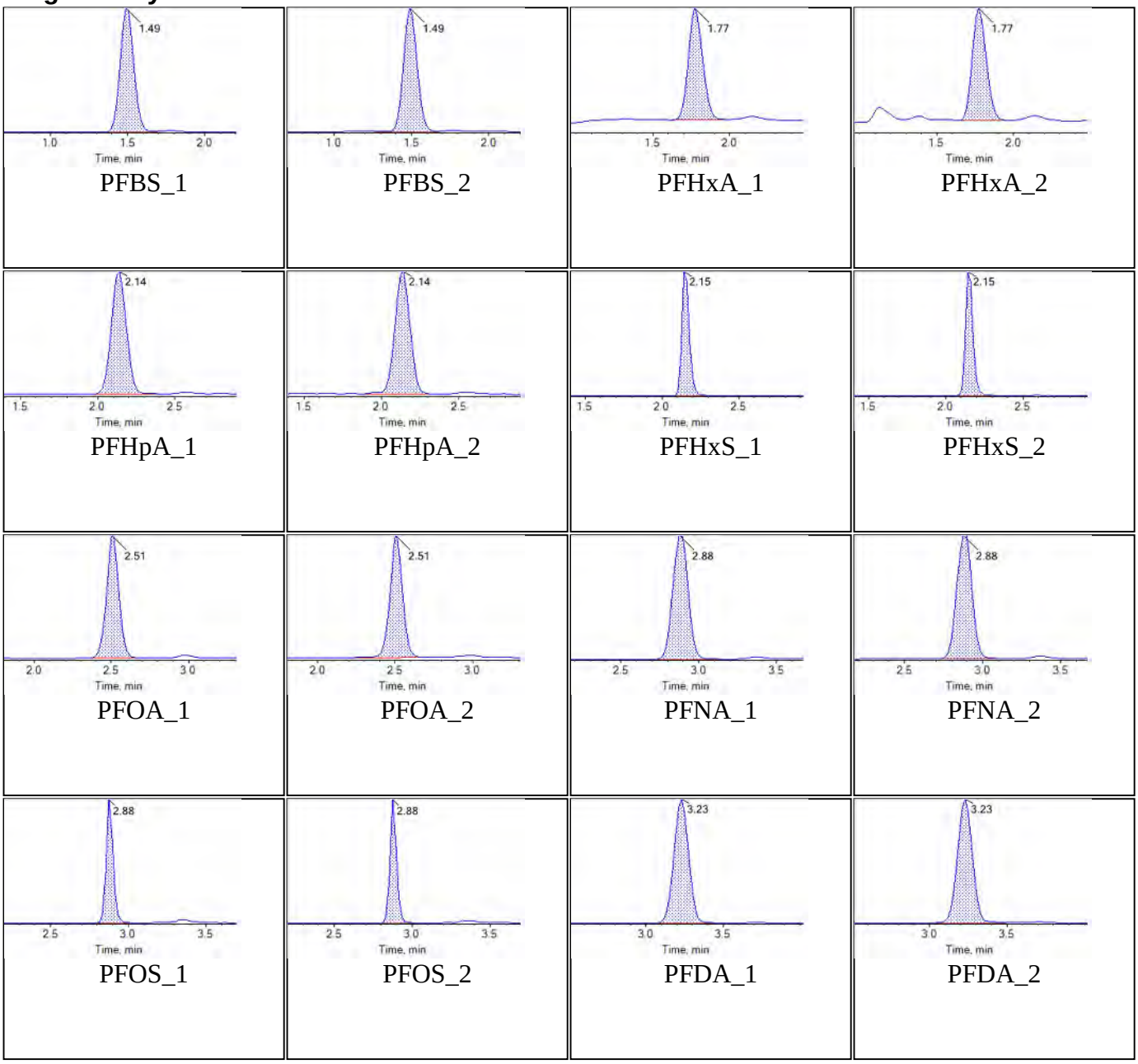
Sample Name	JV66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:26:04	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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Chromatogram Report

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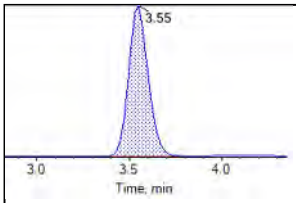

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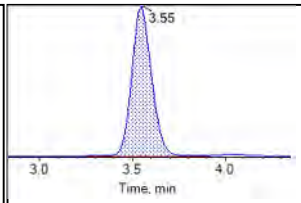

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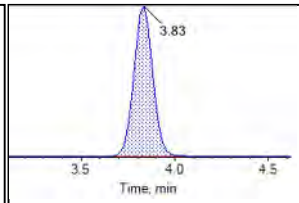

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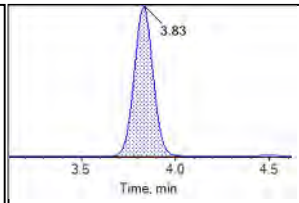

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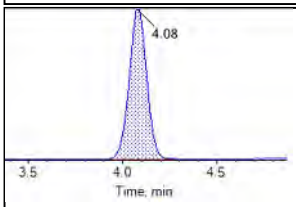

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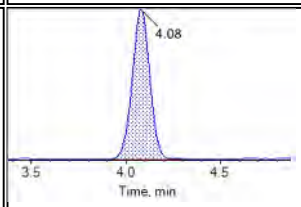

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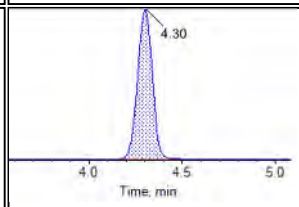

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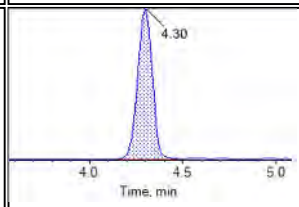

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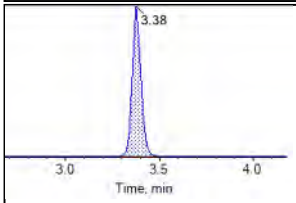

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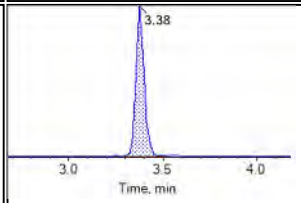

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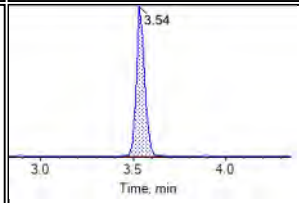

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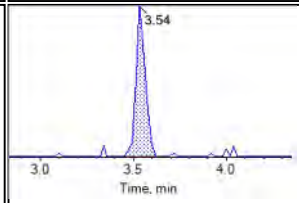

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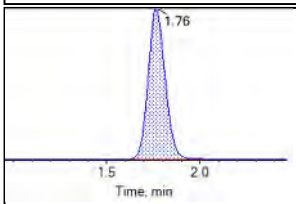

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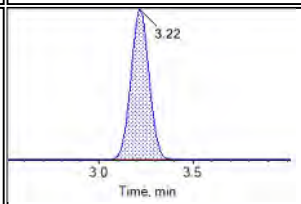

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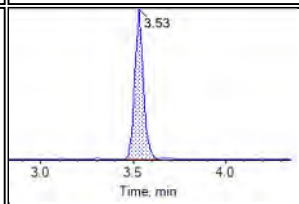

d5-EtFOSAA

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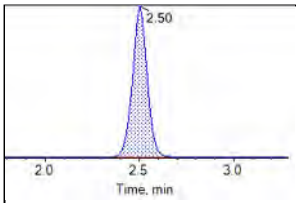

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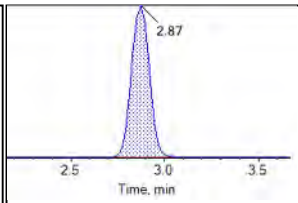

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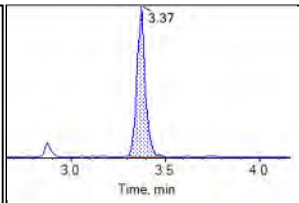

d3-MeFOSAA

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Chromatogram Report

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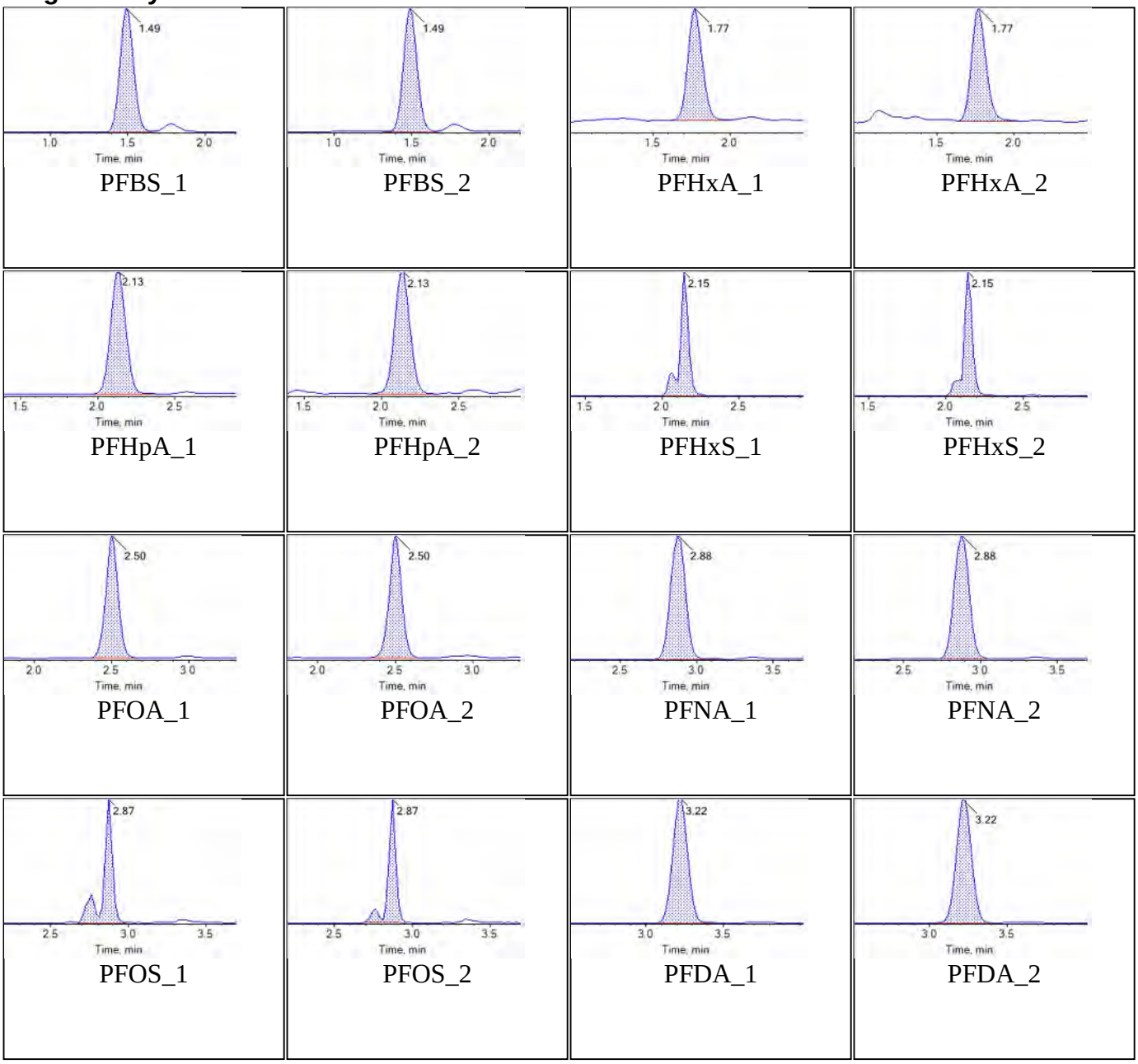
Sample Name	JX72 CCV	**Injection Vial**	31
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T20:51:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

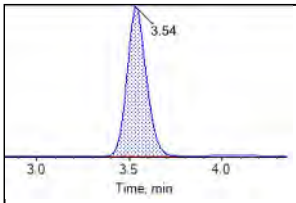
Target Analytes:



BATTELLE

Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:32:37 PM



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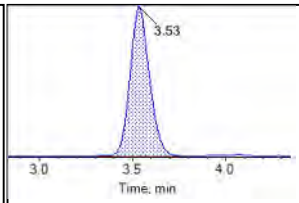
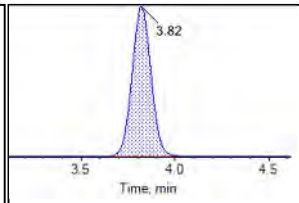


PFUnA_2



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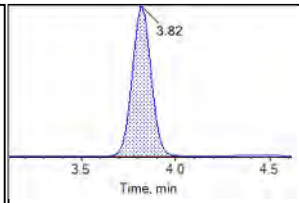

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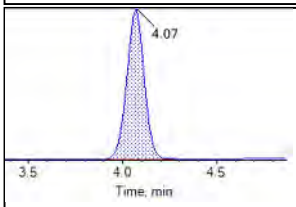

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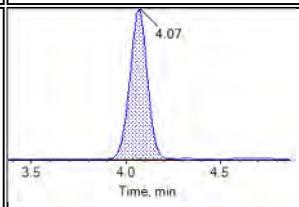

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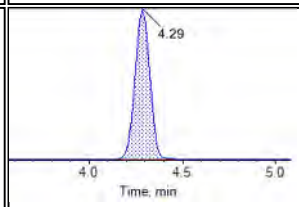

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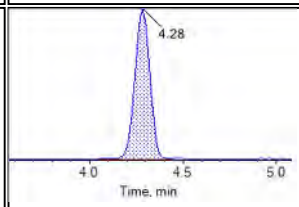

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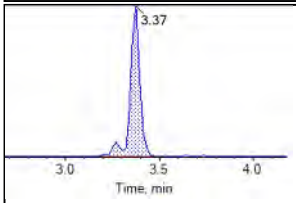

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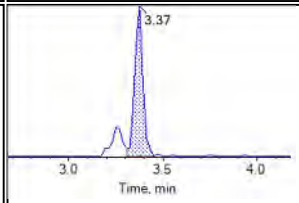

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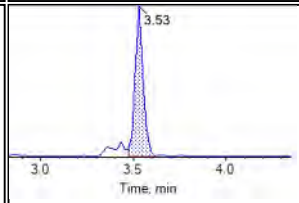

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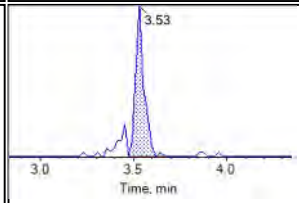

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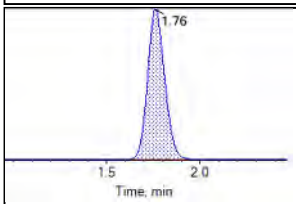
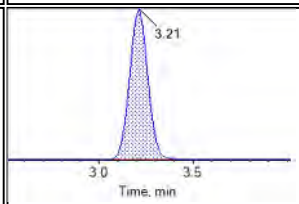


13C2-PFHxA



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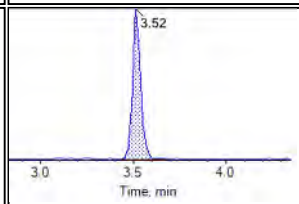
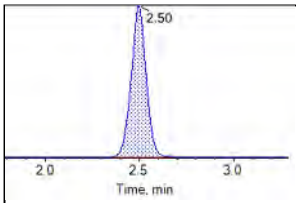


d5-EtFOSAA

Internal Standards:



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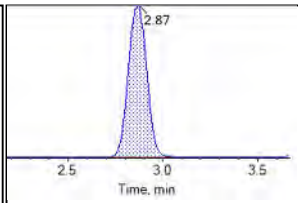

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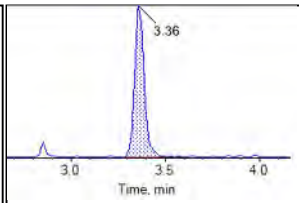

d3-MeFOSAA

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Chromatogram Report

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Printed: 29/06/2018 1:32:43 PM

Sample Name	JX73 CCV	**Injection Vial**	41
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:29:51	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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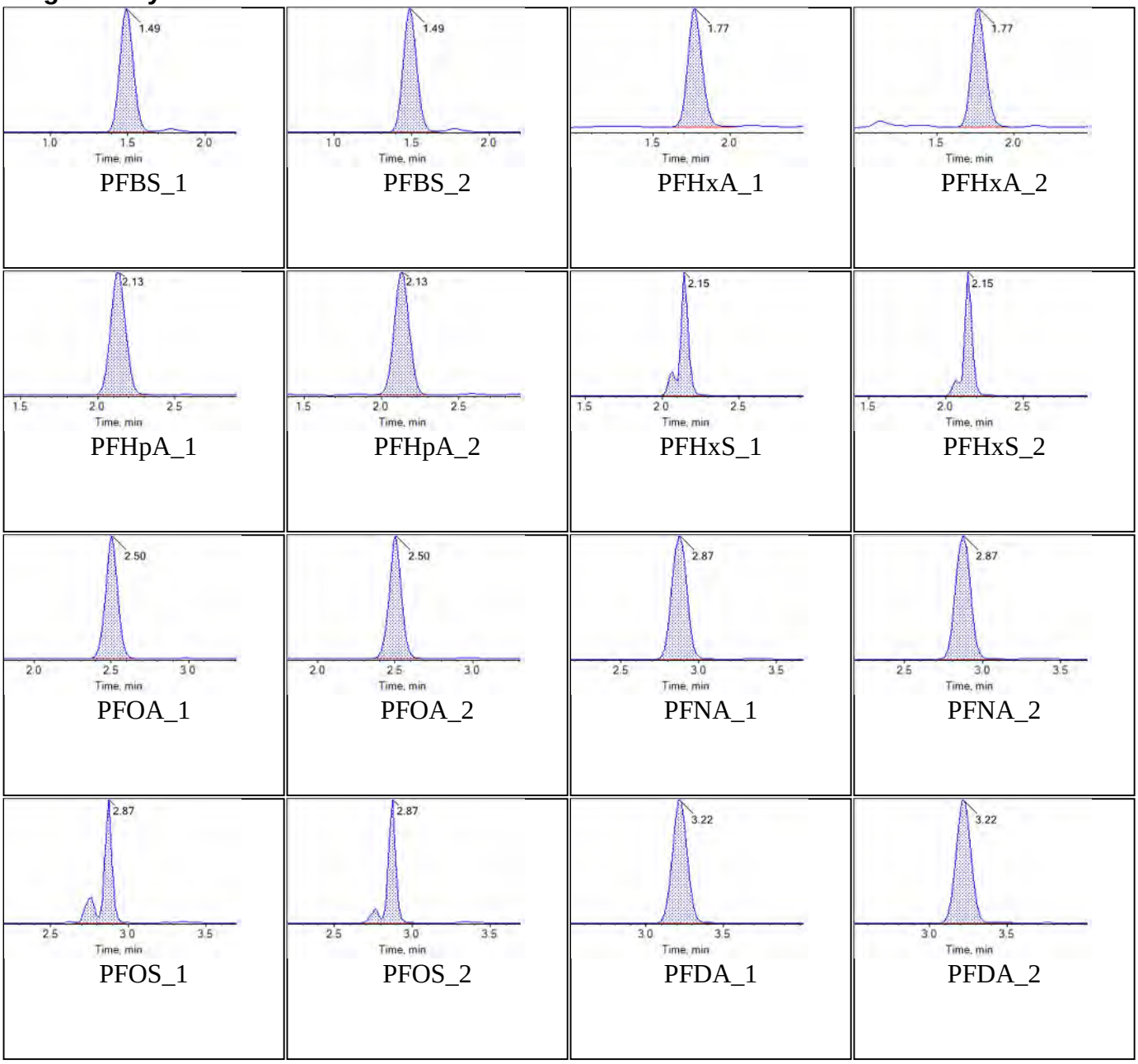

BATTELLE

Chromatogram Report

Created with Analyst Reporter
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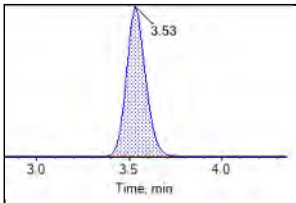

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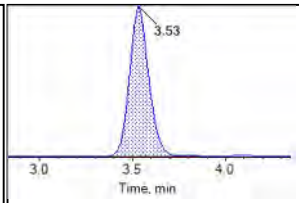

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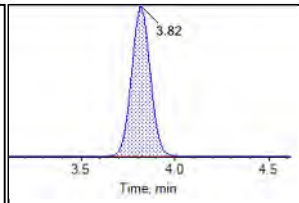

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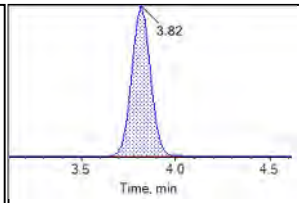

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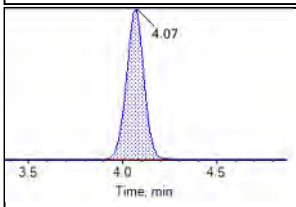

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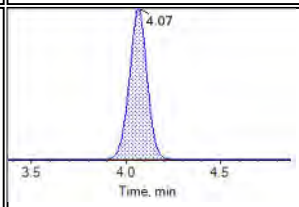

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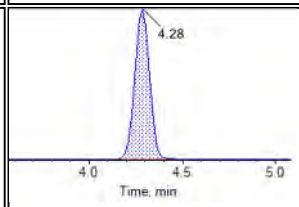

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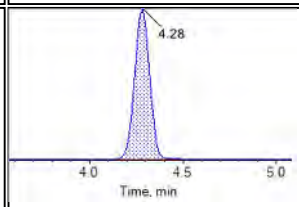

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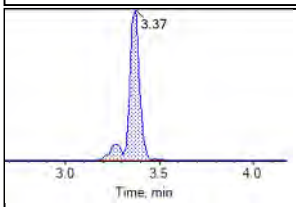

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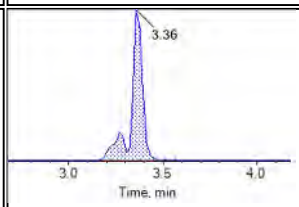

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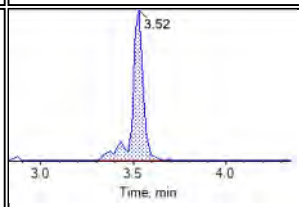

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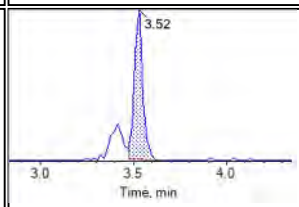

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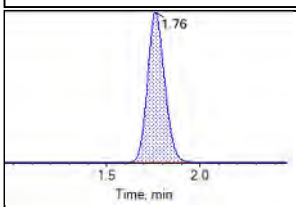
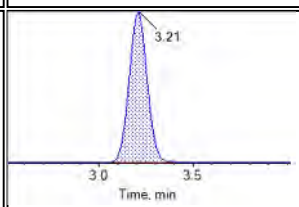


13C2-PFHxA



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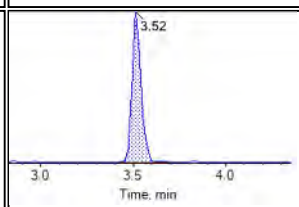

d5-EtFOSAA

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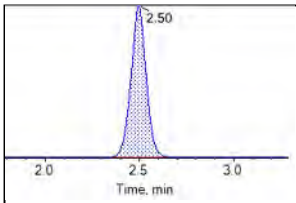

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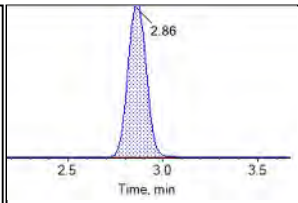

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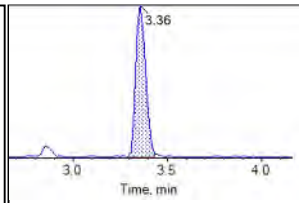


d3-MeFOSAA

BATTELLE

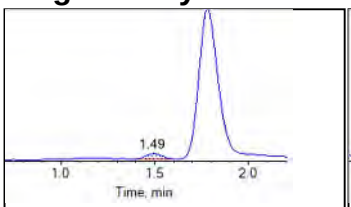
Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:32:50 PM

Sample Name	CR040PB-FS(0)	**Injection Vial**	42
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:47:46	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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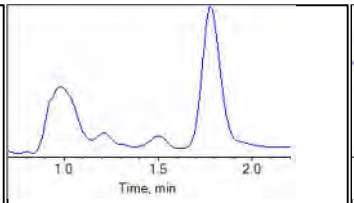
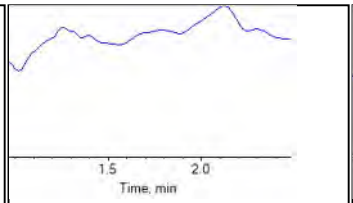


PFBS_2



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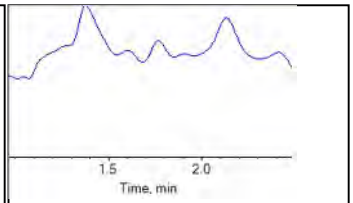

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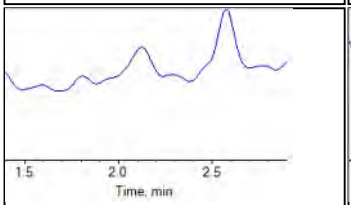

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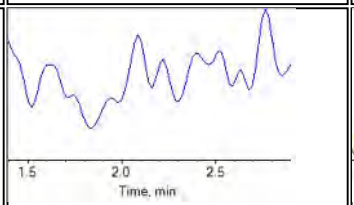

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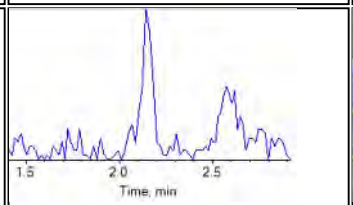

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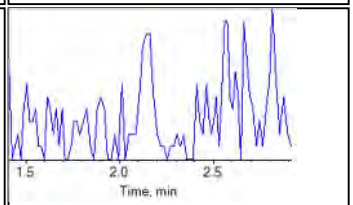
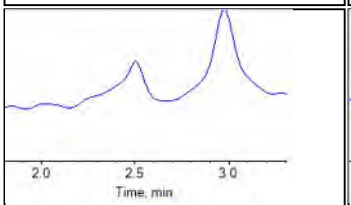


PFHxS_2



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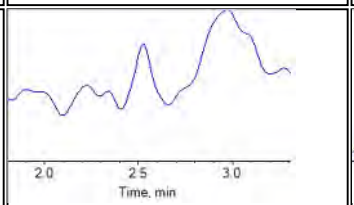

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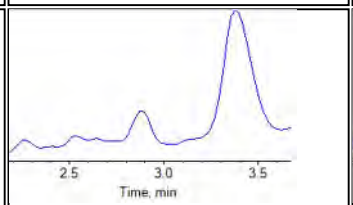

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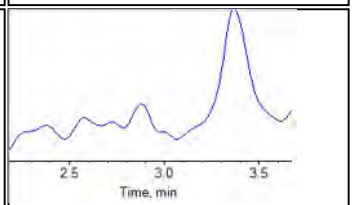

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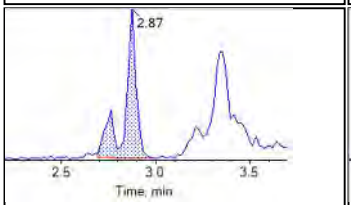
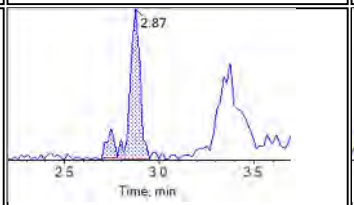


PFOS_1



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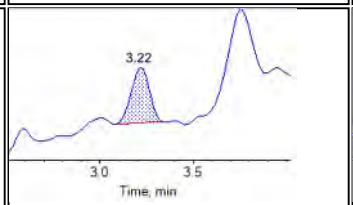

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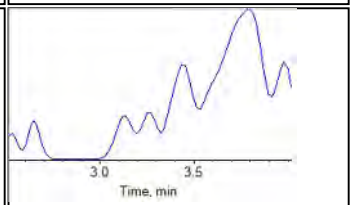

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Chromatogram Report

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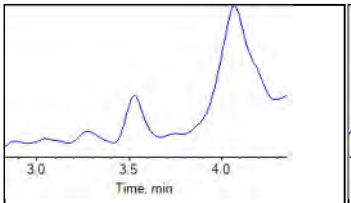

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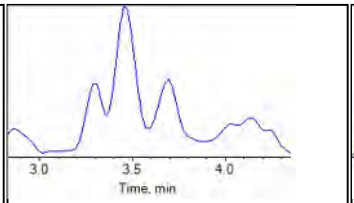

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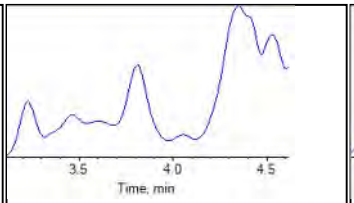

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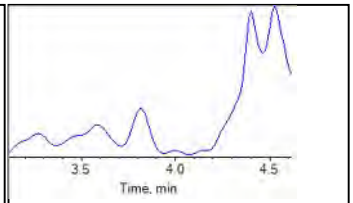

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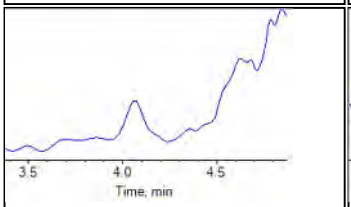

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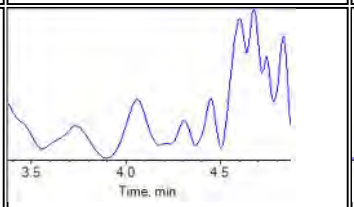

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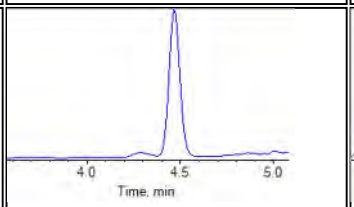

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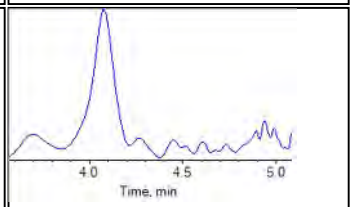

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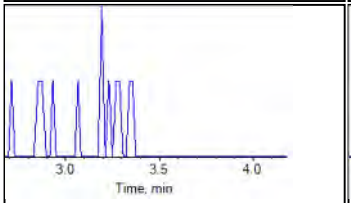

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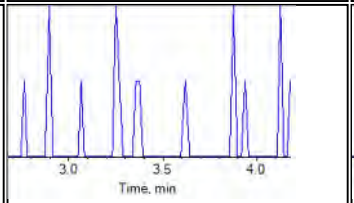

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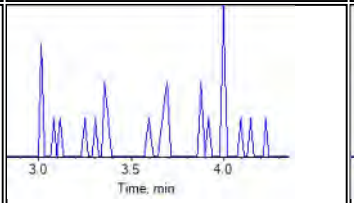

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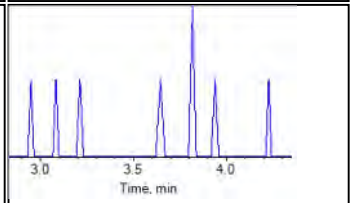

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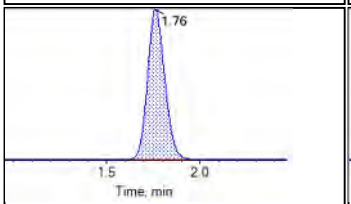

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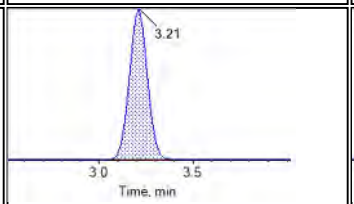

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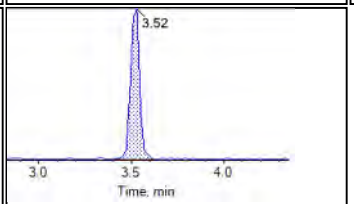
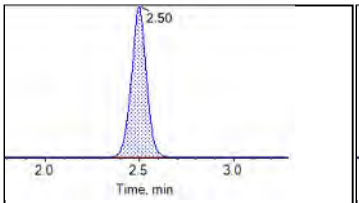


d5-EtFOSAA

Internal Standards:



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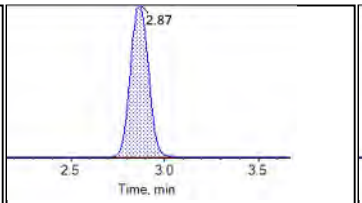

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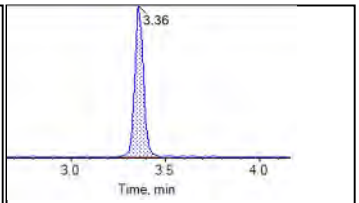

d3-MeFOSAA

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Chromatogram Report

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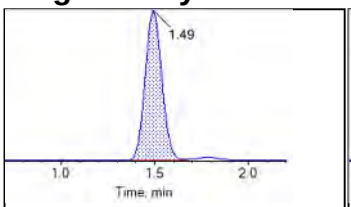
Sample Name	CR041LCS-FS(0)	**Injection Vial**	43
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:56:42	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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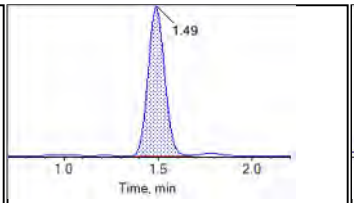

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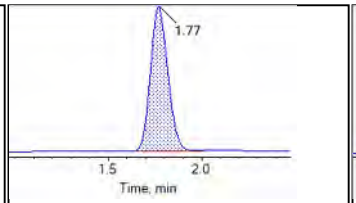

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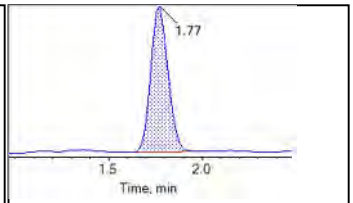

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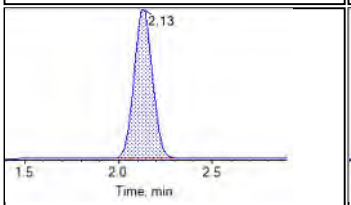

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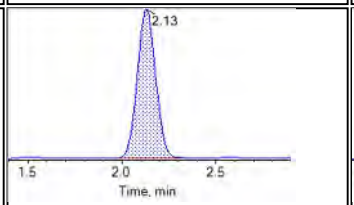

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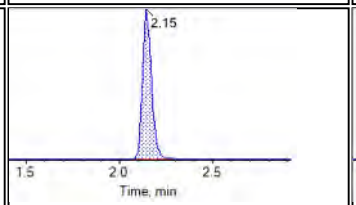

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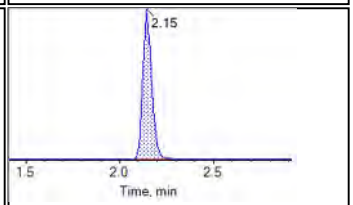

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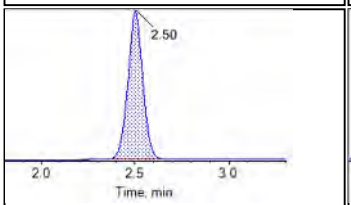

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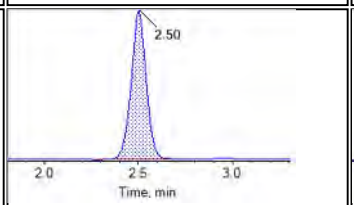

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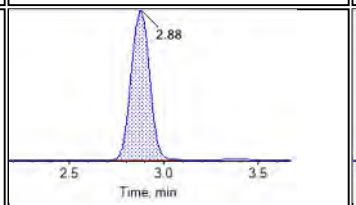

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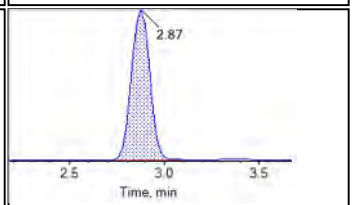

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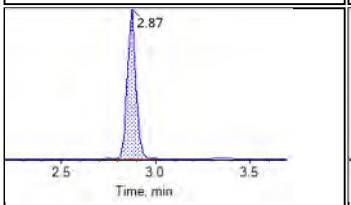

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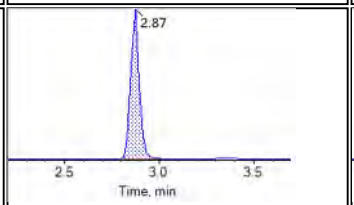

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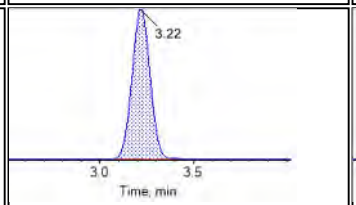

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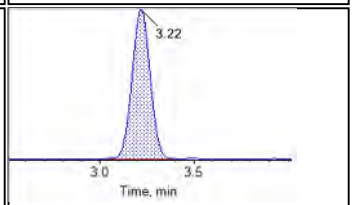

PFDA_2

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Chromatogram Report

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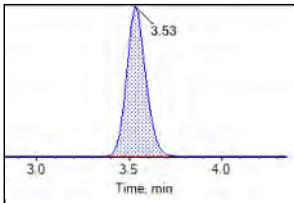

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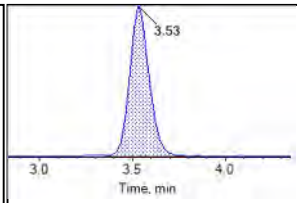

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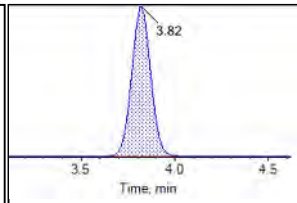

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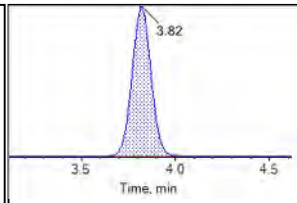

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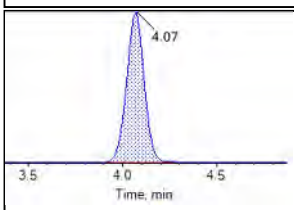

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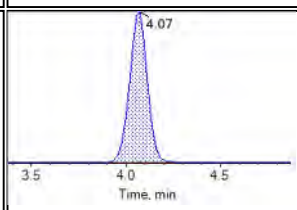

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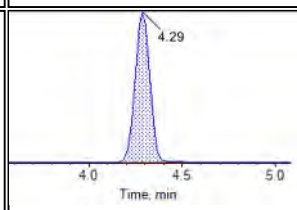

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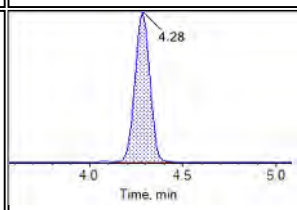

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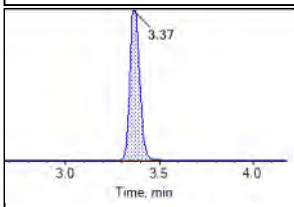

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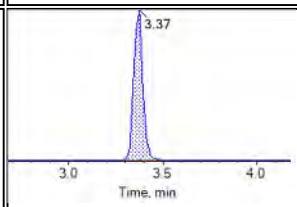

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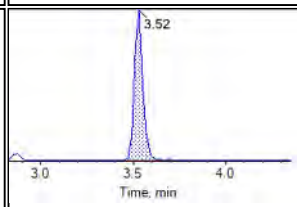

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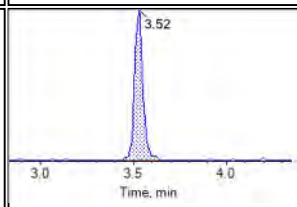

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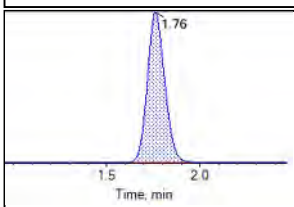
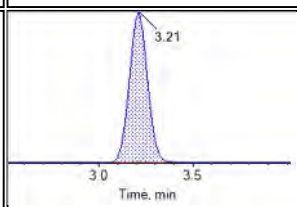


13C2-PFHxA



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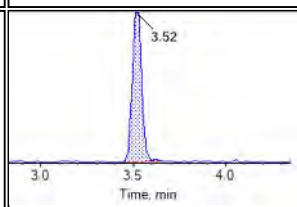
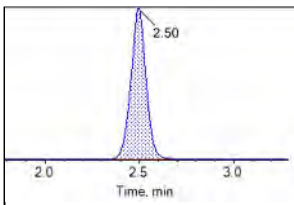
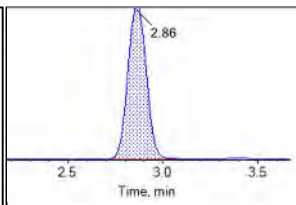


d5-EtFOSAA

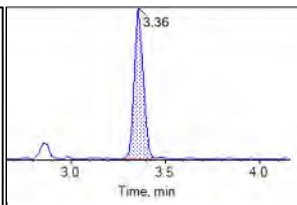
Internal Standards:



13C2-PFOA



13C4-PFOS



d3-MeFOSAA

BATTELLE

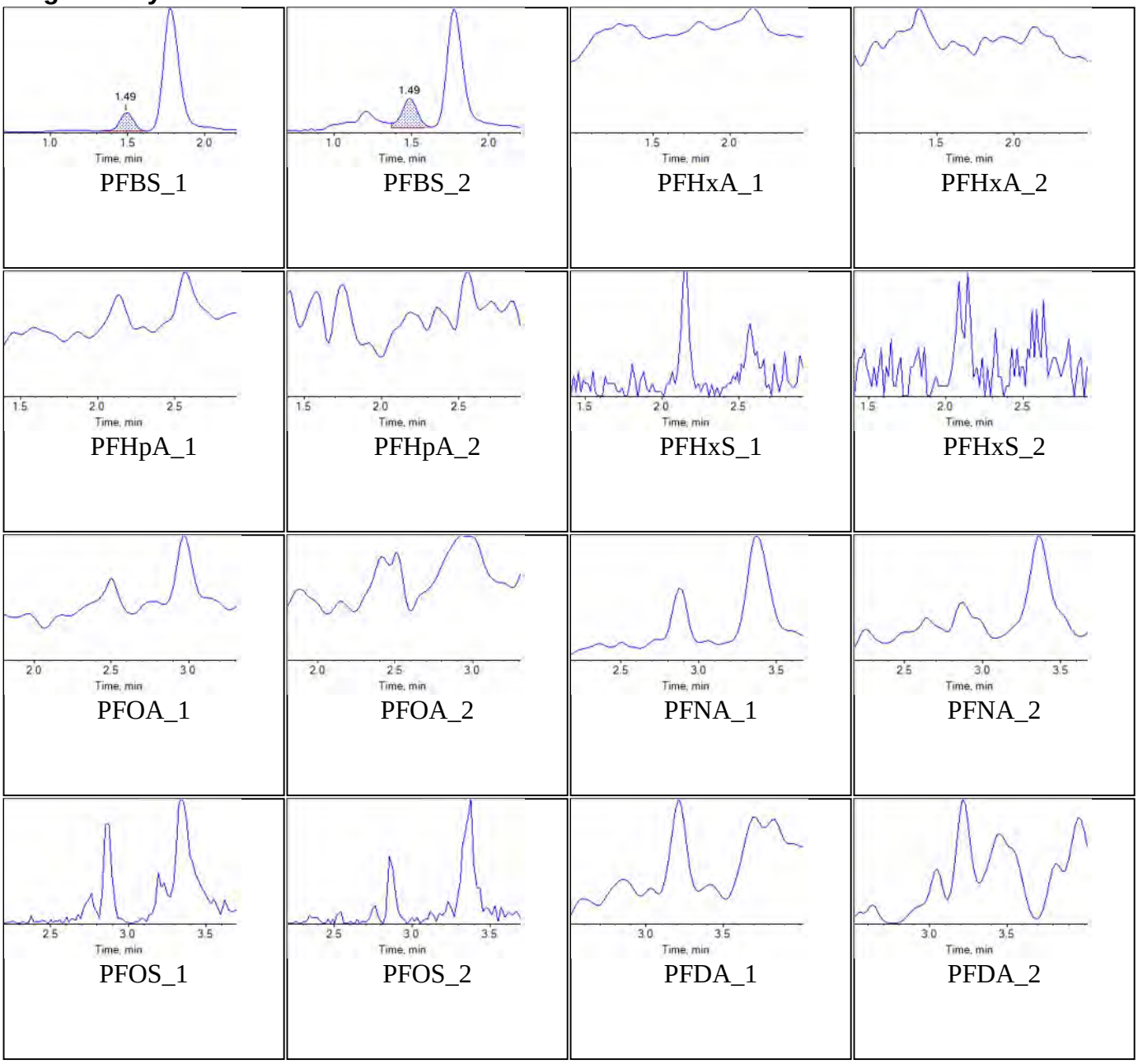
Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:32:57 PM

Sample Name	J6738-FS(0)	**Injection Vial**	44
Sample ID	WGNA-061118-FRB-3073	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:05:37	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

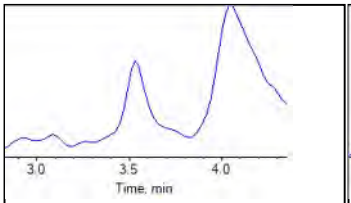
Target Analytes:



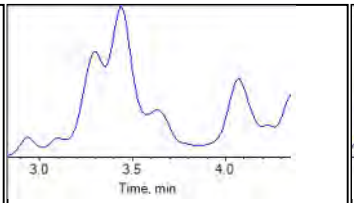
BATTELLE

Chromatogram Report

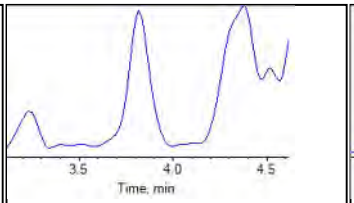
Created with Analyst Reporter
Printed: 29/06/2018 1:32:57 PM



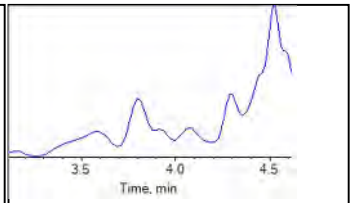
PFUnA_1



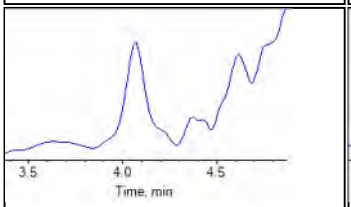
PFUnA_2



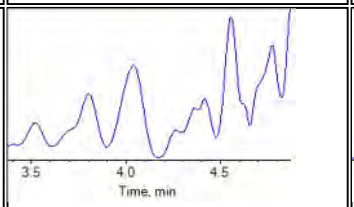
PFDoA_1



PFDoA_2



PFTrDA_1



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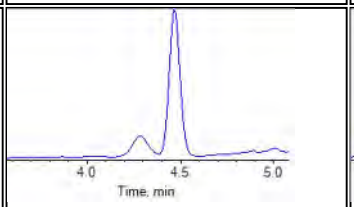
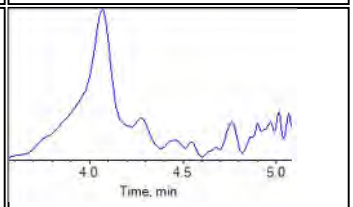
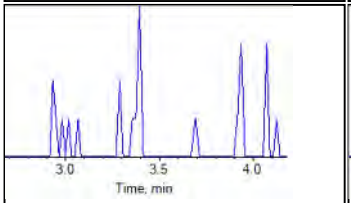


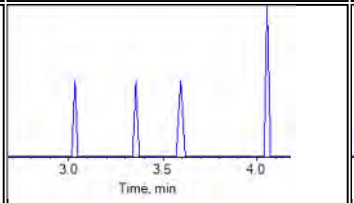
PFTeDA_1



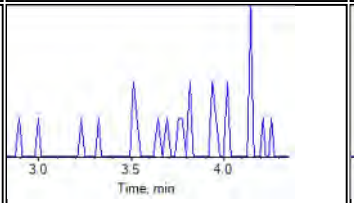
PFTeDA_2



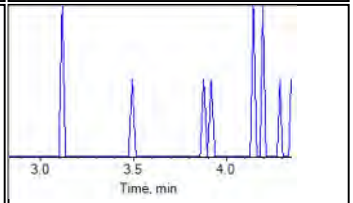
NMeFOSAA_1



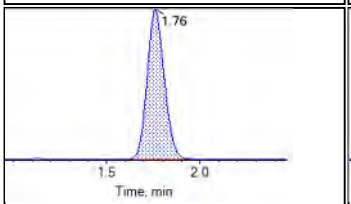
NMeFOSAA_2



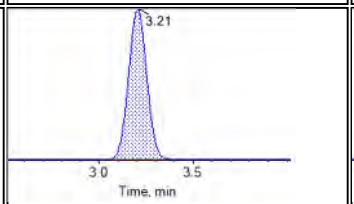
NEtFOSAA_1



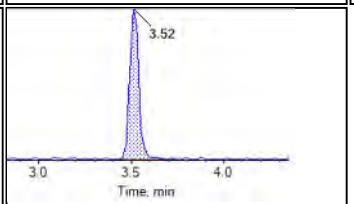
NEtFOSAA_2



13C2-PFHxA

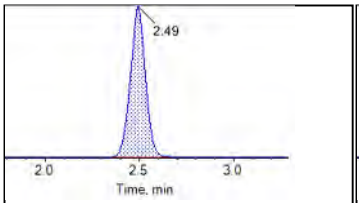


13C2-PFDA

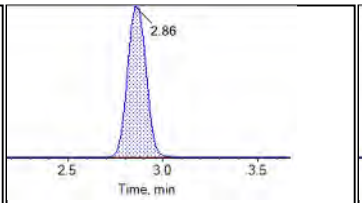


d5-EtFOSAA

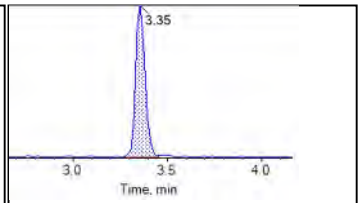
Internal Standards:



13C2-PFOA



13C4-PFOS



d3-MeFOSAA

BATTELLE

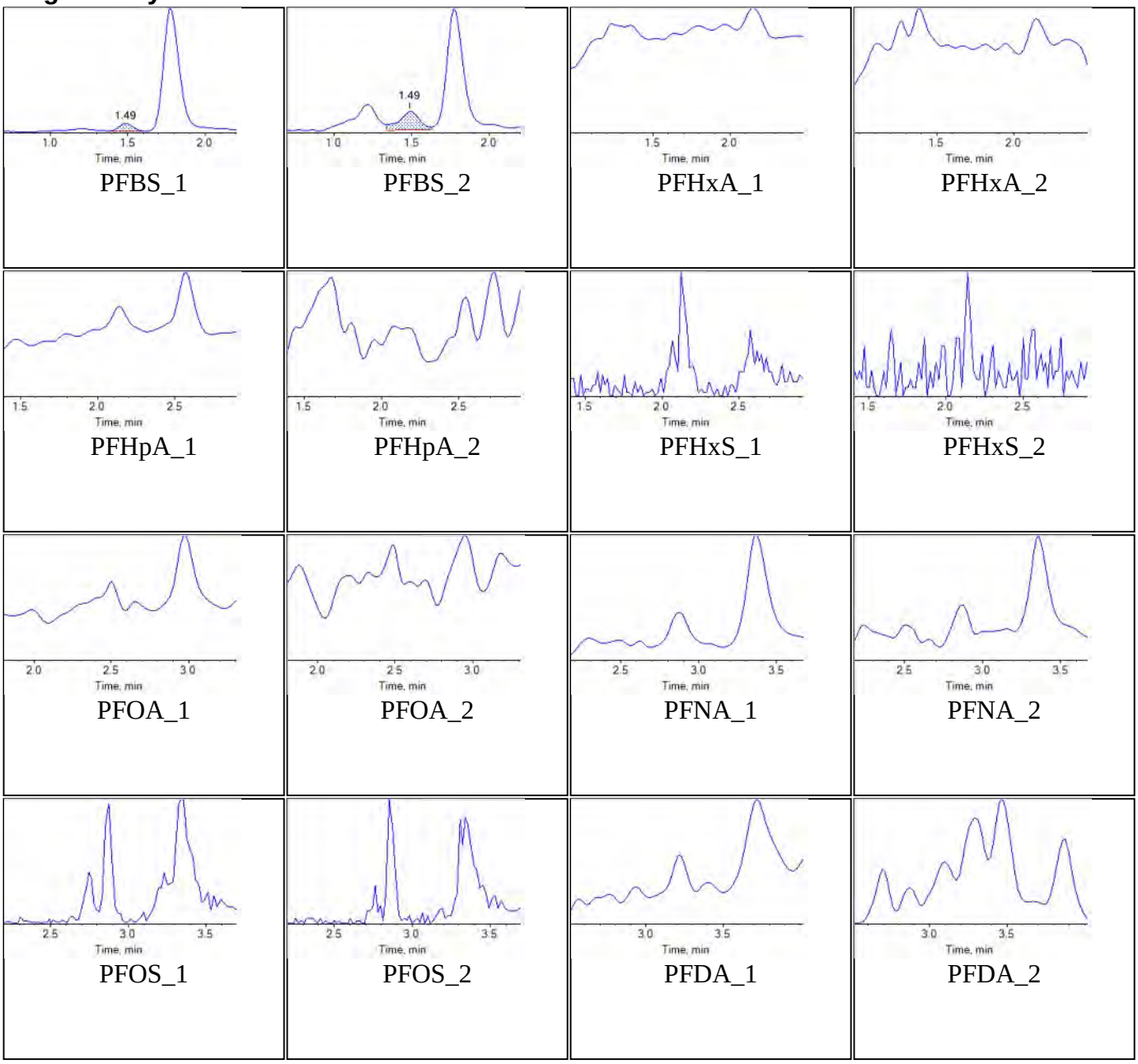
Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:33:00 PM

Sample Name	J6740-FS(0)	**Injection Vial**	45
Sample ID	WGNA-061118-FRB-0437	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:14:33	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

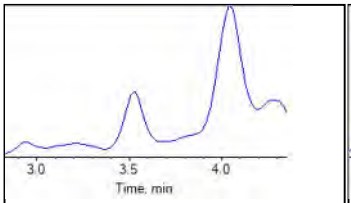
Target Analytes:



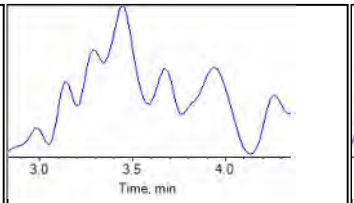
BATTELLE

Chromatogram Report

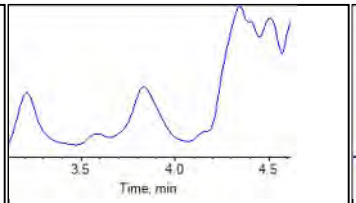
Created with Analyst Reporter
Printed: 29/06/2018 1:33:00 PM



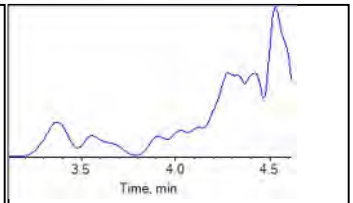
PFUnA_1



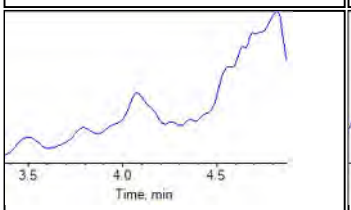
PFUnA_2



PFDoA_1



PFDoA_2



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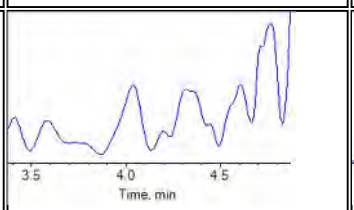
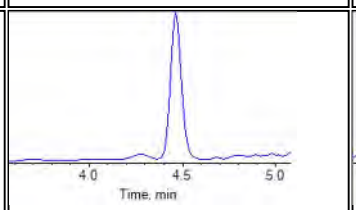
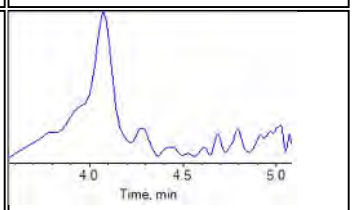


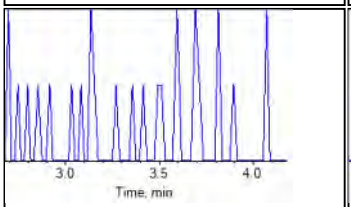
PFTrDA_2



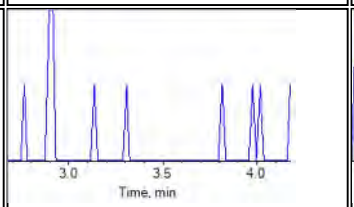
PFTeDA_1



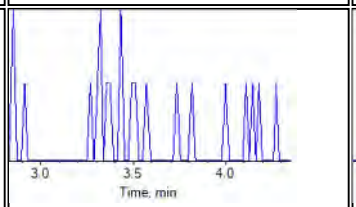
PFTeDA_2



NMeFOSAA_1



NMeFOSAA_2



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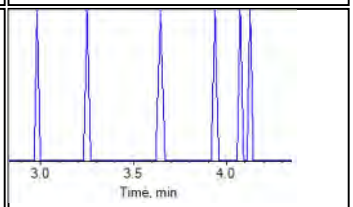
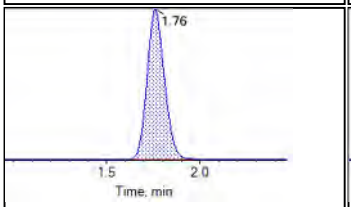
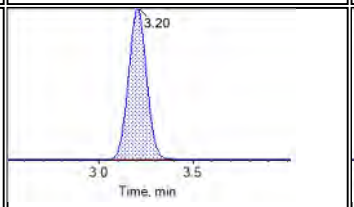


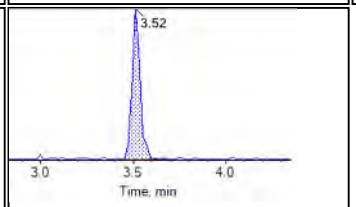
NEtFOSAA_2



13C2-PFHxA

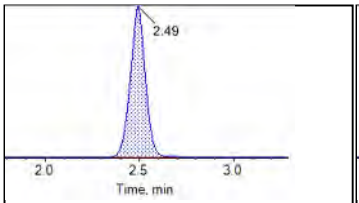


13C2-PFDA

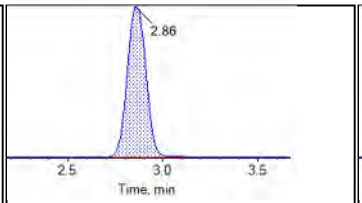


d5-EtFOSAA

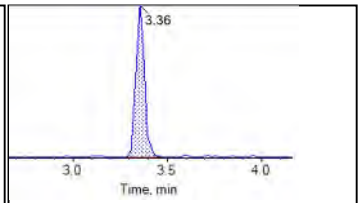
Internal Standards:



13C2-PFOA



13C4-PFOS



d3-MeFOSAA

BATTELLE

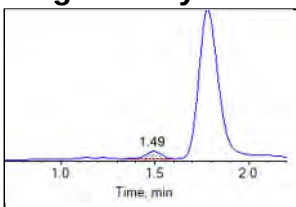
Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:33:03 PM

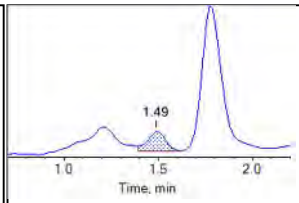
Sample Name	J6742-FS(0)	**Injection Vial**	46
Sample ID	WGNA-061218-FRB-3283	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:23:30	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

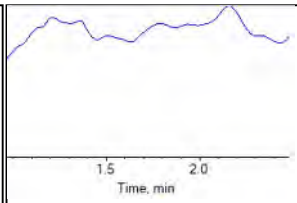
Target Analytes:



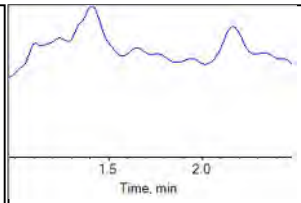
PFBS_1



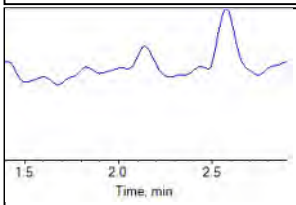
PFBS_2



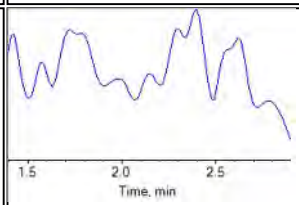
PFHxA_1



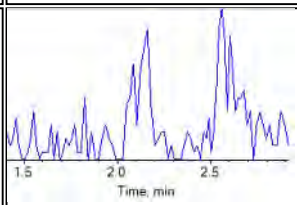
PFHxA_2



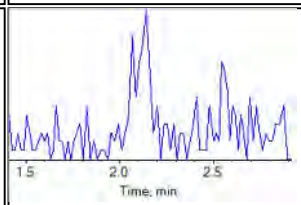
PFHpA_1



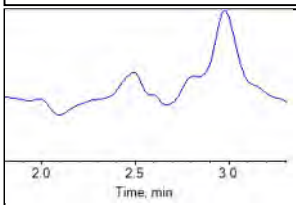
PFHpA_2



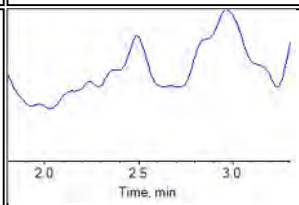
PFHxS_1



PFHxS_2



PFOA_1



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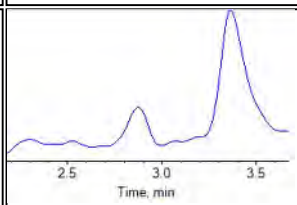

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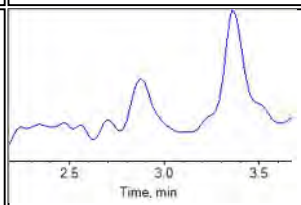

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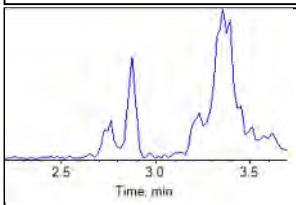

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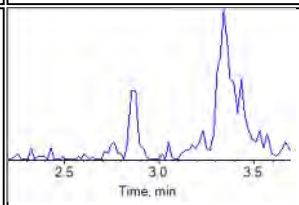

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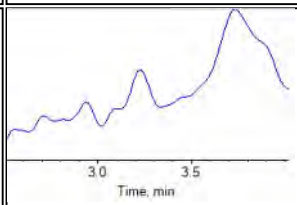

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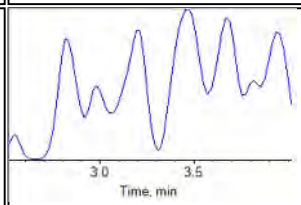

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Chromatogram Report

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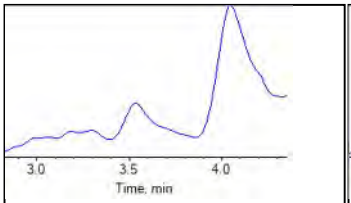

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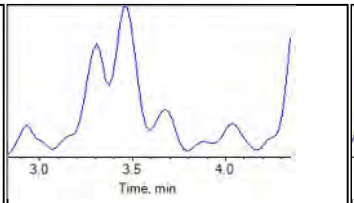

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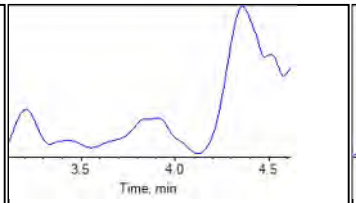

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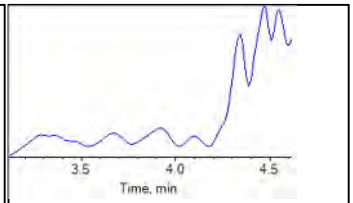

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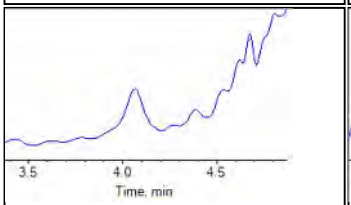

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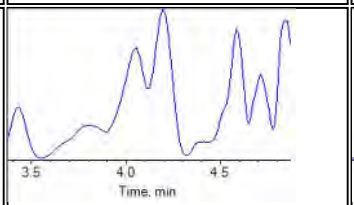

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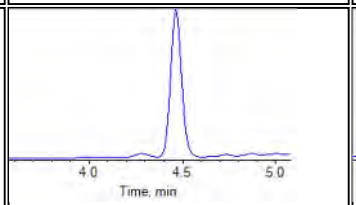

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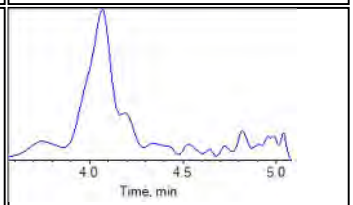

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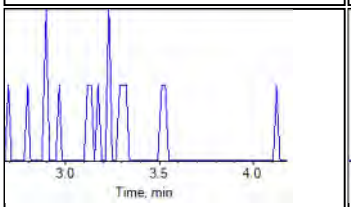

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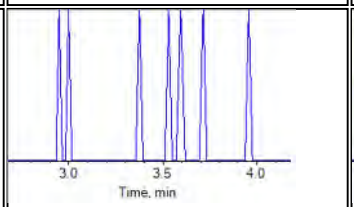

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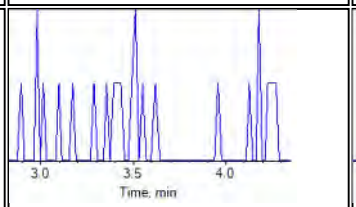

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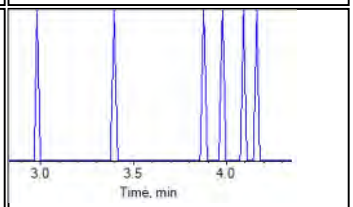

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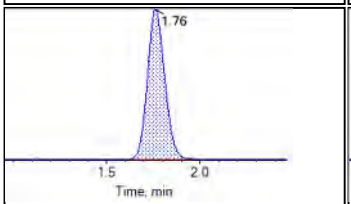
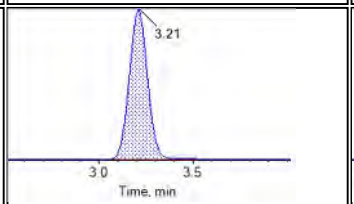


13C2-PFHxA



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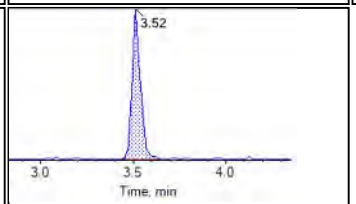

d5-EtFOSAA

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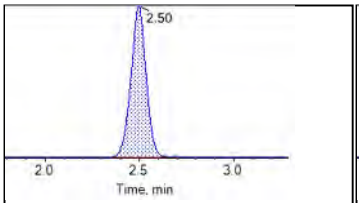

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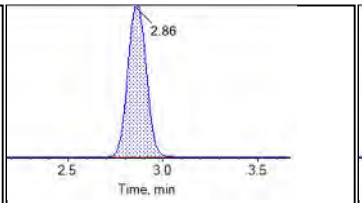

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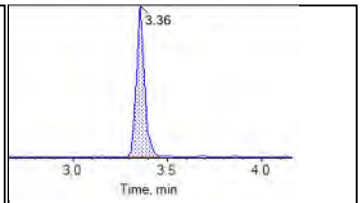

d3-MeFOSAA

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Chromatogram Report

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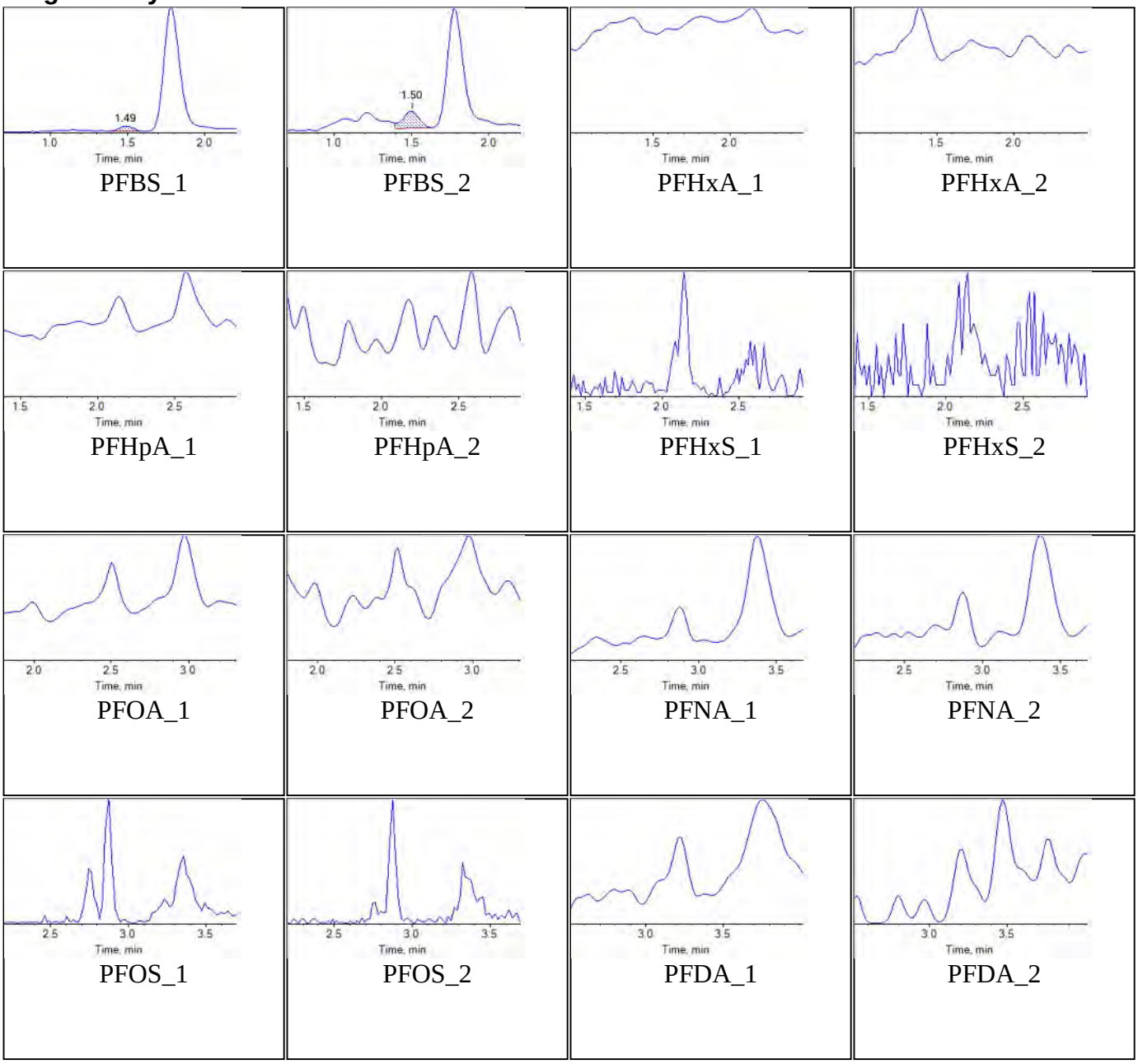
Sample Name	J6744-FS(0)	**Injection Vial**	47
Sample ID	WGNA-061218-FRB-3382	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:32:26	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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Chromatogram Report

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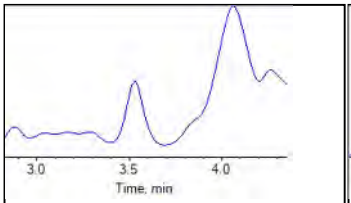

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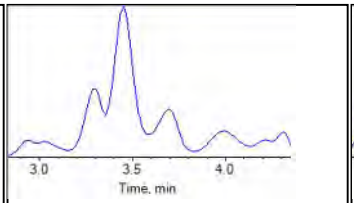

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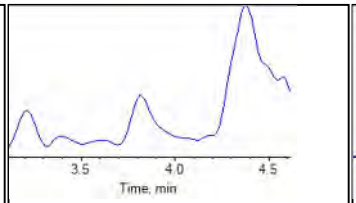

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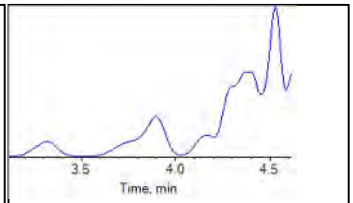

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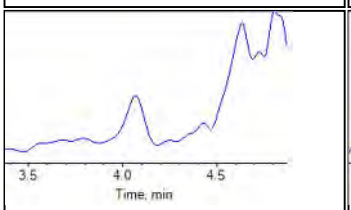

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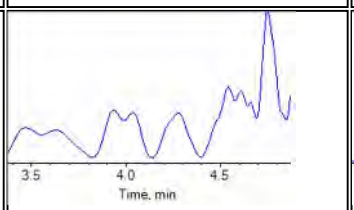

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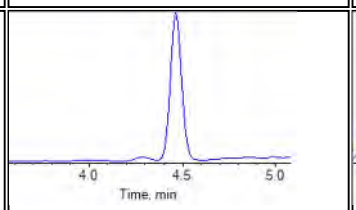

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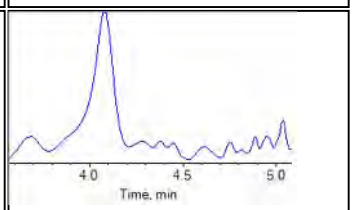

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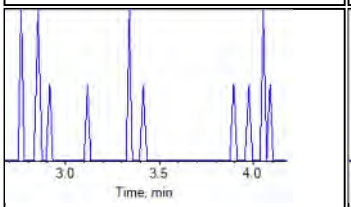

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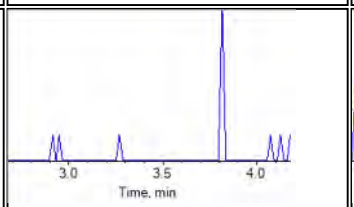

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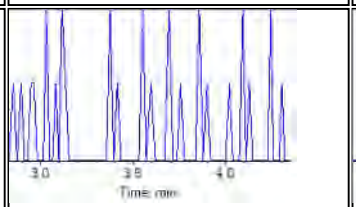

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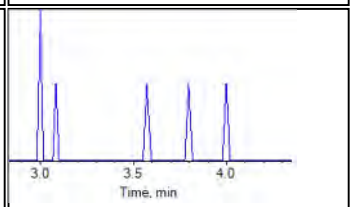

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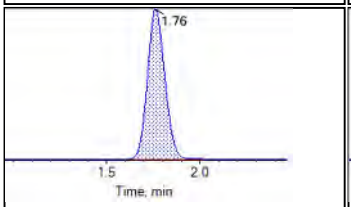

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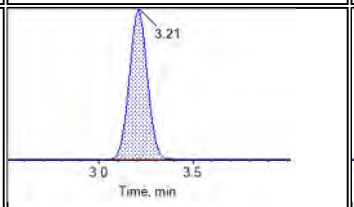

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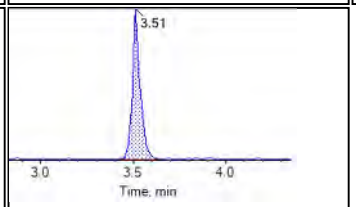
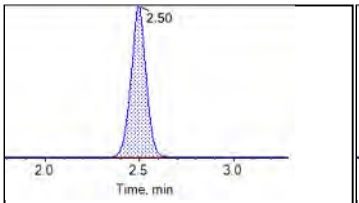


d5-EtFOSAA

Internal Standards:



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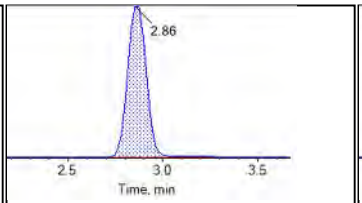

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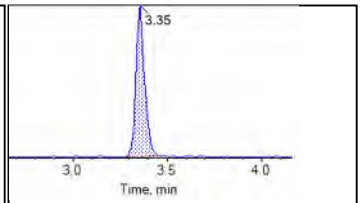

d3-MeFOSAA

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Chromatogram Report

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Printed: 29/06/2018 1:33:10 PM

Sample Name	J6746-FS(0)	**Injection Vial**	48
Sample ID	NAWC-061218-FRB-276	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:41:23	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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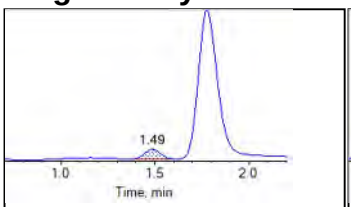

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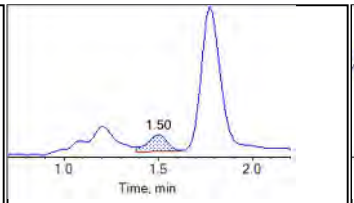

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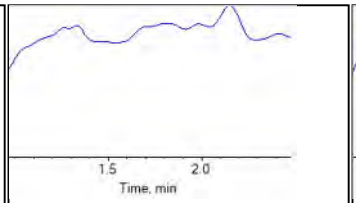

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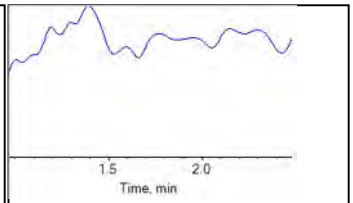

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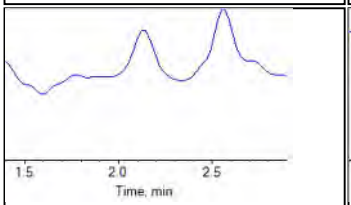

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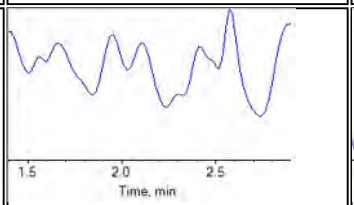

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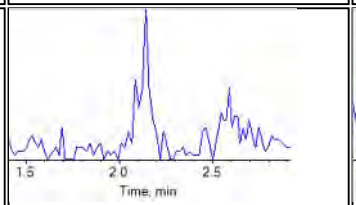

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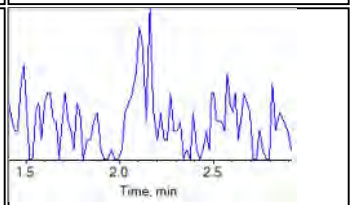

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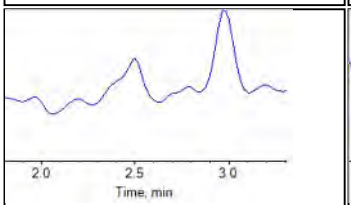

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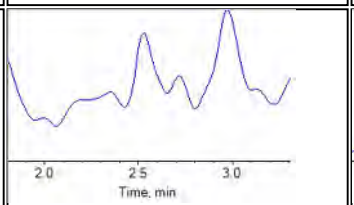

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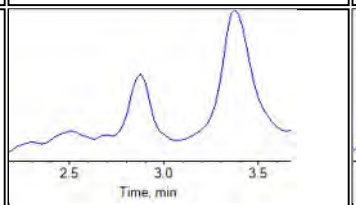

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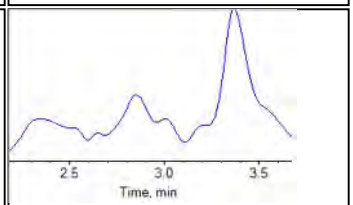

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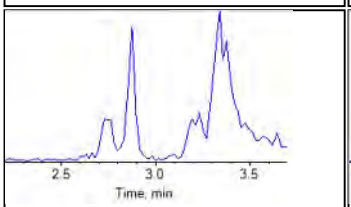

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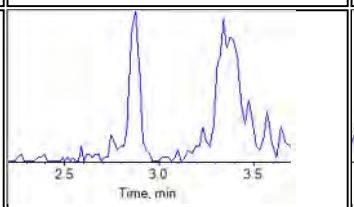

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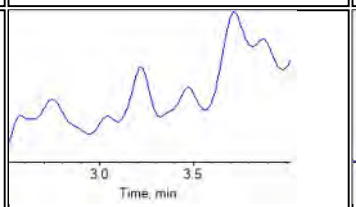

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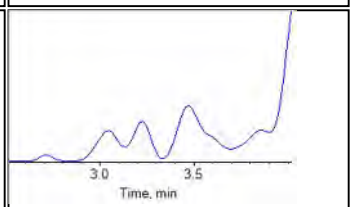

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Chromatogram Report

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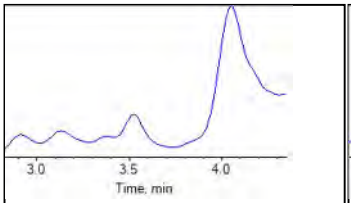

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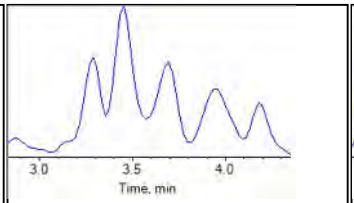

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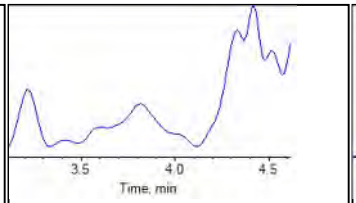

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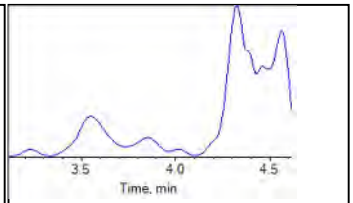

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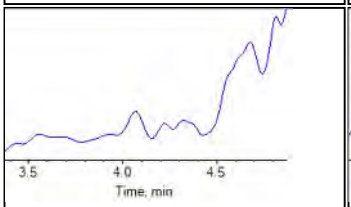

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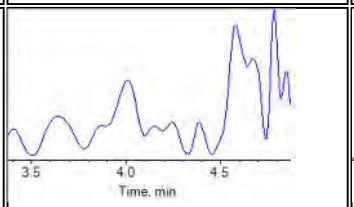

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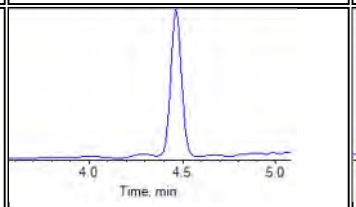

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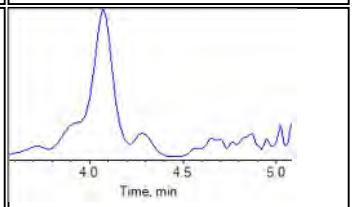

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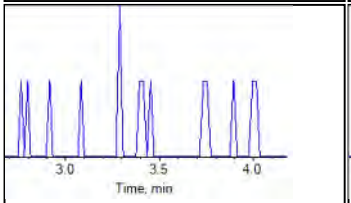

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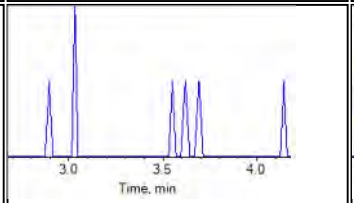

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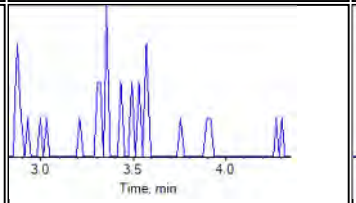

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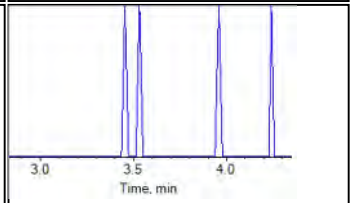

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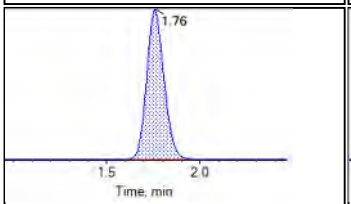
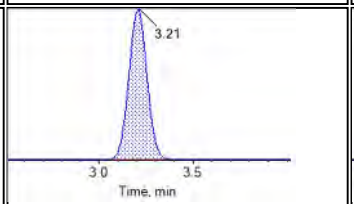


13C2-PFHxA



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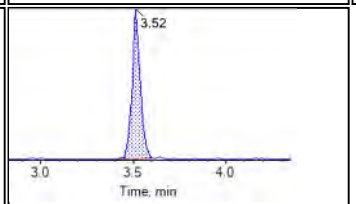

d5-EtFOSAA

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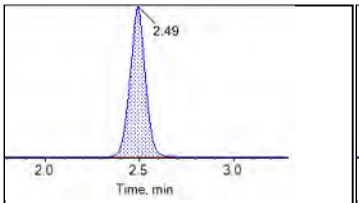

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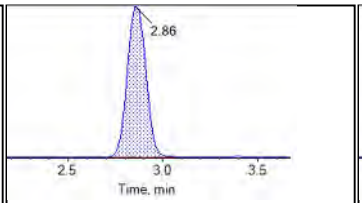
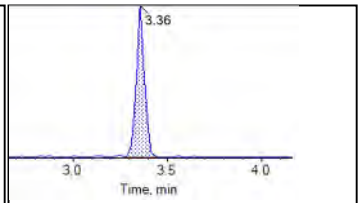


13C4-PFOS



d3-MeFOSAA

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Chromatogram Report

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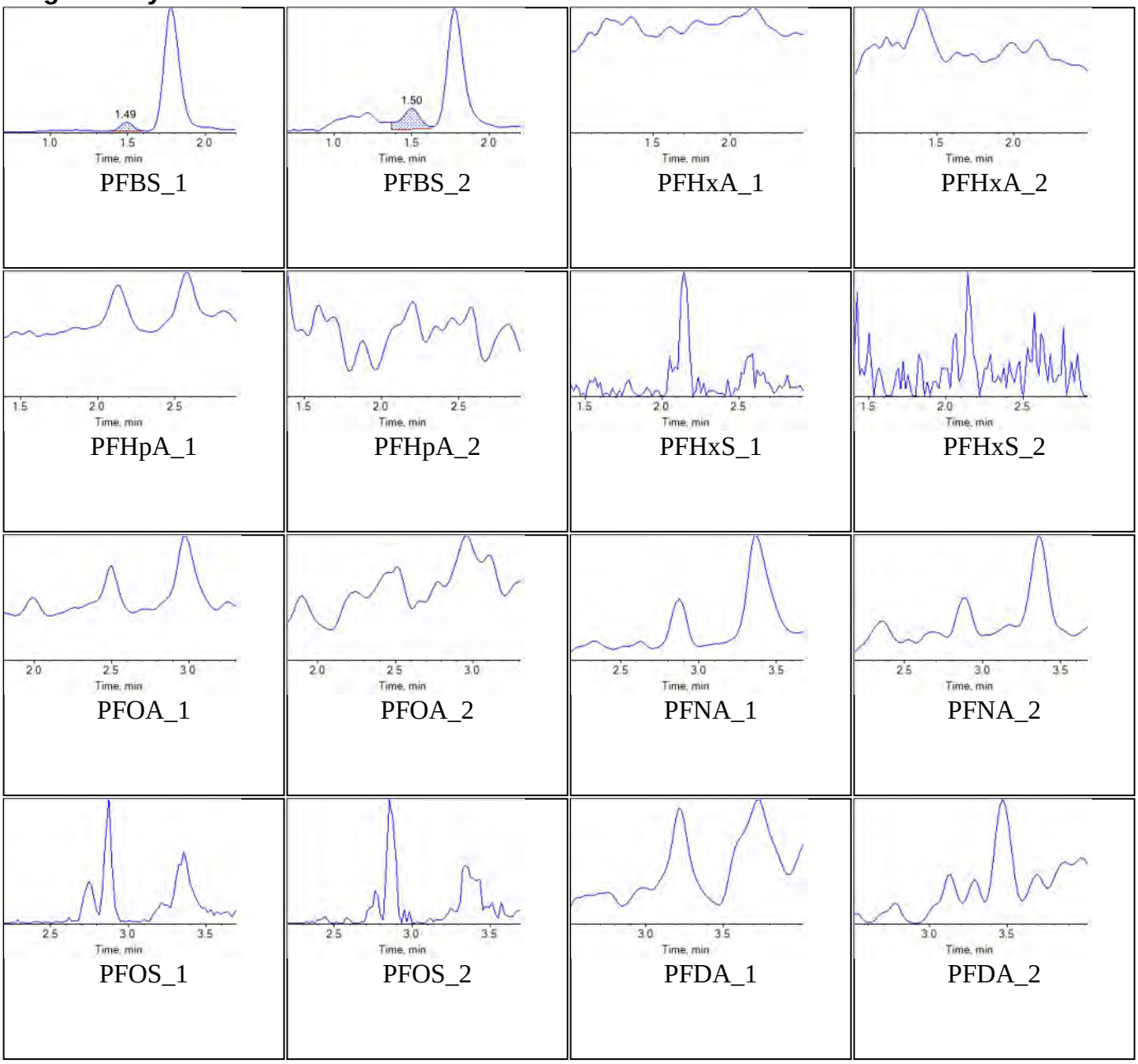
Sample Name	J6759-FS(0)	**Injection Vial**	49
Sample ID	NAWC-061418-FRB-111	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:50:19	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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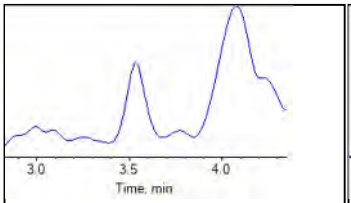
Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:33:13 PM



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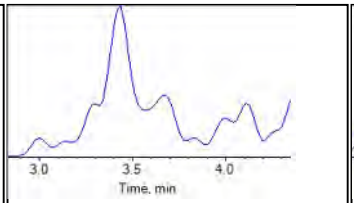

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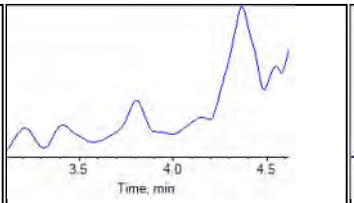

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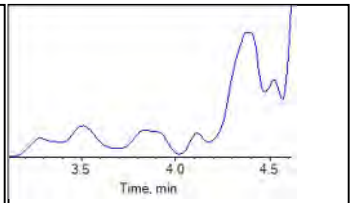

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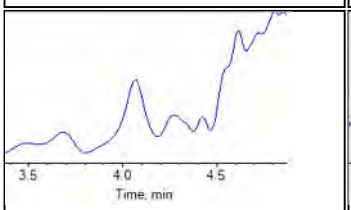

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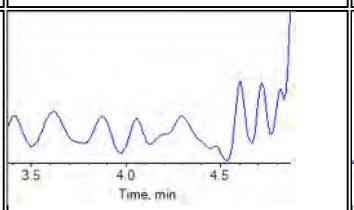

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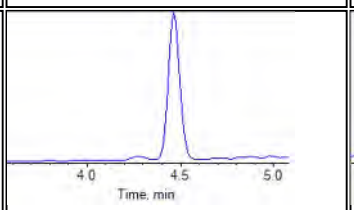

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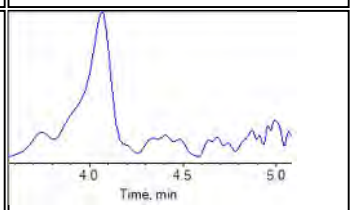

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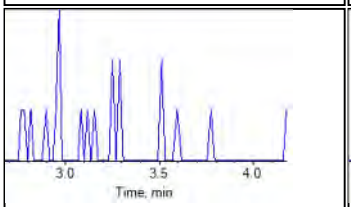

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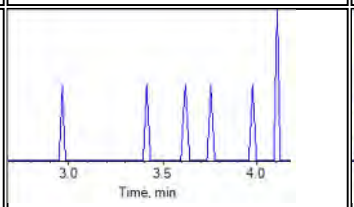

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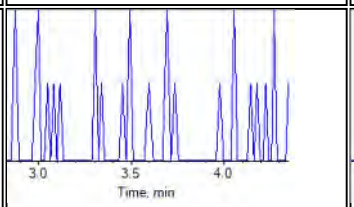

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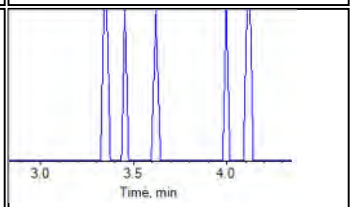

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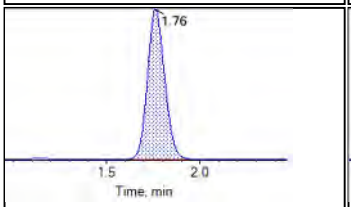

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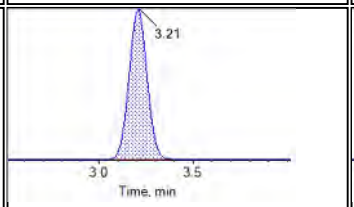

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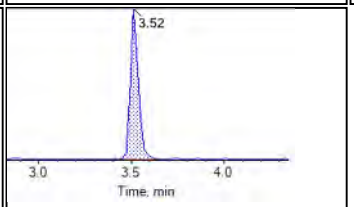
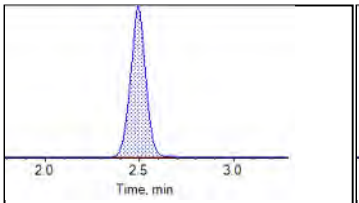


d5-EtFOSAA

Internal Standards:



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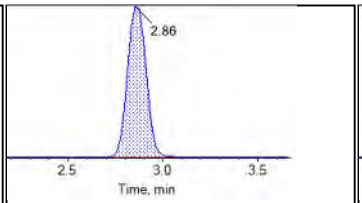

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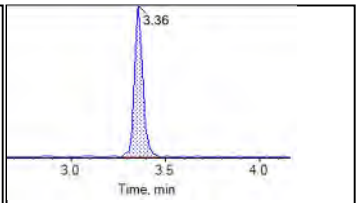

d3-MeFOSAA

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Chromatogram Report

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Sample Name	J6761-FS(0)	**Injection Vial**	50
Sample ID	NAWC-061418-FRB-056	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T23:59:16	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

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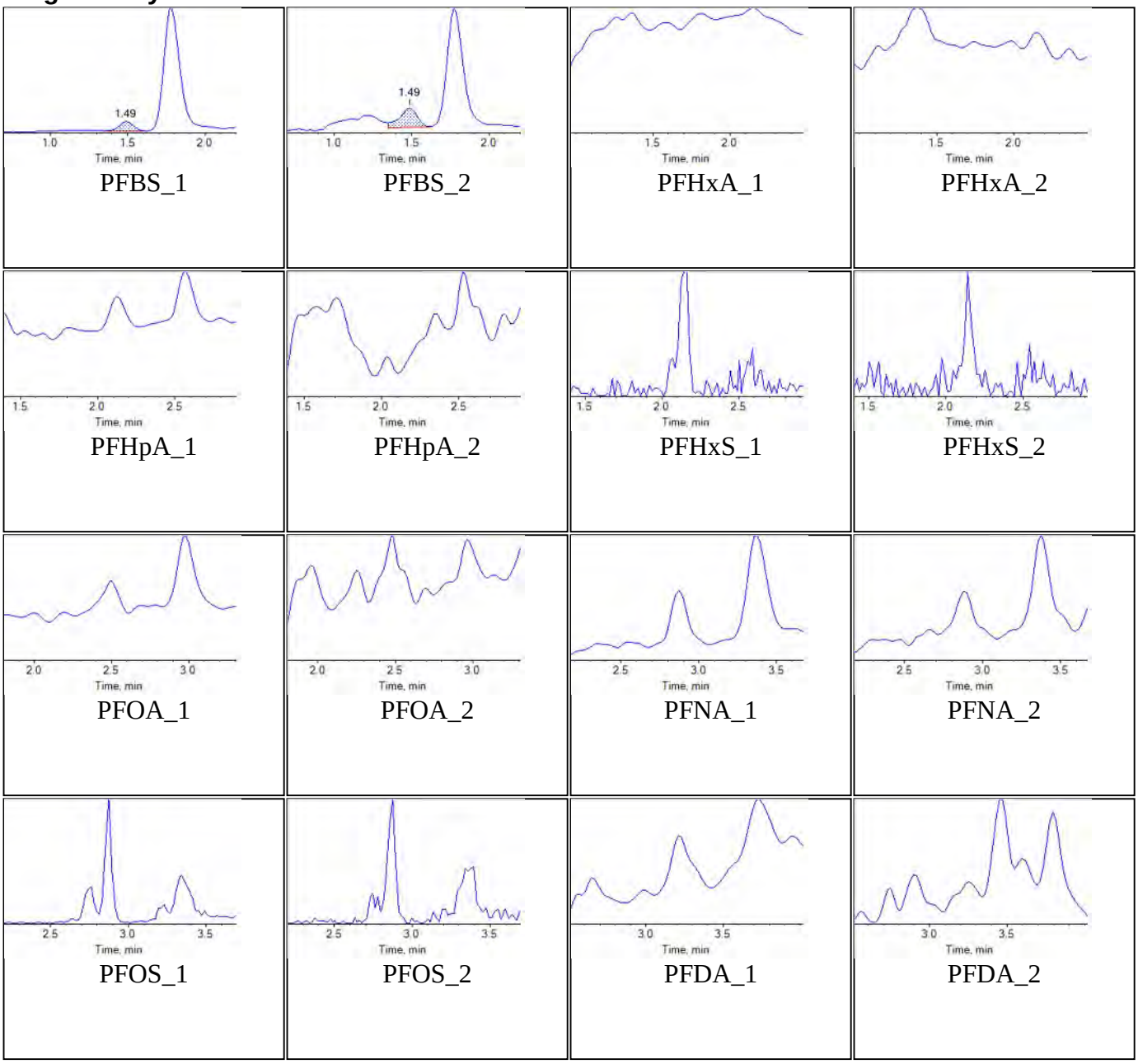

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Chromatogram Report

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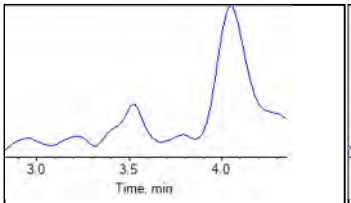

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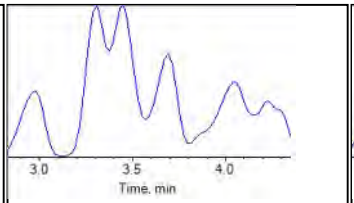
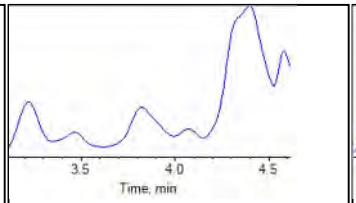


PFUnA_2



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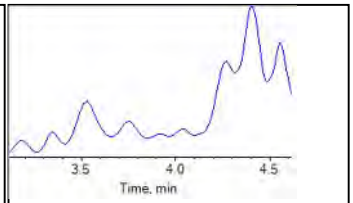

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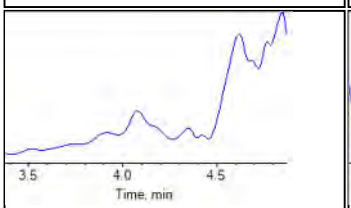

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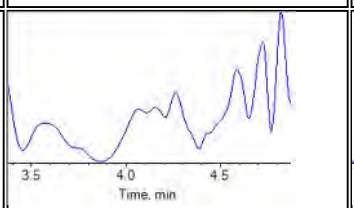

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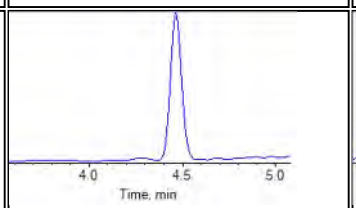

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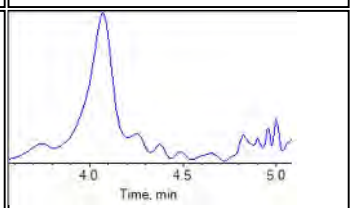

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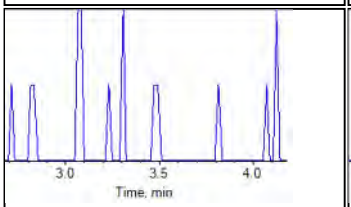

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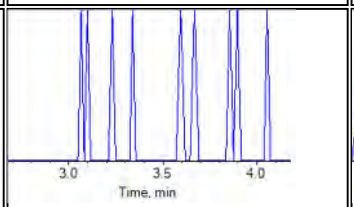

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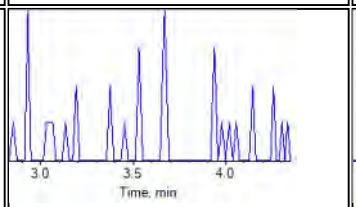

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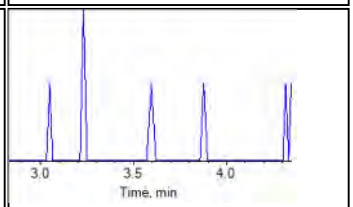

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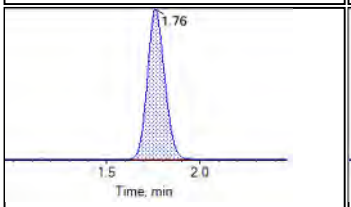

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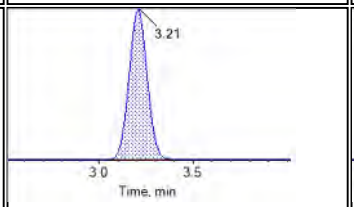

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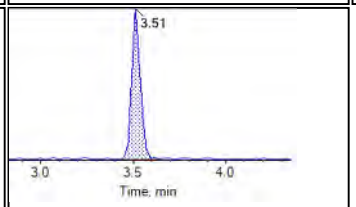

d5-EtFOSAA

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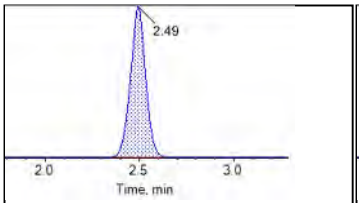

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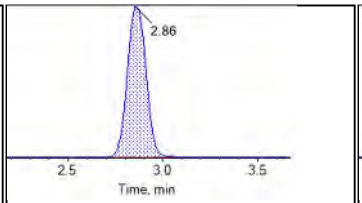

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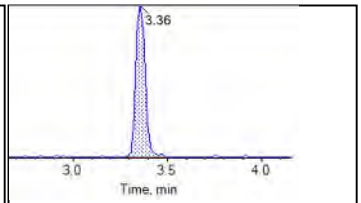


d3-MeFOSAA

BATTELLE

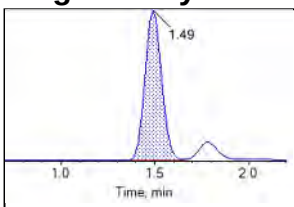
Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:33:20 PM

Sample Name	JX71 CCV	**Injection Vial**	51
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-28T00:08:12	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Chromatograms

Target Analytes:



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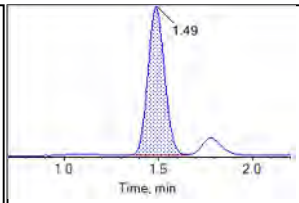

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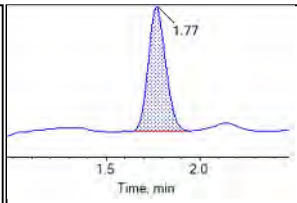

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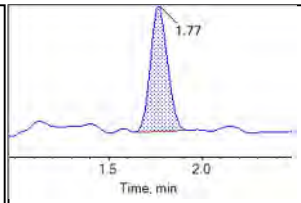

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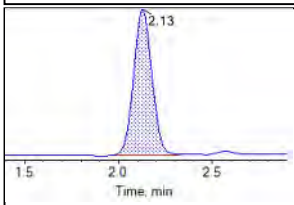

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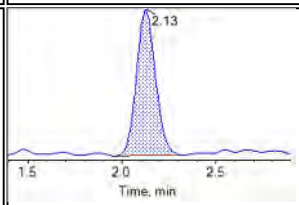

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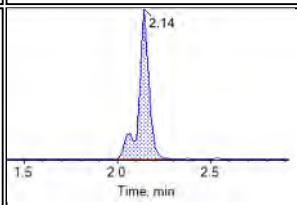

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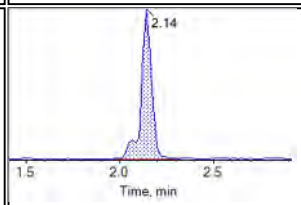

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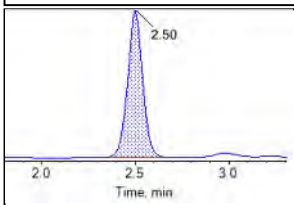

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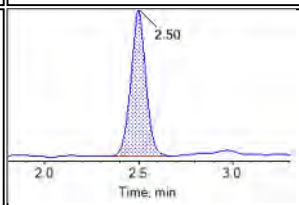

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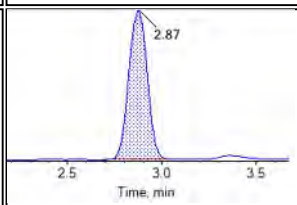

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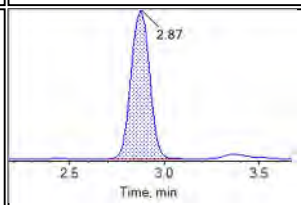

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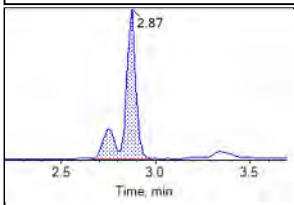

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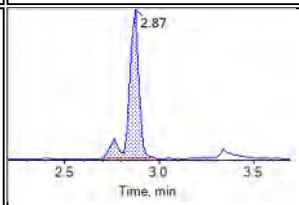

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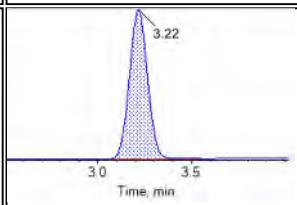

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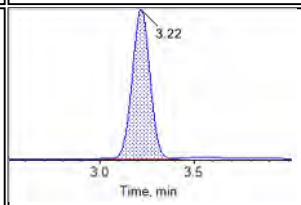

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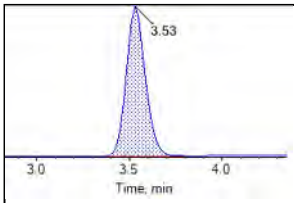
BATTELLE

Chromatogram Report

Created with Analyst Reporter
Printed: 29/06/2018 1:33:20 PM



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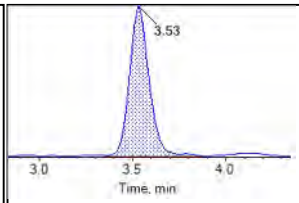

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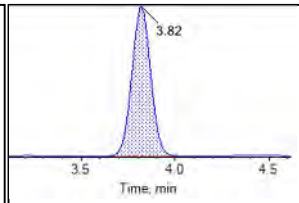

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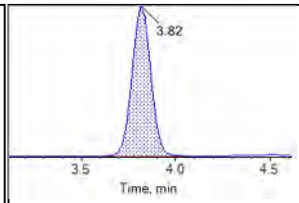

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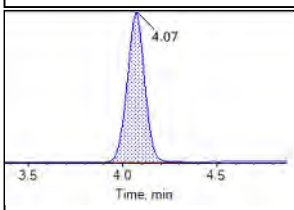

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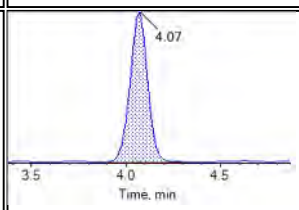

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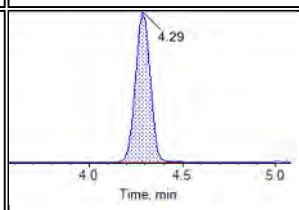

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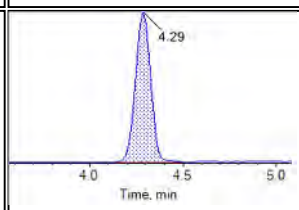

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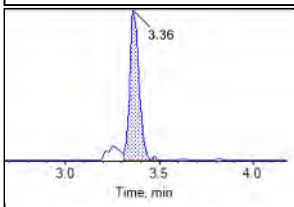

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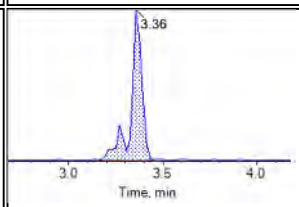

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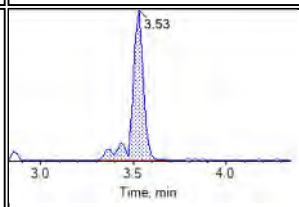

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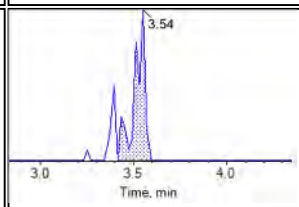

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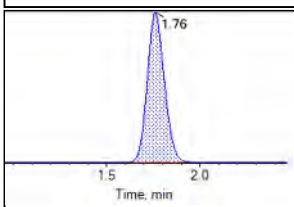

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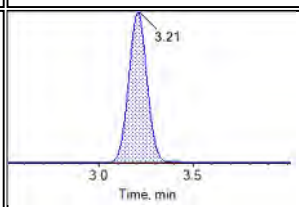

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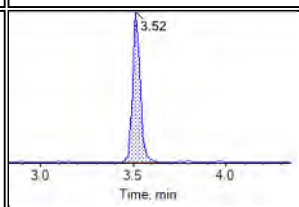

d5-EtFOSAA

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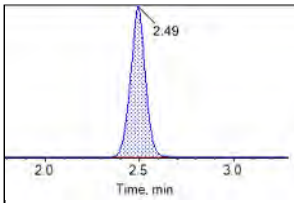

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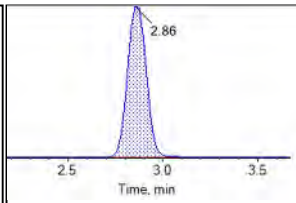

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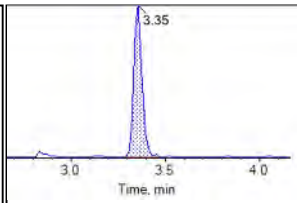

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",".000500","1.000000",""
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1","PFNA","1.000000","ng/L","U",".370000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","335-76-
2","PFDA","1.000000","ng/L","U",".390000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","2058-94-
8","PFUnA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","307-55-
1","PFDoA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","72629-94-
8","PFTrDA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500
00",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","376-06-
7","PFTeDA","1.500000","ng/L","U",".730000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500
00",".000500","1.500000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","2355-31-
9","NMeFOSAA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".
250000",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","2991-50-
6","NEtFOSAA","1.000000","ng/L","U",".440000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2
50000",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","375-73-
5","PFBS",".500000","ng/L","U",".210000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",
".000500",".500000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","355-46-
4","PFHxS","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","1763-23-
1","PFOS","1.000000","ng/L","U",".300000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","BDO-2106","13C2-
PFHxA",".410000","ng/L","","-99.000000","NA","","SIS","102.00","","-99.000000","NA","YES",".400000","",".2500
00",".000500",".500000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","BDO-2110","13C2-
PFDA",".420000","ng/L","","-99.000000","NA","","SIS","105.00","","-99.000000","NA","YES",".400000","",".25000
0",".000500",".500000",""
"CR040PB-FS","SOP 5-369","Initial","CR040PB-FS","BNO","BDO-1839","d5-
EtFOSAA","1.480000","ng/L","","-99.000000","NA","","SIS","92.00","","-99.000000","NA","YES","1.600000","",".2
50000",".000500",".500000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","307-24-
4","PFHxA","18.370000","ng/L","",".220000","MDL","","T","122.00","","2.500000","LOQ","YES","15.000000","",".2

50000",".000500",".500000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","375-85-
9","PFHpA","18.220000","ng/L","",".340000","MDL","","T","121.00","","2.500000","LOQ","YES","15.000000","",".2
50000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","335-67-
1","PFOA","18.190000","ng/L","",".380000","MDL","","T","121.00","","2.500000","LOQ","YES","15.000000","",".25
0000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","375-95-
1","PFNA","17.480000","ng/L","",".370000","MDL","","T","117.00","","2.500000","LOQ","YES","15.000000","",".25
0000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","335-76-
2","PFDA","18.700000","ng/L","",".390000","MDL","","T","125.00","","2.500000","LOQ","YES","15.000000","",".25
0000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","2058-94-
8","PFUnA","17.330000","ng/L","",".380000","MDL","","T","116.00","","2.500000","LOQ","YES","15.000000","",".2
50000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","307-55-
1","PFDoA","17.580000","ng/L","",".420000","MDL","","T","117.00","","2.500000","LOQ","YES","15.000000","",".2
50000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","72629-94-
8","PFTrDA","17.340000","ng/L","",".420000","MDL","","T","116.00","","2.500000","LOQ","YES","15.000000","",".
250000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","376-06-
7","PFTeDA","26.810000","ng/L","",".730000","MDL","","T","179.00","","2.500000","LOQ","YES","15.000000","","
.250000",".000500","1.500000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","2355-31-
9","NMeFOSAA","16.070000","ng/L","",".420000","MDL","","T","107.00","","2.500000","LOQ","YES","15.000000"
,"",".250000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","2991-50-
6","NEtFOSAA","16.510000","ng/L","",".440000","MDL","","T","110.00","","2.500000","LOQ","YES","15.000000","
","",".250000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","375-73-
5","PFBS","14.520000","ng/L","",".210000","MDL","","T","109.00","","2.500000","LOQ","YES","13.280000","",".25
0000",".000500",".500000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","355-46-
4","PFHxS","15.200000","ng/L","",".340000","MDL","","T","107.00","","2.500000","LOQ","YES","14.180000","",".2
50000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","1763-23-
1","PFOS","16.150000","ng/L","",".300000","MDL","","T","113.00","","2.500000","LOQ","YES","14.330000","",".25
0000",".000500","1.000000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","BDO-2106","13C2-
PFHxA",".420000","ng/L","","-99.000000","NA","","SIS","104.00","","-99.000000","NA","YES",".400000","",".2500
00",".000500",".500000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","BDO-2110","13C2-
PFDA",".430000","ng/L","","-99.000000","NA","","SIS","107.00","","-99.000000","NA","YES",".400000","",".25000
0",".000500",".500000",""
"CR041LCS-FS","SOP 5-369","Initial","CR041LCS-FS","BNO","BDO-1839","d5-
EtFOSAA","1.260000","ng/L","","-99.000000","NA","","SIS","79.00","","-99.000000","NA","YES","1.600000","",".2
50000",".000500",".500000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","307-24-
4","PFHxA",".480000","ng/L","U",".210000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000
",".000500",".480000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","375-85-
9","PFHpA",".960000","ng/L","U",".330000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000

",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","335-67-1","PFOA",".960000","ng/L","U",".370000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","375-95-1","PFNA",".960000","ng/L","U",".360000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","335-76-2","PFDA",".960000","ng/L","U",".380000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","2058-94-8","PFUnA",".960000","ng/L","U",".370000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","307-55-1","PFDoA",".960000","ng/L","U",".400000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","72629-94-8","PFTrDA",".960000","ng/L","U",".400000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","376-06-7","PFTeDA","1.440000","ng/L","U",".700000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500","1.440000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","2355-31-9","NMeFOSAA",".960000","ng/L","U",".400000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","2991-50-6","NEtFOSAA",".960000","ng/L","U",".420000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","375-73-5","PFBS",".480000","ng/L","U",".200000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".480000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","355-46-4","PFHxS",".960000","ng/L","U",".330000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","1763-23-1","PFOS",".960000","ng/L","U",".290000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","BDO-2106","13C2-PFHxA",".420000","ng/L","","-99.000000","NA","","SIS","109.00","","-99.000000","NA","YES",".380000","",".260000",".000500",".500000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","BDO-2110","13C2-PFDA",".420000","ng/L","","-99.000000","NA","","SIS","110.00","","-99.000000","NA","YES",".380000","",".260000",".000500",".500000",""
"WGNA-061118-FRB-3073","SOP 5-369","Initial","J6738-FS","BNO","BDO-1839","d5-EtFOSAA","1.350000","ng/L","","-99.000000","NA","","SIS","87.00","","-99.000000","NA","YES","1.540000","",".260000",".000500",".500000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","307-24-4","PFHxA",".500000","ng/L","U",".220000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500",".500000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","375-85-9","PFHpA","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","335-67-1","PFOA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000

",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","375-95-1","PFNA","1.000000","ng/L","U",".370000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","335-76-2","PFDA","1.000000","ng/L","U",".390000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","2058-94-8","PFUnA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","307-55-1","PFDoA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","72629-94-8","PFTrDA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","376-06-7","PFTeDA","1.500000","ng/L","U",".730000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.500000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","2355-31-9","NMeFOSAA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","2991-50-6","NEtFOSAA","1.000000","ng/L","U",".440000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","375-73-5","PFBS",".500000","ng/L","U",".210000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500",".500000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","355-46-4","PFHxS","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","1763-23-1","PFOS","1.000000","ng/L","U",".300000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","BDO-2106","13C2-PFHxA",".400000","ng/L","","-99.000000","NA","","SIS","101.00","","-99.000000","NA","YES",".400000","",".250000",".000500",".500000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","BDO-2110","13C2-PFDA",".420000","ng/L","","-99.000000","NA","","SIS","104.00","","-99.000000","NA","YES",".400000","",".250000",".000500",".500000",""
"WGNA-061118-FRB-0437","SOP 5-369","Initial","J6740-FS","BNO","BDO-1839","d5-EtFOSAA","1.430000","ng/L","","-99.000000","NA","","SIS","90.00","","-99.000000","NA","YES","1.600000","",".250000",".000500",".500000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","307-24-4","PFHxA",".480000","ng/L","U",".210000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".480000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","375-85-9","PFHpA",".960000","ng/L","U",".330000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","335-67-1","PFOA",".960000","ng/L","U",".370000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","375-95-1","PFNA",".960000","ng/L","U",".360000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",

".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","335-76-2","PFDA",".960000","ng/L","U",".380000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","2058-94-8","PFUnA",".960000","ng/L","U",".370000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","307-55-1","PFDoA",".960000","ng/L","U",".400000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","72629-94-8","PFTrDA",".960000","ng/L","U",".400000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","376-06-7","PFTeDA","1.440000","ng/L","U",".700000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500","1.440000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","2355-31-9","NMeFOSAA",".960000","ng/L","U",".400000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","2991-50-6","NEtFOSAA",".960000","ng/L","U",".420000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","375-73-5","PFBS",".480000","ng/L","U",".200000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".480000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","355-46-4","PFHxS",".960000","ng/L","U",".330000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","1763-23-1","PFOS",".960000","ng/L","U",".290000","MDL","","T","","","2.400000","LOQ","YES","-99.000000","",".260000",".000500",".960000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","BDO-2106","13C2-PFHxA",".420000","ng/L","","-99.000000","NA","","SIS","108.00","","-99.000000","NA","YES",".380000","",".260000",".000500",".500000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","BDO-2110","13C2-PFDA",".410000","ng/L","","-99.000000","NA","","SIS","106.00","","-99.000000","NA","YES",".380000","",".260000",".000500",".500000",""
"WGNA-061218-FRB-3283","SOP 5-369","Initial","J6742-FS","BNO","BDO-1839","d5-EtFOSAA","1.400000","ng/L","","-99.000000","NA","","SIS","91.00","","-99.000000","NA","YES","1.540000","",".260000",".000500",".500000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","307-24-4","PFHxA",".500000","ng/L","U",".220000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500",".500000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","375-85-9","PFHpA","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","335-67-1","PFOA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","375-95-1","PFNA","1.000000","ng/L","U",".370000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","335-76-2","PFDA","1.000000","ng/L","U",".390000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000

",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","2058-94-8","PFUnA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","307-55-1","PFDoA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","72629-94-8","PFTrDA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","376-06-7","PFTeDA","1.500000","ng/L","U",".730000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.500000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","2355-31-9","NMeFOSAA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","2991-50-6","NEtFOSAA","1.000000","ng/L","U",".440000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","375-73-5","PFBS",".500000","ng/L","U",".210000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500",".500000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","355-46-4","PFHxS","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","1763-23-1","PFOS","1.000000","ng/L","U",".300000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","BDO-2106","13C2-PFHxA",".460000","ng/L","","-99.000000","NA","","SIS","115.00","","-99.000000","NA","YES",".400000","",".250000",".000500",".500000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","BDO-2110","13C2-PFDA",".420000","ng/L","","-99.000000","NA","","SIS","106.00","","-99.000000","NA","YES",".400000","",".250000",".000500",".500000",""
"WGNA-061218-FRB-3382","SOP 5-369","Initial","J6744-FS","BNO","BDO-1839","d5-EtFOSAA","1.780000","ng/L","","-99.000000","NA","","SIS","111.00","","-99.000000","NA","YES","1.600000","",".250000",".000500",".500000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","307-24-4","PFHxA",".500000","ng/L","U",".220000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500",".500000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","375-85-9","PFHpA","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","335-67-1","PFOA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","375-95-1","PFNA","1.000000","ng/L","U",".370000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","335-76-2","PFDA","1.000000","ng/L","U",".390000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","2058-94-8","PFUnA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000

0",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","307-55-
1","PFDoA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","72629-94-
8","PFTrDA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500
00",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","376-06-
7","PFTeDA","1.500000","ng/L","U",".730000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500
00",".000500","1.500000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","2355-31-
9","NMeFOSAA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".
250000",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","2991-50-
6","NEtFOSAA","1.000000","ng/L","U",".440000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2
50000",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","375-73-
5","PFBS",".500000","ng/L","U",".210000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",
".000500",".500000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","355-46-
4","PFHxS","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","1763-23-
1","PFOS","1.000000","ng/L","U",".300000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","BDO-2106","13C2-
PFHxA",".460000","ng/L","","-99.000000","NA","","SIS","115.00","","-99.000000","NA","YES",".400000","",".2500
00",".000500",".500000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","BDO-2110","13C2-
PFDA",".420000","ng/L","","-99.000000","NA","","SIS","105.00","","-99.000000","NA","YES",".400000","",".25000
0",".000500",".500000",""
"NAWC-061218-FRB-276","SOP 5-369","Initial","J6746-FS","BNO","BDO-1839","d5-
EtFOSAA","1.400000","ng/L","","-99.000000","NA","","SIS","88.00","","-99.000000","NA","YES","1.600000","",".2
50000",".000500",".500000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","307-24-
4","PFHxA",".500000","ng/L","U",".220000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500",".500000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","375-85-
9","PFHpA","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","335-67-
1","PFOA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","375-95-
1","PFNA","1.000000","ng/L","U",".370000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","335-76-
2","PFDA","1.000000","ng/L","U",".390000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","2058-94-
8","PFUnA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","307-55-
1","PFDoA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000

0",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","72629-94-
8","PFTrDA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500
00",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","376-06-
7","PFTeDA","1.500000","ng/L","U",".730000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500
00",".000500","1.500000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","2355-31-
9","NMeFOSAA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".
250000",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","2991-50-
6","NEtFOSAA","1.000000","ng/L","U",".440000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2
50000",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","375-73-
5","PFBS",".500000","ng/L","U",".210000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",
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"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","355-46-
4","PFHxS","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","1763-23-
1","PFOS","1.000000","ng/L","U",".300000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","BDO-2106","13C2-
PFHxA",".400000","ng/L","","-99.000000","NA","","SIS","101.00","","-99.000000","NA","YES",".400000","",".2500
00",".000500",".500000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","BDO-2110","13C2-
PFDA",".390000","ng/L","","-99.000000","NA","","SIS","99.00","","-99.000000","NA","YES",".400000","",".250000"
,".000500",".500000",""
"NAWC-061418-FRB-111","SOP 5-369","Initial","J6759-FS","BNO","BDO-1839","d5-
EtFOSAA","1.850000","ng/L","","-99.000000","NA","","SIS","116.00","","-99.000000","NA","YES","1.600000","",".
250000",".000500",".500000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","307-24-
4","PFHxA",".500000","ng/L","U",".220000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500",".500000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","375-85-
9","PFHpA","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","335-67-
1","PFOA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","375-95-
1","PFNA","1.000000","ng/L","U",".370000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","335-76-
2","PFDA","1.000000","ng/L","U",".390000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","2058-94-
8","PFUnA","1.000000","ng/L","U",".380000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","307-55-
1","PFDoA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","72629-94-
8","PFTrDA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500

00",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","376-06-
7","PFTeDA","1.500000","ng/L","U",".730000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2500
00",".000500","1.500000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","2355-31-
9","NMeFOSAA","1.000000","ng/L","U",".420000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".
250000",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","2991-50-
6","NEtFOSAA","1.000000","ng/L","U",".440000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".2
50000",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","375-73-
5","PFBS",".500000","ng/L","U",".210000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000",
".000500",".500000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","355-46-
4","PFHxS","1.000000","ng/L","U",".340000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".25000
0",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","1763-23-
1","PFOS","1.000000","ng/L","U",".300000","MDL","","T","","","2.500000","LOQ","YES","-99.000000","",".250000
",".000500","1.000000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","BDO-2106","13C2-
PFHxA",".420000","ng/L","","-99.000000","NA","","SIS","105.00","","-99.000000","NA","YES",".400000","",".2500
00",".000500",".500000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","BDO-2110","13C2-
PFDA",".400000","ng/L","","-99.000000","NA","","SIS","99.00","","-99.000000","NA","YES",".400000","",".250000"
,".000500",".500000",""
"NAWC-061418-FRB-056","SOP 5-369","Initial","J6761-FS","BNO","BDO-1839","d5-
EtFOSAA","1.800000","ng/L","","-99.000000","NA","","SIS","113.00","","-99.000000","NA","YES","1.600000","",".
250000",".000500",".500000",""
"112G08005-WE04","WE04 NAS Willow Grove","CR040PB-FS","","WATER","CR040PB-FS","Method
Bla","","-99.000000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018
22:47","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-
0158","18-0392","06/25/2018 15:43","07/05/2018 14:46",""
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FS","LCS","","-99.000000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018
22:56","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-
0158","18-0392","06/25/2018 15:43","07/05/2018 14:46",""
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FS","NM","SHP-180613-02","1.700000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018
23:05","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-
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FS","NM","SHP-180613-02","1.700000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018
23:14","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-
0158","18-0392","06/13/2018 09:45","07/05/2018 14:46",""
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FS","NM","SHP-180613-02","1.700000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018
23:23","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-
0158","18-0392","06/13/2018 09:45","07/05/2018 14:46",""
"112G08005-WE04","WE04 NAS Willow Grove","WGNA-061218-FRB-3382","06/12/2018 09:35","DW","J6744-
FS","NM","SHP-180613-02","1.700000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018
23:32","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-
0158","18-0392","06/13/2018 09:45","07/05/2018 14:46",""
"112G08005-WE04","WE04 NAS Willow Grove","NAWC-061218-FRB-276","06/12/2018 10:05","DW","J6746-
FS","NM","SHP-180613-02","1.700000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018

23:41","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-0158","18-0392","06/13/2018 09:45","07/05/2018 14:46",""
"112G08005-WE04","WE04 NAS Willow Grove","NAWC-061418-FRB-111","06/14/2018 09:05","DW","J6759-FS","NM","SHP-180615-01","2.100000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018 23:50","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-0158","18-0392","06/15/2018 10:00","07/05/2018 14:46",""
"112G08005-WE04","WE04 NAS Willow Grove","NAWC-061418-FRB-056","06/14/2018 09:35","DW","J6761-FS","NM","SHP-180615-01","2.100000","SOP 5-369","Gen Prep","Initial","06/25/2018 15:43","06/27/2018 23:59","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0392","18-0392","DP-18-0158","DP-18-0158","18-0392","06/15/2018 10:00","07/05/2018 14:46",""

TETRA TECH **INTERNAL CORRESPONDENCE**

TO: **A. FREBOWITZ** **DATE:** **AUGUST 7, 2018**

FROM: **TERRI L. SOLOMON** **COPIES:** **FILE**

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUPS (SDGs) 18-0372, 18-0392

SAMPLES: SDG 18-0372
7/Drinking Water

NAWC-061218-RW-276	NAWC-061418-RW-056
NAWC-061418-RW-111	WGNA-061118-RW-0437
WGNA-061118-RW-3073	WGNA-061218-RW-3283
WGNA-061218-RW-3382	

SDG 18-0392
7/Field Reagent Blank (FRB)

NAWC-061218-FRB-276	NAWC-061418-FRB-056
NAWC-061418-FRB-111	WGNA-061118-FRB-0437
WGNA-061118-FRB-3073	WGNA-061218-FRB-3283
WGNA-061218-FRB-3382	

Overview

The sample sets for NAS JRB Willow Grove, SDGs 18-0372 and 18-0392, consisted of seven (7) drinking water samples and seven (7) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorooctane sulfonic acid (PFOS), N-ethylperfluorooctane sulfonamidoacetate (NMeFOSA), N-methylperfluorooctane sulfonamidoacetate (NEtFOSA), perfluorodecanoic acid (PFDA), perfluorododecanoic acid (PFDoA), perfluorohexanoic acid (PFHxA), perfluorotetradecanoic acid (PFTeDA), perfluorotridecanoic acid (PFTrDA) and perfluoroundecanoic acid (PFUnA). No field duplicate pairs were included in this SDG.

The samples were collected by Tetra Tech on June 11, 12 and 14, 2018 and analyzed by Battelle Norwell Operations. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, mass calibration, mass spectral acquisition rate, tune check, instrument sensitivity check, initial/continuing calibrations, ion transition check, laboratory method/FRBs, surrogate spike recoveries (extracted internal standard recoveries), laboratory control sample results, injected internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

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Major

No issues.

Minor

Detected results reported below the LOQ but above the detection limit (DL) were qualified as estimated (J).

The surrogate recovery for n-deuterioethylperfluoro-1-octanesulfonamidoacetic acid (d5-NEtFOSAA) was below the quality control limit for sample NAWC-061218-RW-276. The detected results reported for the

affected sample were qualified as biased low (J-) or estimated (J), as a result of conflicting noncompliances. The nondetected results reported in the affected sample were qualified as estimated (UJ).

The surrogate recoveries for perfluoro-n-(1,2-$^{13}C_2$)hexanoic acid (^{13}C-PFHxA), perfluoro-n-(1,2-$^{13}C_2$)decanoic acid (^{13}C-PFDA) and d5-NEtFOSAA were below the quality control limit for sample NAWC-061418-RW-056. The detected results reported for the affected sample were qualified as biased low (J-) or estimated (J), as a result of conflicting noncompliances. The nondetected results reported in the affected sample were qualified as estimated (UJ).

The internal standard recovery for N-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-NMeFOSAA) was below the continuing calibration lower limit for sample NAWC-061218-RW-276. The compounds affected were NMeFOSA and NEtFOSA. The nondetected results reported for NMeFOSA and NEtFOSA in the affected sample were qualified as estimated (UJ).

Notes

The laboratory uses a primary transition for the quantitation of each analyte and a secondary transition for confirmation.

Sample WGNA-061118-RW-3073 was analyzed at a 20X dilution for PFBS.

The laboratory control sample for SDGs 18-0372 and 18-0392 had a percent recovery for PFTeDA that was above the quality control limit. No validation actions were required as all sample and FRB results were nondetects.

Samples with detections and their associated FRBs are summarized below.

Sample	Associated FRB
NAWC-061218-RW-276	NAWC-061218-FRB-276
NAWC-061418-RW-056	NAWC-061418-FRB-056
NAWC-061418-RW-111	NAWC-061418-FRB-111
WGNA-061118-RW-0437	WGNA-061118-FRB-0437
WGNA-061118-RW-3073	WGNA-061118-FRB-3073
WGNA-061218-RW-3283	WGNA-061218-FRB-3283
WGNA-061218-RW-3382	WGNA-061218-FRB-3382

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

Executive Summary

Laboratory Performance: Surrogate recoveries were below the quality control limits in two samples. One internal standard recovery was below the quality control limit in one sample.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, “Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)”, (September 2009), US EPA National Functional Guidelines for Organic Data Review (January 2017), and the Department of Defense (DoD) document entitled “Quality Systems Manual (QSM) for Environmental Laboratories version

5.1" (2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

Terri L. Solomon

Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator

Joseph A. Samchuck

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-061218-RW-276			NAWC-061418-RW-056			NAWC-061418-RW-111			WGNA-061118-RW-0437		
SDG: 18-0372	LAB_ID	J6745-FS			J6760-FS			J6758-FS			J6739-FS		
FRACTION: PFAS	SAMP_DATE	6/12/2018			6/14/2018			6/14/2018			6/11/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.93	UJ	NR	0.89	UJ	R	0.88	U		0.91	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		0.93	UJ	NR	0.89	UJ	R	0.88	U		0.91	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		22.47	J-	R	38.83	J-	R	19.26			26.21		
PERFLUOROBUTANESULFONIC ACID (PFBS)		6.89	J-	R	11.57	J-	R	4.18			18.23		
PERFLUORODECANOIC ACID (PFDA)		0.98	J	PR	0.47	J	PR	0.41	J	P	0.45	J	P
PERFLUORODODECANOIC ACID (PFDOA)		0.93	UJ	R	0.89	UJ	R	0.88	U		0.91	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		9.04	J-	R	21.73	J-	R	5.33			7.09		
PERFLUOROHEXANESULFONIC ACID (PFHXS)		12.35	J-	R	11.58	J-	R	15.75			16.23		
PERFLUOROHEXANOIC ACID (PFHXA)		14.77	J-	R	20.78	J-	R	11.38			11.97		
PERFLUORONONANOIC ACID (PFNA)		3.18	J-	R	2.94	J-	R	2.44			5.77		
PERFLUOROOCTANESULFONIC ACID (PFOS)		23.87	J-	R	21.65	J-	R	28.23			25.28		
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.39	UJ	R	1.34	UJ	R	1.32	U		1.36	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.93	UJ	R	0.89	UJ	R	0.88	U		0.91	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		0.93	UJ	R	0.89	UJ	R	0.88	U		0.91	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-061118-RW-3073			WGNA-061218-RW-3283			WGNA-061218-RW-3382		
SDG: 18-0372	LAB_ID	J6737-FS			J6741-FS			J6743-FS		
FRACTION: PFAS	SAMP_DATE	6/11/2018			6/12/2018			6/12/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.93	U		0.93	U		0.93	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		0.93	U		0.93	U		0.93	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		14.04			16.63			15.22		
PERFLUOROBUTANESULFONIC ACID (PFBS)		88.23			16.99			13.89		
PERFLUORODECANOIC ACID (PFDA)		0.93	U		0.64	J	P	0.93	U	
PERFLUORODODECANOIC ACID (PFDOA)		0.93	U		0.93	U		0.93	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		9.42			5.38			5.37		
PERFLUOROHEXANESULFONIC ACID (PFHXS)		14.36			7.94			6.33		
PERFLUOROHEXANOIC ACID (PFHXA)		12.26			7.75			8.24		
PERFLUORONONANOIC ACID (PFNA)		2.64			2.61			2.74		
PERFLUOROOCTANESULFONIC ACID (PFOS)		29.77			18.26			13.8		
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.39	U		1.39	U		1.39	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.93	U		0.93	U		0.93	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		0.93	U		0.93	U		0.93	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-061218-FRB-276			NAWC-061418-FRB-056			NAWC-061418-FRB-111			WGNA-061118-FRB-0437		
SDG: 18-0392	LAB_ID	J6746-FS			J6761-FS			J6759-FS			J6740-FS		
FRACTION: PFAS	SAMP_DATE	6/12/2018			6/14/2018			6/14/2018			6/11/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		1	U		1	U		1	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1	U		1	U		1	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		1	U		1	U		1	U		1	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		0.5	U		0.5	U		0.5	U		0.5	U	
PERFLUORODECANOIC ACID (PFDA)		1	U		1	U		1	U		1	U	
PERFLUORODODECANOIC ACID (PFDOA)		1	U		1	U		1	U		1	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		1	U		1	U		1	U		1	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		1	U		1	U		1	U		1	U	
PERFLUOROHEXANOIC ACID (PFHXA)		0.5	U		0.5	U		0.5	U		0.5	U	
PERFLUORONONANOIC ACID (PFNA)		1	U		1	U		1	U		1	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		1	U		1	U		1	U		1	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.5	U		1.5	U		1.5	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		1	U		1	U		1	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1	U		1	U		1	U		1	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-061118-FRB-3073			WGNA-061218-FRB-3283			WGNA-061218-FRB-3382		
SDG: 18-0392	LAB_ID	J6738-FS			J6742-FS			J6744-FS		
FRACTION: PFAS	SAMP_DATE	6/11/2018			6/12/2018			6/12/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.96	U		0.96	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		0.96	U		0.96	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		0.96	U		0.96	U		1	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		0.48	U		0.48	U		0.5	U	
PERFLUORODECANOIC ACID (PFDA)		0.96	U		0.96	U		1	U	
PERFLUORODODECANOIC ACID (PFDOA)		0.96	U		0.96	U		1	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		0.96	U		0.96	U		1	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		0.96	U		0.96	U		1	U	
PERFLUOROHEXANOIC ACID (PFHXA)		0.48	U		0.48	U		0.5	U	
PERFLUORONONANOIC ACID (PFNA)		0.96	U		0.96	U		1	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		0.96	U		0.96	U		1	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.44	U		1.44	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.96	U		0.96	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		0.96	U		0.96	U		1	U	

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-RW-3073			
Battelle ID	J6737-FS			
Sample Type	SA			
Collection Date	06/11/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	12.26	0.20	0.46	2.31
PFHpA	9.42	0.31	0.93	2.31
PFOA	14.04	0.35	0.93	2.31
PFNA	2.64	0.34	0.93	2.31
PFDA	0.93 U	0.36	0.93	2.31
PFUnA	0.93 U	0.35	0.93	2.31
PFDoA	0.93 U	0.39	0.93	2.31
PFTrDA	0.93 U	0.39	0.93	2.31
PFTeDA	1.39 U	0.68	1.39	2.31
NMeFOSAA	0.93 U	0.39	0.93	2.31
NEtFOSAA	0.93 U	0.41	0.93	2.31
PFBS	88.23 ~~D~~	3.89	9.26	46.30
PFHxS	14.36	0.31	0.93	2.31
PFOS	29.77	0.28	0.93	2.31
Surrogate Recoveries (%)				
13C2-PFHxA	120			
13C2-PFDA	104			
d5-EtFOSAA	84			

07/18/2018

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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-RW-0437
Battelle ID	J6739-FS
Sample Type	SA
Collection Date	06/11/2018
Extraction Date	06/25/2018
Analysis Date	06/27/2018
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	DW
Sample Size	0.275
Size Unit-Basis	L

Units	ng/L	MDL	LOD	LOQ
PFHxA	11.97	0.20	0.45	2.27
PFHpA	7.09	0.31	0.91	2.27
PFOA	26.21	0.35	0.91	2.27
PFNA	5.77	0.34	0.91	2.27
PFDA	0.45 J	0.35	0.91	2.27
PFUnA	0.91 U	0.35	0.91	2.27
PFDoA	0.91 U	0.38	0.91	2.27
PFTrDA	0.91 U	0.38	0.91	2.27
PFTeDA	1.36 U	0.66	1.36	2.27
NMeFOSAA	0.91 U	0.38	0.91	2.27
NEtFOSAA	0.91 U	0.40	0.91	2.27
PFBS	18.23	0.19	0.45	2.27
PFHxS	16.23	0.31	0.91	2.27
PFOS	25.28	0.27	0.91	2.27

Surrogate Recoveries (%)

13C2-PFHxA	110
13C2-PFDA	92
d5-EtFOSAA	85

Terri L Salomon
07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-RW-3283			
Battelle ID	J6741-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	7.75	0.20	0.46	2.31
PFHpA	5.38	0.31	0.93	2.31
PFOA	16.63	0.35	0.93	2.31
PFNA	2.61	0.34	0.93	2.31
PFDA	0.64 J	0.36	0.93	2.31
PFUnA	0.93 U	0.35	0.93	2.31
PFDoA	0.93 U	0.39	0.93	2.31
PFTrDA	0.93 U	0.39	0.93	2.31
PFTeDA	1.39 U	0.68	1.39	2.31
NMeFOSAA	0.93 U	0.39	0.93	2.31
NEtFOSAA	0.93 U	0.41	0.93	2.31
PFBS	16.99	0.19	0.46	2.31
PFHxS	7.94	0.31	0.93	2.31
PFOS	18.26	0.28	0.93	2.31
Surrogate Recoveries (%)				
13C2-PFHxA	104			
13C2-PFDA	92			
d5-EtFOSAA	82			

07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-RW-3382			
Battelle ID	J6743-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	8.24	0.20	0.46	2.31
PFHpA	5.37	0.31	0.93	2.31
PFOA	15.22	0.35	0.93	2.31
PFNA	2.74	0.34	0.93	2.31
PFDA	0.93 U	0.36	0.93	2.31
PFUnA	0.93 U	0.35	0.93	2.31
PFDoA	0.93 U	0.39	0.93	2.31
PFTrDA	0.93 U	0.39	0.93	2.31
PFTeDA	1.39 U	0.68	1.39	2.31
NMeFOSAA	0.93 U	0.39	0.93	2.31
NEtFOSAA	0.93 U	0.41	0.93	2.31
PFBS	13.89	0.19	0.46	2.31
PFHxS	6.33	0.31	0.93	2.31
PFOS	13.80	0.28	0.93	2.31
Surrogate Recoveries (%)				
13C2-PFHxA	95			
13C2-PFDA	84			
d5-EtFOSAA	76			

07/18/2018

BATTELLE
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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061218-RW-276				
Battelle ID	J6745-FS				
Sample Type	SA				
Collection Date	06/12/2018				
Extraction Date	06/25/2018				
Analysis Date	06/27/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.270				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	14.77	J-	0.20	0.46	2.31
PFHpA	9.04	J-	0.31	0.93	2.31
PFOA	22.47	J-	0.35	0.93	2.31
PFNA	3.18	J-	0.34	0.93	2.31
PFDA	0.98 J		0.36	0.93	2.31
PFUnA	0.93 ~~U~~	UJ	0.35	0.93	2.31
PFDoA	0.93 ~~U~~	UJ	0.39	0.93	2.31
PFTrDA	0.93 ~~U~~	UJ	0.39	0.93	2.31
PFTeDA	1.39 ~~U~~	UJ	0.68	1.39	2.31
NMeFOSAA	0.93 ~~U~~	UJ	0.39	0.93	2.31
NEtFOSAA	0.93 ~~U~~	UJ	0.41	0.93	2.31
PFBS	6.89	J-	0.19	0.46	2.31
PFHxS	12.35	J-	0.31	0.93	2.31
PFOS	23.87	J-	0.28	0.93	2.31

Surrogate Recoveries (%)

13C2-PFHxA	90
13C2-PFDA	81
d5-EtFOSAA	62 N

07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-RW-111			
Battelle ID	J6758-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.285			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	11.38	0.19	0.44	2.19
PFHpA	5.33	0.30	0.88	2.19
PFOA	19.26	0.33	0.88	2.19
PFNA	2.44	0.32	0.88	2.19
PFDA	0.41 J	0.34	0.88	2.19
PFUnA	0.88 U	0.33	0.88	2.19
PFDoA	0.88 U	0.37	0.88	2.19
PFTrDA	0.88 U	0.37	0.88	2.19
PFTeDA	1.32 U	0.64	1.32	2.19
NMeFOSAA	0.88 U	0.37	0.88	2.19
NEtFOSAA	0.88 U	0.39	0.88	2.19
PFBS	4.18	0.18	0.44	2.19
PFHxS	15.75	0.30	0.88	2.19
PFOS	28.23	0.26	0.88	2.19
Surrogate Recoveries (%)				
13C2-PFHxA	110			
13C2-PFDA	88			
d5-EtFOSAA	91			

07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-RW-056				
Battelle ID	J6760-FS				
Sample Type	SA				
Collection Date	06/14/2018				
Extraction Date	06/25/2018				
Analysis Date	06/27/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.280				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	20.78	J-	0.20	0.45	2.23
PFHpA	21.73	J-	0.30	0.89	2.23
PFOA	38.83	J-	0.34	0.89	2.23
PFNA	2.94	J-	0.33	0.89	2.23
PFDA	0.47 J		0.35	0.89	2.23
PFUnA	0.89 ~~U~~	UJ	0.34	0.89	2.23
PFDoA	0.89 ~~U~~	UJ	0.38	0.89	2.23
PFTrDA	0.89 ~~U~~	UJ	0.38	0.89	2.23
PFTeDA	1.34 ~~U~~	UJ	0.65	1.34	2.23
NMeFOSAA	0.89 ~~U~~	UJ	0.38	0.89	2.23
NEtFOSAA	0.89 ~~U~~	UJ	0.39	0.89	2.23
PFBS	11.57	J-	0.19	0.45	2.23
PFHxS	11.58	J-	0.30	0.89	2.23
PFOS	21.65	J-	0.27	0.89	2.23

Surrogate Recoveries (%)

13C2-PFHxA	64	N
13C2-PFDA	54	N
d5-EtFOSAA	46	N

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BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-FRB-3073				
Battelle ID	J6738-FS				
Sample Type	SA				
Collection Date	06/11/2018				
Extraction Date	06/25/2018				
Analysis Date	06/27/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.260				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.48	U	0.21	0.48	2.40
PFHpA	0.96	U	0.33	0.96	2.40
PFOA	0.96	U	0.37	0.96	2.40
PFNA	0.96	U	0.36	0.96	2.40
PFDA	0.96	U	0.38	0.96	2.40
PFUnA	0.96	U	0.37	0.96	2.40
PFDoA	0.96	U	0.40	0.96	2.40
PFTrDA	0.96	U	0.40	0.96	2.40
PFTeDA	1.44	U	0.70	1.44	2.40
NMeFOSAA	0.96	U	0.40	0.96	2.40
NEtFOSAA	0.96	U	0.42	0.96	2.40
PFBS	0.48	U	0.20	0.48	2.40
PFHxS	0.96	U	0.33	0.96	2.40
PFOS	0.96	U	0.29	0.96	2.40
Surrogate Recoveries (%)					
13C2-PFHxA	109				
13C2-PFDA	110				
d5-EtFOSAA	87				

07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-FRB-0437			
Battelle ID	J6740-FS			
Sample Type	SA			
Collection Date	06/11/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	101			
13C2-PFDA	104			
d5-EtFOSAA	90			

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BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-FRB-3283			
Battelle ID	J6742-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.260			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.48 U	0.21	0.48	2.40
PFHpA	0.96 U	0.33	0.96	2.40
PFOA	0.96 U	0.37	0.96	2.40
PFNA	0.96 U	0.36	0.96	2.40
PFDA	0.96 U	0.38	0.96	2.40
PFUnA	0.96 U	0.37	0.96	2.40
PFDoA	0.96 U	0.40	0.96	2.40
PFTrDA	0.96 U	0.40	0.96	2.40
PFTeDA	1.44 U	0.70	1.44	2.40
NMeFOSAA	0.96 U	0.40	0.96	2.40
NEtFOSAA	0.96 U	0.42	0.96	2.40
PFBS	0.48 U	0.20	0.48	2.40
PFHxS	0.96 U	0.33	0.96	2.40
PFOS	0.96 U	0.29	0.96	2.40
Surrogate Recoveries (%)				
13C2-PFHxA	108			
13C2-PFDA	106			
d5-EtFOSAA	91			

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BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-FRB-3382			
Battelle ID	J6744-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	115
13C2-PFDA	106
d5-EtFOSAA	111

07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061218-FRB-276			
Battelle ID	J6746-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	105			
d5-EtFOSAA	88			

07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-FRB-111
Battelle ID	J6759-FS
Sample Type	SA
Collection Date	06/14/2018
Extraction Date	06/25/2018
Analysis Date	06/27/2018
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	DW
Sample Size	0.250
Size Unit-Basis	L

Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	101
13C2-PFDA	99
d5-EtFOSAA	116

07/18/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-FRB-056			
Battelle ID	J6761-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	105			
13C2-PFDA	99			
d5-EtFOSAA	113			

07/18/2018

Appendix B

Results as Reported by the Laboratory

BATTELLE
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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-RW-3073				
Battelle ID	J6737-FS				
Sample Type	SA				
Collection Date	06/11/2018				
Extraction Date	06/25/2018				
Analysis Date	06/27/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.270				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	12.26		0.20	0.46	2.31
PFHpA	9.42		0.31	0.93	2.31
PFOA	14.04		0.35	0.93	2.31
PFNA	2.64		0.34	0.93	2.31
PFDA	0.93	U	0.36	0.93	2.31
PFUnA	0.93	U	0.35	0.93	2.31
PFDoA	0.93	U	0.39	0.93	2.31
PFTrDA	0.93	U	0.39	0.93	2.31
PFTeDA	1.39	U	0.68	1.39	2.31
NMeFOSAA	0.93	U	0.39	0.93	2.31
NEtFOSAA	0.93	U	0.41	0.93	2.31
PFBS	88.23	D	3.89	9.26	46.30
PFHxS	14.36		0.31	0.93	2.31
PFOS	29.77		0.28	0.93	2.31
Surrogate Recoveries (%)					
13C2-PFHxA	120				
13C2-PFDA	104				
d5-EtFOSAA	84				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-RW-0437			
Battelle ID	J6739-FS			
Sample Type	SA			
Collection Date	06/11/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.275			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	11.97	0.20	0.45	2.27
PFHpA	7.09	0.31	0.91	2.27
PFOA	26.21	0.35	0.91	2.27
PFNA	5.77	0.34	0.91	2.27
PFDA	0.45 J	0.35	0.91	2.27
PFUnA	0.91 U	0.35	0.91	2.27
PFDoA	0.91 U	0.38	0.91	2.27
PFTrDA	0.91 U	0.38	0.91	2.27
PFTeDA	1.36 U	0.66	1.36	2.27
NMeFOSAA	0.91 U	0.38	0.91	2.27
NEtFOSAA	0.91 U	0.40	0.91	2.27
PFBS	18.23	0.19	0.45	2.27
PFHxS	16.23	0.31	0.91	2.27
PFOS	25.28	0.27	0.91	2.27
Surrogate Recoveries (%)				
13C2-PFHxA	110			
13C2-PFDA	92			
d5-EtFOSAA	85			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-RW-3283			
Battelle ID	J6741-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	7.75	0.20	0.46	2.31
PFHpA	5.38	0.31	0.93	2.31
PFOA	16.63	0.35	0.93	2.31
PFNA	2.61	0.34	0.93	2.31
PFDA	0.64 J	0.36	0.93	2.31
PFUnA	0.93 U	0.35	0.93	2.31
PFDoA	0.93 U	0.39	0.93	2.31
PFTrDA	0.93 U	0.39	0.93	2.31
PFTeDA	1.39 U	0.68	1.39	2.31
NMeFOSAA	0.93 U	0.39	0.93	2.31
NEtFOSAA	0.93 U	0.41	0.93	2.31
PFBS	16.99	0.19	0.46	2.31
PFHxS	7.94	0.31	0.93	2.31
PFOS	18.26	0.28	0.93	2.31
Surrogate Recoveries (%)				
13C2-PFHxA	104			
13C2-PFDA	92			
d5-EtFOSAA	82			

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-RW-3382			
Battelle ID	J6743-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	8.24	0.20	0.46	2.31
PFHpA	5.37	0.31	0.93	2.31
PFOA	15.22	0.35	0.93	2.31
PFNA	2.74	0.34	0.93	2.31
PFDA	0.93 U	0.36	0.93	2.31
PFUnA	0.93 U	0.35	0.93	2.31
PFDoA	0.93 U	0.39	0.93	2.31
PFTrDA	0.93 U	0.39	0.93	2.31
PFTeDA	1.39 U	0.68	1.39	2.31
NMeFOSAA	0.93 U	0.39	0.93	2.31
NEtFOSAA	0.93 U	0.41	0.93	2.31
PFBS	13.89	0.19	0.46	2.31
PFHxS	6.33	0.31	0.93	2.31
PFOS	13.80	0.28	0.93	2.31
Surrogate Recoveries (%)				
13C2-PFHxA	95			
13C2-PFDA	84			
d5-EtFOSAA	76			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061218-RW-276			
Battelle ID	J6745-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	14.77	0.20	0.46	2.31
PFHpA	9.04	0.31	0.93	2.31
PFOA	22.47	0.35	0.93	2.31
PFNA	3.18	0.34	0.93	2.31
PFDA	0.98 J	0.36	0.93	2.31
PFUnA	0.93 U	0.35	0.93	2.31
PFDoA	0.93 U	0.39	0.93	2.31
PFTrDA	0.93 U	0.39	0.93	2.31
PFTeDA	1.39 U	0.68	1.39	2.31
NMeFOSAA	0.93 U	0.39	0.93	2.31
NEtFOSAA	0.93 U	0.41	0.93	2.31
PFBS	6.89	0.19	0.46	2.31
PFHxS	12.35	0.31	0.93	2.31
PFOS	23.87	0.28	0.93	2.31
Surrogate Recoveries (%)				
13C2-PFHxA	90			
13C2-PFDA	81			
d5-EtFOSAA	62 N			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-RW-111			
Battelle ID	J6758-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.285			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	11.38	0.19	0.44	2.19
PFHpA	5.33	0.30	0.88	2.19
PFOA	19.26	0.33	0.88	2.19
PFNA	2.44	0.32	0.88	2.19
PFDA	0.41 J	0.34	0.88	2.19
PFUnA	0.88 U	0.33	0.88	2.19
PFDoA	0.88 U	0.37	0.88	2.19
PFTrDA	0.88 U	0.37	0.88	2.19
PFTeDA	1.32 U	0.64	1.32	2.19
NMeFOSAA	0.88 U	0.37	0.88	2.19
NEtFOSAA	0.88 U	0.39	0.88	2.19
PFBS	4.18	0.18	0.44	2.19
PFHxS	15.75	0.30	0.88	2.19
PFOS	28.23	0.26	0.88	2.19
Surrogate Recoveries (%)				
13C2-PFHxA	110			
13C2-PFDA	88			
d5-EtFOSAA	91			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-RW-056			
Battelle ID	J6760-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	20.78	0.20	0.45	2.23
PFHpA	21.73	0.30	0.89	2.23
PFOA	38.83	0.34	0.89	2.23
PFNA	2.94	0.33	0.89	2.23
PFDA	0.47 J	0.35	0.89	2.23
PFUnA	0.89 U	0.34	0.89	2.23
PFDoA	0.89 U	0.38	0.89	2.23
PFTrDA	0.89 U	0.38	0.89	2.23
PFTeDA	1.34 U	0.65	1.34	2.23
NMeFOSAA	0.89 U	0.38	0.89	2.23
NEtFOSAA	0.89 U	0.39	0.89	2.23
PFBS	11.57	0.19	0.45	2.23
PFHxS	11.58	0.30	0.89	2.23
PFOS	21.65	0.27	0.89	2.23
Surrogate Recoveries (%)				
13C2-PFHxA	64 N			
13C2-PFDA	54 N			
d5-EtFOSAA	46 N			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-FRB-3073				
Battelle ID	J6738-FS				
Sample Type	SA				
Collection Date	06/11/2018				
Extraction Date	06/25/2018				
Analysis Date	06/27/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.260				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.48	U	0.21	0.48	2.40
PFHpA	0.96	U	0.33	0.96	2.40
PFOA	0.96	U	0.37	0.96	2.40
PFNA	0.96	U	0.36	0.96	2.40
PFDA	0.96	U	0.38	0.96	2.40
PFUnA	0.96	U	0.37	0.96	2.40
PFDoA	0.96	U	0.40	0.96	2.40
PFTrDA	0.96	U	0.40	0.96	2.40
PFTeDA	1.44	U	0.70	1.44	2.40
NMeFOSAA	0.96	U	0.40	0.96	2.40
NEtFOSAA	0.96	U	0.42	0.96	2.40
PFBS	0.48	U	0.20	0.48	2.40
PFHxS	0.96	U	0.33	0.96	2.40
PFOS	0.96	U	0.29	0.96	2.40
Surrogate Recoveries (%)					
13C2-PFHxA	109				
13C2-PFDA	110				
d5-EtFOSAA	87				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061118-FRB-0437			
Battelle ID	J6740-FS			
Sample Type	SA			
Collection Date	06/11/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	101			
13C2-PFDA	104			
d5-EtFOSAA	90			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-FRB-3283			
Battelle ID	J6742-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.260			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.48 U	0.21	0.48	2.40
PFHpA	0.96 U	0.33	0.96	2.40
PFOA	0.96 U	0.37	0.96	2.40
PFNA	0.96 U	0.36	0.96	2.40
PFDA	0.96 U	0.38	0.96	2.40
PFUnA	0.96 U	0.37	0.96	2.40
PFDoA	0.96 U	0.40	0.96	2.40
PFTrDA	0.96 U	0.40	0.96	2.40
PFTeDA	1.44 U	0.70	1.44	2.40
NMeFOSAA	0.96 U	0.40	0.96	2.40
NEtFOSAA	0.96 U	0.42	0.96	2.40
PFBS	0.48 U	0.20	0.48	2.40
PFHxS	0.96 U	0.33	0.96	2.40
PFOS	0.96 U	0.29	0.96	2.40
Surrogate Recoveries (%)				
13C2-PFHxA	108			
13C2-PFDA	106			
d5-EtFOSAA	91			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-061218-FRB-3382			
Battelle ID	J6744-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	106			
d5-EtFOSAA	111			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061218-FRB-276			
Battelle ID	J6746-FS			
Sample Type	SA			
Collection Date	06/12/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	105			
d5-EtFOSAA	88			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-FRB-111			
Battelle ID	J6759-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	101			
13C2-PFDA	99			
d5-EtFOSAA	116			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-061418-FRB-056			
Battelle ID	J6761-FS			
Sample Type	SA			
Collection Date	06/14/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	105			
13C2-PFDA	99			
d5-EtFOSAA	113			

Appendix C

Support Documentation

Battelle

The Business of Innovation

Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days

Project Name: WE04
Project No.: 112G08005-WE04

Normal ☑
Priority ☐
RUSH ☐
Time Zone: Eastern

Sampling Site: WE04

Site Information: NAS JRB Willow Grove/WGNA Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservativ: Trizma	Analysis: PFAS EPA 537 14 analytes	
WGNA-061118-RW-3073 J6737	6/11/2018	11:10	G	DW	2		X	
WGNA-061118-FRB-3073 J6738	6/11/2018	11:05	G	DW	2		X	Field Reagent Blank
WGNA-061118-RW-0437 J6739	6/11/2018	11:40	G	DW	2		X	
WGNA-061118-FRB-0437 J6740	6/11/2018	11:35	G	DW	2		X	Field Reagent Blank
WGNA-061218-RW-3283 J6741	6/12/2018	09:10	G	DW	2		X	
WGNA-061218-FRB-3283 J6742	6/12/2018	09:05	G	DW	2		X	Field Reagent Blank
WGNA-061218-RW-3382 J6743	6/12/2018	09:40	G	DW	2		X	
WGNA-061218-FRB-3382 J6744	6/12/2018	09:35	G	DW	2		X	Field Reagent Blank
NAWC-061218-RW-276 J6745	6/12/2018	10:10	G	DW	2		X	
NAWC-061218-FRB-276 J6746	6/12/2018	10:05	G	DW	2		X	Field Reagent Blank

Receipt Temperature:(°C) 1.7°

Samples Intact: Yes - No

Samples on Ice: Yes No

Receipt Comments:

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	6/12/2018 16:00	Matt Schumitz	Battelle	6-13-18 9:45

Comments: FedEx Tracking # 7724 5597 5123

Battelle

The Business of Innovation

Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days

Project Name: WE04
Project No.: 112G08005-WE04

Normal ☑
Priority ☐
RUSH ☐
Time Zone: Eastern

Sampling Site: WE04
Site Information: NAS JRB Willow Grove/WGNA Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservativ: Trizma	Analysis: PFAS EPA 537 14 analytes	
NAWC-061418-RW-111 J6758	6/14/2018	09:10	G	DW	2		X	
NAWC-061418-FRB-111 J6759	6/14/2018	09:05	G	DW	2		X	Field Reagent Blank
NAWC-061418-RW-056 J6760	6/14/2018	09:40	G	DW	2		X	
NAWC-061418-FRB-056 J6761	6/14/2018	09:35	G	DW	2		X	Field Reagent Blank

Receipt Temperature:(°C)
Samples Intact: Yes - No
Samples on Ice: Yes - No
Receipt Comments:

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	06/14/2018 16:00	Matt Schimitz MS	Battelle	6-15-18 1000

Comments: FedEx Tracking # 7724 7437 4685

Project:	CTO-WE04 Naval Air Station Joint Reserve Base Willow Grove
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	DW
Data Set:	DP-18-0153
Analytical SOP:	5-371
Method Reference:	USEPA 537 rev. 1.1, QSM 5.1

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
6/11,12/2018	6/13/2018	1.7
6/14/2018	6/15/2018	2.1

Corrective Actions	None
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	The associated field reagent blank samples are reported in SDG 18-0392.

	METHOD SUMMARIES
Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a solid phase extraction (SPE) cartridge and eluted from the SPE with methanol. Extracts were concentrated to dryness under nitrogen with a water bath set between 60 °C and 65 °C, reconstituted with 96:4 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.
Prep comments	None.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on the Sciex 5500. PFTeDA exhibited a high response in the LCS and is E qualified on the report tables. As the analyte was not detected in any field samples, no additional corrective action was taken. There are no ion ratio exceedences above 50% RPD for any analyte detected above the MDL or the LOQ in this SDG.

Holding Times	Extraction Date(s)	Analysis Date(s)
	6/25/2018	6/27 – 28, 7/2/2018

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ 1/3 the MRL	No exceedances noted.
	No comments.

Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
70-130% of true value	One exceedance noted.
	PFTeDA is over-recovered. Where this target is over-recovered and not detected in any of the associated samples, no further corrective action was taken.

Matrix Spike (MS) / Duplicate (MSD)	A MS/MSD were prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. The relative percent difference was calculated to measure precision.
70-130% of true value, RPD ≤ 30%	Not applicable.
	MS/MSD samples were not prepared with this batch of FRB samples.

Surrogates Standard Analytes	Labelled surrogate compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
70-130% of true value	Four exceedances noted.
	No comments.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
ICAL high and low points RPD ≤20%, 50-150% of average area of the ICAL and 70-140% of most recent CCV	No exceedances noted.
	For quant method 18-0372_DW (data file 0625018_5-371.wiff), sample J6745 exhibited low internal standard areas, as compared to the previous CCV, for d3-MeFOSAA. Area as compared to the average of the calibration curve passed criteria. The sample was realiquoted and reanalyzed to confirm the results, the second run, quant method 18-0372A_DW was also outside of criteria as compared to the CCV.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
R^2 >0.99 Target and SIS compounds +/- 30% of true value, Low point 50-150% of true value	No exceedances noted.
	No comments.

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
Target and SIS compounds +/- 30% of true value	No exceedances noted.
	No comments.

Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
Target and SIS compounds +/- 30% of true value Low point 50-150% of true value	No exceedances noted.
	No comments.

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BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0372

WE04 PFAS Analysis

DW

Sample ID	Description
CQ969PB-FS	Procedural Blank
CQ970LCS-FS	Laboratory Control Sample
J6737-FS	WGNA-061118-RW-3073
J6739-FS	WGNA-061118-RW-0437
J6741-FS	WGNA-061218-RW-3283
J6743-FS	WGNA-061218-RW-3382
J6745-FS	NAWC-061218-RW-276
J6758-FS	NAWC-061418-RW-111
J6760-FS	NAWC-061418-RW-056

Samples Assigned By: Stephanie Schultz Date : June 13, 2018

Comments:

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Number: 100117920-WE04
Preparation Batch: 18-0372
Data Set: DP-18-0153
Test Code: Master_371

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	1	Please see misc doc for details LMG 7/2/18
Matrix Spike / Matrix Spike Duplicate Recovery	0	None
Matrix Spike / Matrix Spike Duplicate Precision	0	None
Extracted Internal Standard Analytes (Surrogates)	4	Please see misc doc for details LMG 7/2/18
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

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BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	Naval Air Station Joint Reserve Base Wi	**Data Set Number:**	DP-18-0153
Project Number:	100117920-WE04	**Prep Batch Number:**	18-0372
Entered By:	Lauren Griffith	**Entered On:**	07/03/2018
Test Code (Matrix Type):	Master_371(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
LMG 7/03/18

JX67 is not being used for PFOA, PFNA, PFOS, PFD, NEtFOSAA and NMeFOSAA for quant method 18-0372_DW. There is no impact on the
data once these points are removed from the calibration.
LMG 7/03/18

JX68 and JX69 are not being used for NEtFOSAA for quant method 18-0372_DW. There is no impact on the data once these points are removed from the calibration.
LMG 7/03/18

JX75 is not being used in method 18-0372_DW for PFNA, PFTeDA, NMeFOSAA and NEtFOSAA. There is no impact on the data once this point is removed from the calibration.
DMS 7/05/18

JX73 and JX74 are not being used in method 18-0372_DW for PFTeDA. There is no impact on the data once these points are removed from the calibration.
DMS 7/05/18

For quant method 18-0372_DW (data file 0625018_5-371.wiff), sample J6745 exhibited low internal standard areas, as compared to the previous CCV, for d3-MeFOSAA. Area as compared to the average of the calibration curve passed criteria. The sample was realiquoted and reanalyzed to confirm the results, the second run, quant method 18-0372A_DW was also outside of criteria as compared to the CCV. Re-extraction was not possible as the sample is outside of holding time. The original result is reported (quant method 18-0372_DW).
LMG 7/03/18

Samples J6745 and J6760 in quant method 18-0372_DW (data file 0625018_5-371.wiff) low surrogate recoveries (J6745 for d5-EtFOSAA, and J6760 for all three surrogates). The samples were realiquoted and reanalyzed with quant method 18-0372A_DW withsimilar results, the original run was reported. Re-extraction was not possible as the samples is outside of holding times. Results for these surrogates are qualified on the data tables.
LMG 7/03/18

PFTeDA exhibited a high recovery in the LCS. Prep records and integrations were verified. Recoveries were acceptable in the ICC and CCVs. It was not detected in any of the authentic samples.
LMG 7/03/18

PFTeDA exhibited a high response in the LCS and is E qualified on the report tables. As the analyte was not detected in any field samples, no additional corrective action was taken.
DMS 7/05/2018

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.07.05 14:56:38 -04'00'

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Procedural Blank			
Battelle ID	CQ969PB-FS			
Sample Type	PB			
Collection Date	06/25/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	WATER			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	117
13C2-PFDA	109
d5-EtFOSAA	103

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Laboratory Control Sample					
Battelle ID	CQ970LCS-FS					
Sample Type	LCS					
Collection Date	06/25/2018					
Extraction Date	06/25/2018					
Analysis Date	06/27/2018					
Analytical Instrument	Sciex 5500 LC/MS/MS					
% Moisture	NA					
Matrix	WATER					
Sample Size	0.250					
Size Unit-Basis	L				Control Limits	
Units	ng/L	Target	Recovery	Qual	Lower	Upper
PFHxA	19.14	15.00	128		70	130
PFHpA	19.14	15.00	128		70	130
PFOA	17.94	15.00	120		70	130
PFNA	17.37	15.00	116		70	130
PFDA	18.55	15.00	124		70	130
PFUnA	17.68	15.00	118		70	130
PFDoA	17.98	15.00	120		70	130
PFTrDA	19.32	15.00	129		70	130
PFTeDA	29.28 E	15.00	195	N	70	130
NMeFOSAA	18.29	15.00	122		70	130
NEtFOSAA	19.46	15.00	130		70	130
PFBS	16.08	13.28	121		70	130
PFHxS	17.89	14.18	126		70	130
PFOS	16.67	14.33	116		70	130

Surrogate Recoveries (%)

13C2-PFHxA	110
13C2-PFDA	105
d5-EtFOSAA	94

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0372
Data Set: DP-18-0153

	CQ969PB-FS (Procedural Blank)	CQ970LCS-FS (Laboratory Control Sample)	J6737-FS (WGNA-061118-RW-3073)	J6739-FS (WGNA-061118-RW-0437)	J6741-FS (WGNA-061218-RW-3283)	J6743-FS (WGNA-061218-RW-3382)
PFHxA	-	L	L	L	L	L
PFHpA	-	L	L	L	L	L
PFOA	-	L	L	L	L	L
PFNA	-	L	L	L	L	L
PFDA	-	L	-	-	-	-
PFUnA	-	L	-	-	-	-
PFDoA	-	L	-	-	-	-
PFTrDA	-	L	-	-	-	-
PFTeDA	-	L	-	-	-	-
NMeFOSAA	-	L	-	-	-	-
NEtFOSAA	-	L	-	-	-	-
PFBS	-	L	L	L	L	L
PFHxS	-	L	L	L	L	L
PFOS	-	L	L/Br	L/Br	L/Br	L/Br

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0372
Data Set: DP-18-0153

	J6745-FS (NAWC-061218-RW-276)	J6758-FS (NAWC-061418-RW-111)	J6760-FS (NAWC-061418-RW-056)
PFHxA	L	L	L
PFHpA	L	L	L
PFOA	L	L	L
PFNA	L	-	L
PFDA	-	-	-
PFUnA	-	-	-
PFDoA	-	-	-
PFTrDA	-	-	-
PFTeDA	-	-	-
NMeFOSAA	-	-	-
NEtFOSAA	-	-	-
PFBS	L	L	L
PFHxS	L	L	L
PFOS	L/Br	L/Br	L/Br

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	13C4-PFOS	195,712.77	-	
JX68	L2	6/27/18 9:14	13C4-PFOS	208,133.24	-	
JX69	L3	6/27/18 9:23	13C4-PFOS	196,602.67	-	
JX70	L4	6/27/18 9:32	13C4-PFOS	221,233.77	-	
JX71	L5	6/27/18 9:41	13C4-PFOS	207,482.97	-	
JX72	L6	6/27/18 9:50	13C4-PFOS	205,389.92	-	
JX73	L7	6/27/18 9:59	13C4-PFOS	210,418.05	-	
JX74	L8	6/27/18 10:08	13C4-PFOS	173,679.17	-	
JX75	L9	6/27/18 10:17	13C4-PFOS	184,387.98	6.0	PASS

Average	Lower	Upper
200,337.84	100,168.92	300,506.76

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	13C4-PFOS	195,712.77	100,168.92	300,506.76		145,238.08	290,476.16	
JX68	L2	6/27/18 9:14	13C4-PFOS	208,133.24	100,168.92	300,506.76		145,238.08	290,476.16	
JX69	L3	6/27/18 9:23	13C4-PFOS	196,602.67	100,168.92	300,506.76		145,238.08	290,476.16	
JX70	L4	6/27/18 9:32	13C4-PFOS	221,233.77	100,168.92	300,506.76		145,238.08	290,476.16	
JX71	L5	6/27/18 9:41	13C4-PFOS	207,482.97	100,168.92	300,506.76		145,238.08	290,476.16	
JX72	L6	6/27/18 9:50	13C4-PFOS	205,389.92	100,168.92	300,506.76		145,238.08	290,476.16	
JX73	L7	6/27/18 9:59	13C4-PFOS	210,418.05	100,168.92	300,506.76		145,238.08	290,476.16	
JX74	L8	6/27/18 10:08	13C4-PFOS	173,679.17	100,168.92	300,506.76		145,238.08	290,476.16	
JX75	L9	6/27/18 10:17	13C4-PFOS	184,387.98	100,168.92	300,506.76		145,238.08	290,476.16	
JV66 ICC	ICC	6/27/18 10:26	13C4-PFOS	198,955.94	100,168.92	300,506.76		145,238.08	290,476.16	
JX72 CCV	CCV	6/27/18 20:51	13C4-PFOS	201,048.50	100,168.92	300,506.76		145,238.08	290,476.16	
CQ969PB-FS(0)	Procedural Blank	6/27/18 21:09	13C4-PFOS	154,235.85	100,168.92	300,506.76		140,733.95	281,467.90	
CQ970LCS-FS(0)	Laboratory Control Sample	6/27/18 21:18	13C4-PFOS	143,182.61	100,168.92	300,506.76		140,733.95	281,467.90	
J6737-FS(0)	WGNA-061118-RW-3073	6/27/18 21:27	13C4-PFOS	148,519.20	100,168.92	300,506.76		140,733.95	281,467.90	
J6739-FS(0)	WGNA-061118-RW-0437	6/27/18 21:36	13C4-PFOS	144,881.29	100,168.92	300,506.76		140,733.95	281,467.90	
J6741-FS(0)	WGNA-061218-RW-3283	6/27/18 21:45	13C4-PFOS	147,024.48	100,168.92	300,506.76		140,733.95	281,467.90	
J6743-FS(0)	WGNA-061218-RW-3382	6/27/18 21:54	13C4-PFOS	152,333.90	100,168.92	300,506.76		140,733.95	281,467.90	
J6745-FS(0)	NAWC-061218-RW-276	6/27/18 22:03	13C4-PFOS	144,055.93	100,168.92	300,506.76		140,733.95	281,467.90	
J6758-FS(0)	NAWC-061418-RW-111	6/27/18 22:11	13C4-PFOS	142,459.97	100,168.92	300,506.76		140,733.95	281,467.90	
J6760-FS(0)	NAWC-061418-RW-056	6/27/18 22:20	13C4-PFOS	159,224.94	100,168.92	300,506.76		140,733.95	281,467.90	
JX73 CCV	CCV	6/27/18 22:29	13C4-PFOS	211,286.43	100,168.92	300,506.76		140,733.95	281,467.90	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	13C2-PFOA	62,699.72	-	
JX68	L2	6/27/18 9:14	13C2-PFOA	68,551.10	-	
JX69	L3	6/27/18 9:23	13C2-PFOA	68,688.50	-	
JX70	L4	6/27/18 9:32	13C2-PFOA	68,613.81	-	
JX71	L5	6/27/18 9:41	13C2-PFOA	68,780.04	-	
JX72	L6	6/27/18 9:50	13C2-PFOA	70,145.13	-	
JX73	L7	6/27/18 9:59	13C2-PFOA	68,944.70	-	
JX74	L8	6/27/18 10:08	13C2-PFOA	60,796.66	-	
JX75	L9	6/27/18 10:17	13C2-PFOA	68,647.41	9.1	PASS

Average	Lower	Upper
67,318.56	33,659.28	100,977.84

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	13C2-PFOA	62,699.72	33,659.28	100,977.84		48,146.03	96,292.06	
JX68	L2	6/27/18 9:14	13C2-PFOA	68,551.10	33,659.28	100,977.84		48,146.03	96,292.06	
JX69	L3	6/27/18 9:23	13C2-PFOA	68,688.50	33,659.28	100,977.84		48,146.03	96,292.06	
JX70	L4	6/27/18 9:32	13C2-PFOA	68,613.81	33,659.28	100,977.84		48,146.03	96,292.06	
JX71	L5	6/27/18 9:41	13C2-PFOA	68,780.04	33,659.28	100,977.84		48,146.03	96,292.06	
JX72	L6	6/27/18 9:50	13C2-PFOA	70,145.13	33,659.28	100,977.84		48,146.03	96,292.06	
JX73	L7	6/27/18 9:59	13C2-PFOA	68,944.70	33,659.28	100,977.84		48,146.03	96,292.06	
JX74	L8	6/27/18 10:08	13C2-PFOA	60,796.66	33,659.28	100,977.84		48,146.03	96,292.06	
JX75	L9	6/27/18 10:17	13C2-PFOA	68,647.41	33,659.28	100,977.84		48,146.03	96,292.06	
JV66 ICC	ICC	6/27/18 10:26	13C2-PFOA	64,713.81	33,659.28	100,977.84		48,146.03	96,292.06	
JX72 CCV	CCV	6/27/18 20:51	13C2-PFOA	65,665.05	33,659.28	100,977.84		48,146.03	96,292.06	
CQ969PB-FS(0)	Procedural Blank	6/27/18 21:09	13C2-PFOA	48,599.87	33,659.28	100,977.84		45,965.54	91,931.07	
CQ970LCS-FS(0)	Laboratory Control Sample	6/27/18 21:18	13C2-PFOA	52,474.17	33,659.28	100,977.84		45,965.54	91,931.07	
J6737-FS(0)	WGNA-061118-RW-3073	6/27/18 21:27	13C2-PFOA	46,890.96	33,659.28	100,977.84		45,965.54	91,931.07	
J6739-FS(0)	WGNA-061118-RW-0437	6/27/18 21:36	13C2-PFOA	49,744.08	33,659.28	100,977.84		45,965.54	91,931.07	
J6741-FS(0)	WGNA-061218-RW-3283	6/27/18 21:45	13C2-PFOA	50,479.53	33,659.28	100,977.84		45,965.54	91,931.07	
J6743-FS(0)	WGNA-061218-RW-3382	6/27/18 21:54	13C2-PFOA	50,715.42	33,659.28	100,977.84		45,965.54	91,931.07	
J6745-FS(0)	NAWC-061218-RW-276	6/27/18 22:03	13C2-PFOA	46,589.54	33,659.28	100,977.84		45,965.54	91,931.07	
J6758-FS(0)	NAWC-061418-RW-111	6/27/18 22:11	13C2-PFOA	47,469.82	33,659.28	100,977.84		45,965.54	91,931.07	
J6760-FS(0)	NAWC-061418-RW-056	6/27/18 22:20	13C2-PFOA	54,036.63	33,659.28	100,977.84		45,965.54	91,931.07	
JX73 CCV	CCV	6/27/18 22:29	13C2-PFOA	67,870.42	33,659.28	100,977.84		45,965.54	91,931.07	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	d3-MeFOSAA	19,930.79	-	
JX68	L2	6/27/18 9:14	d3-MeFOSAA	21,677.32	-	
JX69	L3	6/27/18 9:23	d3-MeFOSAA	20,129.83	-	
JX70	L4	6/27/18 9:32	d3-MeFOSAA	23,296.23	-	
JX71	L5	6/27/18 9:41	d3-MeFOSAA	21,998.06	-	
JX72	L6	6/27/18 9:50	d3-MeFOSAA	24,086.51	-	
JX73	L7	6/27/18 9:59	d3-MeFOSAA	21,518.81	-	
JX74	L8	6/27/18 10:08	d3-MeFOSAA	18,342.89	-	
JX75	L9	6/27/18 10:17	d3-MeFOSAA	22,175.02	10.7	PASS

Average	Lower	Upper
21,461.72	10,730.86	32,192.58

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	d3-MeFOSAA	19,930.79	10,730.86	32,192.58		15,398.64	30,797.28	
JX68	L2	6/27/18 9:14	d3-MeFOSAA	21,677.32	10,730.86	32,192.58		15,398.64	30,797.28	
JX69	L3	6/27/18 9:23	d3-MeFOSAA	20,129.83	10,730.86	32,192.58		15,398.64	30,797.28	
JX70	L4	6/27/18 9:32	d3-MeFOSAA	23,296.23	10,730.86	32,192.58		15,398.64	30,797.28	
JX71	L5	6/27/18 9:41	d3-MeFOSAA	21,998.06	10,730.86	32,192.58		15,398.64	30,797.28	
JX72	L6	6/27/18 9:50	d3-MeFOSAA	24,086.51	10,730.86	32,192.58		15,398.64	30,797.28	
JX73	L7	6/27/18 9:59	d3-MeFOSAA	21,518.81	10,730.86	32,192.58		15,398.64	30,797.28	
JX74	L8	6/27/18 10:08	d3-MeFOSAA	18,342.89	10,730.86	32,192.58		15,398.64	30,797.28	
JX75	L9	6/27/18 10:17	d3-MeFOSAA	22,175.02	10,730.86	32,192.58		15,398.64	30,797.28	
JV66 ICC	ICC	6/27/18 10:26	d3-MeFOSAA	18,854.41	10,730.86	32,192.58		15,398.64	30,797.28	
JX72 CCV	CCV	6/27/18 20:51	d3-MeFOSAA	18,035.76	10,730.86	32,192.58		15,398.64	30,797.28	
CQ969PB-FS(0)	Procedural Blank	6/27/18 21:09	d3-MeFOSAA	15,254.53	10,730.86	32,192.58		12,625.03	25,250.06	
CQ970LCS-FS(0)	Laboratory Control Sample	6/27/18 21:18	d3-MeFOSAA	14,956.29	10,730.86	32,192.58		12,625.03	25,250.06	
J6737-FS(0)	WGNA-061118-RW-3073	6/27/18 21:27	d3-MeFOSAA	14,556.85	10,730.86	32,192.58		12,625.03	25,250.06	
J6739-FS(0)	WGNA-061118-RW-0437	6/27/18 21:36	d3-MeFOSAA	14,435.97	10,730.86	32,192.58		12,625.03	25,250.06	
J6741-FS(0)	WGNA-061218-RW-3283	6/27/18 21:45	d3-MeFOSAA	14,451.66	10,730.86	32,192.58		12,625.03	25,250.06	
J6743-FS(0)	WGNA-061218-RW-3382	6/27/18 21:54	d3-MeFOSAA	14,421.44	10,730.86	32,192.58		12,625.03	25,250.06	
J6745-FS(0)	NAWC-061218-RW-276	6/27/18 22:03	d3-MeFOSAA	12,310.76	10,730.86	32,192.58		12,625.03	25,250.06	N
J6758-FS(0)	NAWC-061418-RW-111	6/27/18 22:11	d3-MeFOSAA	13,688.34	10,730.86	32,192.58		12,625.03	25,250.06	
J6760-FS(0)	NAWC-061418-RW-056	6/27/18 22:20	d3-MeFOSAA	16,473.91	10,730.86	32,192.58		12,625.03	25,250.06	
JX73 CCV	CCV	6/27/18 22:29	d3-MeFOSAA	19,503.16	10,730.86	32,192.58		12,625.03	25,250.06	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	7/2/18 9:35	13C4-PFOS	228,307.87	-	
JX68	L2	7/2/18 9:44	13C4-PFOS	229,395.98	-	
JX69	L3	7/2/18 9:53	13C4-PFOS	222,081.65	-	
JX70	L4	7/2/18 10:01	13C4-PFOS	233,939.96	-	
JX71	L5	7/2/18 10:10	13C4-PFOS	219,992.23	-	
JX72	L6	7/2/18 10:19	13C4-PFOS	220,247.15	-	
JX73	L7	7/2/18 10:28	13C4-PFOS	220,249.66	-	
JX74	L8	7/2/18 10:37	13C4-PFOS	183,941.38	-	
JX75	L9	7/2/18 10:46	13C4-PFOS	219,730.99	3.8	PASS

Average	Lower	Upper
219,765.21	109,882.61	329,647.82

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	7/2/18 9:35	13C4-PFOS	228,307.87	109,882.61	329,647.82		153,994.56	307,989.12	
JX68	L2	7/2/18 9:44	13C4-PFOS	229,395.98	109,882.61	329,647.82		153,994.56	307,989.12	
JX69	L3	7/2/18 9:53	13C4-PFOS	222,081.65	109,882.61	329,647.82		153,994.56	307,989.12	
JX70	L4	7/2/18 10:01	13C4-PFOS	233,939.96	109,882.61	329,647.82		153,994.56	307,989.12	
JX71	L5	7/2/18 10:10	13C4-PFOS	219,992.23	109,882.61	329,647.82		153,994.56	307,989.12	
JX72	L6	7/2/18 10:19	13C4-PFOS	220,247.15	109,882.61	329,647.82		153,994.56	307,989.12	
JX73	L7	7/2/18 10:28	13C4-PFOS	220,249.66	109,882.61	329,647.82		153,994.56	307,989.12	
JX74	L8	7/2/18 10:37	13C4-PFOS	183,941.38	109,882.61	329,647.82		153,994.56	307,989.12	
JX75	L9	7/2/18 10:46	13C4-PFOS	219,730.99	109,882.61	329,647.82		153,994.56	307,989.12	
JX66 ICC	ICC	7/2/18 10:55	13C4-PFOS	201,375.62	109,882.61	329,647.82		153,994.56	307,989.12	
JX72	L6	7/2/18 14:35	13C4-PFOS	214,456.49	109,882.61	329,647.82		153,994.56	307,989.12	
J6737-FS-D(3)	WGNA-061118-RW-3073	7/2/18 14:43	13C4-PFOS	189,888.68	109,882.61	329,647.82		150,119.54	300,239.09	
JX72	L6	7/2/18 15:18	13C4-PFOS	211,410.64	109,882.61	329,647.82		150,119.54	300,239.09	

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Summary Asymmetry Report

Created with Analyst Reporter
Printed: 03/07/2018 7:10:30 AM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 9:59:20 AM	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.50	0.96	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.78	1.40	0.8 – 1.5

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Summary Asymmetry Report

Created with Analyst Reporter
Printed: 03/07/2018 7:11:00 AM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	7/2/2018 10:28:45 AM	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.52	1.07	0.8 – 1.5

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Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 03/07/2018 7:11:34 AM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 9:59:20 AM	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.50	30	>10
PFBS_2	298.9 / 99.0	1.50	35	>10
PFHxA_1	313.0 / 269.0	1.78	26	>10
PFHxA_2	313.0 / 119.0	1.78	29	>10
PFHpA_1	363.0 / 319.0	2.14	32	>10
PFHpA_2	363.0 / 169.0	2.14	31	>10
PFHxS_1	399.0 / 80.0	2.15	28	>10
PFHxS_2	399.0 / 99.0	2.15	26	>10
PFOA_1	413.0 / 369.0	2.51	35	>10
PFOA_2	413.0 / 169.0	2.51	33	>10
PFNA_1	463.0 / 419.0	2.89	32	>10
PFNA_2	463.0 / 219.0	2.89	25	>10
PFOS_1	499.0 / 80.0	2.88	24	>10
PFOS_2	499.0 / 99.0	2.88	27	>10
PFDA_1	513.0 / 469.0	3.23	27	>10
PFDA_2	513.0 / 219.0	3.23	33	>10
PFUnA_1	563.0 / 519.0	3.55	35	>10
PFUnA_2	563.0 / 269.0	3.55	27	>10
PFDoA_1	613.0 / 569.0	3.84	35	>10
PFDoA_2	613.0 / 319.0	3.84	32	>10
PFTrDA_1	663.0 / 619.0	4.09	31	>10
PFTrDA_2	663.0 / 169.0	4.09	26	>10
PFTeDA_1	713.0 / 669.0	4.31	43	>10
PFTeDA_2	713.0 / 169.0	4.31	37	>10
NMeFOSAA_1	570.0 / 419.0	3.38	26	>10
NMeFOSAA_2	570.0 / 512.0	3.38	25	>10
NEtFOSAA_1	584.0 / 419.0	3.54	24	>10
NEtFOSAA_2	584.0 / 483.0	3.54	15	>10
13C2-PFHxA	315.0 / 270.0	1.77	32	>10
13C2-PFDA	515.0 / 470.0	3.23	35	>10
d5-EtFOSAA	589.0 / 419.0	3.54	12	>10

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Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 03/07/2018 7:12:09 AM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	7/2/2018 10:28:45 AM	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.52	29	>10
PFBS_2	298.9 / 99.0	1.52	22	>10
d5-EtFOSAA	589.0 / 419.0	3.60	27	>10

BATTELLE DETECTION LIMITS FOR PFAS IN DRINKING WATER

Battelle SOP 5-371 (EPA Method 537 Version 1.1)

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)	MRL (ng/L)
PFHxA	307-24-4	0.22	0.5	2.5	2.5
PFHpA	375-85-9	0.34	1.0	2.5	2.5
PFOA	335-67-1	0.38	1.0	2.5	2.5
PFNA	375-95-1	0.37	1.0	2.5	2.5
PFDA	335-76-2	0.39	1.0	2.5	2.5
PFUnA	2058-94-8	0.38	1.0	2.5	2.5
PFDoA	307-55-1	0.42	1.0	2.5	2.5
PFTrDA	72629-94-8	0.42	1.0	2.5	2.5
PFTeDA	376-06-7	0.73	1.5	2.5	2.5
NMeFOSAA	2355-31-9	0.42	1.0	2.5	2.5
NEtFOSAA	2991-50-6	0.44	1.0	2.5	2.5
PFBS	375-73-5	0.21	0.5	2.5	2.5
PFHxS	3871-99-6	0.34	1.0	2.5	2.5
PFOS	1763-23-1	0.30	1.0	2.5	2.5

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

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ID 626 04/18

Analytical Transitions for PFAS in drinking water

SOP 5-371 (EPA 537 Version 1.1)

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFBS	375-73-5	Target	298.9.0 / 80.0	298.9.0 / 99.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
13C2-PFHxA	NA	SIS	315.0 / 270.0	NA
13C2-PFDA	NA	SIS	515.0 / 470.0	NA
d5-EtFOSAA	NA	SIS	589.0 / 419.0	NA
$^{13}C_2$-PFOA	NA	IS	415.0 / 270.0	NA
$^{13}C_4$-PFOS	NA	IS	503.0 / 80.0	NA
d3-MeFOSAA	NA	IS	573.0 / 419.0	NA

Drinking Water Calibration to Sample Equivalents

ICAL (ng/L)	PIV (mL)	DF[1]	Sample Size (L)	Sample Equivalent (ng/L)[2]
25	1	1	0.250	0.1
50	1	1	0.250	0.2
100	1	1	0.250	0.4
250	1	1	0.250	1.0
500	1	1	0.250	2.0
1,000	1	1	0.250	4.0
2,500	1	1	0.250	10.0
5,000	1	1	0.250	20.0
10,000	1	1	0.250	40.0

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

Mass calibration and Tune Check

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	22-Feb-2017

Request ID:	3683
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____

Performed By: Kaustubh Dhayagude **Date:** 22-Feb-2017

Approved By :_____ **Date:** _____

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.5	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.9	Read Only
☑ CAD Medium	2.4	Read Only
☑ CAD High	3.4	Read Only
☑ CAD 12	3.4	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.64 e6	Read Only	0.8095	Read Only
Q1 500.380	2.40 e7	Read Only	0.8592	Read Only
Q1 906.673	2.86 e7	Read Only	0.9633	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.26 e6	Read Only	0.6252	Read Only
Q3 500.380	2.19 e7	Read Only	0.7275	Read Only
Q3 906.673	3.02 e7	Read Only	0.7662	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__19.51%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.43 e7	Read Only	0.9981	Read Only
MS/MS 195.1	1.45 e7	Read Only	0.6582	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.43 e7	Read Only	0.7330	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.22 e7	Read Only	0.8138	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.35 e6	Read Only	0.6495	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	2.1	Read Only
☑ CAD Medium	2.6	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.94 e6	≥1.2^{e}6	0.6933	0.6 to 0.8
Q1 500.380	2.25 e7	≥9.0^{e}6	0.7444	0.6 to 0.8
Q1 906.673	2.74 e7	≥1.4^{e}7	0.7347	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7656	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	4.54 e6	≥1.2^{e}6	0.6390	0.6 to 0.8
Q3 500.380	2.13 e7	≥9.0^{e}6	0.7008	0.6 to 0.8
Q3 906.673	3.04 e7	≥1.4^{e}7	0.7683	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.51 e8	≥6.8^{e}7	0.7118	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 16.93% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.74 e7	N/A	0.7667	Read Only
MS/MS 195.1	9.72 e6	N/A	0.6751	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.31 e7	≥1.0^{e}7	0.6895	0.6 to 0.8
Q1 933.636	1000	50	6.32 e7	≥4.0^{e}7	0.6740	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.70 e7	≥8.0^{e}6	0.7665	0.6 to 0.8
Q3 933.636	1000	50	7.41 e7	≥4.0^{e}7	0.7292	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.08 e6	≥7.2 ^{e}6	0.1302	<0.35
ER 922.010	0.05	3.89 e7	≥2.8 ^{e}6	0.2603	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.55 e7	≥2.4 ^{e}7	0.3740	<0.65
ER 922.010	0.05	2.37 e8	≥6.8 ^{e}7	0.5407	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.05 e8	≥4.4 ^{e}7	0.1840	<0.35
ER 601.978	0.05	7.74 e7	≥5.6 ^{e}7	0.1849	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.43 e8	≥1.2 ^{e}8	0.4382	<0.65
ER 601.978	0.05	2.55 e8	≥1.6 ^{e}8	0.6205	<0.65

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.5 e6	≥2.0 ^{e}6	> 4.0 e7	≥6.4 ^{e}6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	3.2 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	1.19 e8	Fragment Intensity	> 4.4 e6	≥1.6x 10^{e}6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

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BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	Project No.(s)
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0372

WE04 PFAS Analysis

DW

SOP Numbers (see workplan for modifications)

VOASOP No. 5-371

This Batch Contains The Following Samples:	
CQ969PB-FS	J6745-FS
CQ970LCS-FS	J6758-FS
J6737-FS	J6760-FS
J6739-FS	
J6741-FS	
J6743-FS	

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

Approved By:	Date	Initials
Denise Schumitz	06/27/2018	DMS

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BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0372

WE04 PFAS Analysis

DW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CQ969PB-FS	Procedural Blank	250.0	NA	--	06/25/18 SAS
CQ970LCS-FS	Laboratory Control Sample	250.0	NA	--	06/25/18 SAS
J6737-FS	WGNA-061118-RW-3073	270.0	1	C	06/26/18 LMG
J6739-FS	WGNA-061118-RW-0437	275.0	1	C	06/26/18 LMG
J6741-FS	WGNA-061218-RW-3283	270.0	1	C	06/26/18 LMG
J6743-FS	WGNA-061218-RW-3382	270.0	1	C	06/26/18 LMG
J6745-FS	NAWC-061218-RW-276	270.0	1	C	06/26/18 LMG
J6758-FS	NAWC-061418-RW-111	285.0	1	C	06/26/18 LMG
J6760-FS	NAWC-061418-RW-056	280.0	1	C	06/26/18 LMG

Comments:

Sample ID:	Comments:
CQ969PB-FS	1.26g Trizma(180502-01) weighed on BAL-009
CQ970LCS-FS	1.23g Trizma(180502-01) weighed on BAL-009

Samples Assigned By Stephanie Schultz Date : June 13, 2018

* - "C" = Sample is Consumed

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BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0372

WE04 PFAS Analysis

DW

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CQ969PB-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
CQ970LCS-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6737-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6737-FS-D(3)	952	48	JV59	50.5	1	1000	20.000	07/02/18 SAS	JCT
J6737-FS-D(5)	952	48	JV59	50.5	1	1000	20.000	07/02/18 LMG	KM
J6739-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6741-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6743-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6745-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6758-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6760-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV59	Pipette	B814659662
JV59	Pipette	D1075429B
JV59	Pipette	I0793912B

Extract Id:	Comments:
CQ969PB-FS	Samples reconstituted in 96/4 methanol/milli-q water

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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BATTELLE - NORWELL OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0372

WE04 PFAS Analysis

DW

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
CQ969PB-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
CQ970LCS-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6737-FS	0	C	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6737-FS	2	C	7/2/2018 9:19:00 AM	J6737-FS	0	1000	950	1.053	1.053	07/02/18 SAS
J6737-FS-D	3	--	7/2/2018 9:19:00 AM	J6737-FS	0	1000	50	20.000	20.000	07/02/18 SAS
J6737-FS	4	--	7/2/2018 12:11:00 PM	J6737-FS	2	950	900	1.056	1.111	07/02/18 LMG
J6737-FS-D	5	--	7/2/2018 12:11:00 PM	J6737-FS	2	950	50	19.000	20.000	07/02/18 LMG
J6739-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6741-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6743-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6745-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6758-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS
J6760-FS	0	--	6/25/2018 2:00:00 PM	NA		NA	NA	1.000	1.000	06/25/18 SAS

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 03/07/2018 7:13:25 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MeOH	Solvent	6/27/2018 8:56:44 AM	5-0371.dam	06252018_5-371.wiff
2	JX67	L1	6/27/2018 9:05:43 AM	5-0371.dam	06252018_5-371.wiff
3	JX68	L2	6/27/2018 9:14:41 AM	5-0371.dam	06252018_5-371.wiff
4	JX69	L3	6/27/2018 9:23:38 AM	5-0371.dam	06252018_5-371.wiff
5	JX70	L4	6/27/2018 9:32:34 AM	5-0371.dam	06252018_5-371.wiff
6	JX71	L5	6/27/2018 9:41:29 AM	5-0371.dam	06252018_5-371.wiff
7	JX72	L6	6/27/2018 9:50:24 AM	5-0371.dam	06252018_5-371.wiff
8	JX73	L7	6/27/2018 9:59:20 AM	5-0371.dam	06252018_5-371.wiff
9	JX74	L8	6/27/2018 10:08:14 AM	5-0371.dam	06252018_5-371.wiff
10	JX75	L9	6/27/2018 10:17:08 AM	5-0371.dam	06252018_5-371.wiff
11	JV66 ICC	ICC	6/27/2018 10:26:04 AM	5-0371.dam	06252018_5-371.wiff
31	JX72 CCV	CCV	6/27/2018 8:51:24 PM	5-0371.dam	06252018_5-371.wiff
5	MeOH	Solvent	6/27/2018 9:00:24 PM	5-0371.dam	06252018_5-371.wiff
32	CQ969PB-FS(0)	Procedural Blank	6/27/2018 9:09:23 PM	5-0371.dam	06252018_5-371.wiff
33	CQ970LCS-FS(0)	Laboratory Control Sample	6/27/2018 9:18:19 PM	5-0371.dam	06252018_5-371.wiff
34	J6737-FS(0)	WGNA-061118-RW-3073	6/27/2018 9:27:15 PM	5-0371.dam	06252018_5-371.wiff
35	J6739-FS(0)	WGNA-061118-RW-0437	6/27/2018 9:36:11 PM	5-0371.dam	06252018_5-371.wiff
36	J6741-FS(0)	WGNA-061218-RW-3283	6/27/2018 9:45:07 PM	5-0371.dam	06252018_5-371.wiff
37	J6743-FS(0)	WGNA-061218-RW-3382	6/27/2018 9:54:04 PM	5-0371.dam	06252018_5-371.wiff
38	J6745-FS(0)	NAWC-061218-RW-276	6/27/2018 10:03:01 PM	5-0371.dam	06252018_5-371.wiff
39	J6758-FS(0)	NAWC-061418-RW-111	6/27/2018 10:11:57 PM	5-0371.dam	06252018_5-371.wiff
40	J6760-FS(0)	NAWC-061418-RW-056	6/27/2018 10:20:55 PM	5-0371.dam	06252018_5-371.wiff
41	JX73 CCV	CCV	6/27/2018 10:29:51 PM	5-0371.dam	06252018_5-371.wiff
54	MeOH	Solvent	6/27/2018 10:38:48 PM	5-0371.dam	06252018_5-371.wiff
14	JX71 CCV	CCV	6/28/2018 2:28:49 PM	5-0371.dam	06282018_05-0371.wiff
15	MeOH	Solvent	6/28/2018 2:37:45 PM	5-0371.dam	06282018_05-0371.wiff
21	J6760-FS(0)	NAWC-061418-RW-	6/28/2018 3:31:14	5-0371.dam	06282018_05-0371.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 03/07/2018 7:13:25 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
		056	PM		
22	JX73 CCV	CCV	6/28/2018 3:40:09 PM	5-0371.dam	06282018_05-0371.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 03/07/2018 7:13:58 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
2	JX67	L1	7/2/2018 9:35:13 AM	5-0371.dam	5500_07022018_371.wiff
3	JX68	L2	7/2/2018 9:44:07 AM	5-0371.dam	5500_07022018_371.wiff
4	JX69	L3	7/2/2018 9:53:02 AM	5-0371.dam	5500_07022018_371.wiff
5	JX70	L4	7/2/2018 10:01:57 AM	5-0371.dam	5500_07022018_371.wiff
6	JX71	L5	7/2/2018 10:10:53 AM	5-0371.dam	5500_07022018_371.wiff
7	JX72	L6	7/2/2018 10:19:49 AM	5-0371.dam	5500_07022018_371.wiff
8	JX73	L7	7/2/2018 10:28:45 AM	5-0371.dam	5500_07022018_371.wiff
9	JX74	L8	7/2/2018 10:37:42 AM	5-0371.dam	5500_07022018_371.wiff
10	JX75	L9	7/2/2018 10:46:37 AM	5-0371.dam	5500_07022018_371.wiff
11	JX66 ICC	ICC	7/2/2018 10:55:35 AM	5-0371.dam	5500_07022018_371.wiff
1	MEOH		7/2/2018 11:04:33 AM	5-0371.dam	5500_07022018_371.wiff
7	JX72	CCV	7/2/2018 2:35:00 PM	5-0371.dam	5500_07022018_371.wiff
12	J6737-FS-D(3)	WGNA-061118-RW-3073	7/2/2018 2:43:58 PM	5-0371.dam	5500_07022018_371.wiff
7	JX72	CCV	7/2/2018 3:18:12 PM	5-0371.dam	5500_07022018_371.wiff

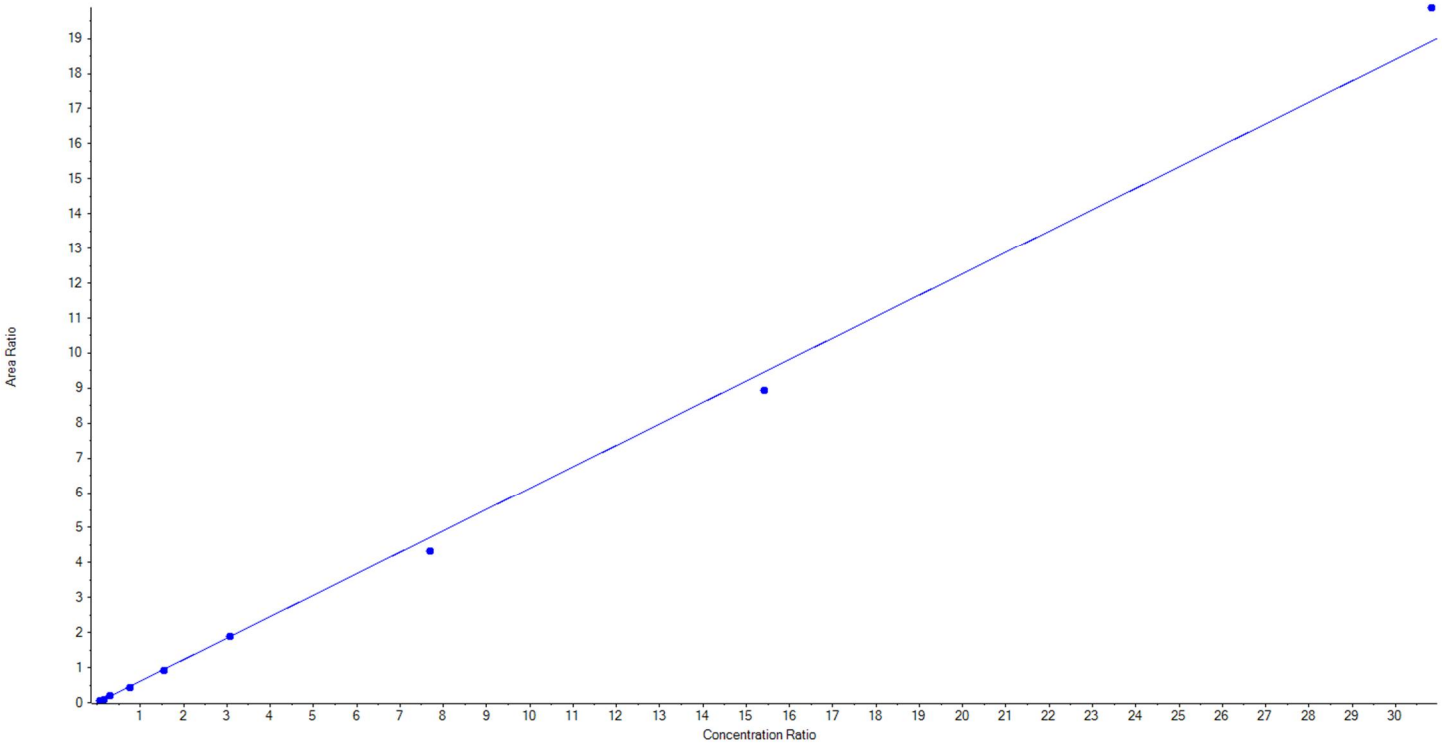
Created with Analyst Reporter
Printed: 03/07/2018 12:27:14 PM

Calibration Summary Report

Analyte Name	PFBS_1	**Data File**	06252018_5-371.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0372_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.61363 x + -0.00126 (r = 0.99834) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	23.830433	107.6
3	JX68	L2	True	44.30	46.278541	104.5
4	JX69	L3	True	88.60	93.683891	105.7
5	JX70	L4	True	221.50	206.327632	93.2
6	JX71	L5	True	443.00	432.516100	97.6
7	JX72	L6	True	885.00	888.747710	100.4
8	JX73	L7	True	2212.50	2024.674722	91.5
9	JX74	L8	True	4425.00	4178.992960	94.4
10	JX75	L9	True	8850.00	9296.998012	105.1



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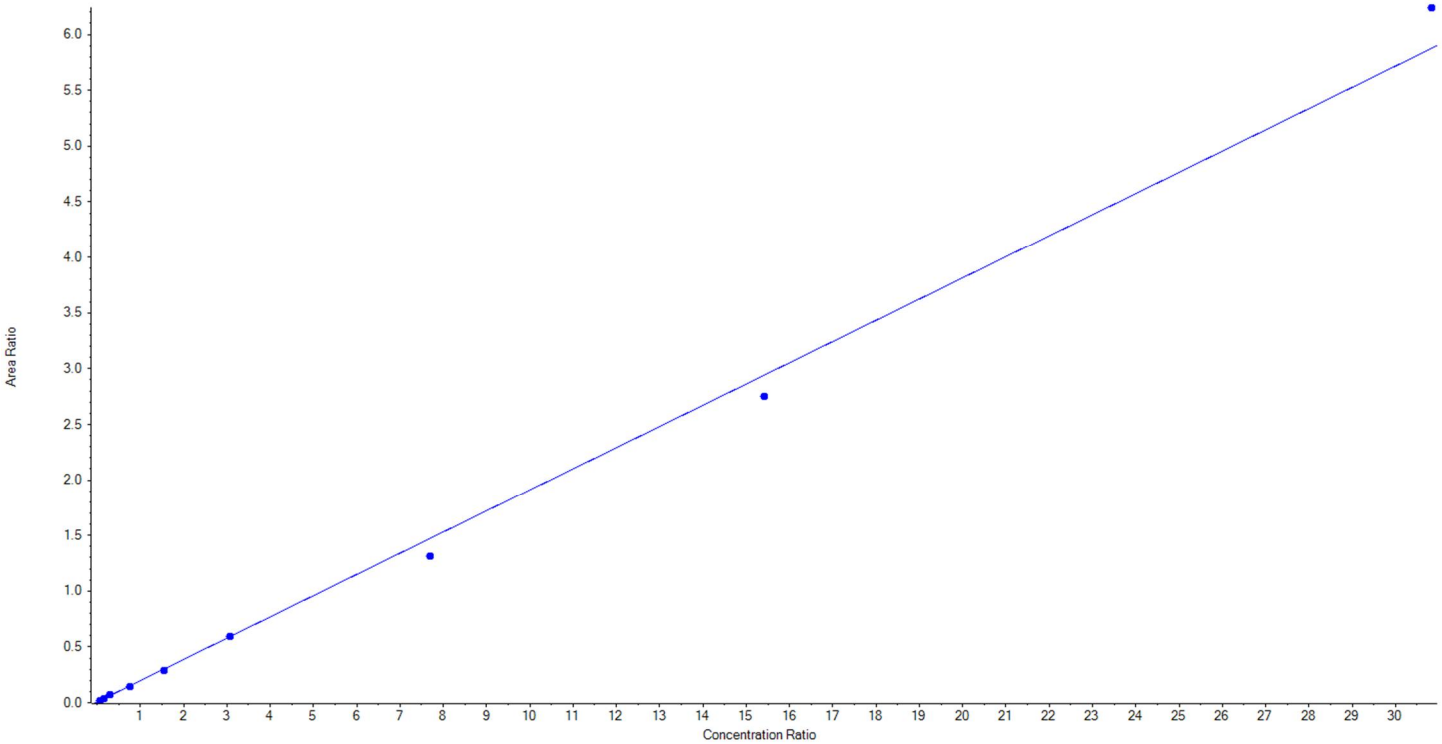
Printed: 03/07/2018 12:27:14 PM

Calibration Summary Report

Analyte Name	PFBS_2	**Data File**	06252018_5-371.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0372_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19036 x + 0.00658 (r = 0.99747) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	22.983577	103.8
3	JX68	L2	True	44.30	49.356949	111.4
4	JX69	L3	True	88.60	93.887974	106.0
5	JX70	L4	True	221.50	205.818634	92.9
6	JX71	L5	True	443.00	429.643049	97.0
7	JX72	L6	True	885.00	889.170002	100.5
8	JX73	L7	True	2212.50	1962.210653	88.7
9	JX74	L8	True	4425.00	4142.359203	93.6
10	JX75	L9	True	8850.00	9396.619960	106.2



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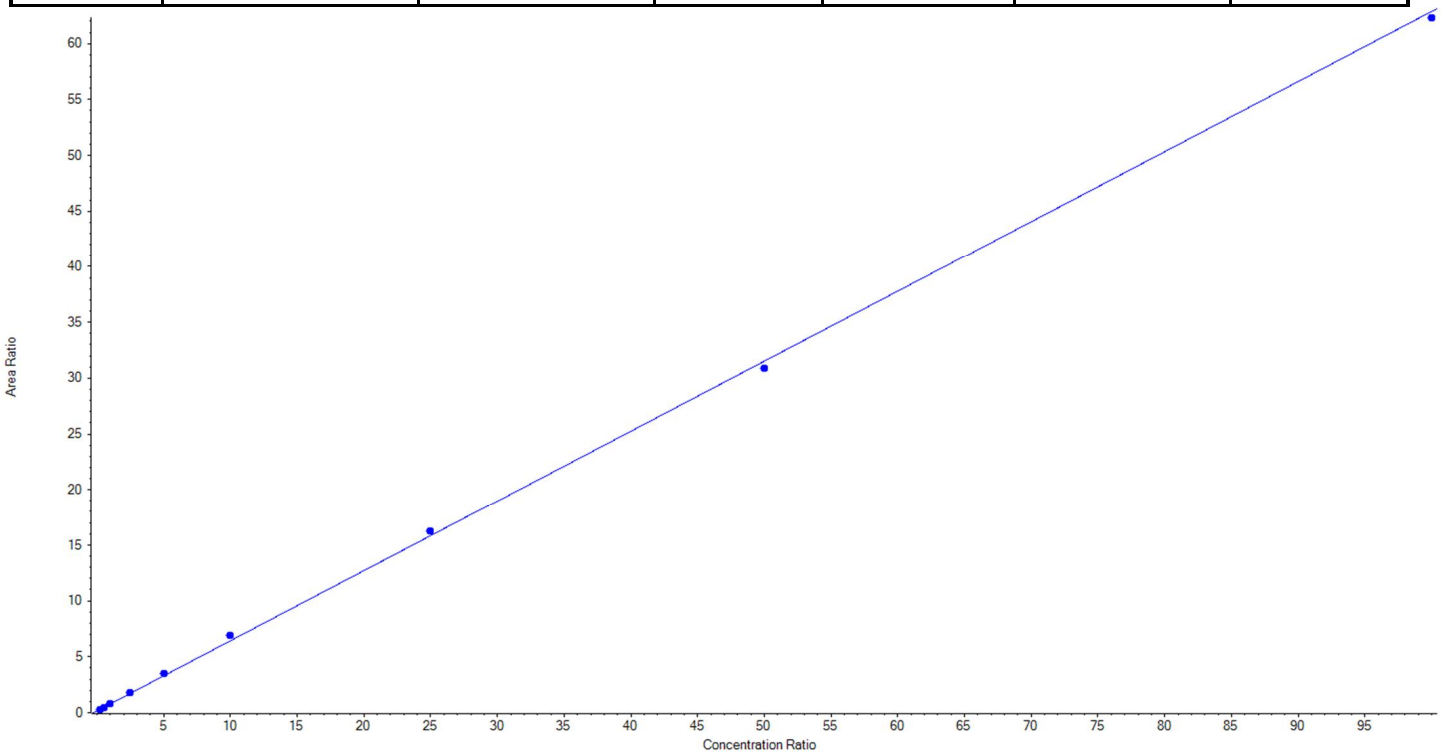
Printed: 03/07/2018 12:27:14 PM

Calibration Summary Report

Analyte Name	PFHxA_1	**Data File**	06252018_5-371.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.62713 x + 0.16053 (r = 0.99957) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.791994	75.2
3	JX68	L2	True	50.00	51.402415	102.8
4	JX69	L3	True	100.00	104.015969	104.0
5	JX70	L4	True	250.00	256.894451	102.8
6	JX71	L5	True	500.00	536.593763	107.3
7	JX72	L6	True	1000.00	1083.560155	108.4
8	JX73	L7	True	2500.00	2559.637674	102.4
9	JX74	L8	True	5000.00	4905.213315	98.1
10	JX75	L9	True	10000.00	9908.890264	99.1



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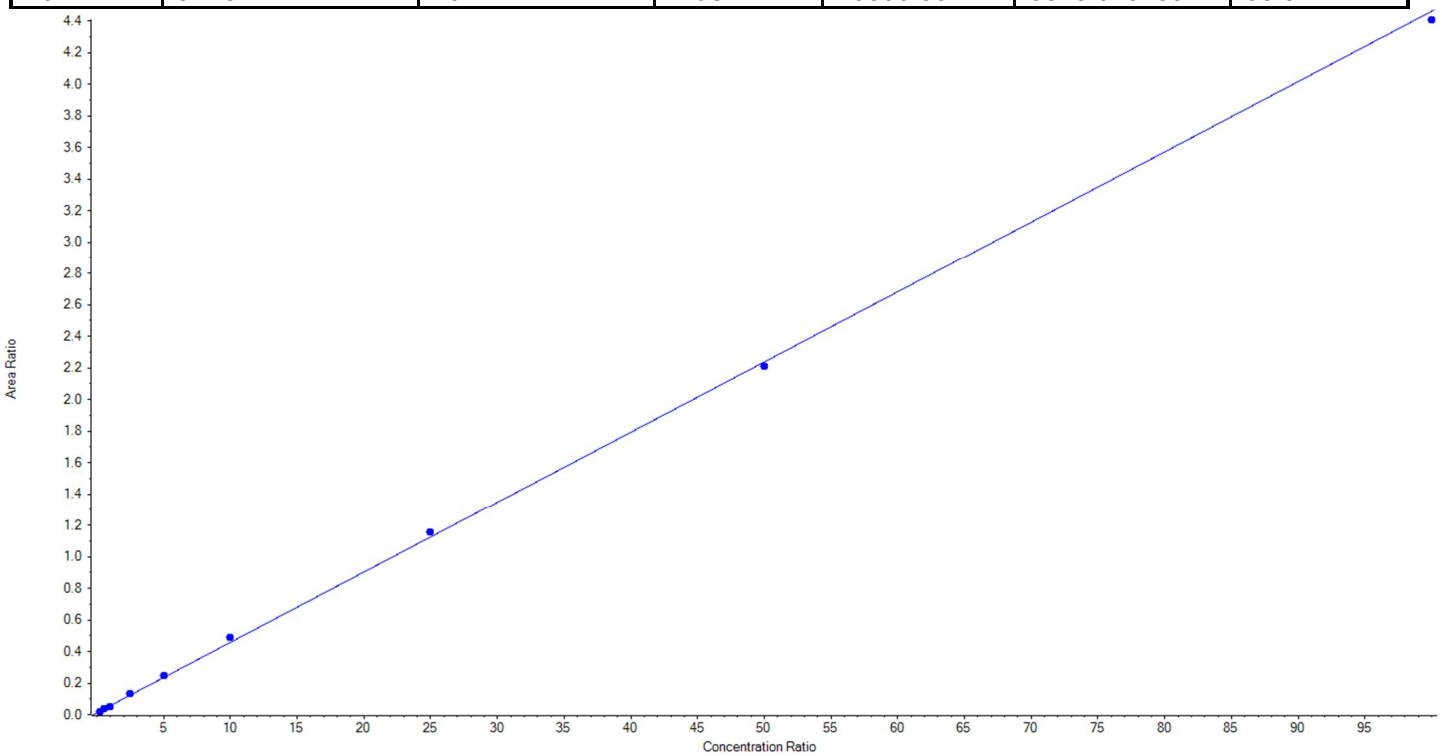
Calibration Summary Report

Analyte Name	PFHxA_2	**Data File**	06252018_5-371.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.04450 x + 0.01264 (r = 0.99956) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.296701	81.2
3	JX68	L2	True	50.00	53.760551	107.5
4	JX69	L3	True	100.00	88.961255	89.0
5	JX70	L4	True	250.00	271.044383	108.4
6	JX71	L5	True	500.00	529.040331	105.8
7	JX72	L6	True	1000.00	1077.865222	107.8
8	JX73	L7	True	2500.00	2570.917958	102.8
9	JX74	L8	True	5000.00	4935.064490	98.7
10	JX75	L9	True	10000.00	9878.049109	98.8



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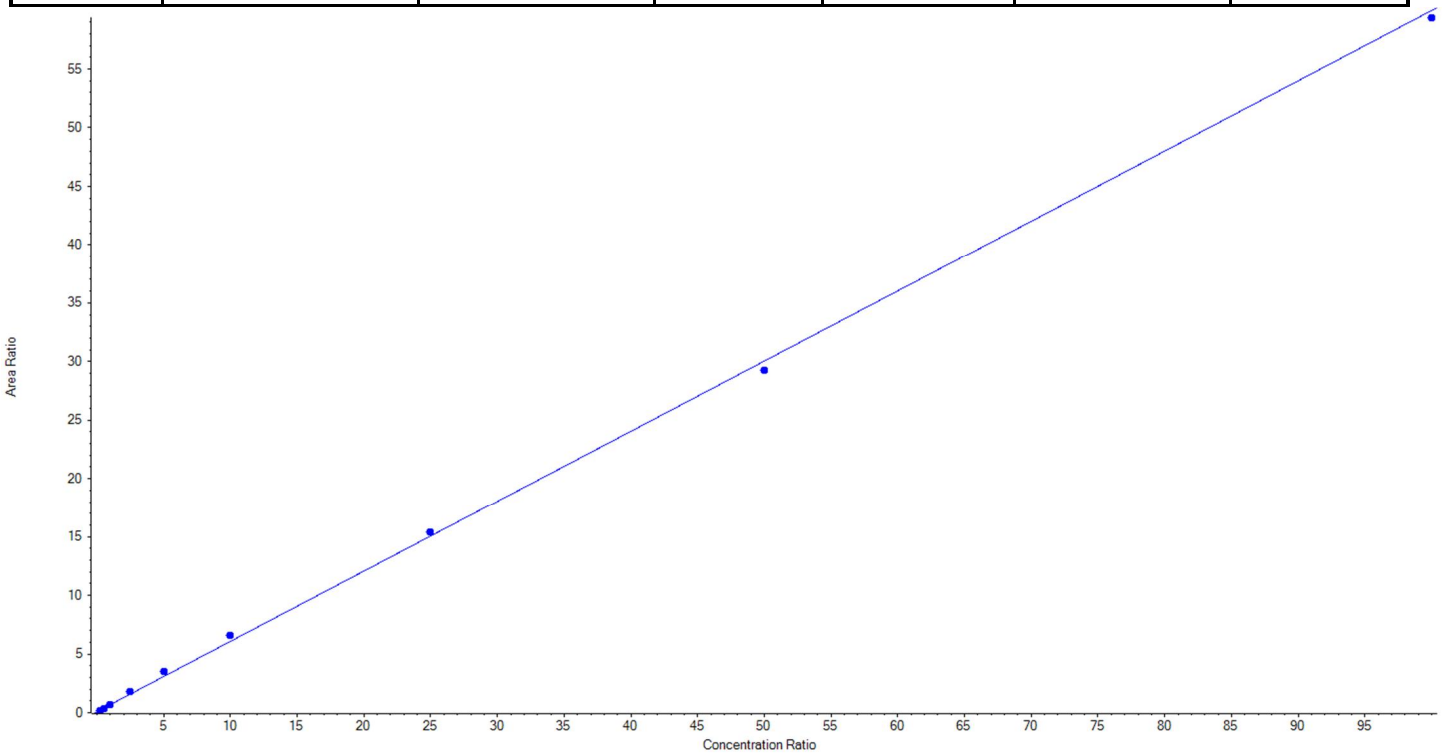
Printed: 03/07/2018 12:27:14 PM

Calibration Summary Report

Analyte Name	PFHpA_1	**Data File**	06252018_5-371.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.59900 x + 0.08720 (r = 0.99924) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.302340	73.2
3	JX68	L2	True	50.00	44.691384	89.4
4	JX69	L3	True	100.00	104.066690	104.1
5	JX70	L4	True	250.00	283.179151	113.3
6	JX71	L5	True	500.00	564.092719	112.8
7	JX72	L6	True	1000.00	1085.640666	108.6
8	JX73	L7	True	2500.00	2557.091682	102.3
9	JX74	L8	True	5000.00	4872.389047	97.5
10	JX75	L9	True	10000.00	9895.546320	99.0



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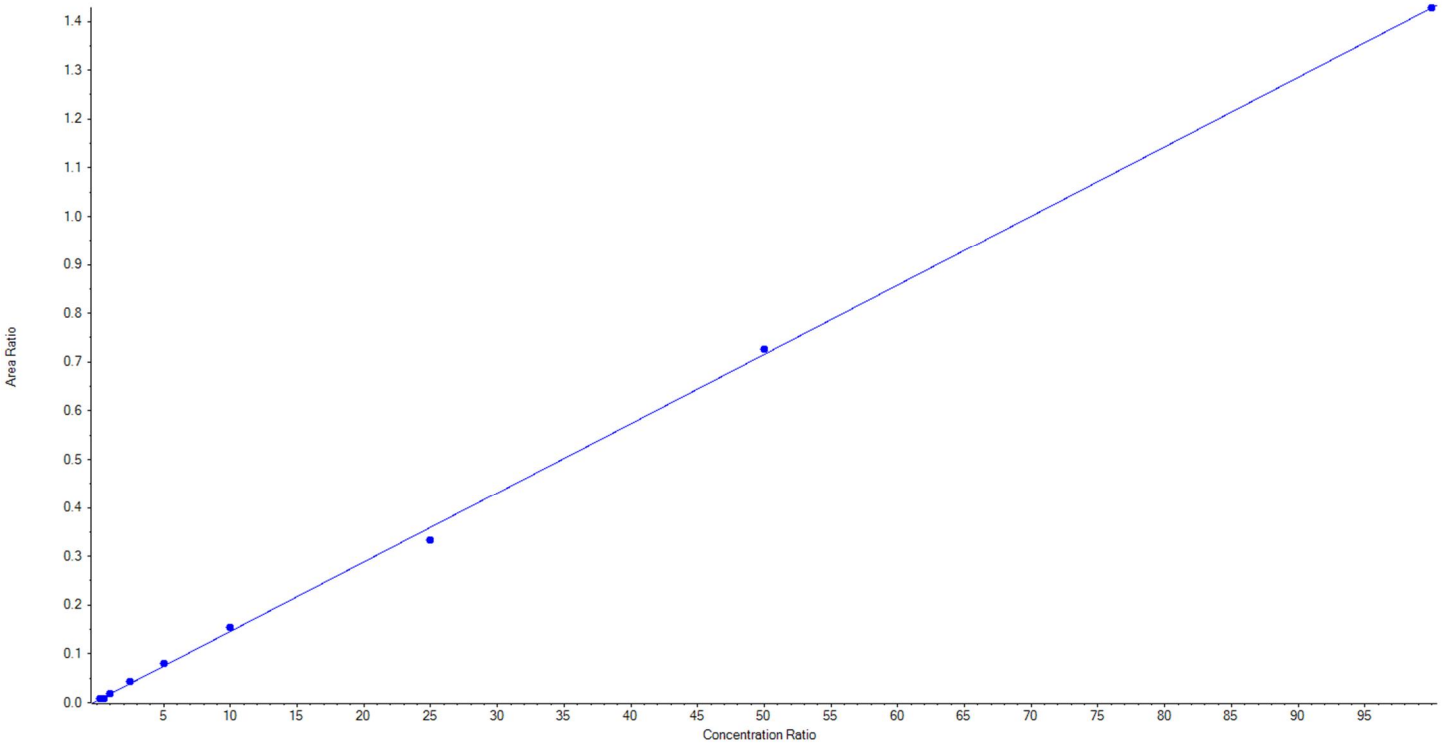
Printed: 03/07/2018 12:27:14 PM

Calibration Summary Report

Analyte Name	PFHpA_2	**Data File**	06252018_5-371.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.01424 x + 0.00368 (r = 0.99920) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	25.182337	100.7
3	JX68	L2	True	50.00	37.004714	74.0
4	JX69	L3	True	100.00	106.084205	106.1
5	JX70	L4	True	250.00	279.413504	111.8
6	JX71	L5	True	500.00	537.484438	107.5
7	JX72	L6	True	1000.00	1062.086999	106.2
8	JX73	L7	True	2500.00	2307.985347	92.3
9	JX74	L8	True	5000.00	5068.903345	101.4
10	JX75	L9	True	10000.00	10000.855110	100.0



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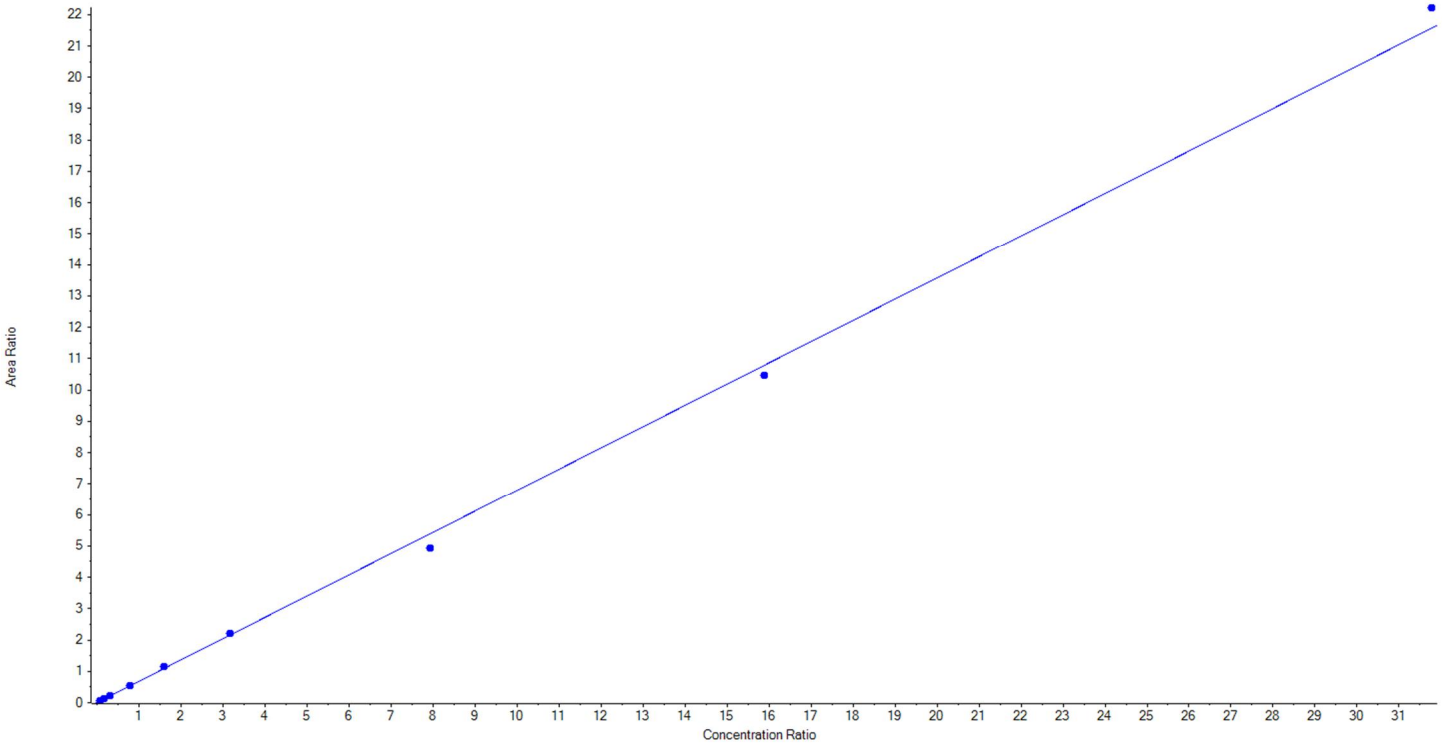
Calibration Summary Report

Analyte Name	PFHxS_1	**Data File**	06252018_5-371.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0372_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.67844 x + 0.00634 (r = 0.99904) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.80	21.160059	92.8
3	JX68	L2	True	45.60	45.485656	99.8
4	JX69	L3	True	91.20	95.245598	104.4
5	JX70	L4	True	228.00	232.577181	102.0
6	JX71	L5	True	456.00	490.689497	107.6
7	JX72	L6	True	912.00	929.472519	101.9
8	JX73	L7	True	2280.00	2087.335538	91.6
9	JX74	L8	True	4560.00	4419.706890	96.9
10	JX75	L9	True	9120.00	9393.927062	103.0



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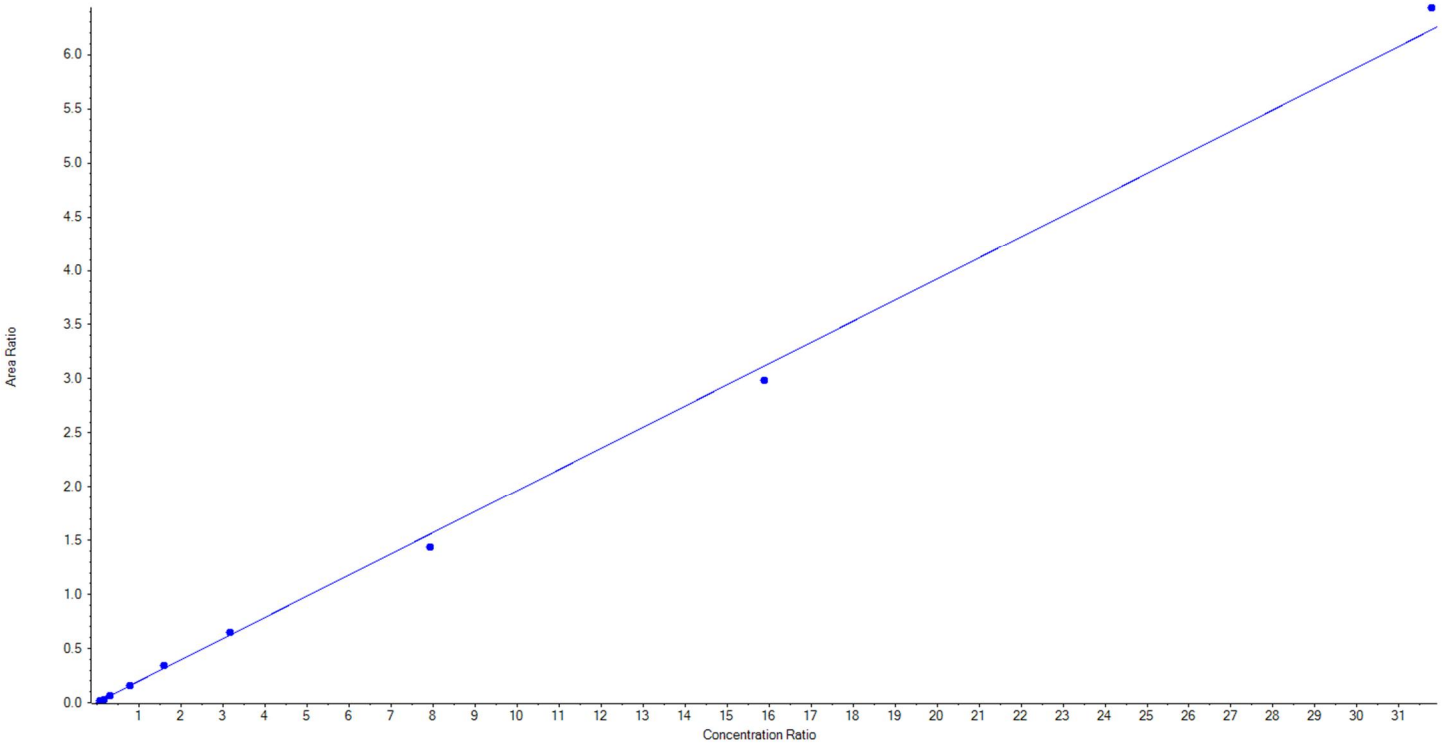
Calibration Summary Report

Analyte Name	PFHxS_2	**Data File**	06252018_5-371.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0372_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19595 x + 0.00351 (r = 0.99884) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.80	23.177641	101.7
3	JX68	L2	True	45.60	41.676123	91.4
4	JX69	L3	True	91.20	94.514379	103.6
5	JX70	L4	True	228.00	224.141632	98.3
6	JX71	L5	True	456.00	499.794260	109.6
7	JX72	L6	True	912.00	951.728157	104.4
8	JX73	L7	True	2280.00	2099.884695	92.1
9	JX74	L8	True	4560.00	4363.227328	95.7
10	JX75	L9	True	9120.00	9417.455786	103.3



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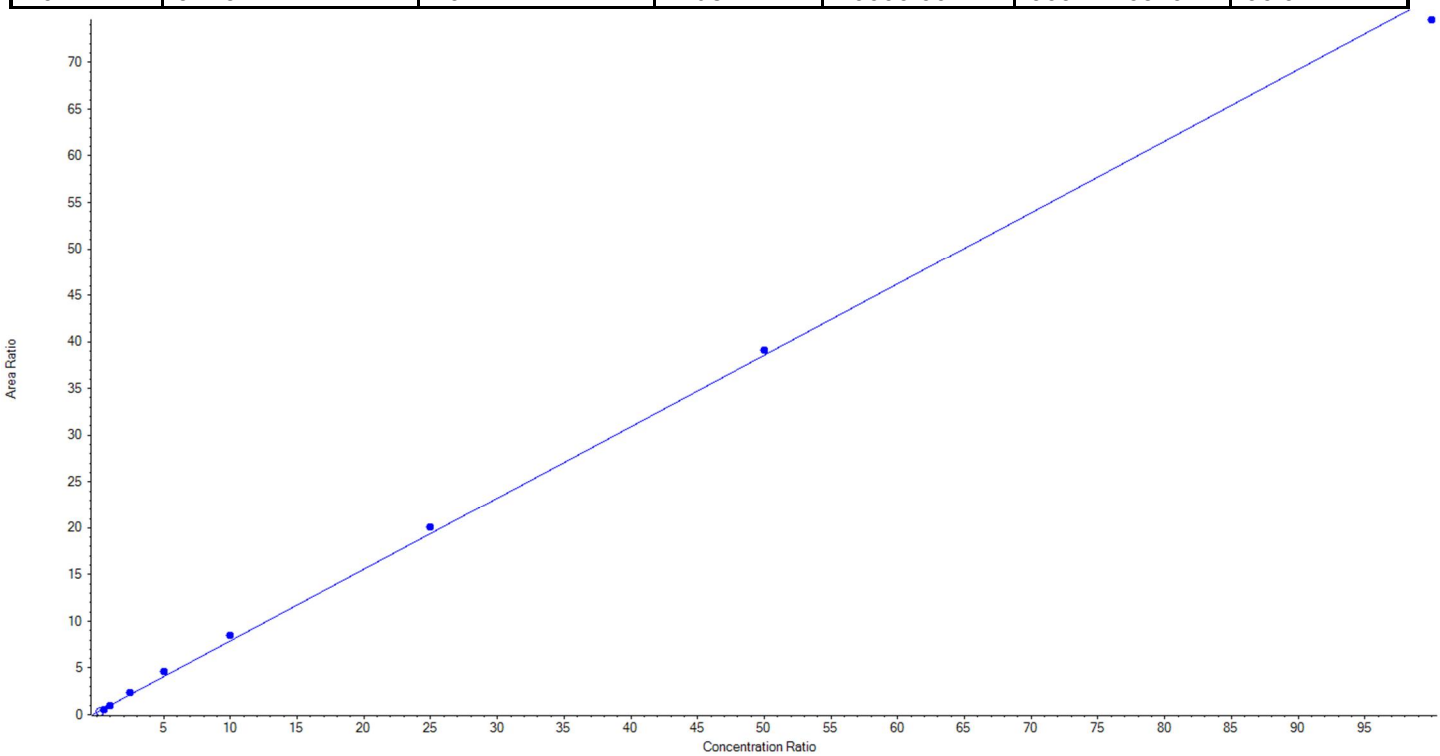
Calibration Summary Report

Analyte Name	PFOA_1	**Data File**	06252018_5-371.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.76657 x + 0.23682 (r = 0.99897) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	5.415311	21.7
3	JX68	L2	True	50.00	36.683792	73.4
4	JX69	L3	True	100.00	92.235736	92.2
5	JX70	L4	True	250.00	275.902665	110.4
6	JX71	L5	True	500.00	572.330827	114.5
7	JX72	L6	True	1000.00	1079.143229	107.9
8	JX73	L7	True	2500.00	2586.190651	103.5
9	JX74	L8	True	5000.00	5063.236772	101.3
10	JX75	L9	True	10000.00	9694.276329	96.9



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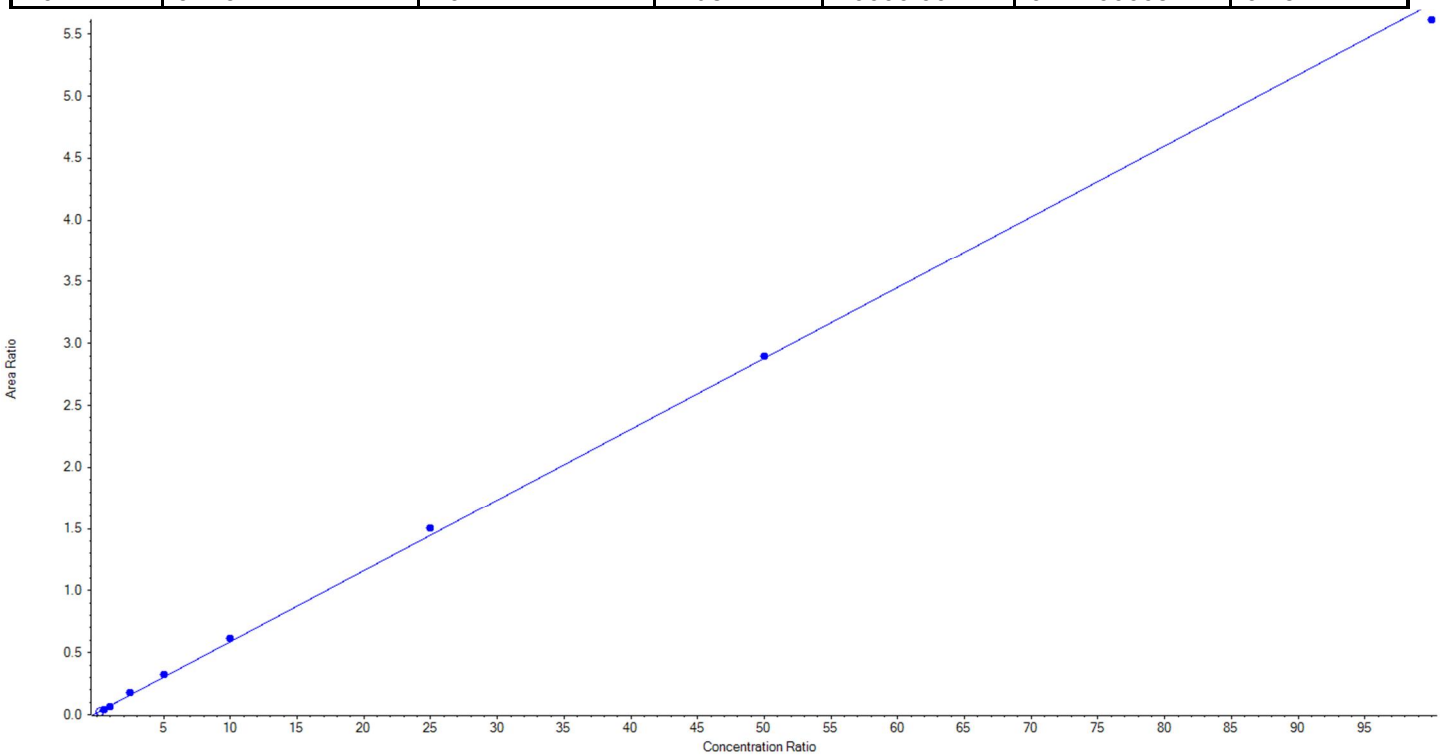
Calibration Summary Report

Analyte Name	PFOA_2	**Data File**	06252018_5-371.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05729 x + 0.01572 (r = 0.99941) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	12.318640	49.3
3	JX68	L2	True	50.00	43.335566	86.7
4	JX69	L3	True	100.00	86.590381	86.6
5	JX70	L4	True	250.00	279.024584	111.6
6	JX71	L5	True	500.00	542.178268	108.4
7	JX72	L6	True	1000.00	1042.123910	104.2
8	JX73	L7	True	2500.00	2604.616479	104.2
9	JX74	L8	True	5000.00	5027.464128	100.6
10	JX75	L9	True	10000.00	9774.666684	97.8



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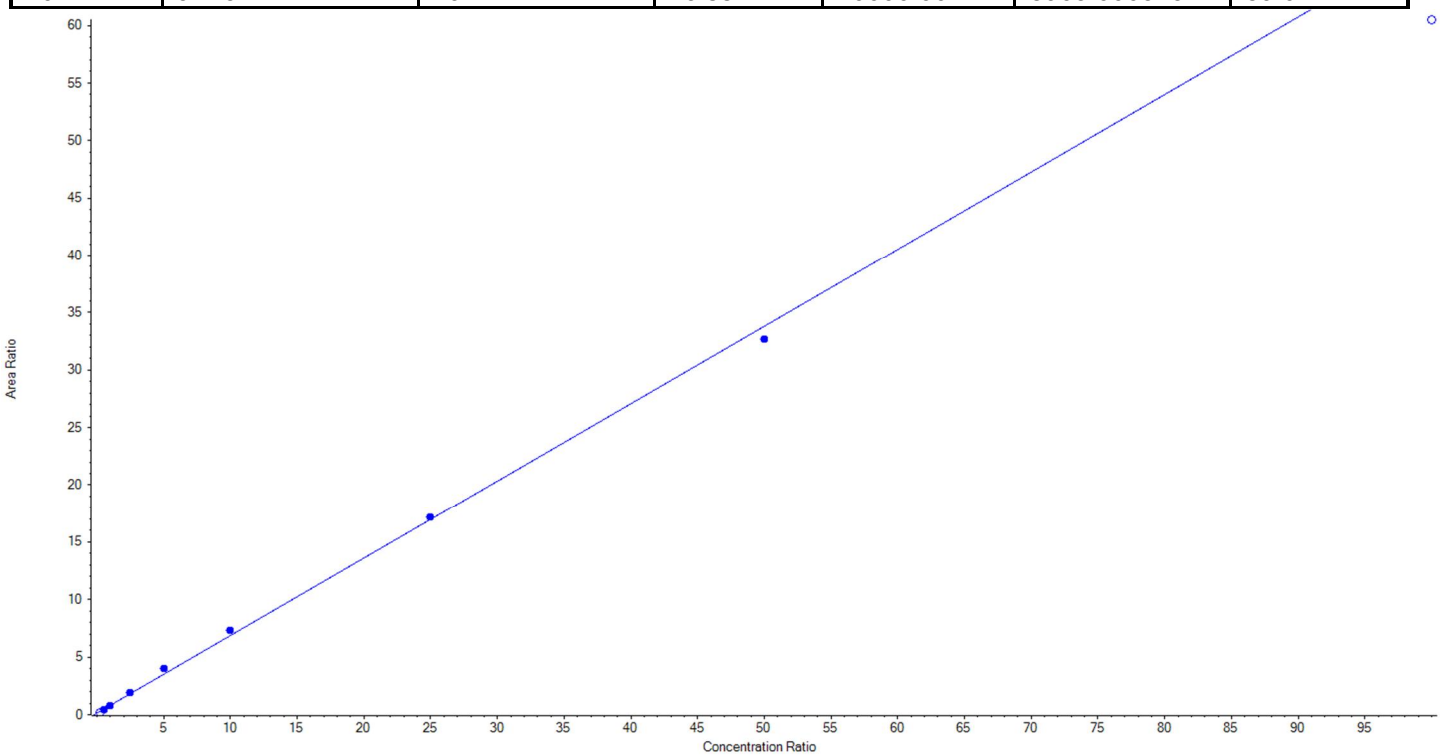
Calibration Summary Report

Analyte Name	PFNA_1	**Data File**	06252018_5-371.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.67314 x + 0.14207 (r = 0.99841) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	7.876482	31.5
3	JX68	L2	True	50.00	38.471445	76.9
4	JX69	L3	True	100.00	96.355173	96.4
5	JX70	L4	True	250.00	268.580288	107.4
6	JX71	L5	True	500.00	575.970800	115.2
7	JX72	L6	True	1000.00	1064.317609	106.4
8	JX73	L7	True	2500.00	2525.890341	101.0
9	JX74	L8	True	5000.00	4830.414344	96.6
10	JX75	L9	False	10000.00	8963.600323	89.6



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Calibration Summary Report

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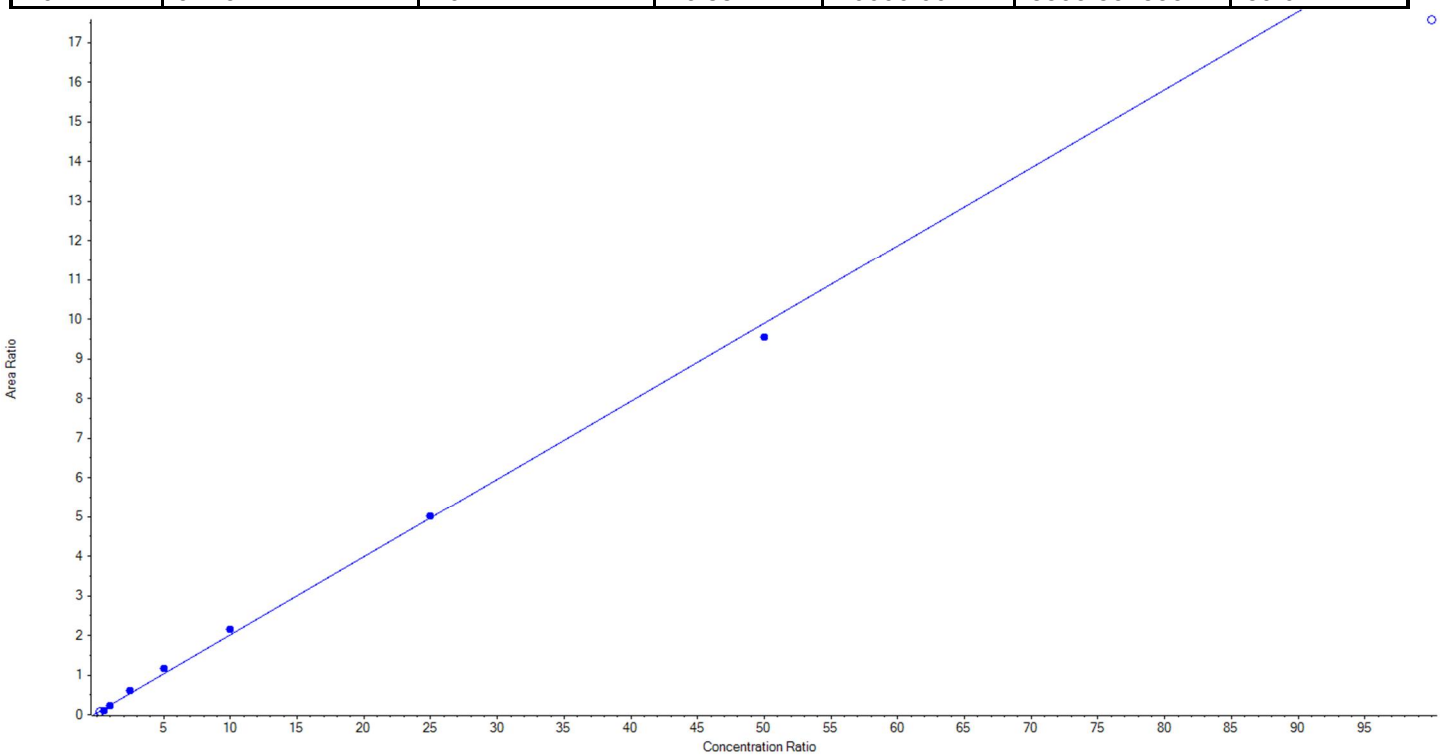
Analyte Name	PFNA_2	**Data File**	06252018_5-371.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19709 x + 0.04473 (r = 0.99821) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	17.483575	69.9
3	JX68	L2	True	50.00	35.058175	70.1
4	JX69	L3	True	100.00	99.127432	99.1
5	JX70	L4	True	250.00	282.168603	112.9
6	JX71	L5	True	500.00	566.768331	113.4
7	JX72	L6	True	1000.00	1073.450506	107.4
8	JX73	L7	True	2500.00	2516.076067	100.6
9	JX74	L8	True	5000.00	4827.350887	96.6
10	JX75	L9	False	10000.00	8895.837853	89.0



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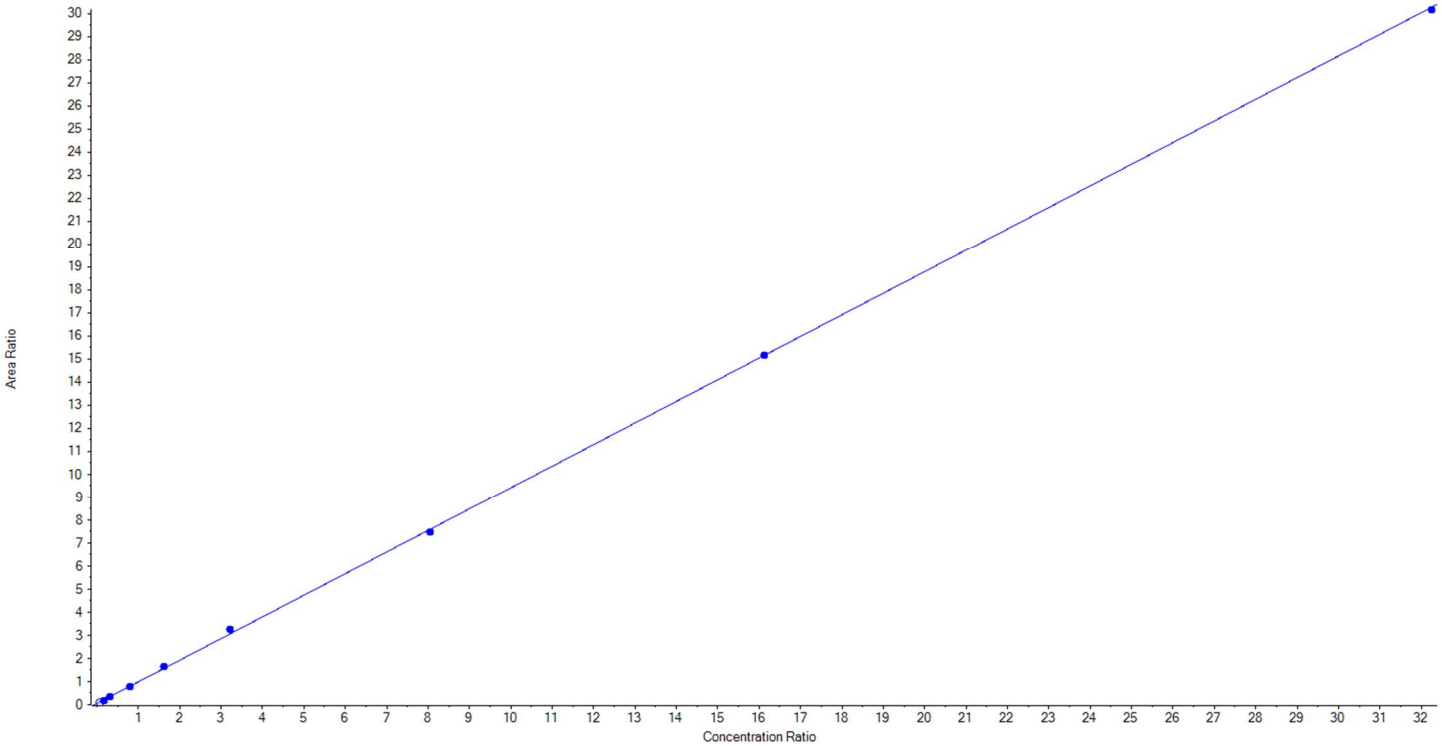
Calibration Summary Report

Analyte Name	PFOS_1	**Data File**	06252018_5-371.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0372_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.93696 x + 0.05143 (r = 0.99979) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	23.15	15.793015	68.2
3	JX68	L2	True	46.30	40.420834	87.3
4	JX69	L3	True	92.60	96.220310	103.9
5	JX70	L4	True	231.50	229.291043	99.1
6	JX71	L5	True	463.00	490.925526	106.0
7	JX72	L6	True	925.60	981.553102	106.1
8	JX73	L7	True	2314.00	2268.446056	98.0
9	JX74	L8	True	4628.00	4628.043250	100.0
10	JX75	L9	True	9256.00	9222.099880	99.6



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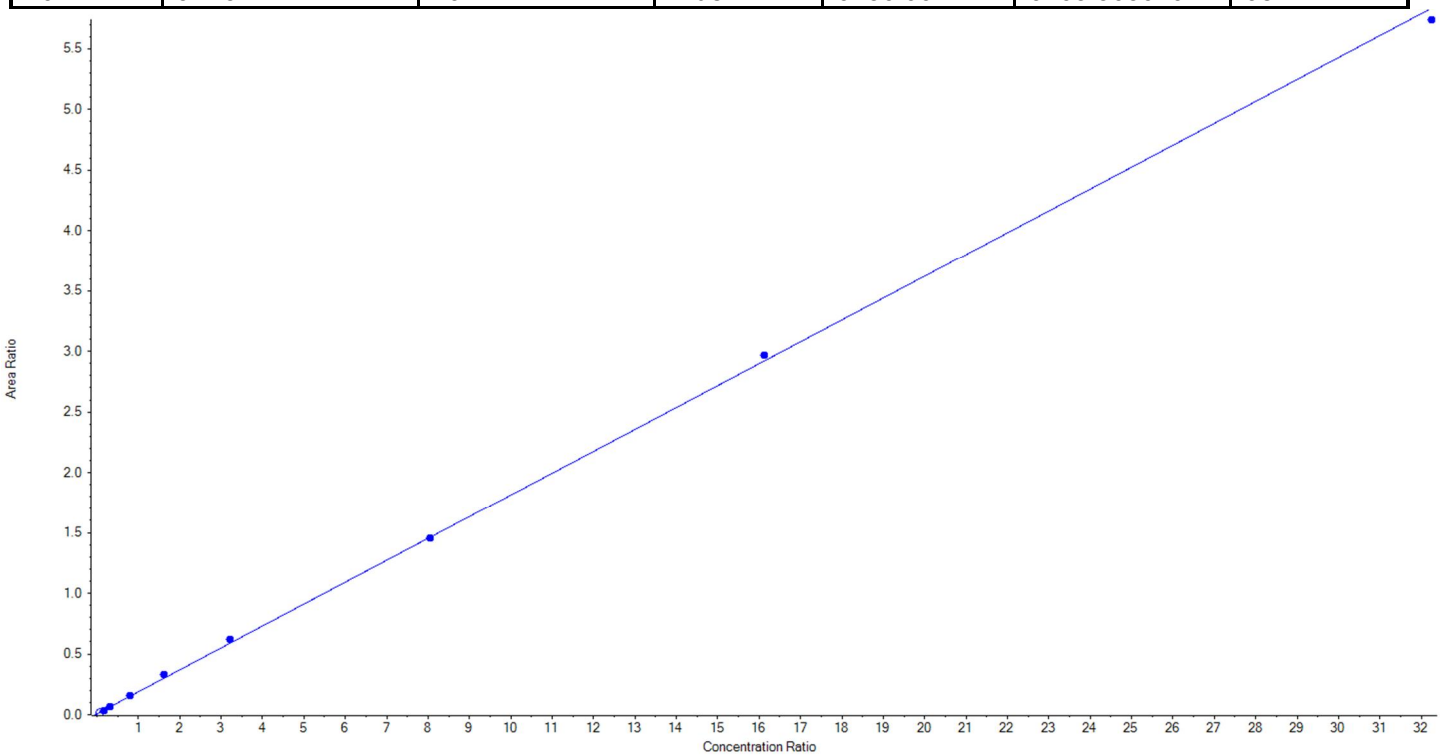
Calibration Summary Report

Analyte Name	PFOS_2	**Data File**	06252018_5-371.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0372_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.18064 x + 0.00767 (r = 0.99961) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	23.15	18.518216	80.0
3	JX68	L2	True	46.30	36.983718	79.9
4	JX69	L3	True	92.60	93.580776	101.1
5	JX70	L4	True	231.50	243.435530	105.2
6	JX71	L5	True	463.00	507.358334	109.6
7	JX72	L6	True	925.60	972.613478	105.1
8	JX73	L7	True	2314.00	2297.795932	99.3
9	JX74	L8	True	4628.00	4701.867193	101.6
10	JX75	L9	True	9256.00	9103.365040	98.4



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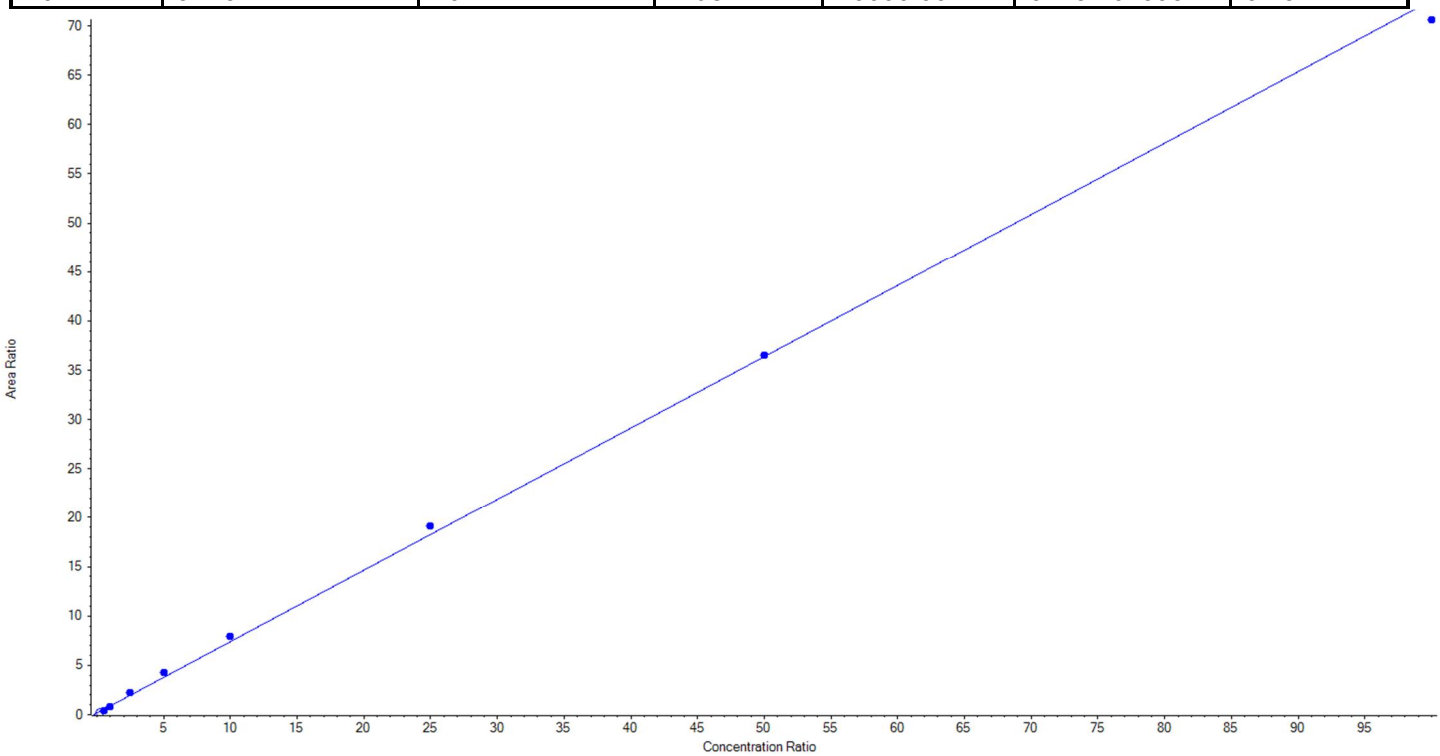
Calibration Summary Report

Analyte Name	PFDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.72444 x + 0.16011 (r = 0.99902) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	4.293986	17.2
3	JX68	L2	True	50.00	38.400405	76.8
4	JX69	L3	True	100.00	87.838796	87.8
5	JX70	L4	True	250.00	283.367571	113.4
6	JX71	L5	True	500.00	562.746141	112.6
7	JX72	L6	True	1000.00	1073.347869	107.3
8	JX73	L7	True	2500.00	2614.798969	104.6
9	JX74	L8	True	5000.00	5014.238853	100.3
10	JX75	L9	True	10000.00	9725.261395	97.3



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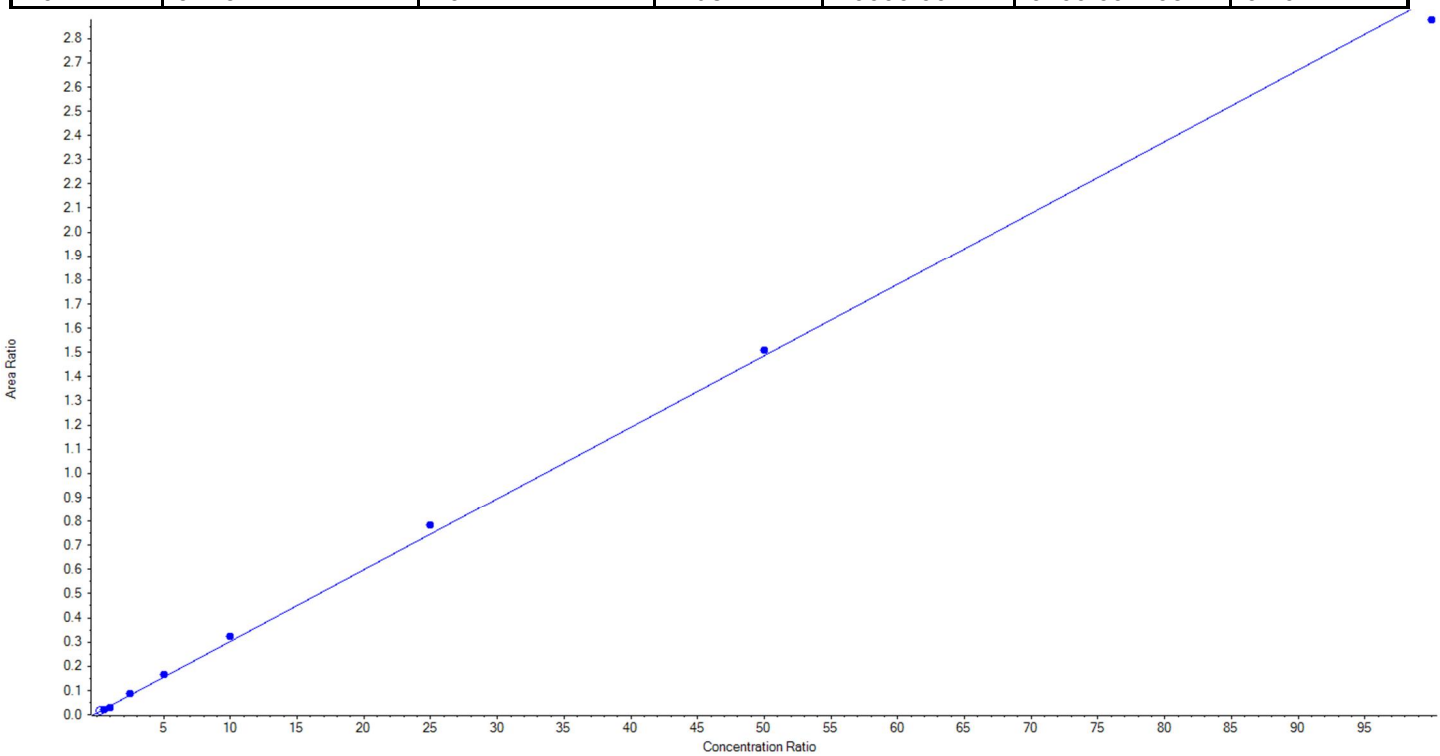
Calibration Summary Report

Analyte Name	PFDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.02959 x + 0.00688 (r = 0.99915) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	27.987541	112.0
3	JX68	L2	True	50.00	48.305605	96.6
4	JX69	L3	True	100.00	78.774590	78.8
5	JX70	L4	True	250.00	266.338265	106.5
6	JX71	L5	True	500.00	536.324707	107.3
7	JX72	L6	True	1000.00	1073.774687	107.4
8	JX73	L7	True	2500.00	2625.689392	105.0
9	JX74	L8	True	5000.00	5070.098049	101.4
10	JX75	L9	True	10000.00	9700.694705	97.0



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Calibration Summary Report

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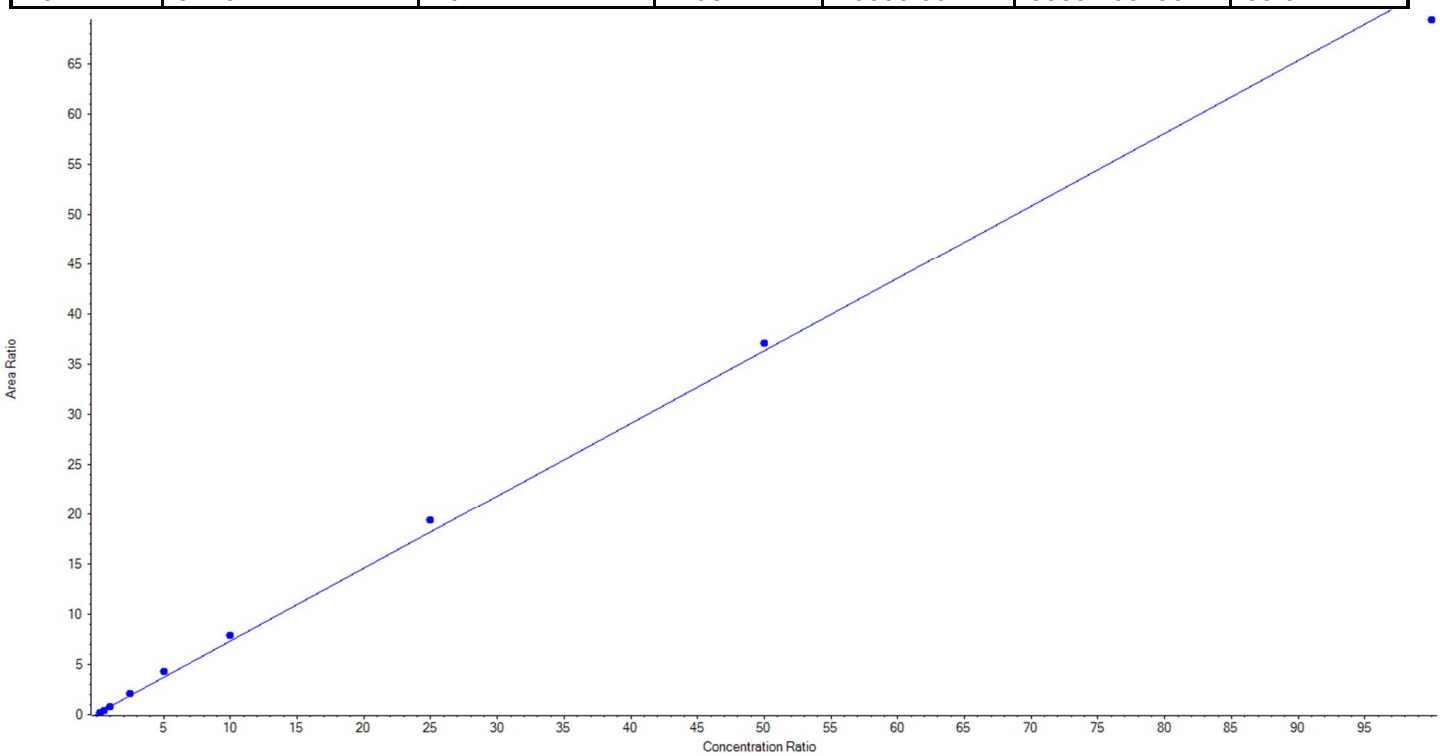
Analyte Name	PFUnA_1	**Data File**	06252018_5-371.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.72537 x + 0.09471 (r = 0.99844) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.073088	80.3
3	JX68	L2	True	50.00	42.388703	84.8
4	JX69	L3	True	100.00	95.029236	95.0
5	JX70	L4	True	250.00	279.090767	111.6
6	JX71	L5	True	500.00	579.829398	116.0
7	JX72	L6	True	1000.00	1079.142455	107.9
8	JX73	L7	True	2500.00	2669.633957	106.8
9	JX74	L8	True	5000.00	5100.109139	102.0
10	JX75	L9	True	10000.00	9559.703256	95.6



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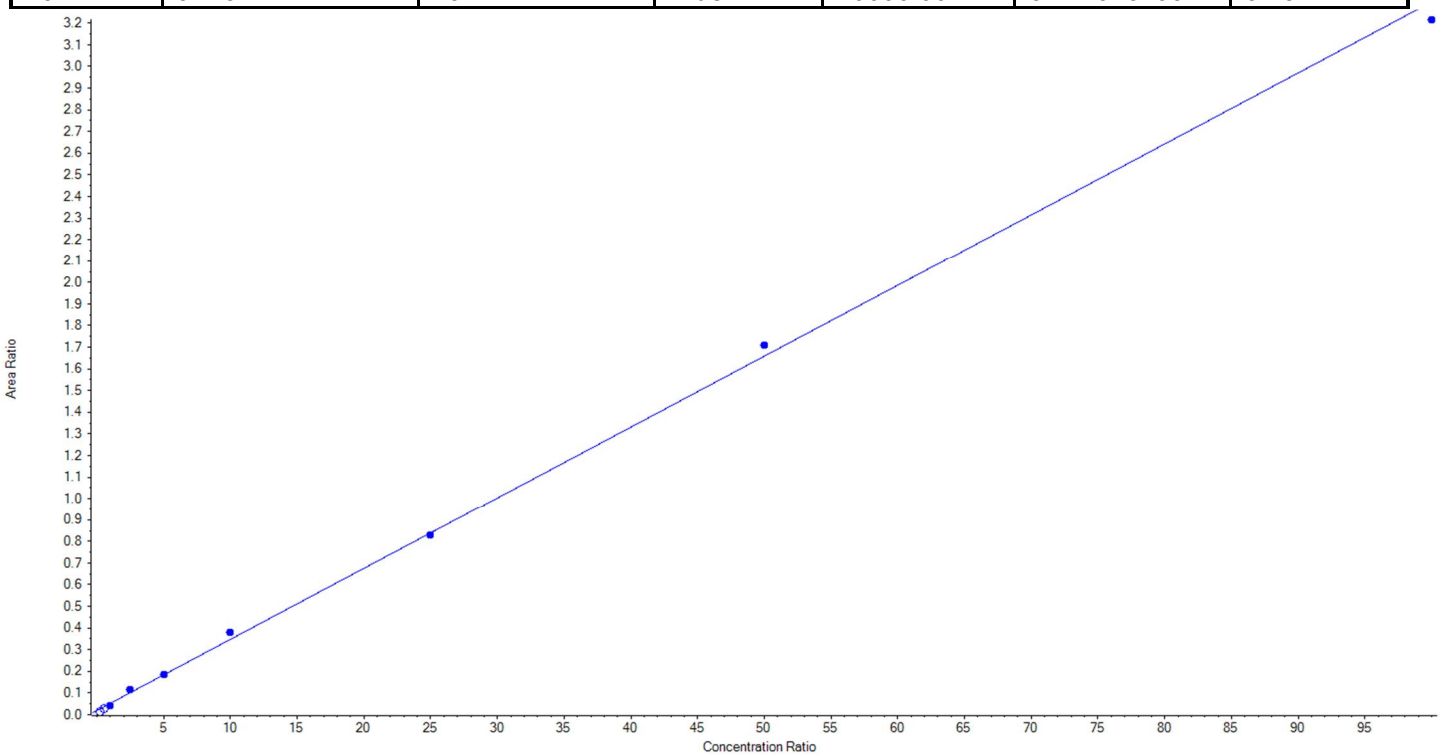
Calibration Summary Report

Analyte Name	PFUnA_2	**Data File**	06252018_5-371.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.03278 x + 0.01985 (r = 0.99876) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	< 0	N/A
3	JX68	L2	False	50.00	25.569843	51.1
4	JX69	L3	True	100.00	70.257455	70.3
5	JX70	L4	True	250.00	299.570771	119.8
6	JX71	L5	True	500.00	500.697313	100.1
7	JX72	L6	True	1000.00	1103.433343	110.3
8	JX73	L7	True	2500.00	2469.487594	98.8
9	JX74	L8	True	5000.00	5158.640024	103.2
10	JX75	L9	True	10000.00	9747.913499	97.5



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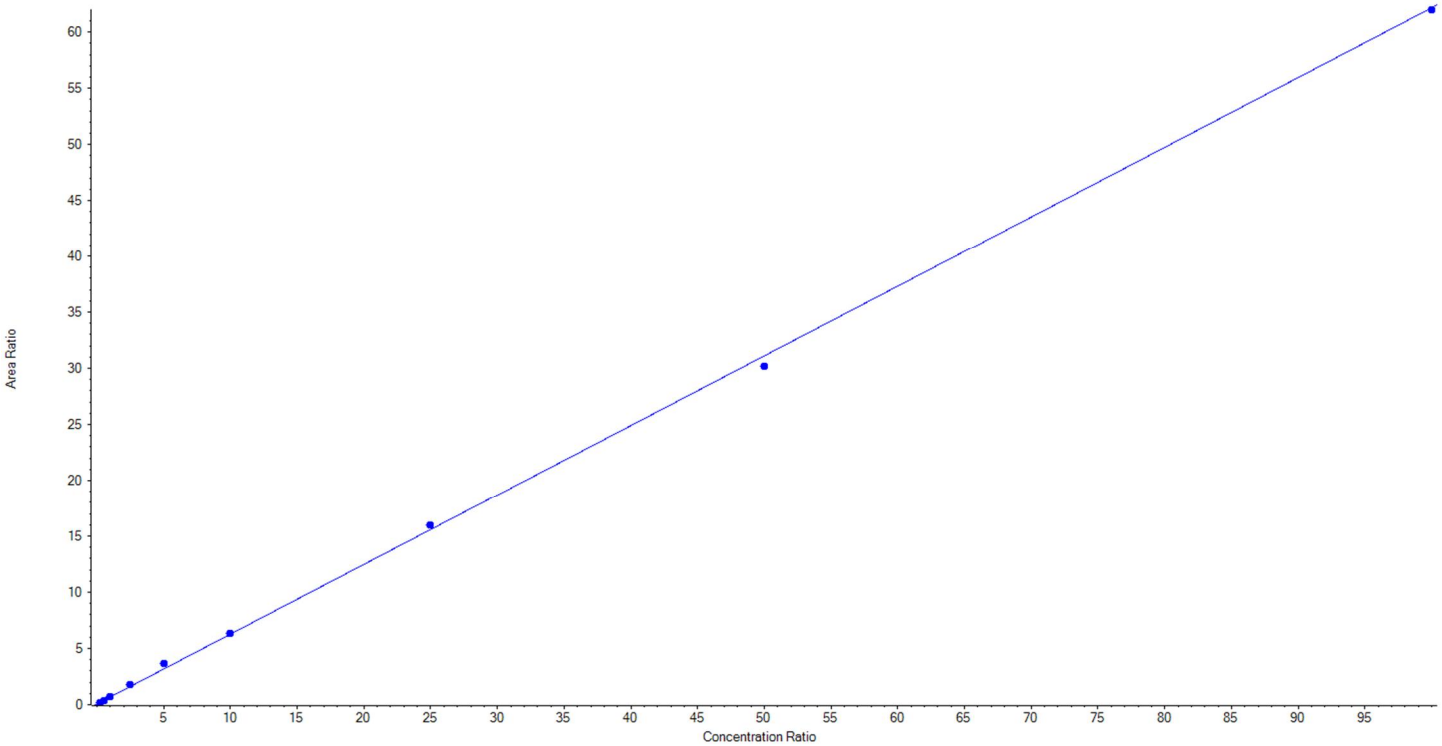
Calibration Summary Report

Analyte Name	PFDoA_1	**Data File**	06252018_5-371.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.62092 x + 0.06665 (r = 0.99942) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.731070	74.9
3	JX68	L2	True	50.00	47.819194	95.6
4	JX69	L3	True	100.00	102.981838	103.0
5	JX70	L4	True	250.00	277.158464	110.9
6	JX71	L5	True	500.00	573.374778	114.7
7	JX72	L6	True	1000.00	1016.155480	101.6
8	JX73	L7	True	2500.00	2561.606452	102.5
9	JX74	L8	True	5000.00	4856.561924	97.1
10	JX75	L9	True	10000.00	9970.610800	99.7



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Calibration Summary Report

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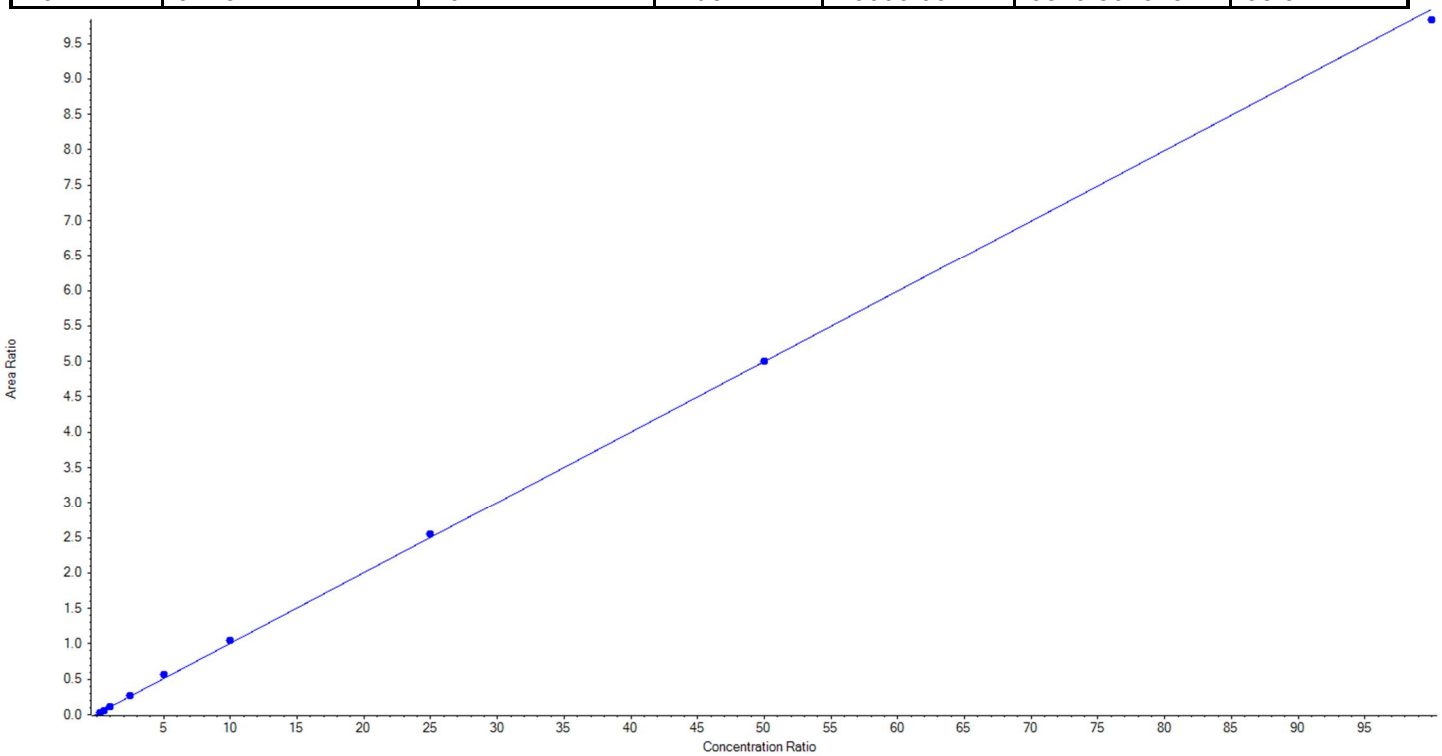
Analyte Name	PFDoA_2	**Data File**	06252018_5-371.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.09973 x + 0.01082 (r = 0.99967) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.603828	82.4
3	JX68	L2	True	50.00	49.166918	98.3
4	JX69	L3	True	100.00	98.860597	98.9
5	JX70	L4	True	250.00	262.630095	105.1
6	JX71	L5	True	500.00	555.711859	111.1
7	JX72	L6	True	1000.00	1035.902153	103.6
8	JX73	L7	True	2500.00	2553.060598	102.1
9	JX74	L8	True	5000.00	4999.256910	100.0
10	JX75	L9	True	10000.00	9849.807043	98.5



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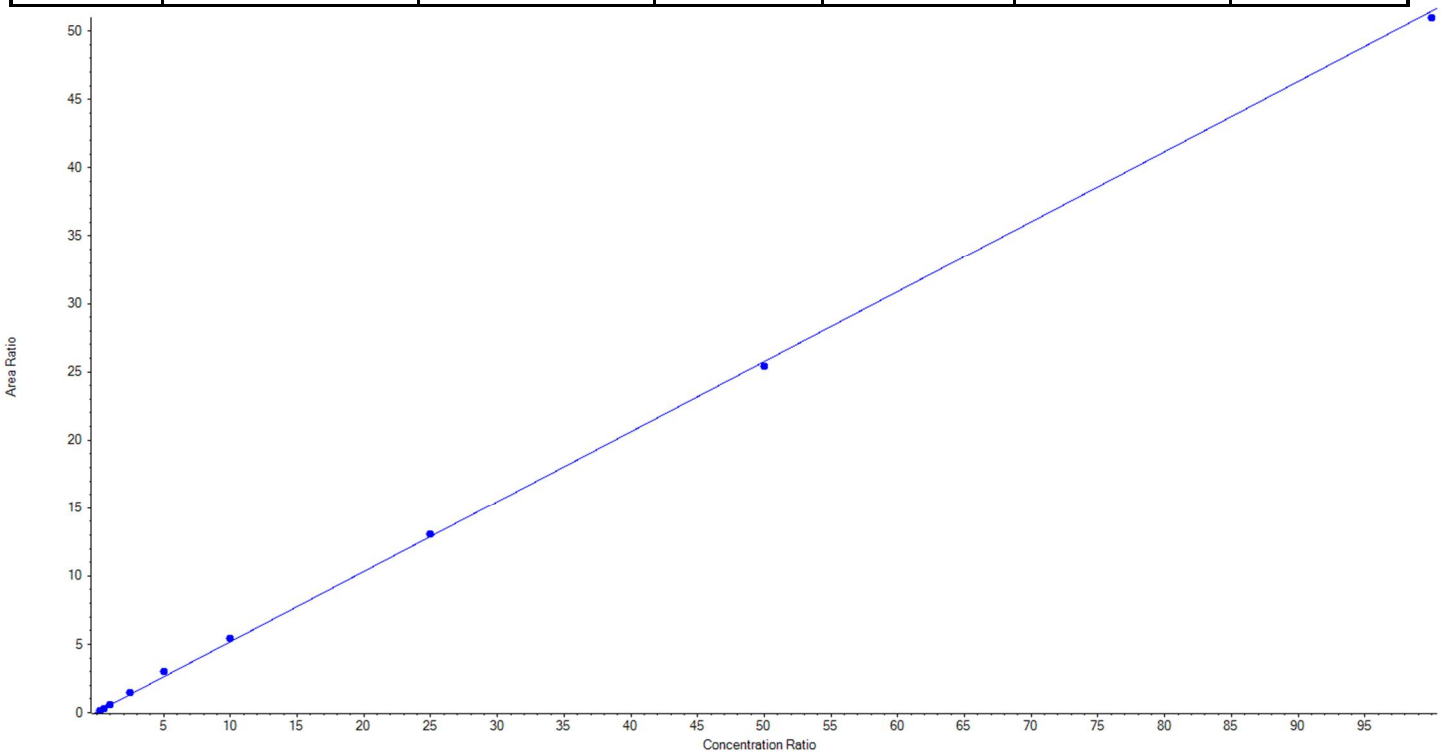
Calibration Summary Report

Analyte Name	PFTrDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.51402 x + 0.05199 (r = 0.99946) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	21.244818	85.0
3	JX68	L2	True	50.00	43.984299	88.0
4	JX69	L3	True	100.00	100.101285	100.1
5	JX70	L4	True	250.00	268.672318	107.5
6	JX71	L5	True	500.00	581.148596	116.2
7	JX72	L6	True	1000.00	1043.469036	104.4
8	JX73	L7	True	2500.00	2531.653493	101.3
9	JX74	L8	True	5000.00	4929.189379	98.6
10	JX75	L9	True	10000.00	9905.536776	99.1



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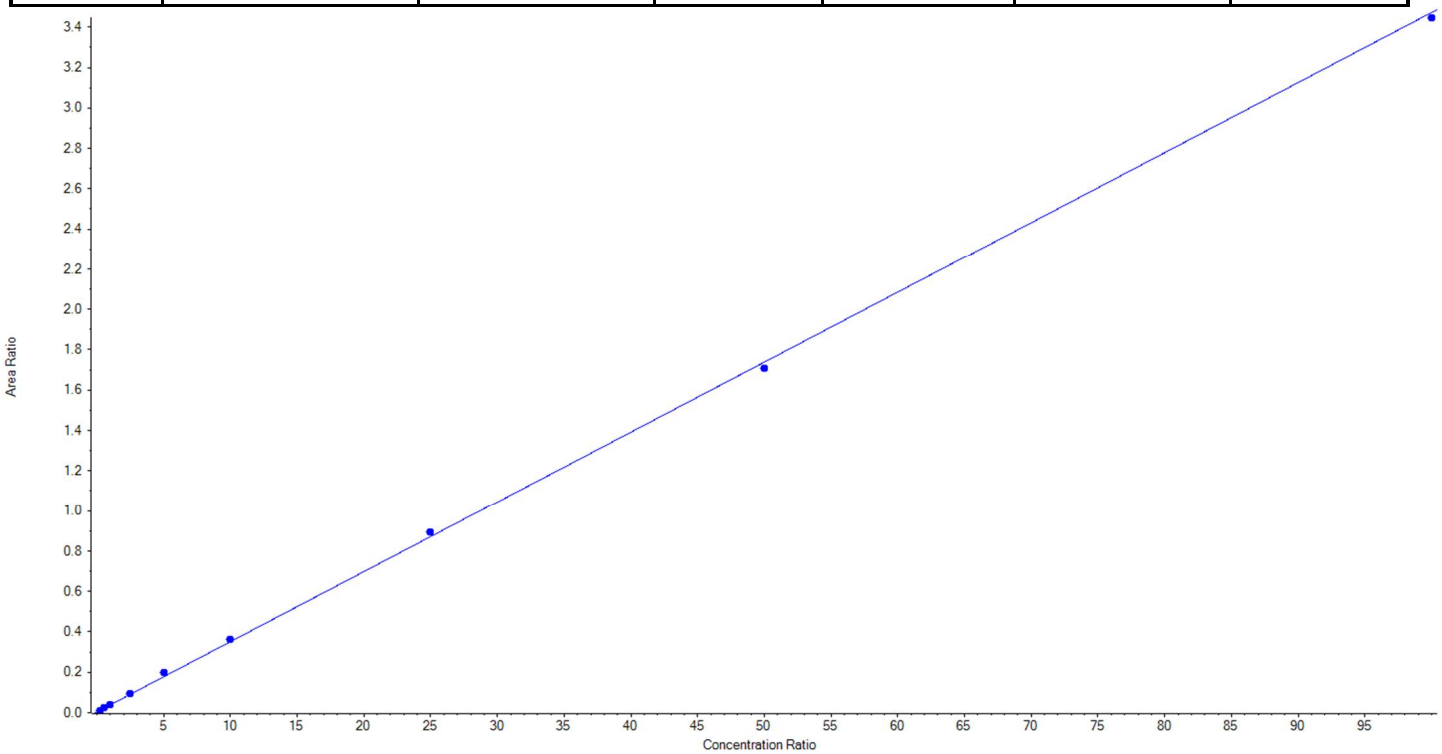
Calibration Summary Report

Analyte Name	PFTrDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.03468 x + 0.00436 (r = 0.99956) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	17.673504	70.7
3	JX68	L2	True	50.00	57.354613	114.7
4	JX69	L3	True	100.00	96.213165	96.2
5	JX70	L4	True	250.00	256.853828	102.7
6	JX71	L5	True	500.00	557.870213	111.6
7	JX72	L6	True	1000.00	1038.781670	103.9
8	JX73	L7	True	2500.00	2570.884235	102.8
9	JX74	L8	True	5000.00	4906.079605	98.1
10	JX75	L9	True	10000.00	9923.289167	99.2



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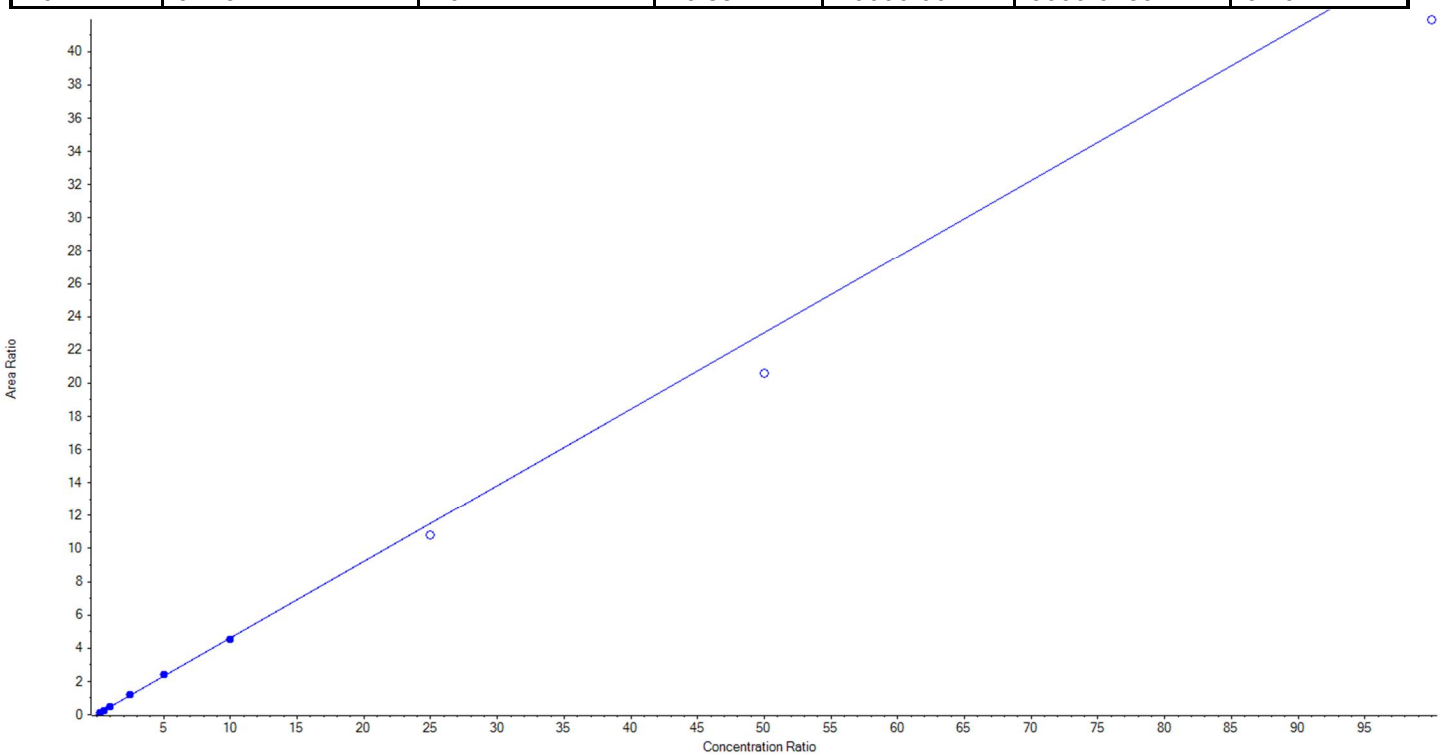
Calibration Summary Report

Analyte Name	PFTeDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.46048 x + 0.01329 (r = 0.99949) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	24.299437	97.2
3	JX68	L2	True	50.00	50.917249	101.8
4	JX69	L3	True	100.00	96.855598	96.9
5	JX70	L4	True	250.00	256.519550	102.6
6	JX71	L5	True	500.00	518.635209	103.7
7	JX72	L6	True	1000.00	977.772958	97.8
8	JX73	L7	False	2500.00	2351.031942	94.0
9	JX74	L8	False	5000.00	4471.708574	89.4
10	JX75	L9	False	10000.00	9099.628917	91.0



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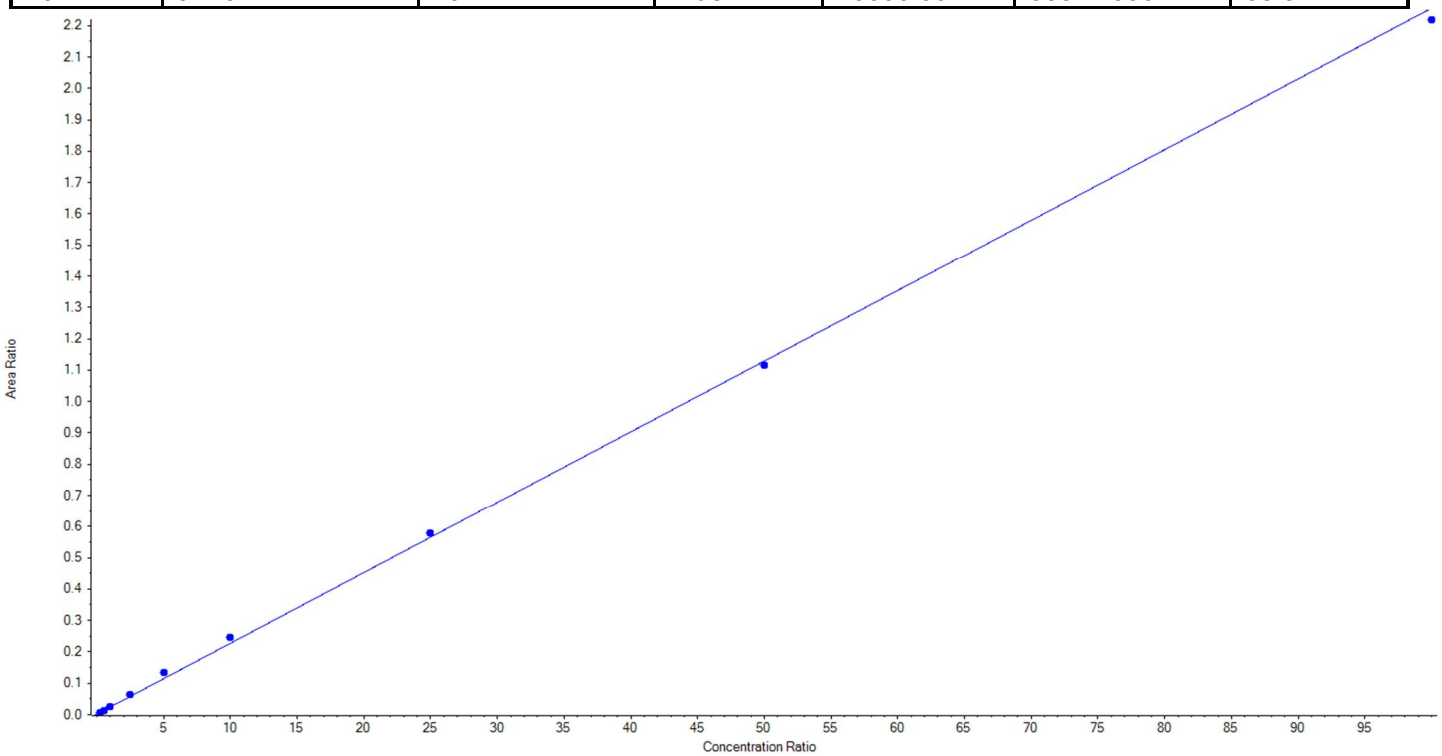
Calibration Summary Report

Analyte Name	PFTeDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0372_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.02254 x + 0.00202 (r = 0.99919) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	17.926807	71.7
3	JX68	L2	True	50.00	48.266278	96.5
4	JX69	L3	True	100.00	99.954762	100.0
5	JX70	L4	True	250.00	267.694654	107.1
6	JX71	L5	True	500.00	588.228040	117.7
7	JX72	L6	True	1000.00	1078.884415	107.9
8	JX73	L7	True	2500.00	2552.861984	102.1
9	JX74	L8	True	5000.00	4936.723449	98.7
10	JX75	L9	True	10000.00	9834.459611	98.3



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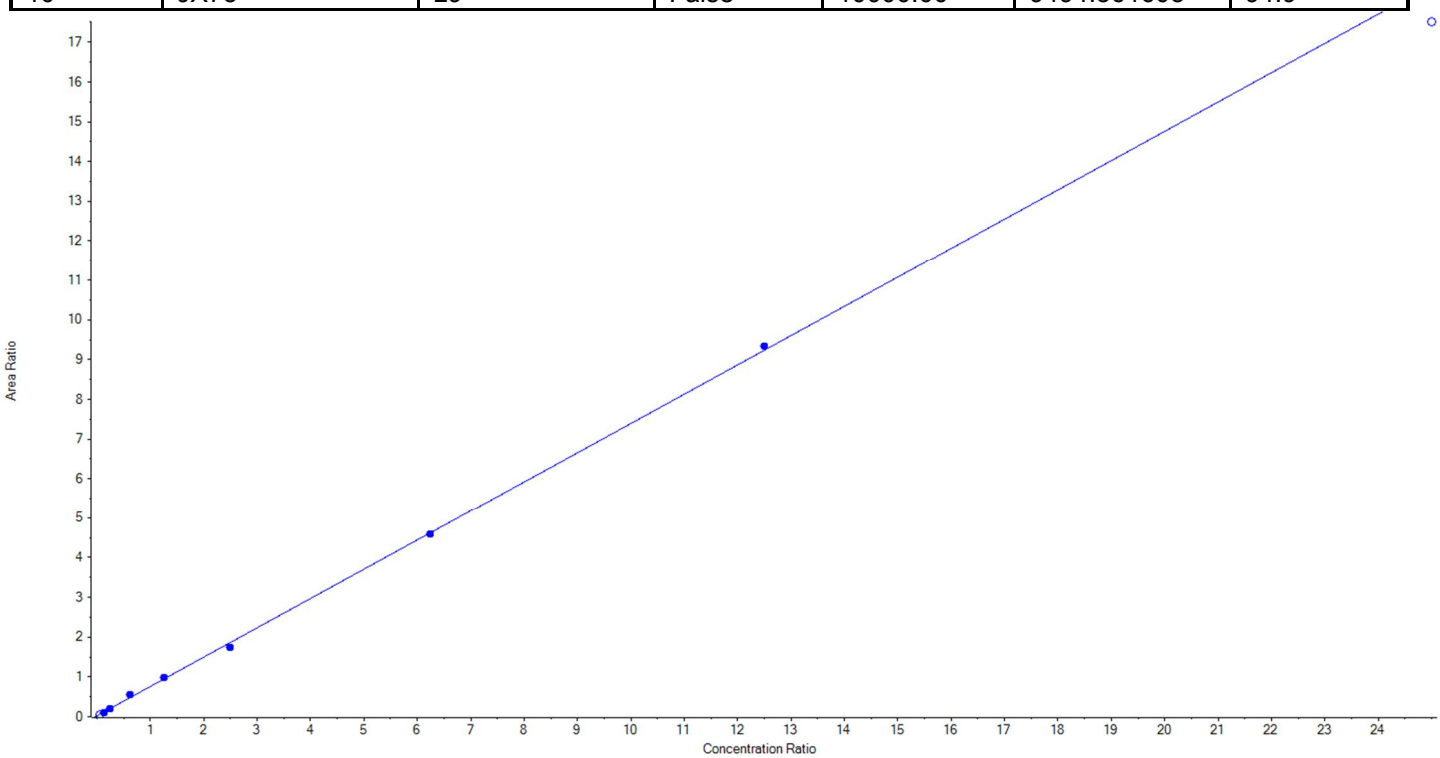
Calibration Summary Report

Analyte Name	NMeFOSAA_1	**Data File**	06252018_5-371.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0372_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.73681 x + 0.02373 (r = 0.99932) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	9.758273	39.0
3	JX68	L2	True	50.00	45.041100	90.1
4	JX69	L3	True	100.00	100.798643	100.8
5	JX70	L4	True	250.00	282.373176	113.0
6	JX71	L5	True	500.00	516.248603	103.3
7	JX72	L6	True	1000.00	928.430271	92.8
8	JX73	L7	True	2500.00	2476.748717	99.1
9	JX74	L8	True	5000.00	5050.359490	101.0
10	JX75	L9	False	10000.00	9494.361603	94.9



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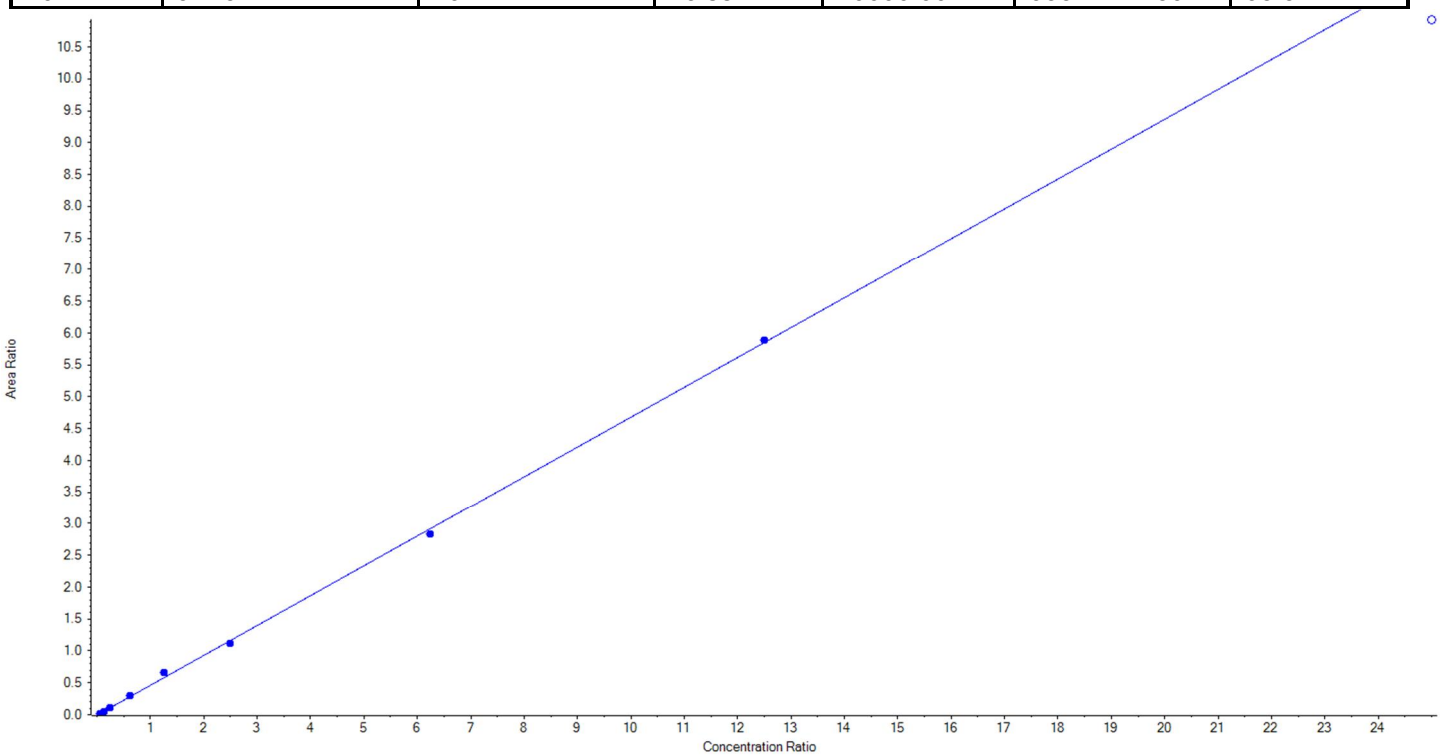
Calibration Summary Report

Analyte Name	NMeFOSAA_2	**Data File**	06252018_5-371.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0372_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.46874 x + -0.00848 (r = 0.99905) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	22.560963	90.2
3	JX68	L2	True	50.00	45.110155	90.2
4	JX69	L3	True	100.00	105.366291	105.4
5	JX70	L4	True	250.00	268.284285	107.3
6	JX71	L5	True	500.00	568.429090	113.7
7	JX72	L6	True	1000.00	954.871996	95.5
8	JX73	L7	True	2500.00	2423.763413	97.0
9	JX74	L8	True	5000.00	5036.613806	100.7
10	JX75	L9	False	10000.00	9331.242739	93.3



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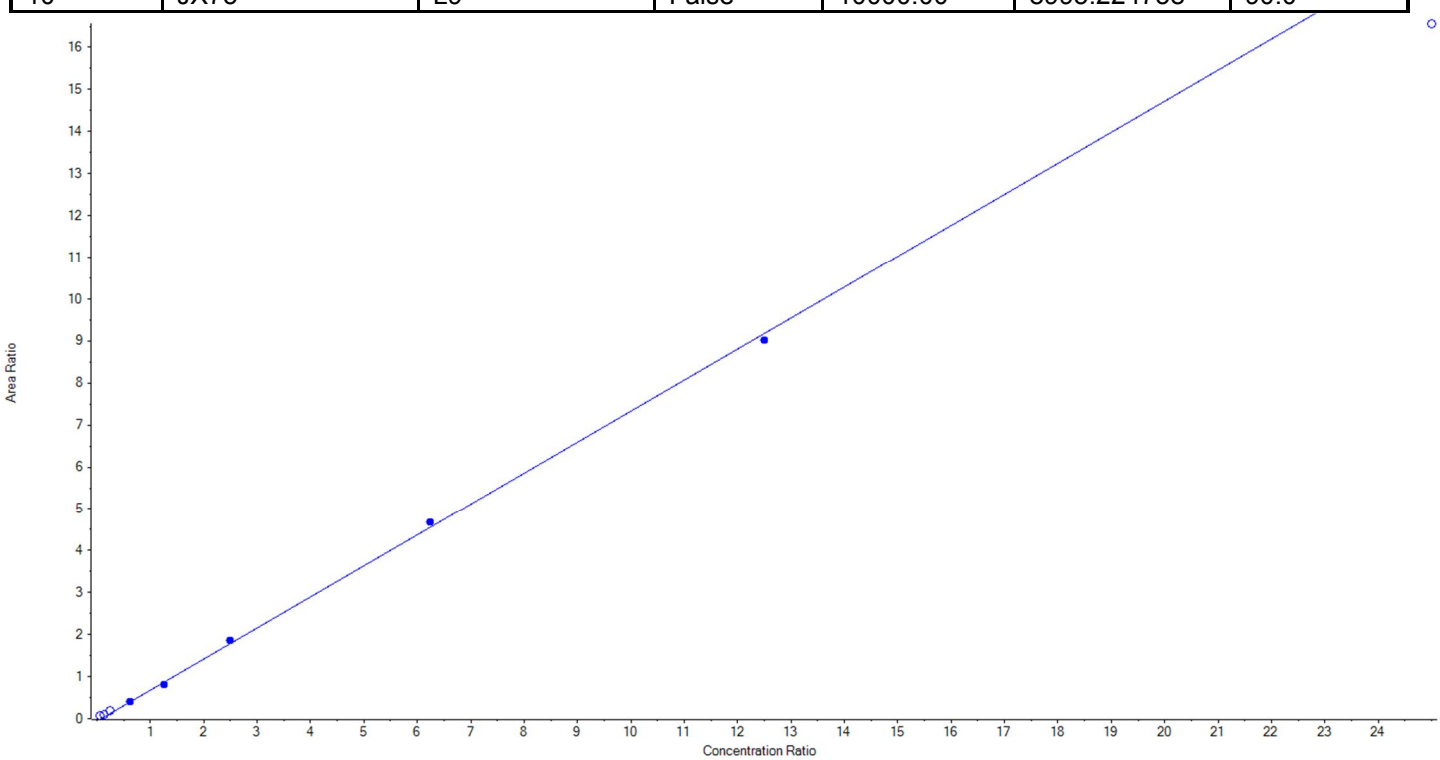
Calibration Summary Report

Analyte Name	NEtFOSAA_1	**Data File**	06252018_5-371.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0372_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.73915 x + -0.06159 (r = 0.99955) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	71.033661	284.1
3	JX68	L2	False	50.00	83.557272	167.1
4	JX69	L3	False	100.00	139.961151	140.0
5	JX70	L4	True	250.00	249.734563	99.9
6	JX71	L5	True	500.00	476.804643	95.4
7	JX72	L6	True	1000.00	1037.045598	103.7
8	JX73	L7	True	2500.00	2565.619121	102.6
9	JX74	L8	True	5000.00	4920.796074	98.4
10	JX75	L9	False	10000.00	8995.224758	90.0



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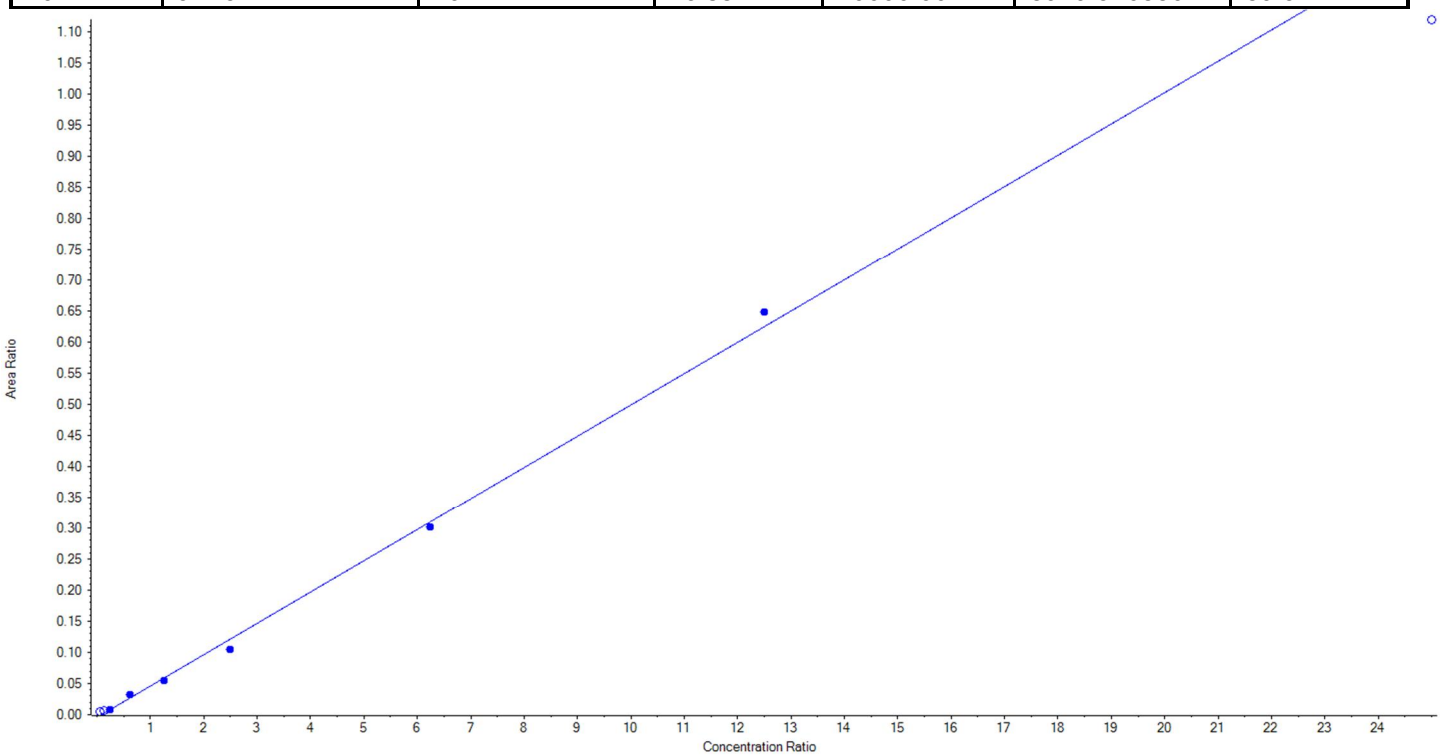
Calibration Summary Report

Analyte Name	NEtFOSAA_2	**Data File**	06252018_5-371.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0372_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05035 x + -0.00432 (r = 0.99783) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	76.800150	307.2
3	JX68	L2	False	50.00	88.632373	177.3
4	JX69	L3	True	100.00	104.202597	104.2
5	JX70	L4	True	250.00	285.076246	114.0
6	JX71	L5	True	500.00	466.286361	93.3
7	JX72	L6	True	1000.00	873.862370	87.4
8	JX73	L7	True	2500.00	2435.597359	97.4
9	JX74	L8	True	5000.00	5184.975067	103.7
10	JX75	L9	False	10000.00	8929.526880	89.3



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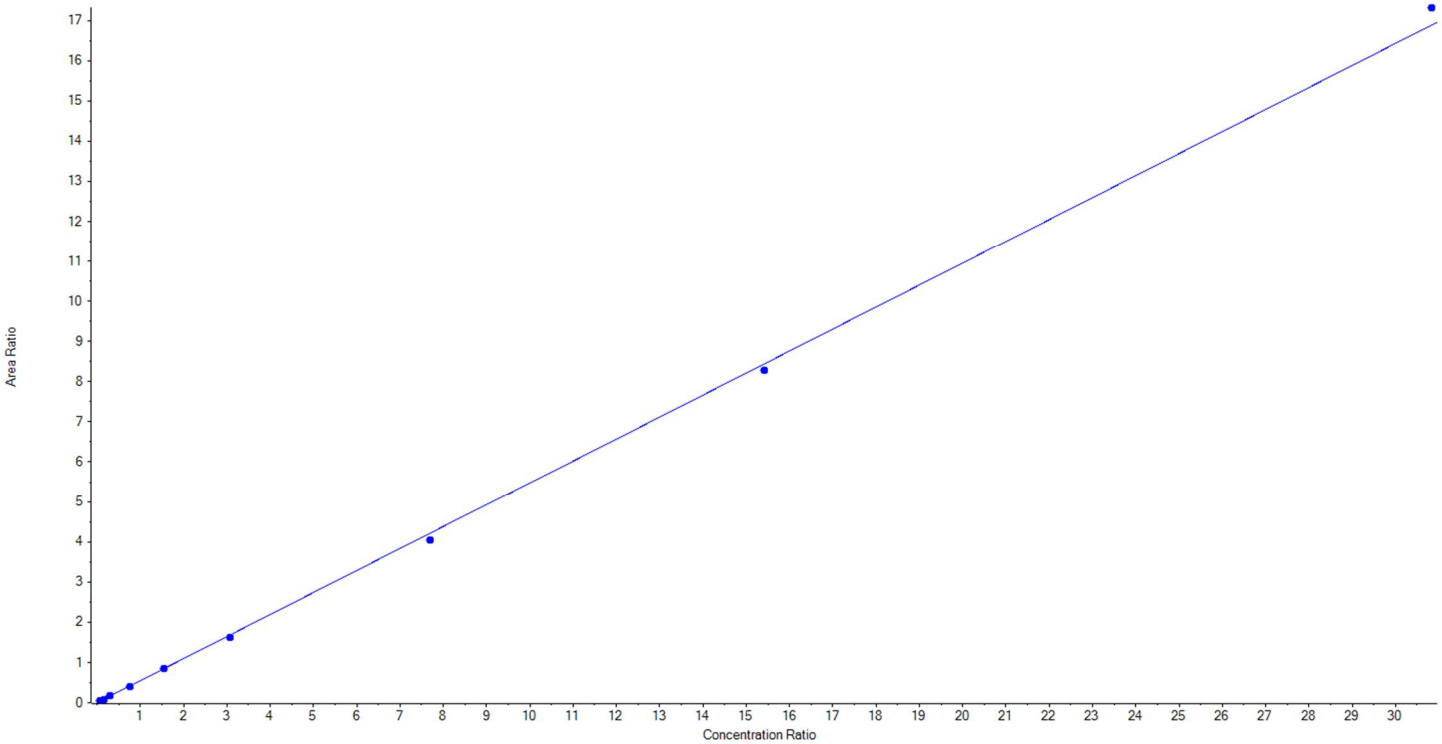
Calibration Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 7:15:46 AM

Analyte Name	PFBS_1	**Data File**	5500_07022018_371.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0372B_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	7/2/2018 9:35:13 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.54761 x + -9.82331e-4 (r = 0.99958) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	24.348619	109.9
3	JX68	L2	True	44.30	44.274193	99.9
4	JX69	L3	True	88.60	89.097417	100.6
5	JX70	L4	True	221.50	216.145714	97.6
6	JX71	L5	True	443.00	442.842975	100.0
7	JX72	L6	True	885.00	848.944885	95.9
8	JX73	L7	True	2212.50	2112.792418	95.5
9	JX74	L8	True	4425.00	4339.859302	98.1
10	JX75	L9	True	8850.00	9073.744476	102.5



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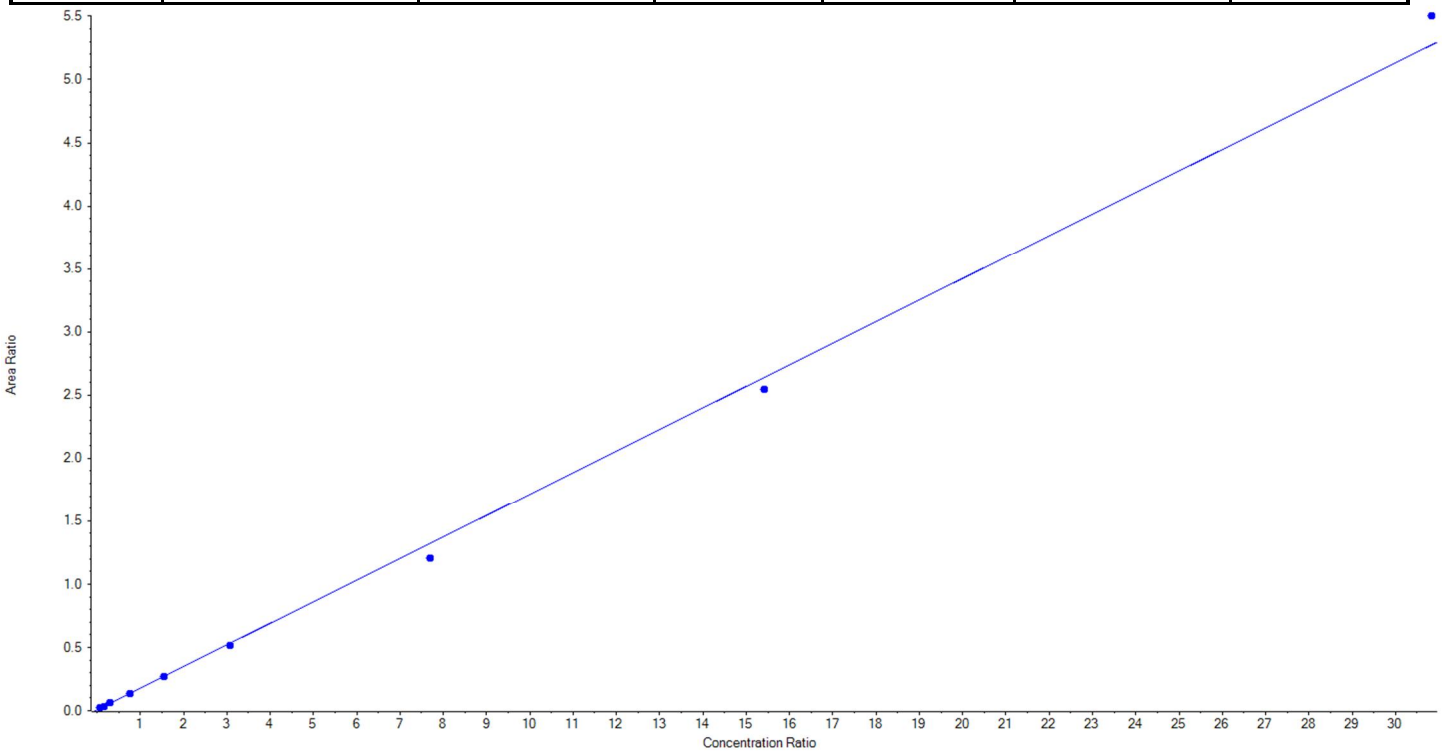
Calibration Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 7:15:46 AM

Analyte Name	PFBS_2	**Data File**	5500_07022018_371.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0372B_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	7/2/2018 9:35:13 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.17081 x + 0.00687 (r = 0.99866) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	23.043361	104.0
3	JX68	L2	True	44.30	43.450812	98.1
4	JX69	L3	True	88.60	100.911234	113.9
5	JX70	L4	True	221.50	212.644552	96.0
6	JX71	L5	True	443.00	443.294416	100.1
7	JX72	L6	True	885.00	850.665326	96.1
8	JX73	L7	True	2212.50	2011.948021	90.9
9	JX74	L8	True	4425.00	4270.369961	96.5
10	JX75	L9	True	8850.00	9235.722318	104.4



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Summary Ion Ratio Report

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Printed: 03/07/2018 7:21:47 AM

Sample Name	JX67	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:05:43	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.439	0.341	ü
PFHxA_1	313.0 / 269.0	1.79	PFHxA			
PFHxA_2	313.0 / 119.0	1.79	PFHxA	0.078	0.072	ü
PFHpA_1	363.0 / 319.0	2.15	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.037	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.343	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.082	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.90	PFNA	0.406	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.89	PFOS	0.188	0.205	ü
PFDA_1	513.0 / 469.0	3.25	PFDA			
PFDA_2	513.0 / 219.0	3.25	PFDA	0.079	0.041	
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.56	PFUnA	0.059	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.85	PFDoA	0.171	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.048	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.431	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.56	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.077	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.78				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX68	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:14:41	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.403	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.076	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.025	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.281	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.078	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.284	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.89	PFOS	0.169	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.048	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.070	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.165	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.087	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.052	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.416	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.56	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.074	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX69	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:23:38	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.346	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.064	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.026	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.294	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.069	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.304	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.90	PFOS	0.241	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.25	PFDA	0.038	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.055	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.85	PFDoA	0.155	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.549	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.045	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX70	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:32:34	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.325	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.075	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.282	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.308	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.259	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.056	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.153	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.052	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.563	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.079	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX71	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:41:29	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.316	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.070	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.023	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.296	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.071	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.289	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.198	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.043	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.156	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.056	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.675	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSAA	0.066	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX72	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:50:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.314	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.297	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.072	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.296	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.190	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.048	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.164	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.640	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.057	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:59:20	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.302	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.022	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.291	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.292	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.195	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.043	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.069	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.618	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.065	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX74	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:08:14	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.308	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.025	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.285	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.074	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.293	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.196	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.046	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.165	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.632	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.072	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX75	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:17:08	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.314	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.290	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.291	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.190	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.046	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.83	PFDoA	0.159	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.068	0.069	ü
PFTeDA_1	713.0 / 669.0	4.30	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.624	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.068	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.22		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.53		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX67	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T09:35:13	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.53	PFBS			
PFBS_2	298.9 / 99.0	1.51	PFBS	0.450	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.62				

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Summary Ion Ratio Report

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Sample Name	JX68	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T09:44:07	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.52	PFBS			
PFBS_2	298.9 / 99.0	1.52	PFBS	0.390	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.62				

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Summary Ion Ratio Report

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Sample Name	JX69	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T09:53:02	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.52	PFBS			
PFBS_2	298.9 / 99.0	1.51	PFBS	0.400	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.61				

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Summary Ion Ratio Report

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Printed: 03/07/2018 7:23:46 AM

Sample Name	JX70	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T10:01:57	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.52	PFBS			
PFBS_2	298.9 / 99.0	1.51	PFBS	0.320	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.61				

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 03/07/2018 7:23:49 AM

Sample Name	JX71	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T10:10:53	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.52	PFBS			
PFBS_2	298.9 / 99.0	1.52	PFBS	0.320	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.61				

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 03/07/2018 7:23:53 AM

Sample Name	JX72	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T10:19:49	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.52	PFBS			
PFBS_2	298.9 / 99.0	1.52	PFBS	0.320	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.60				

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 03/07/2018 7:23:56 AM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T10:28:45	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.52	PFBS			
PFBS_2	298.9 / 99.0	1.52	PFBS	0.300	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.60				

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 03/07/2018 7:24:00 AM

Sample Name	JX74	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T10:37:42	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.52	PFBS			
PFBS_2	298.9 / 99.0	1.52	PFBS	0.310	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.60				

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 03/07/2018 7:24:03 AM

Sample Name	JX75	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T10:46:37	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.51	PFBS			
PFBS_2	298.9 / 99.0	1.51	PFBS	0.320	0.348	ü
d5-EtFOSAA	589.0 / 419.0	3.59				

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QC Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 12:29:18 PM

Sample Name	JV66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:26:04	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	805.276200	885.00	90.99
PFBS_2	298.9 / 99.0	1.49	795.986368	885.00	89.94
PFHxA_1	313.0 / 269.0	1.77	996.404291	1000.00	99.64
PFHxA_2	313.0 / 119.0	1.77	997.489769	1000.00	99.75
PFHpA_1	363.0 / 319.0	2.14	1031.124835	1000.00	103.11
PFHpA_2	363.0 / 169.0	2.14	1161.534315	1000.00	116.15
PFHxS_1	399.0 / 80.0	2.15	919.917034	912.00	100.87
PFHxS_2	399.0 / 99.0	2.15	869.821102	912.00	95.38
PFOA_1	413.0 / 369.0	2.51	1050.976678	1000.00	105.10
PFOA_2	413.0 / 169.0	2.51	1048.582291	1000.00	104.86
PFNA_1	463.0 / 419.0	2.88	1000.643194	1000.00	100.06
PFNA_2	463.0 / 219.0	2.88	1035.420136	1000.00	103.54
PFOS_1	499.0 / 80.0	2.88	853.106666	925.60	92.17
PFOS_2	499.0 / 99.0	2.88	972.796760	925.60	105.10
PFDA_1	513.0 / 469.0	3.23	1068.328726	1000.00	106.83
PFDA_2	513.0 / 219.0	3.23	1022.246333	1000.00	102.22
PFUnA_1	563.0 / 519.0	3.55	1036.138808	1000.00	103.61
PFUnA_2	563.0 / 269.0	3.55	1023.503647	1000.00	102.35
PFDoA_1	613.0 / 569.0	3.83	1033.267977	1000.00	103.33
PFDoA_2	613.0 / 319.0	3.83	1036.887732	1000.00	103.69
PFTrDA_1	663.0 / 619.0	4.08	1007.914002	1000.00	100.79
PFTrDA_2	663.0 / 169.0	4.08	1068.145164	1000.00	106.81
PFTeDA_1	713.0 / 669.0	4.30	924.958865	1000.00	92.50
PFTeDA_2	713.0 / 169.0	4.30	990.767060	1000.00	99.08
NMeFOSAA_1	570.0 / 419.0	3.38	1290.413497	1000.00	129.04
NMeFOSAA_2	570.0 / 512.0	3.38	1107.023361	1000.00	110.70
NEtFOSAA_1	584.0 / 419.0	3.54	1214.192847	1000.00	121.42
NEtFOSAA_2	584.0 / 483.0	3.54	1298.760705	1000.00	129.88
13C2-PFHxA	315.0 / 270.0	1.76	102.268470	100.00	102.27
13C2-PFDA	515.0 / 470.0	3.22	104.026718	100.00	104.03
d5-EtFOSAA	589.0 / 419.0	3.53	462.843644	400.00	115.71

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QC Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 12:29:21 PM

Sample Name	JX72 CCV	**Injection Vial**	31
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T20:51:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	866.166863	885.00	97.87
PFBS_2	298.9 / 99.0	1.49	845.929656	885.00	95.59
PFHxA_1	313.0 / 269.0	1.77	1110.146700	1000.00	111.01
PFHxA_2	313.0 / 119.0	1.77	1114.367468	1000.00	111.44
PFHpA_1	363.0 / 319.0	2.13	1084.675205	1000.00	108.47
PFHpA_2	363.0 / 169.0	2.13	1081.069510	1000.00	108.11
PFHxS_1	399.0 / 80.0	2.15	866.313670	912.00	94.99
PFHxS_2	399.0 / 99.0	2.15	854.899584	912.00	93.74
PFOA_1	413.0 / 369.0	2.50	1121.579020	1000.00	112.16
PFOA_2	413.0 / 169.0	2.50	1136.830502	1000.00	113.68
PFNA_1	463.0 / 419.0	2.88	1114.289558	1000.00	111.43
PFNA_2	463.0 / 219.0	2.88	1056.803545	1000.00	105.68
PFOS_1	499.0 / 80.0	2.87	927.914746	925.60	100.25
PFOS_2	499.0 / 99.0	2.87	905.590378	925.60	97.84
PFDA_1	513.0 / 469.0	3.22	1177.384628	1000.00	117.74
PFDA_2	513.0 / 219.0	3.22	1216.292183	1000.00	121.63
PFUnA_1	563.0 / 519.0	3.54	1158.866697	1000.00	115.89
PFUnA_2	563.0 / 269.0	3.53	1038.065993	1000.00	103.81
PFDoA_1	613.0 / 569.0	3.82	1145.412871	1000.00	114.54
PFDoA_2	613.0 / 319.0	3.82	1080.836127	1000.00	108.08
PFTrDA_1	663.0 / 619.0	4.07	1124.100491	1000.00	112.41
PFTrDA_2	663.0 / 169.0	4.07	1090.798917	1000.00	109.08
PFTeDA_1	713.0 / 669.0	4.29	1026.506111	1000.00	102.65
PFTeDA_2	713.0 / 169.0	4.28	1179.494860	1000.00	117.95
NMeFOSAA_1	570.0 / 419.0	3.37	1164.766206	1000.00	116.48
NMeFOSAA_2	570.0 / 512.0	3.37	893.472644	1000.00	89.35
NEtFOSAA_1	584.0 / 419.0	3.53	966.800494	1000.00	96.68
NEtFOSAA_2	584.0 / 483.0	3.53	1082.885547	1000.00	108.29
13C2-PFHxA	315.0 / 270.0	1.76	102.897180	100.00	102.90
13C2-PFDA	515.0 / 470.0	3.21	110.292007	100.00	110.29
d5-EtFOSAA	589.0 / 419.0	3.52	415.883750	400.00	103.97

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QC Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 12:29:24 PM

Sample Name	JX73 CCV	**Injection Vial**	41
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:29:51	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	1987.104482	2212.50	89.81
PFBS_2	298.9 / 99.0	1.49	1986.528803	2212.50	89.79
PFHxA_1	313.0 / 269.0	1.77	2500.520078	2500.00	100.02
PFHxA_2	313.0 / 119.0	1.77	2511.176079	2500.00	100.45
PFHpA_1	363.0 / 319.0	2.13	2561.587938	2500.00	102.46
PFHpA_2	363.0 / 169.0	2.13	2446.244001	2500.00	97.85
PFHxS_1	399.0 / 80.0	2.15	2085.070400	2280.00	91.45
PFHxS_2	399.0 / 99.0	2.15	2086.686160	2280.00	91.52
PFOA_1	413.0 / 369.0	2.50	2634.075491	2500.00	105.36
PFOA_2	413.0 / 169.0	2.50	2683.560009	2500.00	107.34
PFNA_1	463.0 / 419.0	2.87	2518.780588	2500.00	100.75
PFNA_2	463.0 / 219.0	2.87	2575.921082	2500.00	103.04
PFOS_1	499.0 / 80.0	2.87	2277.266097	2314.00	98.41
PFOS_2	499.0 / 99.0	2.87	2278.767955	2314.00	98.48
PFDA_1	513.0 / 469.0	3.22	2810.068457	2500.00	112.40
PFDA_2	513.0 / 219.0	3.22	2735.099313	2500.00	109.40
PFUnA_1	563.0 / 519.0	3.53	2761.223316	2500.00	110.45
PFUnA_2	563.0 / 269.0	3.53	2703.959603	2500.00	108.16
PFDoA_1	613.0 / 569.0	3.82	2696.755918	2500.00	107.87
PFDoA_2	613.0 / 319.0	3.82	2681.823361	2500.00	107.27
PFTrDA_1	663.0 / 619.0	4.07	2613.711884	2500.00	104.55
PFTrDA_2	663.0 / 169.0	4.07	2563.005769	2500.00	102.52
PFTeDA_1	713.0 / 669.0	4.28	2508.339112	2500.00	100.33
PFTeDA_2	713.0 / 169.0	4.28	2755.246976	2500.00	110.21
NMeFOSAA_1	570.0 / 419.0	3.37	2682.364580	2500.00	107.29
NMeFOSAA_2	570.0 / 512.0	3.36	2585.297898	2500.00	103.41
NEtFOSAA_1	584.0 / 419.0	3.52	2621.948419	2500.00	104.88
NEtFOSAA_2	584.0 / 483.0	3.52	2002.729197	2500.00	80.11
13C2-PFHxA	315.0 / 270.0	1.76	105.333931	100.00	105.33
13C2-PFDA	515.0 / 470.0	3.21	113.722041	100.00	113.72
d5-EtFOSAA	589.0 / 419.0	3.52	441.059521	400.00	110.26

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QC Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 7:34:31 AM

Sample Name	JX66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T10:55:35	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.51	793.574603	885.00	89.67
PFBS_2	298.9 / 99.0	1.51	769.642119	885.00	86.97
d5-EtFOSAA	589.0 / 419.0	3.59	411.469456	400.00	102.87

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QC Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 7:34:34 AM

Sample Name	JX72	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T14:35:00	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.53	1020.854647	885.00	115.35
PFBS_2	298.9 / 99.0	1.53	1008.898787	885.00	114.00
d5-EtFOSAA	589.0 / 419.0	3.62	407.955945	400.00	101.99

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 03/07/2018 7:34:38 AM

Sample Name	JX72	**Injection Vial**	7
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-07-02T15:18:12	**Data File**	5500_07022018_371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372B_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.54	1132.833977	885.00	128.00
PFBS_2	298.9 / 99.0	1.53	1131.009745	885.00	127.80
d5-EtFOSAA	589.0 / 419.0	3.63	431.652309	400.00	107.91

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Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days

Project Name: WE04
Project No.: 112G08005-WE04

Normal ☑
Priority ☐
RUSH ☐
Time Zone: Eastern

Sampling Site: WE04
Site Information: NAS JRB Willow Grove/WGNA Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservativ: Trizma	Analysis: PFAS EPA 537 14 analytes	
WGNA-061118-RW-3073 J6737	6/11/2018	11:10	G	DW	2		X	
WGNA-061118-FRB-3073 J6738	6/11/2018	11:05	G	DW	2		X	Field Reagent Blank
WGNA-061118-RW-0437 J6739	6/11/2018	11:40	G	DW	2		X	
WGNA-061118-FRB-0437 J6740	6/11/2018	11:35	G	DW	2		X	Field Reagent Blank
WGNA-061218-RW-3283 J6741	6/12/2018	09:10	G	DW	2		X	
WGNA-061218-FRB-3283 J6742	6/12/2018	09:05	G	DW	2		X	Field Reagent Blank
WGNA-061218-RW-3382 J6743	6/12/2018	09:40	G	DW	2		X	
WGNA-061218-FRB-3382 J6744	6/12/2018	09:35	G	DW	2		X	Field Reagent Blank
NAWC-061218-RW-276 J6745	6/12/2018	10:10	G	DW	2		X	
NAWC-061218-FRB-276 J6746	6/12/2018	10:05	G	DW	2		X	Field Reagent Blank

Receipt Temperature:(°C) 1.7°
Samples Intact: Yes - No
Samples on Ice: Yes No
Receipt Comments:

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	6/12/2018 16:00	Matt Schumitz	Battelle	6-13-18 9:45

Comments: FedEx Tracking # 7724 5597 5123

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Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days

Project Name: WE04
Project No.: 112G08005-WE04

Normal ☑
Priority ☐
RUSH ☐
Time Zone: Eastern

Sampling Site: WE04
Site Information: NAS JRB Willow Grove/WGNA Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservativ: Trizma	Analysis: PFAS EPA 537 14 analytes	
NAWC-061418-RW-111 J6758	6/14/2018	09:10	G	DW	2		X	
NAWC-061418-FRB-111 J6759	6/14/2018	09:05	G	DW	2		X	Field Reagent Blank
NAWC-061418-RW-056 J6760	6/14/2018	09:40	G	DW	2		X	
NAWC-061418-FRB-056 J6761	6/14/2018	09:35	G	DW	2		X	Field Reagent Blank

Receipt Temperature:(°C)
Samples Intact: Yes - No
Samples on Ice: Yes - No
Receipt Comments:

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	06/14/2018 16:00	Matt Selimitz MS	Battelle	6-15-18 1000

Comments: FedEx Tracking # 7724 7437 4685

Project:	CTO-WE04 Naval Air Station Joint Reserve Base Willow Grove
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	DW
Data Set:	DP-18-0158
Analytical SOP:	5-371
Method Reference:	USEPA 537 rev. 1.1, QSM 5.1

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
6/11, 12/2018	6/13/2018	1.7
6/14/2018	6/15/2018	2.1

Corrective Actions	None
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	The associated field samples are reported in SDG 18-0372.

	METHOD SUMMARIES
Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with methanol. Extracts were concentrated to dryness under nitrogen with a water bath set between 60 °C and 65 °C, reconstituted with 96:4 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.
Prep comments	None.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on the Sciex 5500. There are no ion ratio exceedences above 50% RPD for any analyte detected above the MDL or the LOQ in this SDG.

Holding Times	Extraction Date(s)	Analysis Date(s)
	6/25/2018	6/27 and 28/2018

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ 1/3 the MRL	No exceedances noted.
	No comments.

Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
70-130% of true value	One exceedance noted.
	PFTeDA is over-recovered, a fresh aliquot was analyzed to verify the recovery. Where this target is over-recovered and not detected in any of the associated samples, no further corrective action was taken.

Matrix Spike (MS) / Duplicate (MSD)	A MS/MSD were prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. The relative percent difference was calculated to measure precision.
70-130% of true value, RPD ≤ 30%	Not applicable.
	MS/MSD samples were not prepared with this batch of FRB samples.

Surrogates Standard Analytes	Labelled surrogate compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
70-130% of true value	No exceedances noted.
	No comments.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
ICAL high and low points RPD ≤20%, 50-150% of average area of the ICAL and 70-140% of most recent CCV	No exceedances noted.
	No comments.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
R^2 >0.99 Target and SIS compounds +/- 30% of true value, Low point 50-150% of true value	No exceedances noted.
	No comments.

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
Target and SIS compounds +/- 30% of true value	No exceedances noted.
	No comments.

Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
Target and SIS compounds +/- 30% of true value Low point 50-150% of true value	No exceedances noted.
	No comments.

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It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Sample ID	Description
CR040PB-FS	Procedural Blank
CR041LCS-FS	Laboratory Control Sample
J6738-FS	WGNA-061118-FRB-3073
J6740-FS	WGNA-061118-FRB-0437
J6742-FS	WGNA-061218-FRB-3283
J6744-FS	WGNA-061218-FRB-3382
J6746-FS	NAWC-061218-FRB-276
J6759-FS	NAWC-061418-FRB-111
J6761-FS	NAWC-061418-FRB-056

Samples Assigned By: Jonathan Thorn Date : June 21, 2018

Comments:

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Procedural Blank			
Battelle ID	CR040PB-FS			
Sample Type	PB			
Collection Date	06/25/2018			
Extraction Date	06/25/2018			
Analysis Date	06/27/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	WATER			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	102
13C2-PFDA	105
d5-EtFOSAA	92

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It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Laboratory Control Sample					
Battelle ID	CR041LCS-FS					
Sample Type	LCS					
Collection Date	06/25/2018					
Extraction Date	06/25/2018					
Analysis Date	06/27/2018					
Analytical Instrument	Sciex 5500 LC/MS/MS					
% Moisture	NA					
Matrix	WATER					
Sample Size	0.250					
Size Unit-Basis	L				Control Limits	
Units	ng/L	Target	Recovery	Qual	Lower	Upper
PFHxA	18.37	15.00	122		70	130
PFHpA	18.22	15.00	121		70	130
PFOA	18.19	15.00	121		70	130
PFNA	17.48	15.00	117		70	130
PFDA	18.70	15.00	125		70	130
PFUnA	17.33	15.00	116		70	130
PFDoA	17.58	15.00	117		70	130
PFTrDA	17.34	15.00	116		70	130
PFTeDA	26.81	15.00	179	N	70	130
NMeFOSAA	16.07	15.00	107		70	130
NEtFOSAA	16.51	15.00	110		70	130
PFBS	14.52	13.28	109		70	130
PFHxS	15.20	14.18	107		70	130
PFOS	16.15	14.33	113		70	130

Surrogate Recoveries (%)

13C2-PFHxA	104
13C2-PFDA	107
d5-EtFOSAA	79

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Number: 100117920-WE04
Preparation Batch: 18-0392
Data Set: DP-18-0158
Test Code: Master_371

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	1	PFTeDA over recovered. Sample was re-run to verify the recovery. As this was over recovered, and not detected in any field sample, no additional corrective action was taken.
Matrix Spike / Matrix Spike Duplicate Recovery	NA	NA
Matrix Spike / Matrix Spike Duplicate Precision	NA	NA
Extracted Internal Standard Analytes (Surrogates)	0	None
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	Naval Air Station Joint Reserve Base Wi	**Data Set Number:**	DP-18-0158
Project Number:	100117920-WE04	**Prep Batch Number:**	18-0392
Entered By:	Lauren Griffith	**Entered On:**	06/29/2018
Test Code (Matrix Type):	Master_371(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
LMG 6/29/18

PFTeDA exhibited a high recovery in the LCS. Prep records and integrations were verified. Recoveries were acceptable in the ICC and CCV. It was not detected in any of the authentic samples.
LMG 6/29/18

JX67 is not being used for PFOA, PFNA, PFOS and PFDA. There is no impact on the data once these points are removed from the calibration.
LMG 6/29/18

JX75 is not being used for PFNA and NMeFOSAA. There is no impact on the data once these points are removed from the calibration.
LMG 6/29/18

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.06.29 17:54:22 -04'00'

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0392
Data Set: DP-18-0158

	CR040PB-FS (Procedural Blank)	CR041LCS-FS (Laboratory Control Sample)	J6738-FS (WGNA-061118-FRB-3073)	J6740-FS (WGNA-061118-FRB-0437)	J6742-FS (WGNA-061218-FRB-3283)	J6744-FS (WGNA-061218-FRB-3382)
PFHxA	-	L	-	-	-	-
PFHpA	-	L	-	-	-	-
PFOA	-	L	-	-	-	-
PFNA	-	L	-	-	-	-
PFDA	-	L	-	-	-	-
PFUnA	-	L	-	-	-	-
PFDoA	-	L	-	-	-	-
PFTrDA	-	L	-	-	-	-
PFTeDA	-	L	-	-	-	-
NMeFOSAA	-	L	-	-	-	-
NEtFOSAA	-	L	-	-	-	-
PFBS	-	L	-	-	-	-
PFHxS	-	L	-	-	-	-
PFOS	-	L	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0392
Data Set: DP-18-0158

	J6746-FS (NAWC-061218-FRB-276)	J6759-FS (NAWC-061418-FRB-111)	J6761-FS (NAWC-061418-FRB-056)
PFHxA	-	-	-
PFHpA	-	-	-
PFOA	-	-	-
PFNA	-	-	-
PFDA	-	-	-
PFUnA	-	-	-
PFDoA	-	-	-
PFTrDA	-	-	-
PFTeDA	-	-	-
NMeFOSAA	-	-	-
NEtFOSAA	-	-	-
PFBS	-	-	-
PFHxS	-	-	-
PFOS	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

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Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	13C4-PFOS	195,712.77	-	
JX68	L2	6/27/18 9:14	13C4-PFOS	208,133.24	-	
JX69	L3	6/27/18 9:23	13C4-PFOS	196,602.67	-	
JX70	L4	6/27/18 9:32	13C4-PFOS	221,233.77	-	
JX71	L5	6/27/18 9:41	13C4-PFOS	207,482.97	-	
JX72	L6	6/27/18 9:50	13C4-PFOS	205,389.92	-	
JX73	L7	6/27/18 9:59	13C4-PFOS	210,418.05	-	
JX74	L8	6/27/18 10:08	13C4-PFOS	173,679.17	-	
JX75	L9	6/27/18 10:17	13C4-PFOS	184,387.98	6	PASS

Average	Lower	Upper
200,337.84	100,168.92	300,506.76

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	13C4-PFOS	195,712.77	100,168.92	300,506.76		145,238.08	290,476.16	
JX68	L2	6/27/18 9:14	13C4-PFOS	208,133.24	100,168.92	300,506.76		145,238.08	290,476.16	
JX69	L3	6/27/18 9:23	13C4-PFOS	196,602.67	100,168.92	300,506.76		145,238.08	290,476.16	
JX70	L4	6/27/18 9:32	13C4-PFOS	221,233.77	100,168.92	300,506.76		145,238.08	290,476.16	
JX71	L5	6/27/18 9:41	13C4-PFOS	207,482.97	100,168.92	300,506.76		145,238.08	290,476.16	
JX72	L6	6/27/18 9:50	13C4-PFOS	205,389.92	100,168.92	300,506.76		145,238.08	290,476.16	
JX73	L7	6/27/18 9:59	13C4-PFOS	210,418.05	100,168.92	300,506.76		145,238.08	290,476.16	
JX74	L8	6/27/18 10:08	13C4-PFOS	173,679.17	100,168.92	300,506.76		145,238.08	290,476.16	
JX75	L9	6/27/18 10:17	13C4-PFOS	184,387.98	100,168.92	300,506.76		145,238.08	290,476.16	
JV66 ICC	ICC	6/27/18 10:26	13C4-PFOS	198,955.94	100,168.92	300,506.76		145,238.08	290,476.16	
JX72 CCV	0	6/27/18 20:51	13C4-PFOS	201,048.50	100,168.92	300,506.76		145,238.08	290,476.16	
JX73 CCV	0	6/27/18 22:29	13C4-PFOS	211,286.43	100,168.92	300,506.76		140,733.95	281,467.90	
CR040PB-FS(0)	Procedural Blank	6/27/18 22:47	13C4-PFOS	161,775.16	100,168.92	300,506.76		147,900.50	295,801.00	
CR041LCS-FS(0)	Laboratory Control Sample	6/27/18 22:56	13C4-PFOS	150,091.01	100,168.92	300,506.76		147,900.50	295,801.00	
J6738-FS(0)	WGNA-061118-FRB-3073	6/27/18 23:05	13C4-PFOS	154,129.14	100,168.92	300,506.76		147,900.50	295,801.00	
J6740-FS(0)	WGNA-061118-FRB-0437	6/27/18 23:14	13C4-PFOS	165,781.81	100,168.92	300,506.76		147,900.50	295,801.00	
J6742-FS(0)	WGNA-061218-FRB-3283	6/27/18 23:23	13C4-PFOS	160,393.26	100,168.92	300,506.76		147,900.50	295,801.00	
J6744-FS(0)	WGNA-061218-FRB-3382	6/27/18 23:32	13C4-PFOS	160,854.25	100,168.92	300,506.76		147,900.50	295,801.00	
J6746-FS(0)	NAWC-061218-FRB-276	6/27/18 23:41	13C4-PFOS	167,999.66	100,168.92	300,506.76		147,900.50	295,801.00	
J6759-FS(0)	NAWC-061418-FRB-111	6/27/18 23:50	13C4-PFOS	159,954.30	100,168.92	300,506.76		147,900.50	295,801.00	
J6761-FS(0)	NAWC-061418-FRB-056	6/27/18 23:59	13C4-PFOS	159,344.80	100,168.92	300,506.76		147,900.50	295,801.00	
JX71 CCV	CCV	6/28/18 0:08	13C4-PFOS	207,937.15	100,168.92	300,506.76		147,900.50	295,801.00	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

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Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	13C2-PFOA	62,699.72	-	
JX68	L2	6/27/18 9:14	13C2-PFOA	68,551.10	-	
JX69	L3	6/27/18 9:23	13C2-PFOA	68,688.50	-	
JX70	L4	6/27/18 9:32	13C2-PFOA	68,613.81	-	
JX71	L5	6/27/18 9:41	13C2-PFOA	68,780.04	-	
JX72	L6	6/27/18 9:50	13C2-PFOA	70,145.13	-	
JX73	L7	6/27/18 9:59	13C2-PFOA	68,944.70	-	
JX74	L8	6/27/18 10:08	13C2-PFOA	60,796.66	-	
JX75	L9	6/27/18 10:17	13C2-PFOA	68,647.41	9.1	PASS

Average	Lower	Upper
67,318.56	33,659.28	100,977.84

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	13C2-PFOA	62,699.72	33,659.28	100,977.84		48,146.03	96,292.06	
JX68	L2	6/27/18 9:14	13C2-PFOA	68,551.10	33,659.28	100,977.84		48,146.03	96,292.06	
JX69	L3	6/27/18 9:23	13C2-PFOA	68,688.50	33,659.28	100,977.84		48,146.03	96,292.06	
JX70	L4	6/27/18 9:32	13C2-PFOA	68,613.81	33,659.28	100,977.84		48,146.03	96,292.06	
JX71	L5	6/27/18 9:41	13C2-PFOA	68,780.04	33,659.28	100,977.84		48,146.03	96,292.06	
JX72	L6	6/27/18 9:50	13C2-PFOA	70,145.13	33,659.28	100,977.84		48,146.03	96,292.06	
JX73	L7	6/27/18 9:59	13C2-PFOA	68,944.70	33,659.28	100,977.84		48,146.03	96,292.06	
JX74	L8	6/27/18 10:08	13C2-PFOA	60,796.66	33,659.28	100,977.84		48,146.03	96,292.06	
JX75	L9	6/27/18 10:17	13C2-PFOA	68,647.41	33,659.28	100,977.84		48,146.03	96,292.06	
JV66 ICC	ICC	6/27/18 10:26	13C2-PFOA	64,713.81	33,659.28	100,977.84		48,146.03	96,292.06	
JX72 CCV	0	6/27/18 20:51	13C2-PFOA	65,665.05	33,659.28	100,977.84		48,146.03	96,292.06	
JX73 CCV	0	6/27/18 22:29	13C2-PFOA	67,870.42	33,659.28	100,977.84		45,965.54	91,931.07	
CR040PB-FS(0)	ocedural Bla	6/27/18 22:47	13C2-PFOA	49,941.91	33,659.28	100,977.84		47,509.29	95,018.59	
CR041LCS-FS(0)	tory Control	6/27/18 22:56	13C2-PFOA	49,985.92	33,659.28	100,977.84		47,509.29	95,018.59	
J6738-FS(0)	-061118-FR	6/27/18 23:05	13C2-PFOA	48,519.13	33,659.28	100,977.84		47,509.29	95,018.59	
J6740-FS(0)	-061118-FR	6/27/18 23:14	13C2-PFOA	52,046.47	33,659.28	100,977.84		47,509.29	95,018.59	
J6742-FS(0)	-061218-FR	6/27/18 23:23	13C2-PFOA	51,035.11	33,659.28	100,977.84		47,509.29	95,018.59	
J6744-FS(0)	-061218-FR	6/27/18 23:32	13C2-PFOA	53,345.82	33,659.28	100,977.84		47,509.29	95,018.59	
J6746-FS(0)	C-061218-FR	6/27/18 23:41	13C2-PFOA	53,268.73	33,659.28	100,977.84		47,509.29	95,018.59	
J6759-FS(0)	C-061418-FR	6/27/18 23:50	13C2-PFOA	53,360.11	33,659.28	100,977.84		47,509.29	95,018.59	
J6761-FS(0)	C-061418-FR	6/27/18 23:59	13C2-PFOA	54,039.24	33,659.28	100,977.84		47,509.29	95,018.59	
JX71 CCV	CCV	6/28/18 0:08	13C2-PFOA	72,909.71	33,659.28	100,977.84		47,509.29	95,018.59	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

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Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JX67	L1	6/27/18 9:05	d3-MeFOSAA	19,930.79	-	
JX68	L2	6/27/18 9:14	d3-MeFOSAA	21,677.32	-	
JX69	L3	6/27/18 9:23	d3-MeFOSAA	20,129.83	-	
JX70	L4	6/27/18 9:32	d3-MeFOSAA	23,296.23	-	
JX71	L5	6/27/18 9:41	d3-MeFOSAA	21,998.06	-	
JX72	L6	6/27/18 9:50	d3-MeFOSAA	24,086.51	-	
JX73	L7	6/27/18 9:59	d3-MeFOSAA	21,518.81	-	
JX74	L8	6/27/18 10:08	d3-MeFOSAA	18,342.89	-	
JX75	L9	6/27/18 10:17	d3-MeFOSAA	22,175.02	10.7	PASS

Average	Lower	Upper
21,461.72	10,730.86	32,192.58

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JX67	L1	6/27/18 9:05	d3-MeFOSAA	19,930.79	10,730.86	32,192.58		15,398.64	30,797.28	
JX68	L2	6/27/18 9:14	d3-MeFOSAA	21,677.32	10,730.86	32,192.58		15,398.64	30,797.28	
JX69	L3	6/27/18 9:23	d3-MeFOSAA	20,129.83	10,730.86	32,192.58		15,398.64	30,797.28	
JX70	L4	6/27/18 9:32	d3-MeFOSAA	23,296.23	10,730.86	32,192.58		15,398.64	30,797.28	
JX71	L5	6/27/18 9:41	d3-MeFOSAA	21,998.06	10,730.86	32,192.58		15,398.64	30,797.28	
JX72	L6	6/27/18 9:50	d3-MeFOSAA	24,086.51	10,730.86	32,192.58		15,398.64	30,797.28	
JX73	L7	6/27/18 9:59	d3-MeFOSAA	21,518.81	10,730.86	32,192.58		15,398.64	30,797.28	
JX74	L8	6/27/18 10:08	d3-MeFOSAA	18,342.89	10,730.86	32,192.58		15,398.64	30,797.28	
JX75	L9	6/27/18 10:17	d3-MeFOSAA	22,175.02	10,730.86	32,192.58		15,398.64	30,797.28	
JV66 ICC	ICC	6/27/18 10:26	d3-MeFOSAA	18,854.41	10,730.86	32,192.58		15,398.64	30,797.28	
JX72 CCV	0	6/27/18 20:51	d3-MeFOSAA	18,208.55	10,730.86	32,192.58		15,398.64	30,797.28	
JX73 CCV	0	6/27/18 22:29	d3-MeFOSAA	19,181.84	10,730.86	32,192.58		12,745.99	25,491.97	
CR040PB-FS(0)	Procedural Blank	6/27/18 22:47	d3-MeFOSAA	14,856.29	10,730.86	32,192.58		13,427.29	26,854.58	
CR041LCS-FS(0)	Laboratory Control Sample	6/27/18 22:56	d3-MeFOSAA	15,725.09	10,730.86	32,192.58		13,427.29	26,854.58	
J6738-FS(0)	WGNA-061118-FRB-3073	6/27/18 23:05	d3-MeFOSAA	14,678.88	10,730.86	32,192.58		13,427.29	26,854.58	
J6740-FS(0)	WGNA-061118-FRB-0437	6/27/18 23:14	d3-MeFOSAA	15,592.22	10,730.86	32,192.58		13,427.29	26,854.58	
J6742-FS(0)	WGNA-061218-FRB-3283	6/27/18 23:23	d3-MeFOSAA	14,821.24	10,730.86	32,192.58		13,427.29	26,854.58	
J6744-FS(0)	WGNA-061218-FRB-3382	6/27/18 23:32	d3-MeFOSAA	14,325.68	10,730.86	32,192.58		13,427.29	26,854.58	
J6746-FS(0)	NAWC-061218-FRB-276	6/27/18 23:41	d3-MeFOSAA	15,597.85	10,730.86	32,192.58		13,427.29	26,854.58	
J6759-FS(0)	NAWC-061418-FRB-111	6/27/18 23:50	d3-MeFOSAA	13,575.22	10,730.86	32,192.58		13,427.29	26,854.58	
J6761-FS(0)	NAWC-061418-FRB-056	6/27/18 23:59	d3-MeFOSAA	13,512.88	10,730.86	32,192.58		13,427.29	26,854.58	
JX71 CCV	CCV	6/28/18 0:08	d3-MeFOSAA	19,579.05	10,730.86	32,192.58		13,427.29	26,854.58	

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Summary Asymmetry Report

Created with Analyst Reporter
Printed: 29/06/2018 1:21:56 PM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 9:59:20 AM	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.50	0.96	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.78	1.40	0.8 – 1.5

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Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 29/06/2018 1:22:52 PM

Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 9:59:20 AM	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.50	30	>10
PFBS_2	298.9 / 99.0	1.50	35	>10
PFHxA_1	313.0 / 269.0	1.78	26	>10
PFHxA_2	313.0 / 119.0	1.78	29	>10
PFHpA_1	363.0 / 319.0	2.14	32	>10
PFHpA_2	363.0 / 169.0	2.14	31	>10
PFHxS_1	399.0 / 80.0	2.15	28	>10
PFHxS_2	399.0 / 99.0	2.15	26	>10
PFOA_1	413.0 / 369.0	2.51	35	>10
PFOA_2	413.0 / 169.0	2.51	33	>10
PFNA_1	463.0 / 419.0	2.89	32	>10
PFNA_2	463.0 / 219.0	2.89	25	>10
PFOS_1	499.0 / 80.0	2.88	24	>10
PFOS_2	499.0 / 99.0	2.88	27	>10
PFDA_1	513.0 / 469.0	3.23	27	>10
PFDA_2	513.0 / 219.0	3.23	33	>10
PFUnA_1	563.0 / 519.0	3.55	35	>10
PFUnA_2	563.0 / 269.0	3.55	27	>10
PFDoA_1	613.0 / 569.0	3.84	35	>10
PFDoA_2	613.0 / 319.0	3.84	32	>10
PFTrDA_1	663.0 / 619.0	4.09	31	>10
PFTrDA_2	663.0 / 169.0	4.09	26	>10
PFTeDA_1	713.0 / 669.0	4.31	43	>10
PFTeDA_2	713.0 / 169.0	4.31	37	>10
NMeFOSAA_1	570.0 / 419.0	3.38	26	>10
NMeFOSAA_2	570.0 / 512.0	3.38	25	>10
NEtFOSAA_1	584.0 / 419.0	3.54	24	>10
NEtFOSAA_2	584.0 / 483.0	3.54	15	>10
13C2-PFHxA	315.0 / 270.0	1.77	32	>10
13C2-PFDA	515.0 / 470.0	3.23	35	>10
d5-EtFOSAA	589.0 / 419.0	3.54	12	>10

BATTELLE DETECTION LIMITS FOR PFAS IN DRINKING WATER

Battelle SOP 5-371 (EPA Method 537 Version 1.1)

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)	MRL (ng/L)
PFHxA	307-24-4	0.22	0.5	2.5	2.5
PFHpA	375-85-9	0.34	1.0	2.5	2.5
PFOA	335-67-1	0.38	1.0	2.5	2.5
PFNA	375-95-1	0.37	1.0	2.5	2.5
PFDA	335-76-2	0.39	1.0	2.5	2.5
PFUnA	2058-94-8	0.38	1.0	2.5	2.5
PFDoA	307-55-1	0.42	1.0	2.5	2.5
PFTrDA	72629-94-8	0.42	1.0	2.5	2.5
PFTeDA	376-06-7	0.73	1.5	2.5	2.5
NMeFOSAA	2355-31-9	0.42	1.0	2.5	2.5
NEtFOSAA	2991-50-6	0.44	1.0	2.5	2.5
PFBS	375-73-5	0.21	0.5	2.5	2.5
PFHxS	3871-99-6	0.34	1.0	2.5	2.5
PFOS	1763-23-1	0.30	1.0	2.5	2.5

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

800.201.2011 | solutions@battelle.org | www.battelle.org

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ID 626 04/18

Analytical Transitions for PFAS in drinking water

SOP 5-371 (EPA 537 Version 1.1)

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFBS	375-73-5	Target	298.9.0 / 80.0	298.9.0 / 99.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
13C2-PFHxA	NA	SIS	315.0 / 270.0	NA
13C2-PFDA	NA	SIS	515.0 / 470.0	NA
d5-EtFOSAA	NA	SIS	589.0 / 419.0	NA
$^{13}C_2$-PFOA	NA	IS	415.0 / 270.0	NA
$^{13}C_4$-PFOS	NA	IS	503.0 / 80.0	NA
d3-MeFOSAA	NA	IS	573.0 / 419.0	NA

Drinking Water Calibration to Sample Equivalents

ICAL (ng/L)	PIV (mL)	DF[1]	Sample Size (L)	Sample Equivalent (ng/L)[2]
25	1	1	0.250	0.1
50	1	1	0.250	0.2
100	1	1	0.250	0.4
250	1	1	0.250	1.0
500	1	1	0.250	2.0
1,000	1	1	0.250	4.0
2,500	1	1	0.250	10.0
5,000	1	1	0.250	20.0
10,000	1	1	0.250	40.0

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

Mass calibration and Tune Check

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	22-Feb-2017

Request ID:	3683
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____

Performed By: Kaustubh Dhayagude **Date:** 22-Feb-2017

Approved By :_____ **Date:** _____

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.5	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.9	Read Only
☑ CAD Medium	2.4	Read Only
☑ CAD High	3.4	Read Only
☑ CAD 12	3.4	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.64 e6	Read Only	0.8095	Read Only
Q1 500.380	2.40 e7	Read Only	0.8592	Read Only
Q1 906.673	2.86 e7	Read Only	0.9633	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.26 e6	Read Only	0.6252	Read Only
Q3 500.380	2.19 e7	Read Only	0.7275	Read Only
Q3 906.673	3.02 e7	Read Only	0.7662	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__19.51%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.43 e7	Read Only	0.9981	Read Only
MS/MS 195.1	1.45 e7	Read Only	0.6582	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.43 e7	Read Only	0.7330	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.22 e7	Read Only	0.8138	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.35 e6	Read Only	0.6495	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	2.1	Read Only
☑ CAD Medium	2.6	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.94 e6	≥1.2^{e}6	0.6933	0.6 to 0.8
Q1 500.380	2.25 e7	≥9.0^{e}6	0.7444	0.6 to 0.8
Q1 906.673	2.74 e7	≥1.4^{e}7	0.7347	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7656	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	4.54 e6	≥1.2^{e}6	0.6390	0.6 to 0.8
Q3 500.380	2.13 e7	≥9.0^{e}6	0.7008	0.6 to 0.8
Q3 906.673	3.04 e7	≥1.4^{e}7	0.7683	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.51 e8	≥6.8^{e}7	0.7118	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 16.93% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.74 e7	N/A	0.7667	Read Only
MS/MS 195.1	9.72 e6	N/A	0.6751	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.31 e7	≥1.0^{e}7	0.6895	0.6 to 0.8
Q1 933.636	1000	50	6.32 e7	≥4.0^{e}7	0.6740	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.70 e7	≥8.0^{e}6	0.7665	0.6 to 0.8
Q3 933.636	1000	50	7.41 e7	≥4.0^{e}7	0.7292	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.08 e6	≥7.2 ^{e}6	0.1302	<0.35
ER 922.010	0.05	3.89 e7	≥2.8 ^{e}6	0.2603	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.55 e7	≥2.4 ^{e}7	0.3740	<0.65
ER 922.010	0.05	2.37 e8	≥6.8 ^{e}7	0.5407	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.05 e8	≥4.4 ^{e}7	0.1840	<0.35
ER 601.978	0.05	7.74 e7	≥5.6 ^{e}7	0.1849	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.43 e8	≥1.2 ^{e}8	0.4382	<0.65
ER 601.978	0.05	2.55 e8	≥1.6 ^{e}8	0.6205	<0.65

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.5 e6	≥2.0 e6	> 4.0 e7	≥6.4 e6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	3.2 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	1.19 e8	Fragment Intensity	> 4.4 e6	≥1.6x 10e6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

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BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0392

WE04 PFAS Analysis

DW

SOP Numbers (see workplan for modifications)

VOASOP No. 5-371

This Batch Contains The Following Samples:	
CR040PB-FS	J6746-FS
CR041LCS-FS	J6759-FS
J6738-FS	J6761-FS
J6740-FS	
J6742-FS	
J6744-FS	

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

Approved By:	Date	Initials
Denise Schumitz	06/27/2018	DMS

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BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392

WE04 PFAS Analysis

DW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CR040PB-FS	Procedural Blank	250.0	NA	--	06/25/18 SAS
CR041LCS-FS	Laboratory Control Sample	250.0	NA	--	06/25/18 SAS
J6738-FS	WGNA-061118-FRB-3073	260.0	1	C	06/26/18 LMG
J6740-FS	WGNA-061118-FRB-0437	250.0	1	C	06/26/18 LMG
J6742-FS	WGNA-061218-FRB-3283	260.0	1	C	06/26/18 LMG
J6744-FS	WGNA-061218-FRB-3382	250.0	1	C	06/26/18 LMG
J6746-FS	NAWC-061218-FRB-276	250.0	1	C	06/26/18 LMG
J6759-FS	NAWC-061418-FRB-111	250.0	1	C	06/26/18 LMG
J6761-FS	NAWC-061418-FRB-056	250.0	1	C	06/26/18 LMG

Comments:

Sample ID:	Comments:
CR040PB-FS	1.25g Trizma(180502-01) weighed on BAL-009
CR041LCS-FS	1.27g Trizma(180502-01) weighed on BAL-009

Samples Assigned By Jonathan Thorn Date : June 21, 2018

* - "C" = Sample is Consumed

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BATTELLE - NORWELL OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392
WE04 PFAS Analysis
DW

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CR040PB-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
CR041LCS-FS	JV41	LCS/MS	1	75	06/25/18 SAS	LMG	NA
CR041LCS-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6738-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6740-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6742-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6744-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6746-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6759-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA
J6761-FS	JV60	SIS	1	50	06/25/18 SAS	LMG	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV41	Pipette	I0793912B
JV60	Pipette	I0793912B

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It can be done

BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0392
WE04 PFAS Analysis
DW

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CR040PB-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
CR041LCS-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6738-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6740-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6742-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6744-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6746-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6759-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS
J6761-FS(0)	950	50	JV59	50	1	1000	1.000	06/26/18 LMG	SAS

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV59	Pipette	D1075429B

Extract Id:	Comments:
CR040PB-FS	Samples reconstituted in 96/4 methanol/milli-q water

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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Sequence Report

Created with Analyst Reporter
Printed: 29/06/2018 1:23:52 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MeOH	Solvent	6/27/2018 8:56:44 AM	5-0371.dam	06252018_5-371.wiff
2	JX67	L1	6/27/2018 9:05:43 AM	5-0371.dam	06252018_5-371.wiff
3	JX68	L2	6/27/2018 9:14:41 AM	5-0371.dam	06252018_5-371.wiff
4	JX69	L3	6/27/2018 9:23:38 AM	5-0371.dam	06252018_5-371.wiff
5	JX70	L4	6/27/2018 9:32:34 AM	5-0371.dam	06252018_5-371.wiff
6	JX71	L5	6/27/2018 9:41:29 AM	5-0371.dam	06252018_5-371.wiff
7	JX72	L6	6/27/2018 9:50:24 AM	5-0371.dam	06252018_5-371.wiff
8	JX73	L7	6/27/2018 9:59:20 AM	5-0371.dam	06252018_5-371.wiff
9	JX74	L8	6/27/2018 10:08:14 AM	5-0371.dam	06252018_5-371.wiff
10	JX75	L9	6/27/2018 10:17:08 AM	5-0371.dam	06252018_5-371.wiff
11	JV66 ICC	ICC	6/27/2018 10:26:04 AM	5-0371.dam	06252018_5-371.wiff
31	JX72 CCV	CCV	6/27/2018 8:51:24 PM	5-0371.dam	06252018_5-371.wiff
5	MeOH	Solvent	6/27/2018 9:00:24 PM	5-0371.dam	06252018_5-371.wiff
41	JX73 CCV	CCV	6/27/2018 10:29:51 PM	5-0371.dam	06252018_5-371.wiff
54	MeOH	Solvent	6/27/2018 10:38:48 PM	5-0371.dam	06252018_5-371.wiff
42	CR040PB-FS(0)	Procedural Blank	6/27/2018 10:47:46 PM	5-0371.dam	06252018_5-371.wiff
43	CR041LCS-FS(0)	Laboratory Control Sample	6/27/2018 10:56:42 PM	5-0371.dam	06252018_5-371.wiff
44	J6738-FS(0)	WGNA-061118-FRB-3073	6/27/2018 11:05:37 PM	5-0371.dam	06252018_5-371.wiff
45	J6740-FS(0)	WGNA-061118-FRB-0437	6/27/2018 11:14:33 PM	5-0371.dam	06252018_5-371.wiff
46	J6742-FS(0)	WGNA-061218-FRB-3283	6/27/2018 11:23:30 PM	5-0371.dam	06252018_5-371.wiff
47	J6744-FS(0)	WGNA-061218-FRB-3382	6/27/2018 11:32:26 PM	5-0371.dam	06252018_5-371.wiff
48	J6746-FS(0)	NAWC-061218-FRB-276	6/27/2018 11:41:23 PM	5-0371.dam	06252018_5-371.wiff
49	J6759-FS(0)	NAWC-061418-FRB-111	6/27/2018 11:50:19 PM	5-0371.dam	06252018_5-371.wiff
50	J6761-FS(0)	NAWC-061418-FRB-056	6/27/2018 11:59:16 PM	5-0371.dam	06252018_5-371.wiff
51	JX71 CCV	CCV	6/28/2018 12:08:12 AM	5-0371.dam	06252018_5-371.wiff

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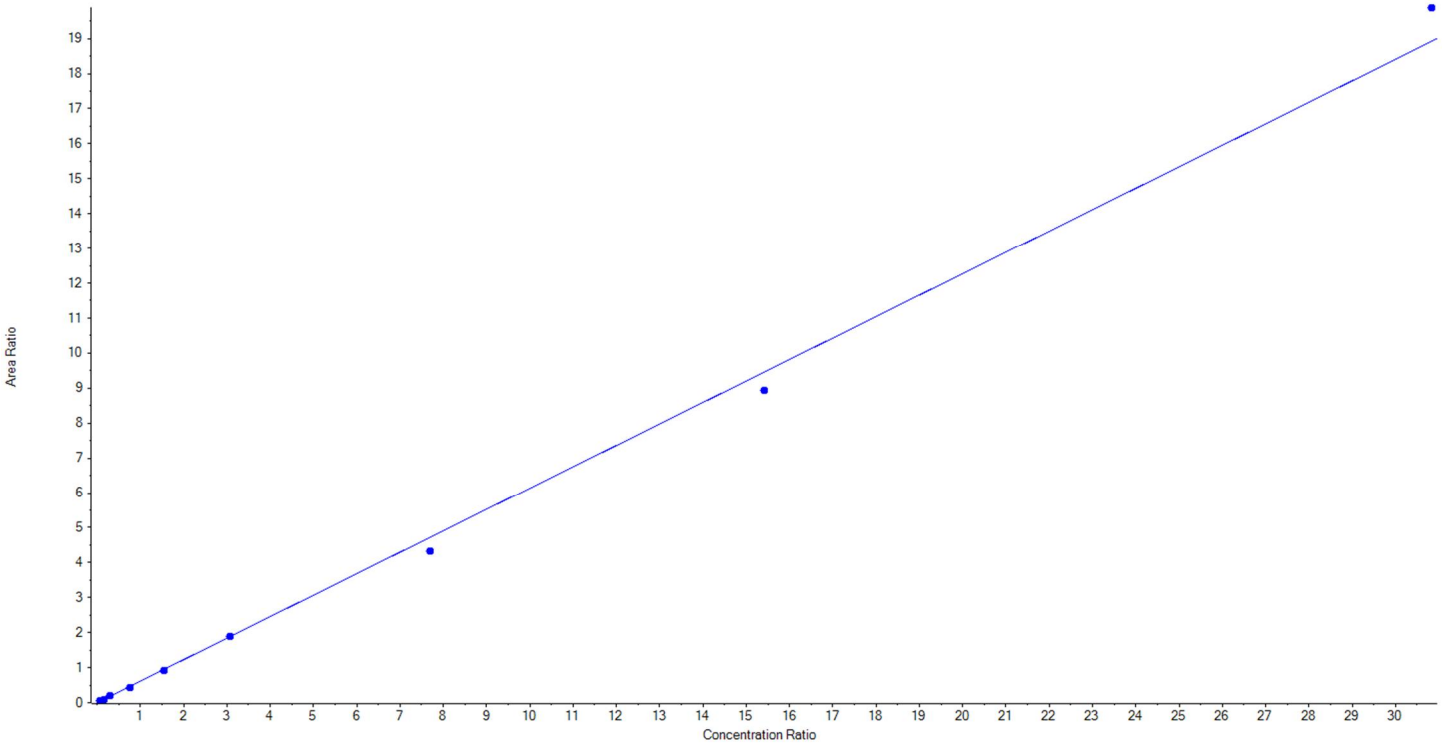
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFBS_1	**Data File**	06252018_5-371.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.61363 x + -0.00126 (r = 0.99834) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	23.830433	107.6
3	JX68	L2	True	44.30	46.278541	104.5
4	JX69	L3	True	88.60	93.683891	105.7
5	JX70	L4	True	221.50	206.327632	93.2
6	JX71	L5	True	443.00	432.516100	97.6
7	JX72	L6	True	885.00	888.747710	100.4
8	JX73	L7	True	2212.50	2024.674722	91.5
9	JX74	L8	True	4425.00	4178.992960	94.4
10	JX75	L9	True	8850.00	9296.998012	105.1



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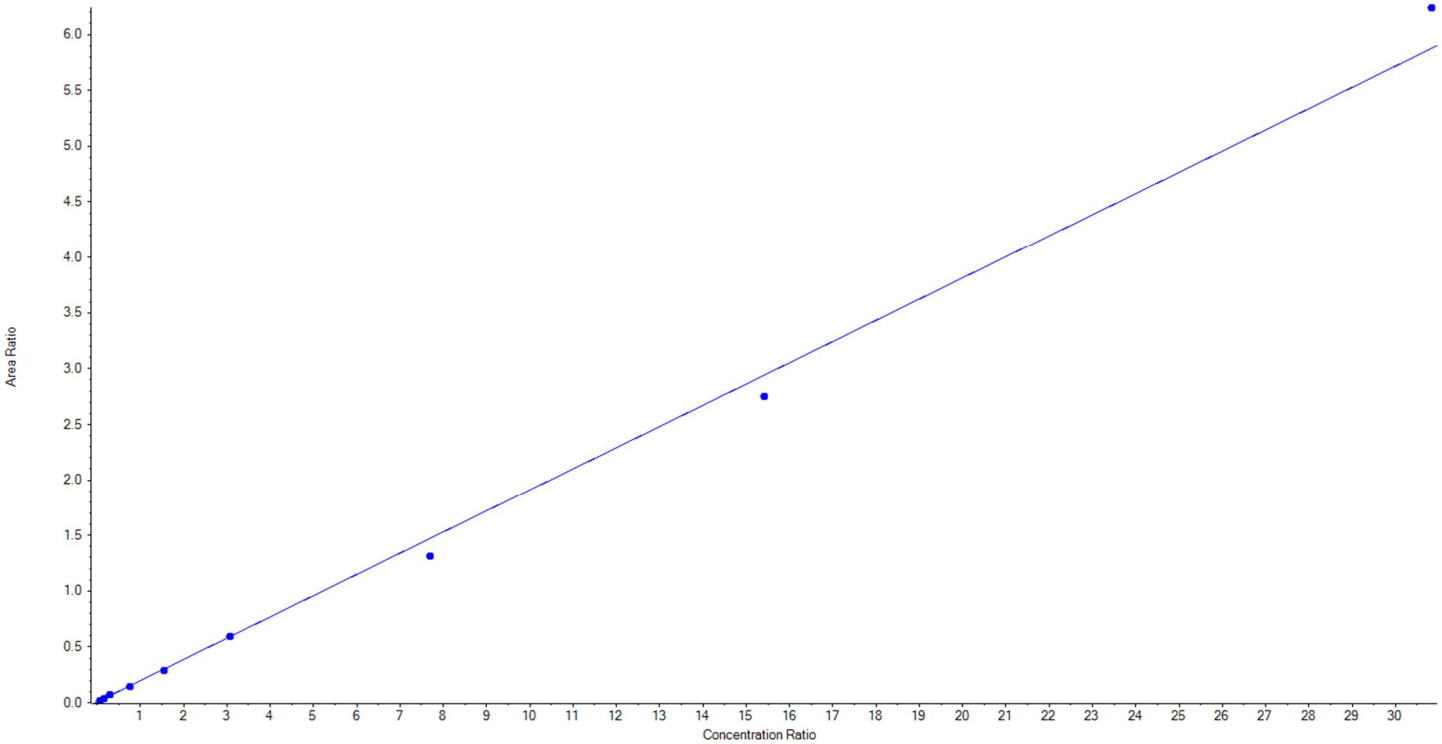
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFBS_2	**Data File**	06252018_5-371.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19036 x + 0.00658 (r = 0.99747) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.15	22.983577	103.8
3	JX68	L2	True	44.30	49.356949	111.4
4	JX69	L3	True	88.60	93.887974	106.0
5	JX70	L4	True	221.50	205.818634	92.9
6	JX71	L5	True	443.00	429.643049	97.0
7	JX72	L6	True	885.00	889.170002	100.5
8	JX73	L7	True	2212.50	1962.210653	88.7
9	JX74	L8	True	4425.00	4142.359203	93.6
10	JX75	L9	True	8850.00	9396.619960	106.2



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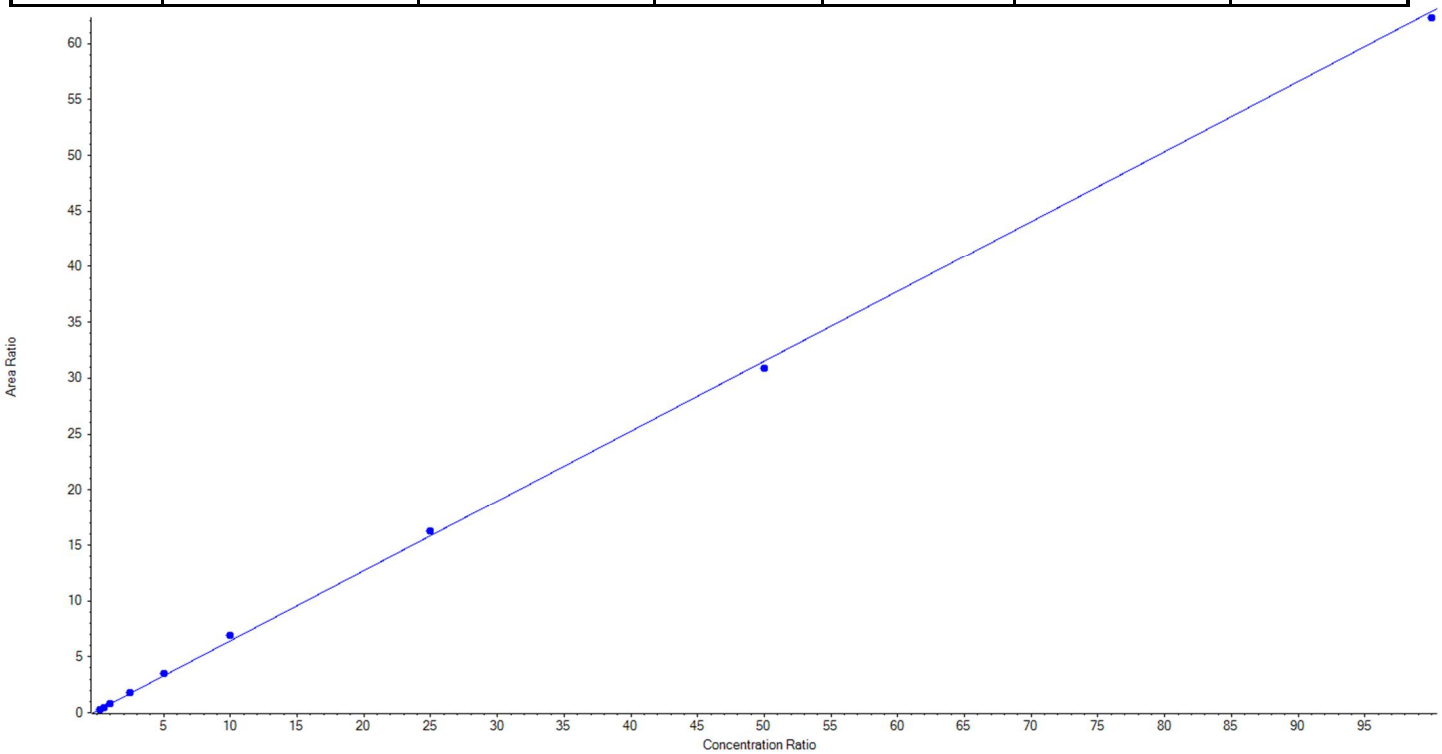
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFHxA_1	**Data File**	06252018_5-371.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.62713 x + 0.16053 (r = 0.99957) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.791994	75.2
3	JX68	L2	True	50.00	51.402415	102.8
4	JX69	L3	True	100.00	104.015969	104.0
5	JX70	L4	True	250.00	256.894451	102.8
6	JX71	L5	True	500.00	536.593763	107.3
7	JX72	L6	True	1000.00	1083.560155	108.4
8	JX73	L7	True	2500.00	2559.637674	102.4
9	JX74	L8	True	5000.00	4905.213315	98.1
10	JX75	L9	True	10000.00	9908.890264	99.1



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Calibration Summary Report

Created with Analyst Reporter
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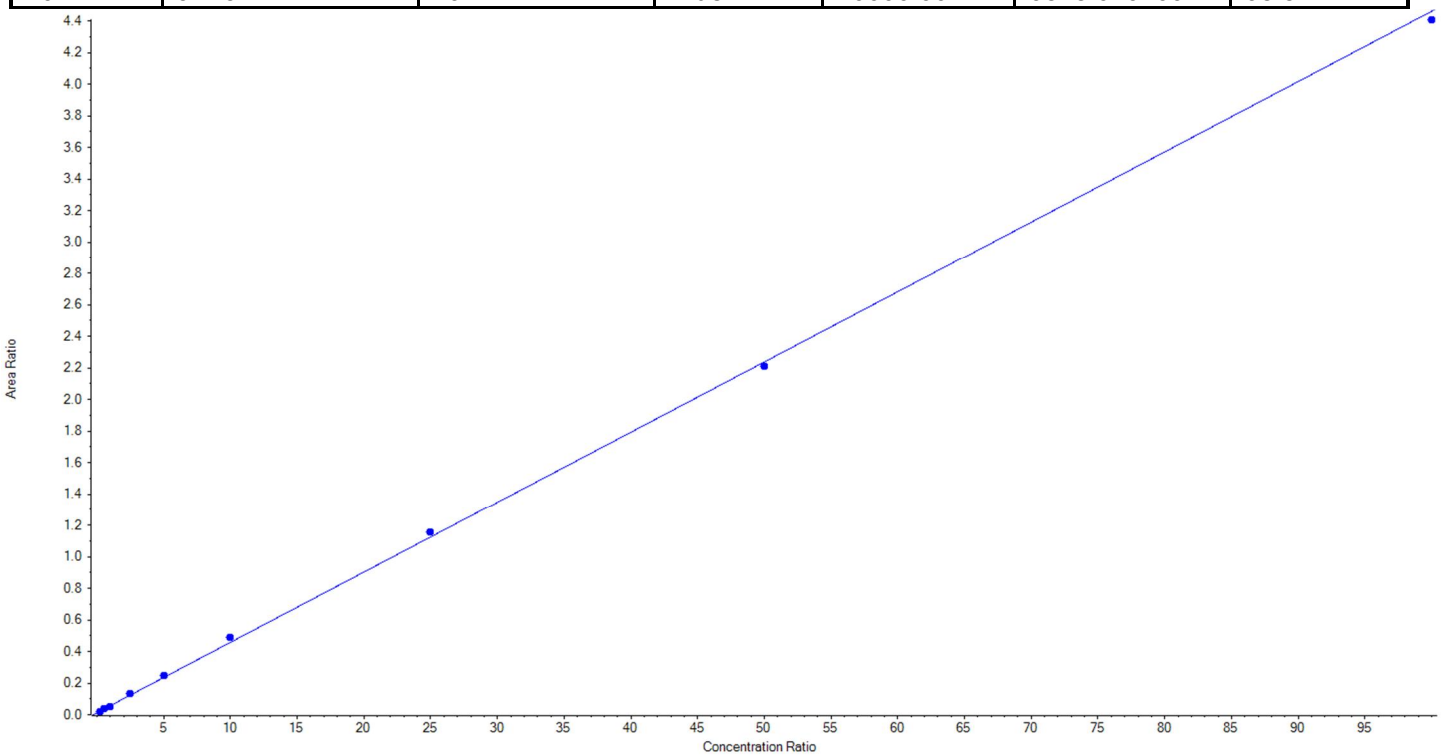
Analyte Name	PFHxA_2	**Data File**	06252018_5-371.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.04450 x + 0.01264 (r = 0.99956) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.296701	81.2
3	JX68	L2	True	50.00	53.760551	107.5
4	JX69	L3	True	100.00	88.961255	89.0
5	JX70	L4	True	250.00	271.044383	108.4
6	JX71	L5	True	500.00	529.040331	105.8
7	JX72	L6	True	1000.00	1077.865222	107.8
8	JX73	L7	True	2500.00	2570.917958	102.8
9	JX74	L8	True	5000.00	4935.064490	98.7
10	JX75	L9	True	10000.00	9878.049109	98.8



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Calibration Summary Report

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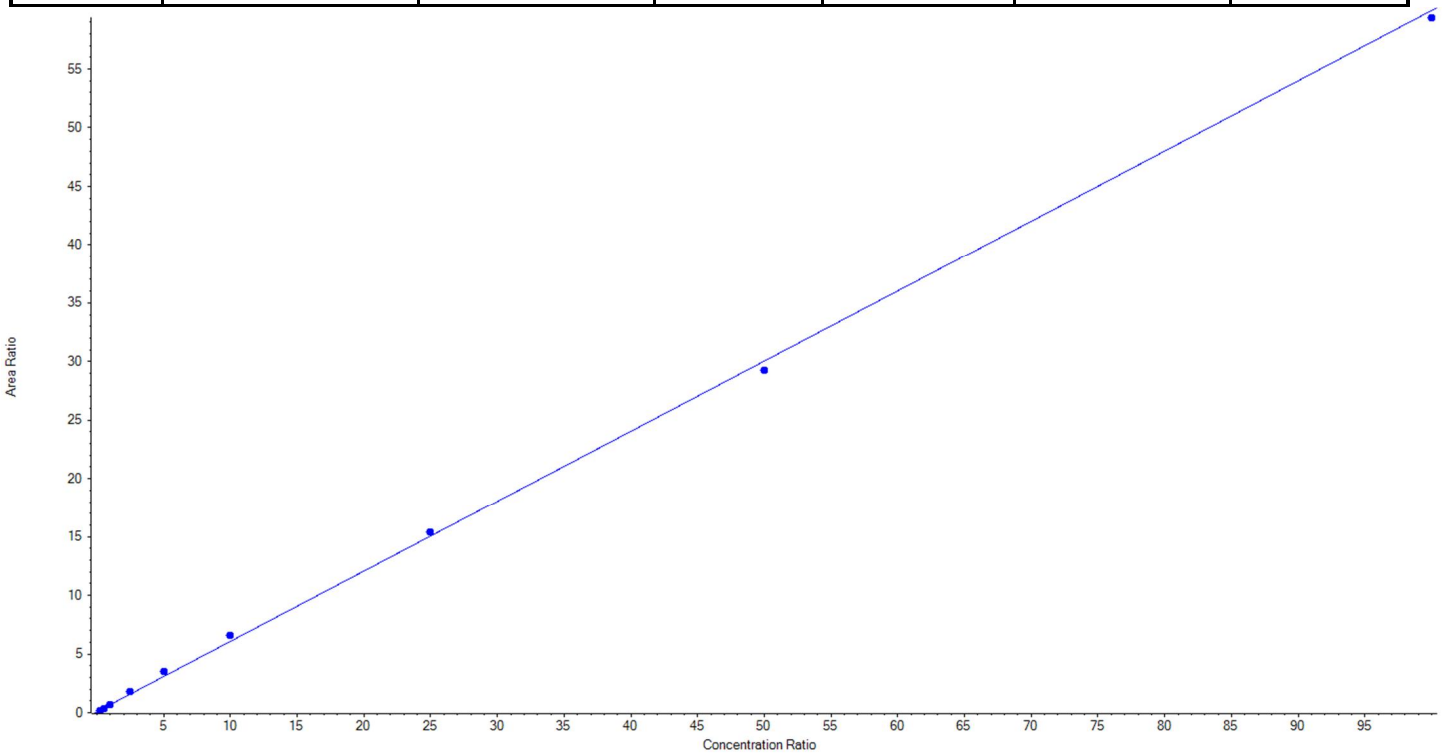
Analyte Name	PFHpA_1	**Data File**	06252018_5-371.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.59900 x + 0.08720 (r = 0.99924) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.302340	73.2
3	JX68	L2	True	50.00	44.691384	89.4
4	JX69	L3	True	100.00	104.066690	104.1
5	JX70	L4	True	250.00	283.179151	113.3
6	JX71	L5	True	500.00	564.092719	112.8
7	JX72	L6	True	1000.00	1085.640666	108.6
8	JX73	L7	True	2500.00	2557.091682	102.3
9	JX74	L8	True	5000.00	4872.389047	97.5
10	JX75	L9	True	10000.00	9895.546320	99.0



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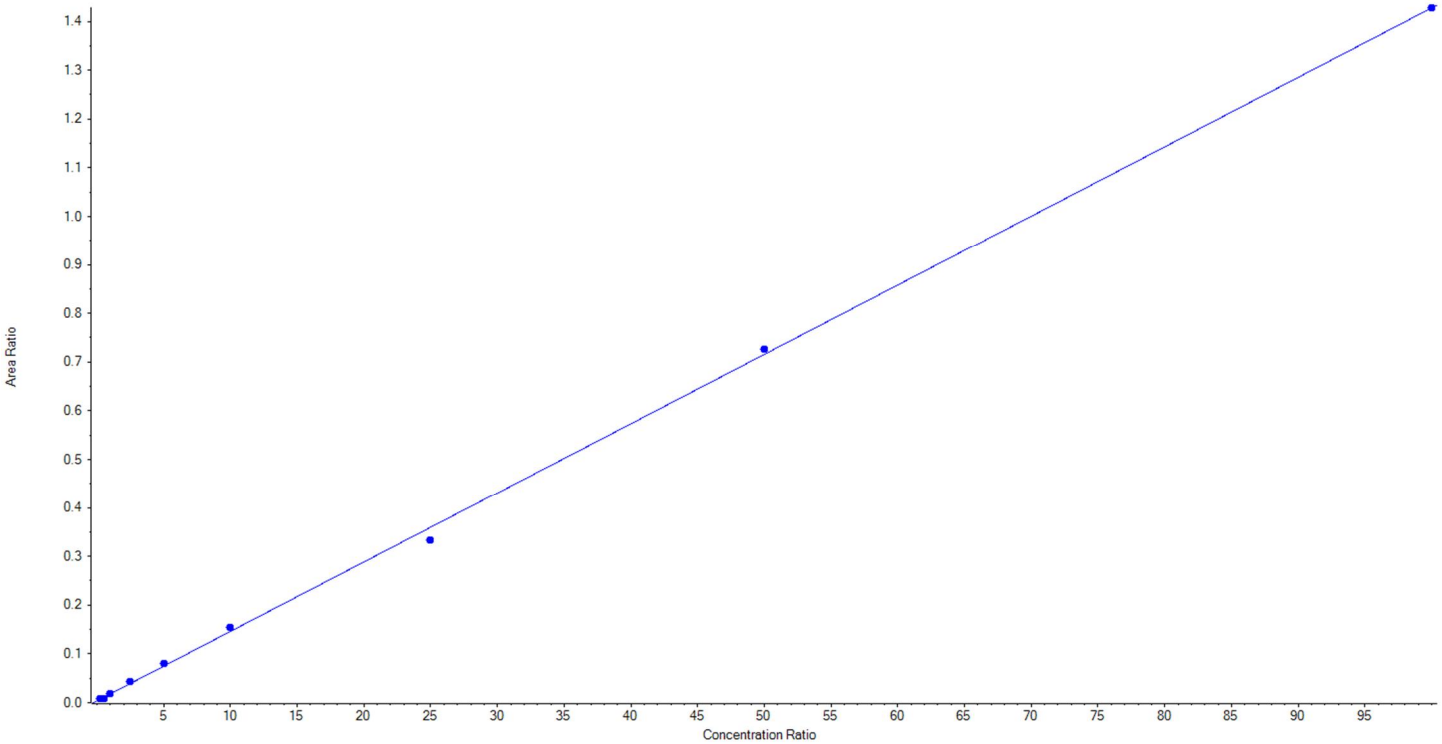
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFHpA_2	**Data File**	06252018_5-371.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.01424 x + 0.00368 (r = 0.99920) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	25.182337	100.7
3	JX68	L2	True	50.00	37.004714	74.0
4	JX69	L3	True	100.00	106.084205	106.1
5	JX70	L4	True	250.00	279.413504	111.8
6	JX71	L5	True	500.00	537.484438	107.5
7	JX72	L6	True	1000.00	1062.086999	106.2
8	JX73	L7	True	2500.00	2307.985347	92.3
9	JX74	L8	True	5000.00	5068.903345	101.4
10	JX75	L9	True	10000.00	10000.855110	100.0



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Calibration Summary Report

Created with Analyst Reporter
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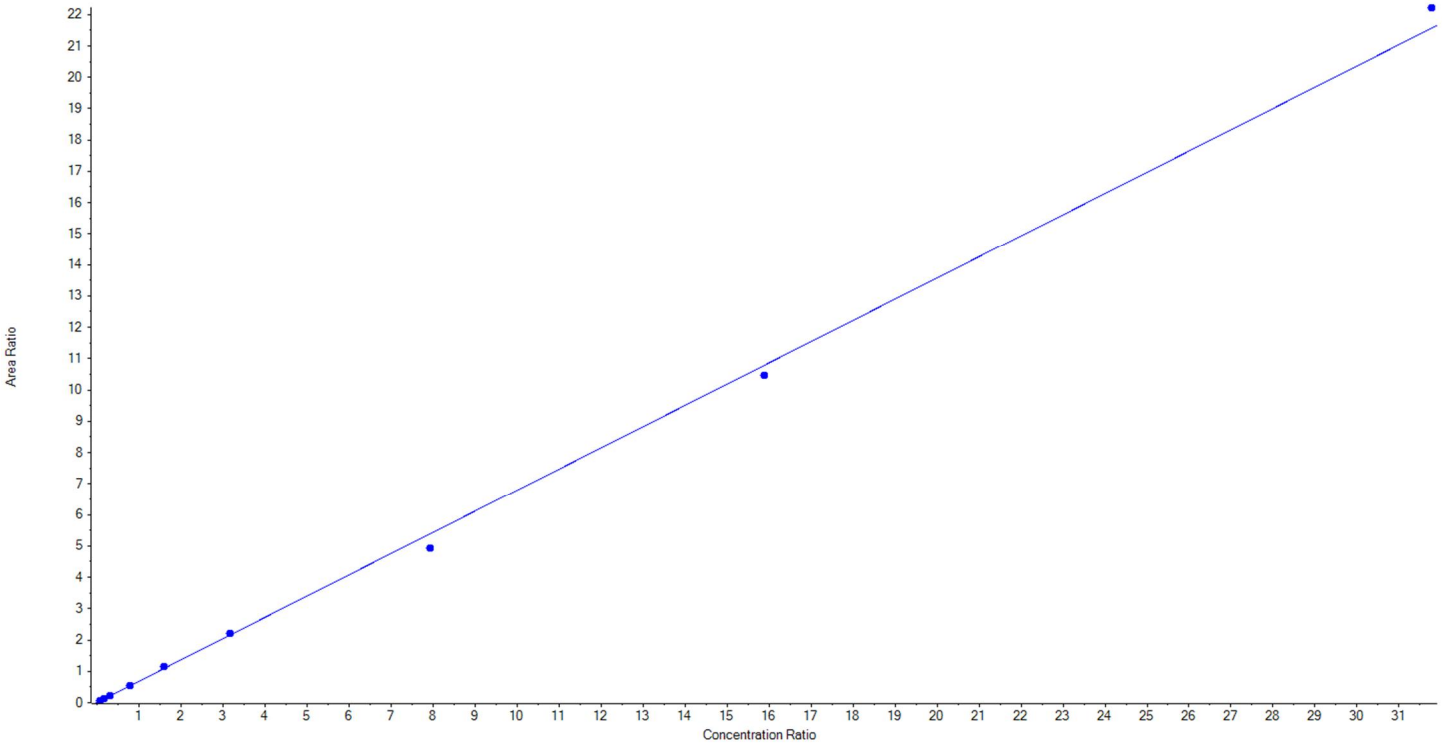
Analyte Name	PFHxS_1	**Data File**	06252018_5-371.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.67844 x + 0.00634 (r = 0.99904) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.80	21.160059	92.8
3	JX68	L2	True	45.60	45.485656	99.8
4	JX69	L3	True	91.20	95.245598	104.4
5	JX70	L4	True	228.00	232.577181	102.0
6	JX71	L5	True	456.00	490.689497	107.6
7	JX72	L6	True	912.00	929.472519	101.9
8	JX73	L7	True	2280.00	2087.335538	91.6
9	JX74	L8	True	4560.00	4419.706890	96.9
10	JX75	L9	True	9120.00	9393.927062	103.0



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Calibration Summary Report

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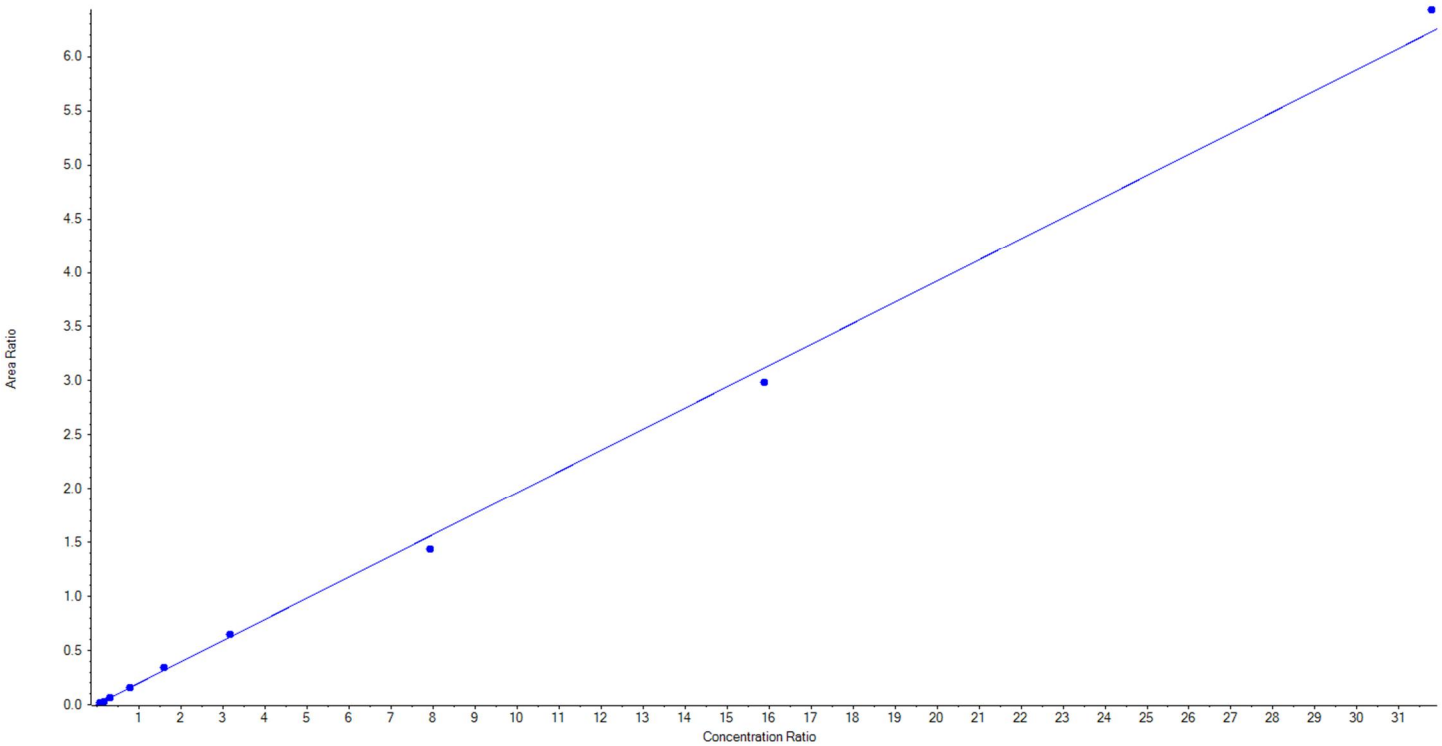
Analyte Name	PFHxS_2	**Data File**	06252018_5-371.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19595 x + 0.00351 (r = 0.99884) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	22.80	23.177641	101.7
3	JX68	L2	True	45.60	41.676123	91.4
4	JX69	L3	True	91.20	94.514379	103.6
5	JX70	L4	True	228.00	224.141632	98.3
6	JX71	L5	True	456.00	499.794260	109.6
7	JX72	L6	True	912.00	951.728157	104.4
8	JX73	L7	True	2280.00	2099.884695	92.1
9	JX74	L8	True	4560.00	4363.227328	95.7
10	JX75	L9	True	9120.00	9417.455786	103.3



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Calibration Summary Report

Created with Analyst Reporter
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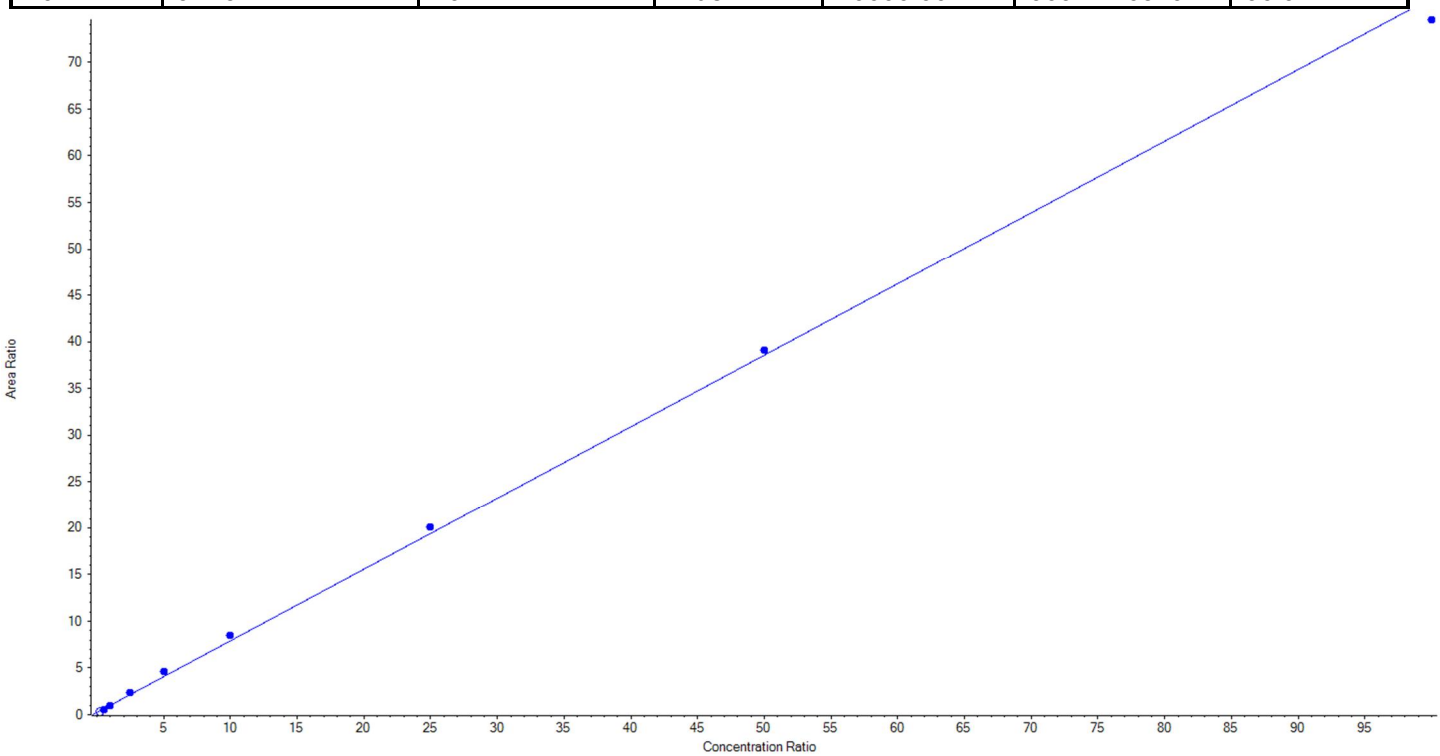
Analyte Name	PFOA_1	**Data File**	06252018_5-371.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.76657 x + 0.23682 (r = 0.99897) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	5.415311	21.7
3	JX68	L2	True	50.00	36.683792	73.4
4	JX69	L3	True	100.00	92.235736	92.2
5	JX70	L4	True	250.00	275.902665	110.4
6	JX71	L5	True	500.00	572.330827	114.5
7	JX72	L6	True	1000.00	1079.143229	107.9
8	JX73	L7	True	2500.00	2586.190651	103.5
9	JX74	L8	True	5000.00	5063.236772	101.3
10	JX75	L9	True	10000.00	9694.276329	96.9



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Calibration Summary Report

Created with Analyst Reporter
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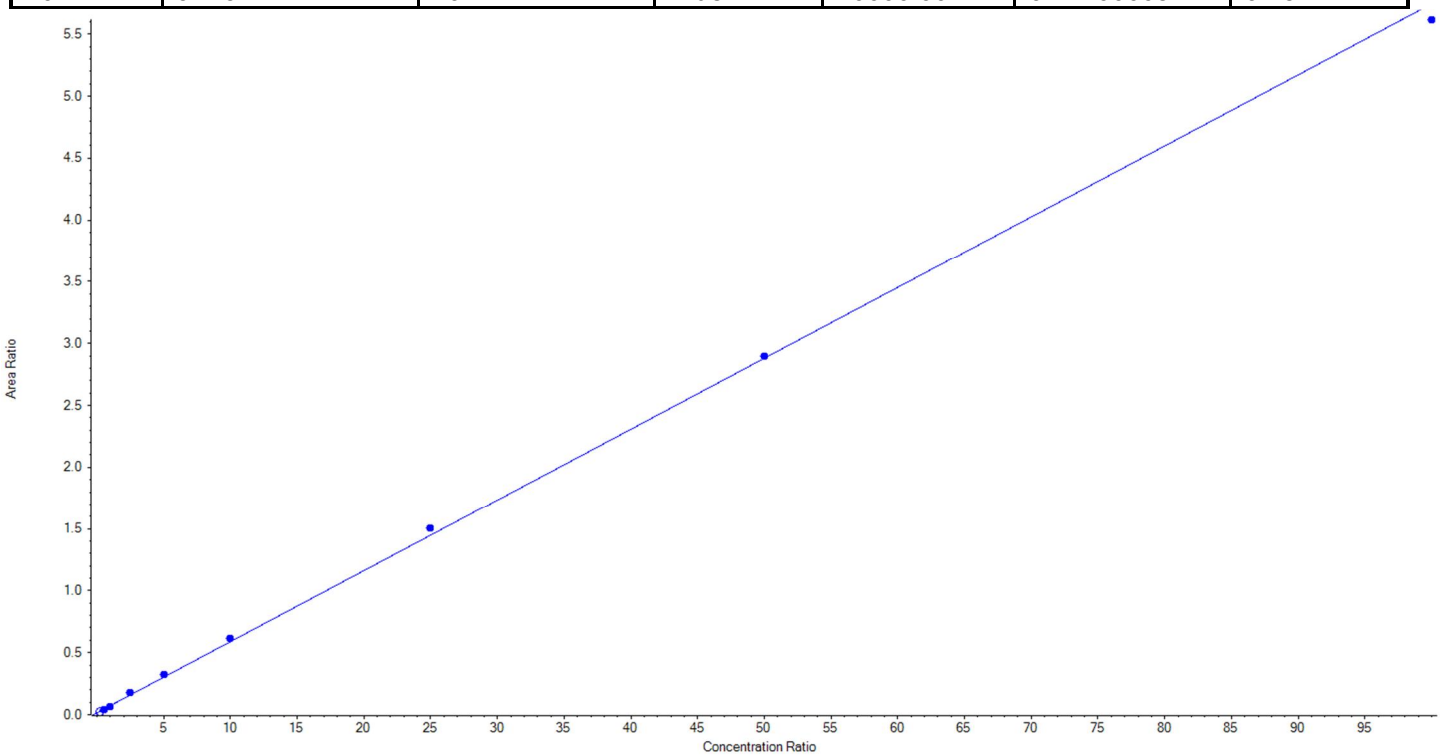
Analyte Name	PFOA_2	**Data File**	06252018_5-371.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05729 x + 0.01572 (r = 0.99941) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	12.318640	49.3
3	JX68	L2	True	50.00	43.335566	86.7
4	JX69	L3	True	100.00	86.590381	86.6
5	JX70	L4	True	250.00	279.024584	111.6
6	JX71	L5	True	500.00	542.178268	108.4
7	JX72	L6	True	1000.00	1042.123910	104.2
8	JX73	L7	True	2500.00	2604.616479	104.2
9	JX74	L8	True	5000.00	5027.464128	100.6
10	JX75	L9	True	10000.00	9774.666684	97.8



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Calibration Summary Report

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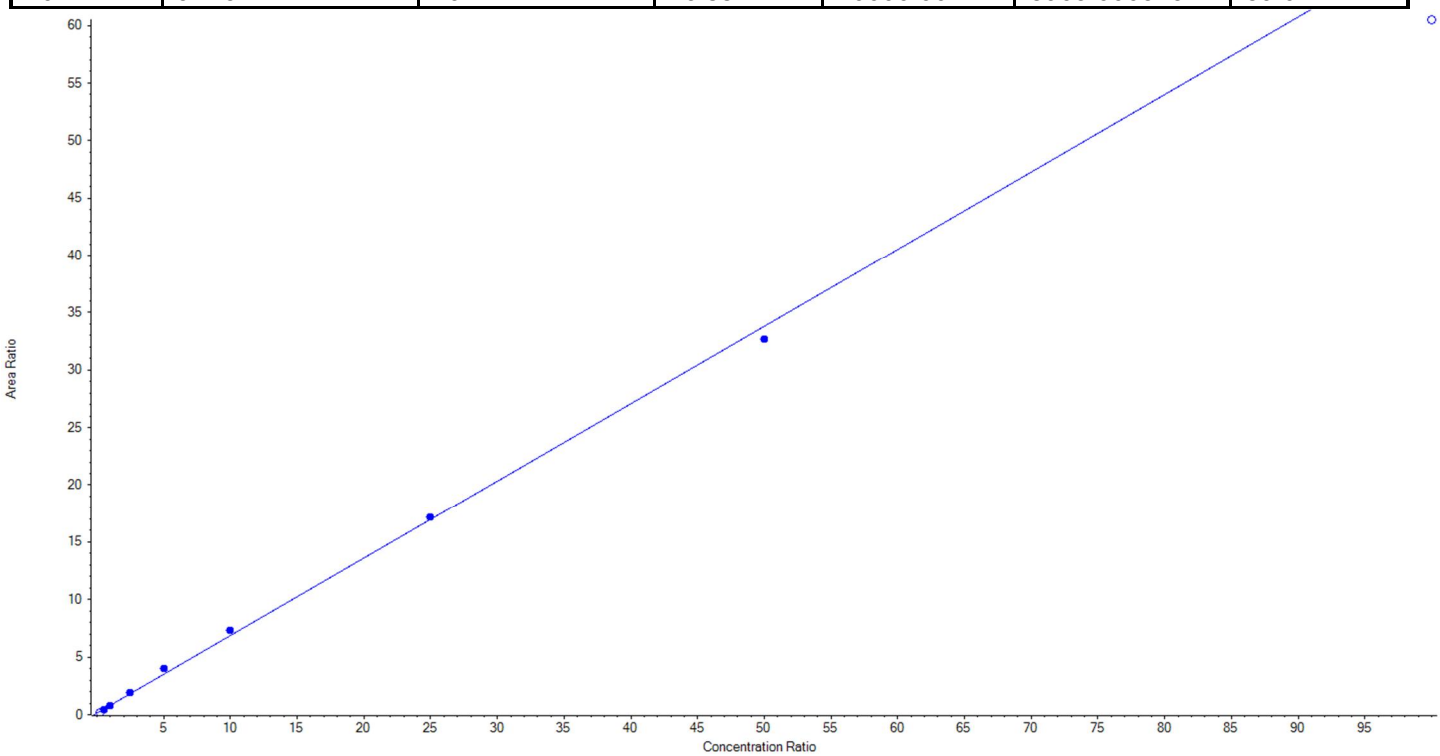
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFNA_1	**Data File**	06252018_5-371.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.67314 x + 0.14207 (r = 0.99841) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	7.876482	31.5
3	JX68	L2	True	50.00	38.471445	76.9
4	JX69	L3	True	100.00	96.355173	96.4
5	JX70	L4	True	250.00	268.580288	107.4
6	JX71	L5	True	500.00	575.970800	115.2
7	JX72	L6	True	1000.00	1064.317609	106.4
8	JX73	L7	True	2500.00	2525.890341	101.0
9	JX74	L8	True	5000.00	4830.414344	96.6
10	JX75	L9	False	10000.00	8963.600323	89.6



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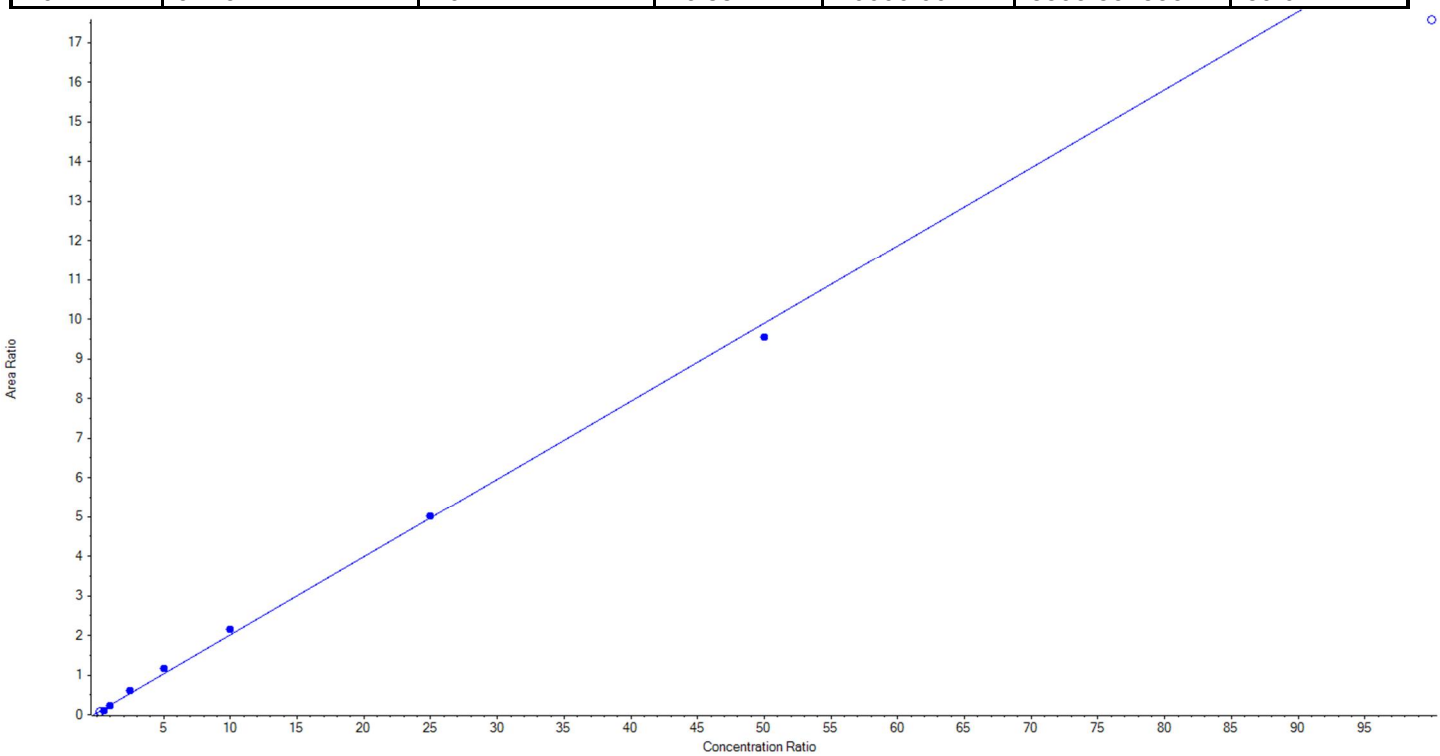
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFNA_2	**Data File**	06252018_5-371.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.19709 x + 0.04473 (r = 0.99821) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	17.483575	69.9
3	JX68	L2	True	50.00	35.058175	70.1
4	JX69	L3	True	100.00	99.127432	99.1
5	JX70	L4	True	250.00	282.168603	112.9
6	JX71	L5	True	500.00	566.768331	113.4
7	JX72	L6	True	1000.00	1073.450506	107.4
8	JX73	L7	True	2500.00	2516.076067	100.6
9	JX74	L8	True	5000.00	4827.350887	96.6
10	JX75	L9	False	10000.00	8895.837853	89.0



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Calibration Summary Report

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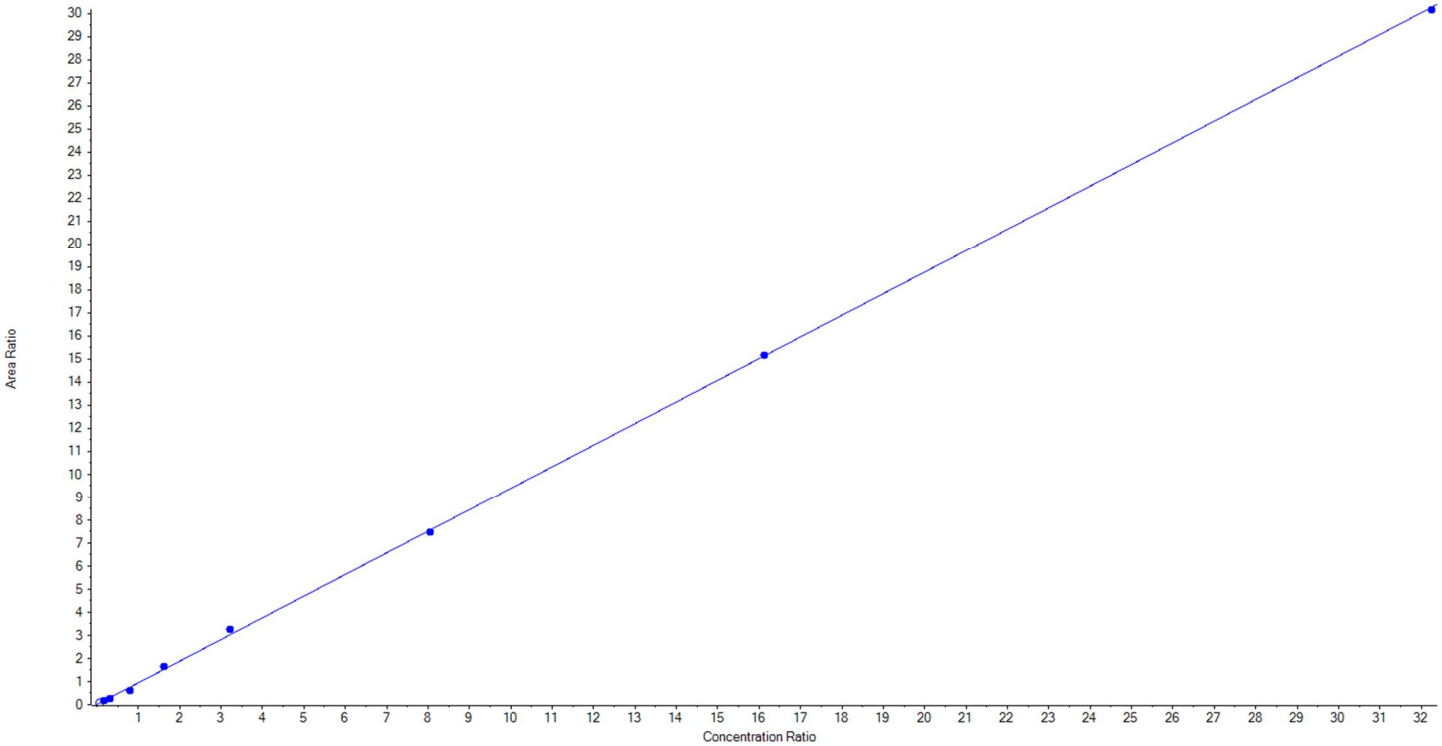
Analyte Name	PFOS_1	**Data File**	06252018_5-371.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.93825 x + 0.00796 (r = 0.99940) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	23.15	29.069233	125.6
3	JX68	L2	True	46.30	53.663362	115.9
4	JX69	L3	True	92.60	82.064517	88.6
5	JX70	L4	True	231.50	187.779233	81.1
6	JX71	L5	True	463.00	503.551777	108.8
7	JX72	L6	True	925.60	993.508190	107.3
8	JX73	L7	True	2314.00	2278.640714	98.5
9	JX74	L8	True	4628.00	4635.010053	100.2
10	JX75	L9	True	9256.00	9222.782154	99.6



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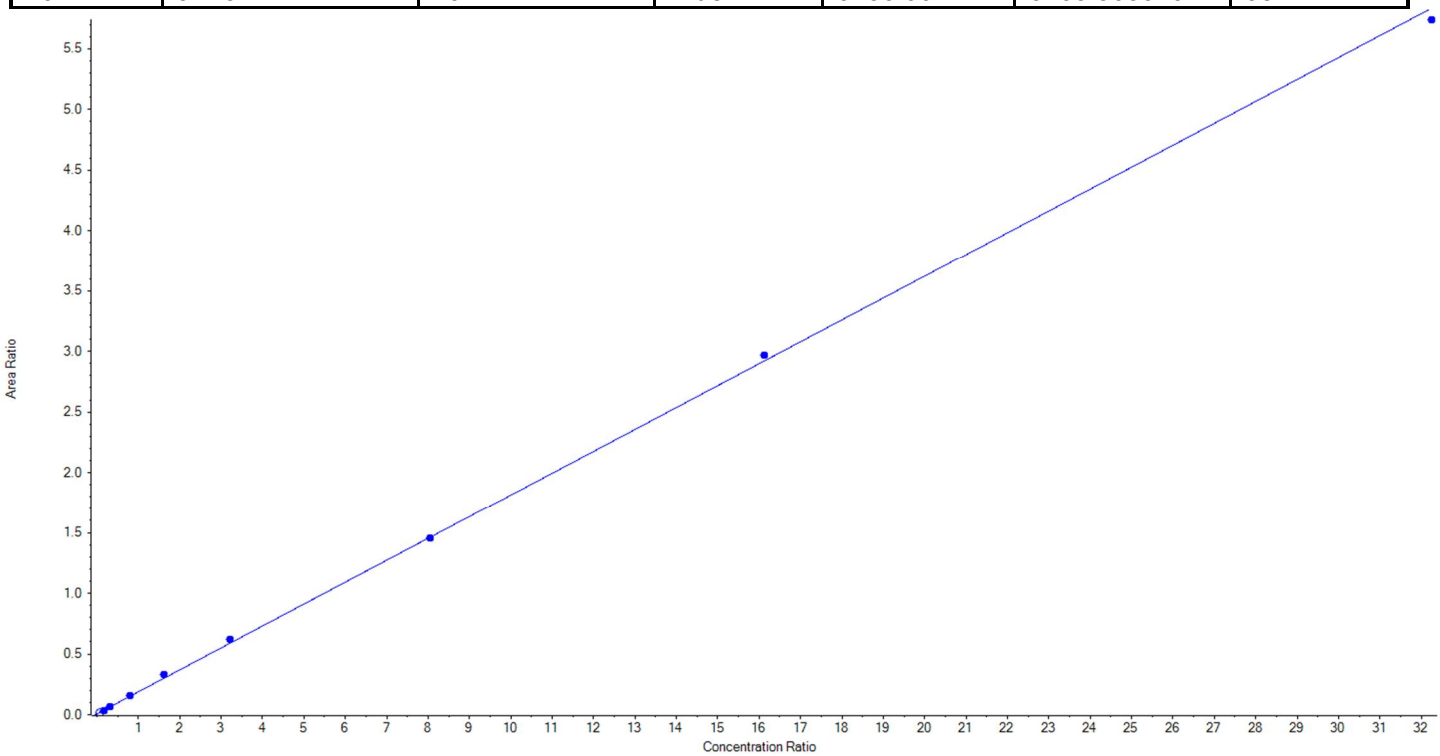
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFOS_2	**Data File**	06252018_5-371.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0392_DW
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.18064 x + 0.00767 (r = 0.99961) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	23.15	18.518216	80.0
3	JX68	L2	True	46.30	36.983718	79.9
4	JX69	L3	True	92.60	93.580776	101.1
5	JX70	L4	True	231.50	243.435530	105.2
6	JX71	L5	True	463.00	507.358334	109.6
7	JX72	L6	True	925.60	972.613478	105.1
8	JX73	L7	True	2314.00	2297.795932	99.3
9	JX74	L8	True	4628.00	4701.867193	101.6
10	JX75	L9	True	9256.00	9103.365040	98.4



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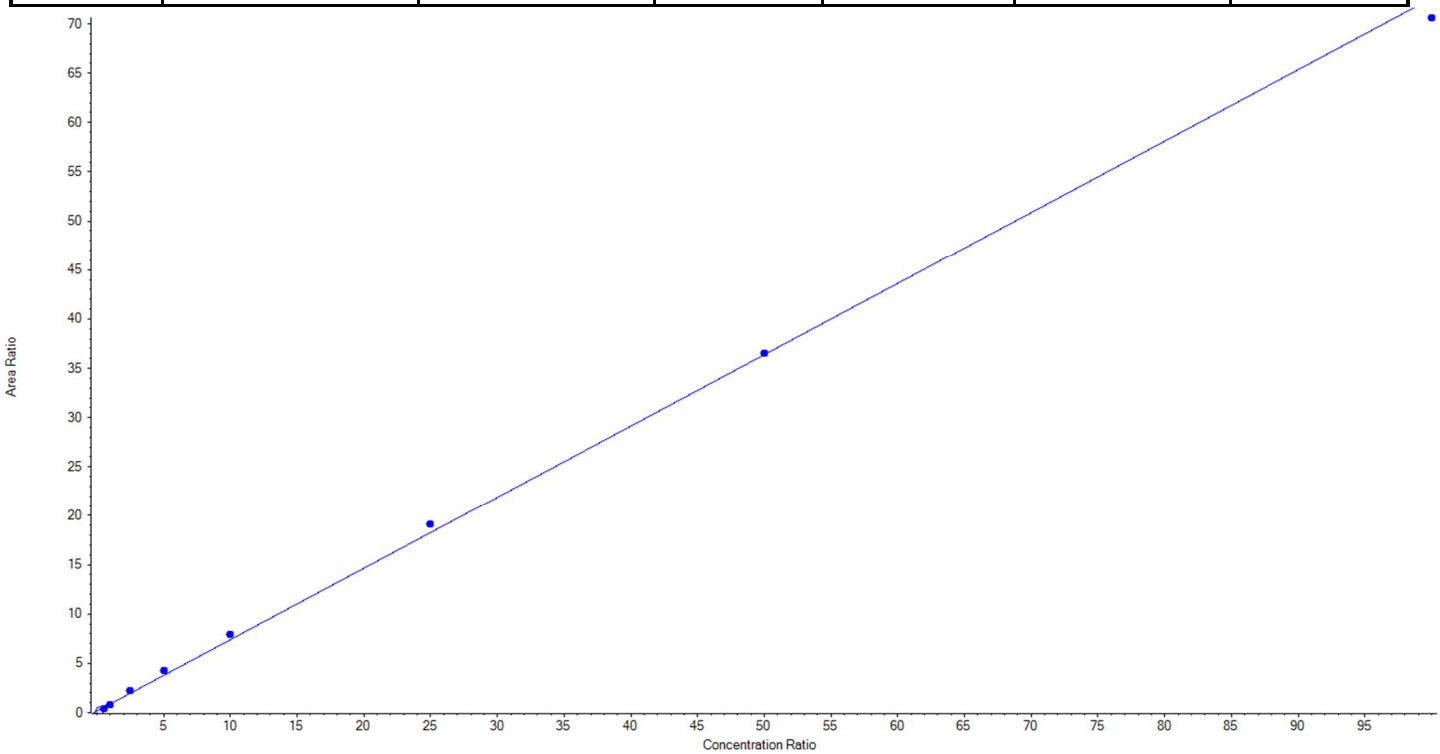
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.72444 x + 0.16011 (r = 0.99902) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	4.293986	17.2
3	JX68	L2	True	50.00	38.400405	76.8
4	JX69	L3	True	100.00	87.838796	87.8
5	JX70	L4	True	250.00	283.367571	113.4
6	JX71	L5	True	500.00	562.746141	112.6
7	JX72	L6	True	1000.00	1073.347869	107.3
8	JX73	L7	True	2500.00	2614.798969	104.6
9	JX74	L8	True	5000.00	5014.238853	100.3
10	JX75	L9	True	10000.00	9725.261395	97.3



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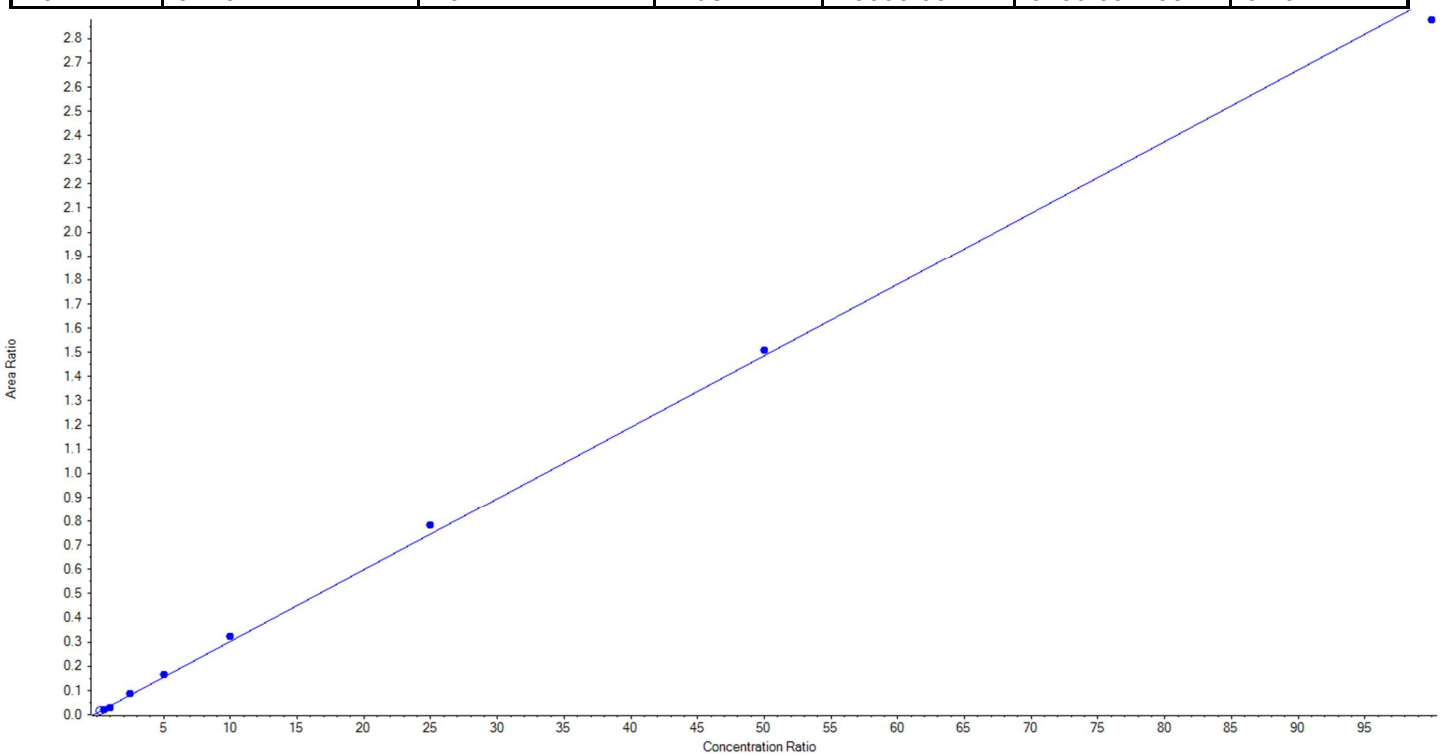
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.02959 x + 0.00688 (r = 0.99915) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	27.987541	112.0
3	JX68	L2	True	50.00	48.305605	96.6
4	JX69	L3	True	100.00	78.774590	78.8
5	JX70	L4	True	250.00	266.338265	106.5
6	JX71	L5	True	500.00	536.324707	107.3
7	JX72	L6	True	1000.00	1073.774687	107.4
8	JX73	L7	True	2500.00	2625.689392	105.0
9	JX74	L8	True	5000.00	5070.098049	101.4
10	JX75	L9	True	10000.00	9700.694705	97.0



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Calibration Summary Report

Created with Analyst Reporter
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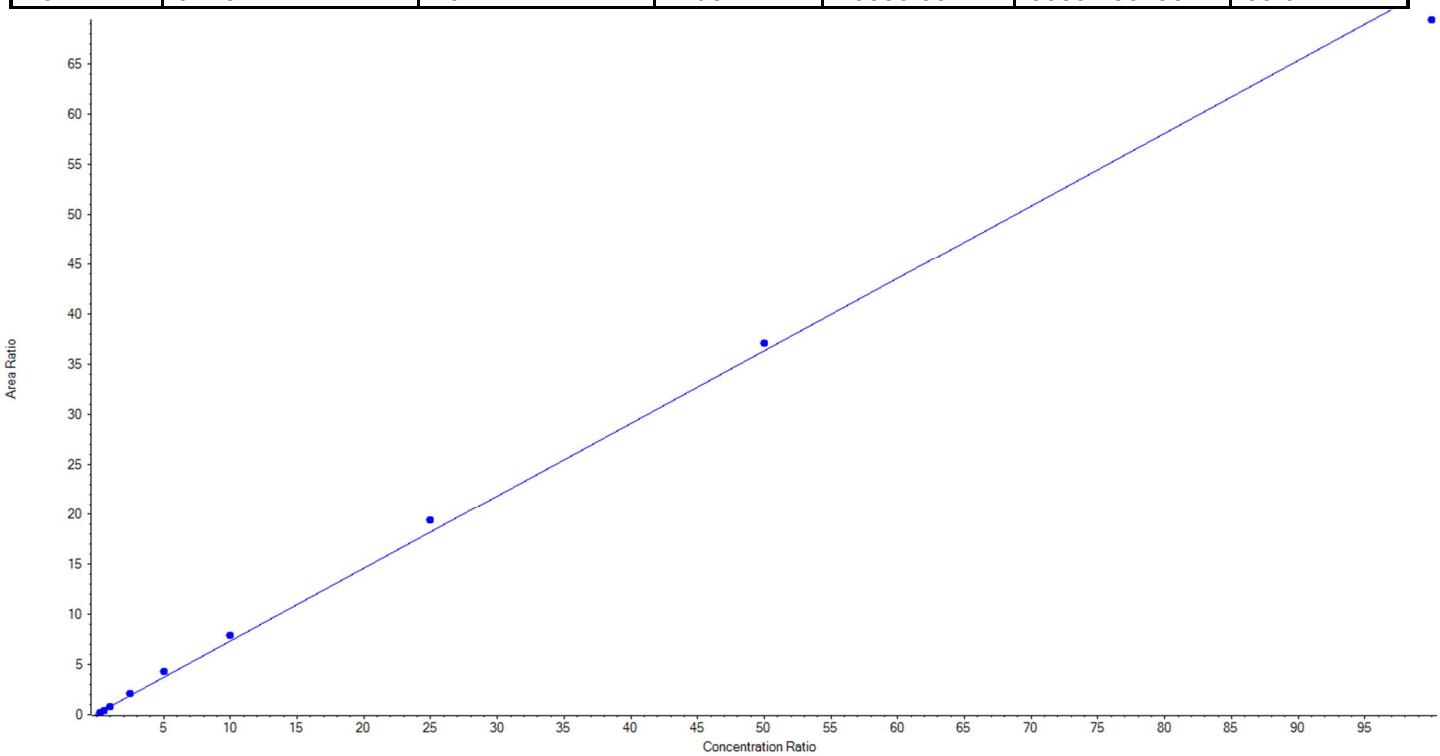
Analyte Name	PFUnA_1	**Data File**	06252018_5-371.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.72537 x + 0.09471 (r = 0.99844) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.073088	80.3
3	JX68	L2	True	50.00	42.388703	84.8
4	JX69	L3	True	100.00	95.029236	95.0
5	JX70	L4	True	250.00	279.090767	111.6
6	JX71	L5	True	500.00	579.829398	116.0
7	JX72	L6	True	1000.00	1079.142455	107.9
8	JX73	L7	True	2500.00	2669.633957	106.8
9	JX74	L8	True	5000.00	5100.109139	102.0
10	JX75	L9	True	10000.00	9559.703256	95.6



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Calibration Summary Report

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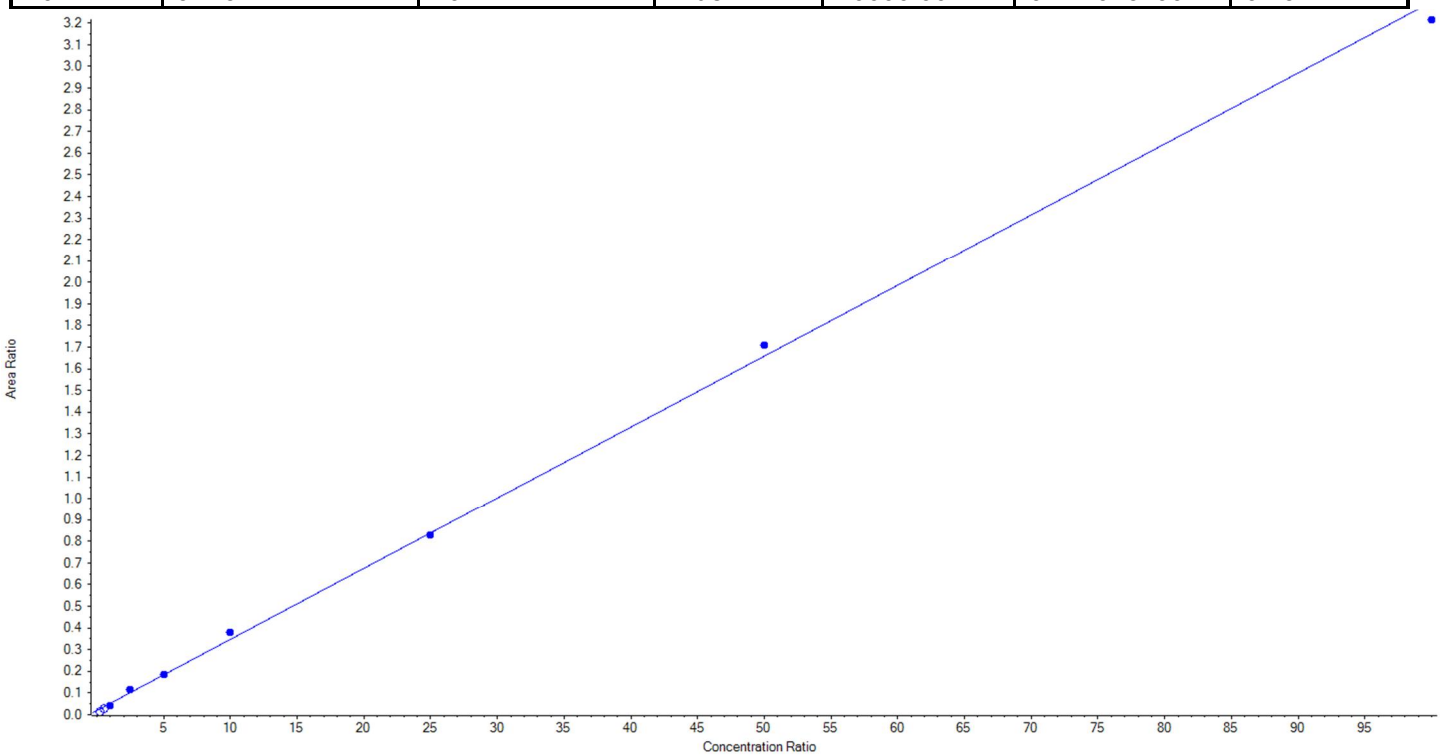
Analyte Name	PFUnA_2	**Data File**	06252018_5-371.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.03278 x + 0.01985 (r = 0.99876) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	< 0	N/A
3	JX68	L2	False	50.00	25.569843	51.1
4	JX69	L3	True	100.00	70.257455	70.3
5	JX70	L4	True	250.00	299.570771	119.8
6	JX71	L5	True	500.00	500.697313	100.1
7	JX72	L6	True	1000.00	1103.433343	110.3
8	JX73	L7	True	2500.00	2469.487594	98.8
9	JX74	L8	True	5000.00	5158.640024	103.2
10	JX75	L9	True	10000.00	9747.913499	97.5



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Calibration Summary Report

Created with Analyst Reporter
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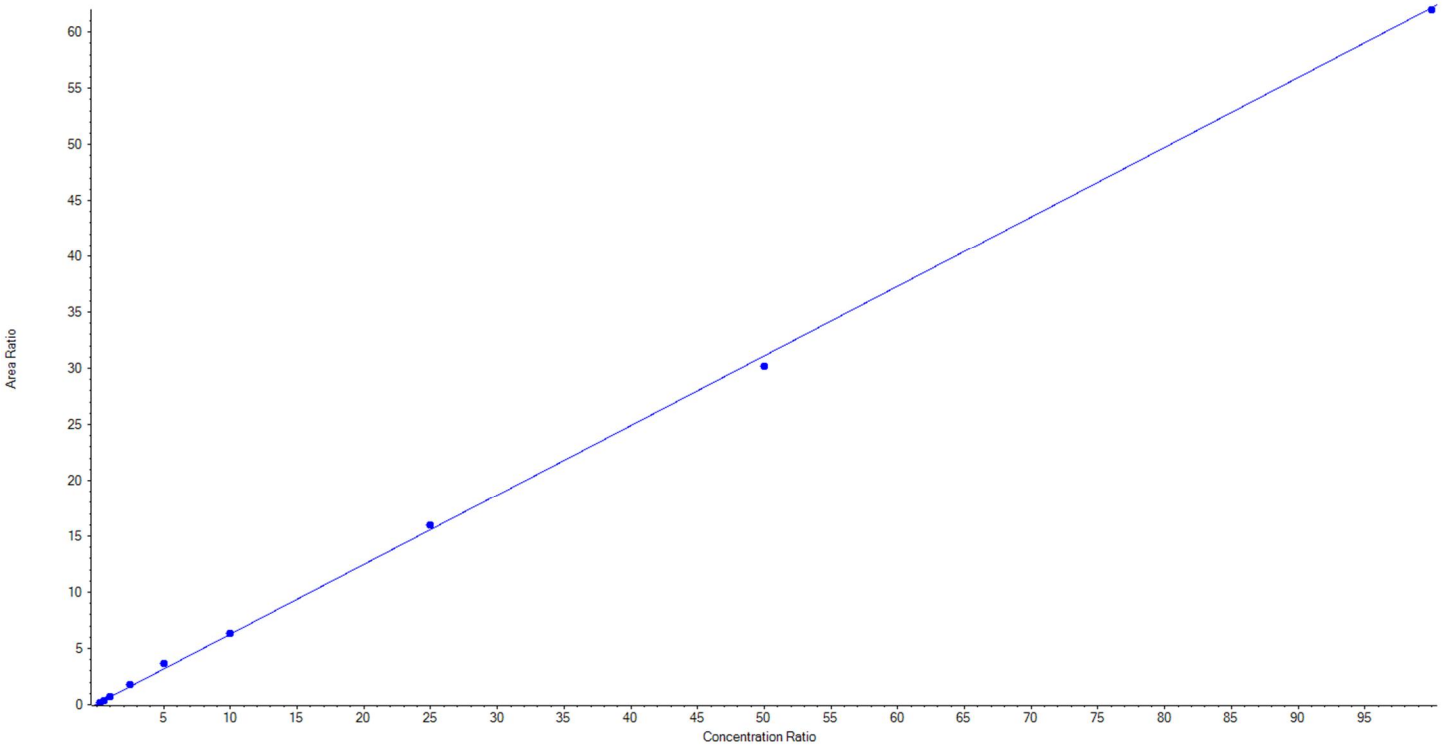
Analyte Name	PFDoA_1	**Data File**	06252018_5-371.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.62092 x + 0.06665 (r = 0.99942) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.731070	74.9
3	JX68	L2	True	50.00	47.819194	95.6
4	JX69	L3	True	100.00	102.981838	103.0
5	JX70	L4	True	250.00	277.158464	110.9
6	JX71	L5	True	500.00	573.374778	114.7
7	JX72	L6	True	1000.00	1016.155480	101.6
8	JX73	L7	True	2500.00	2561.606452	102.5
9	JX74	L8	True	5000.00	4856.561924	97.1
10	JX75	L9	True	10000.00	9970.610800	99.7



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Calibration Summary Report

Created with Analyst Reporter
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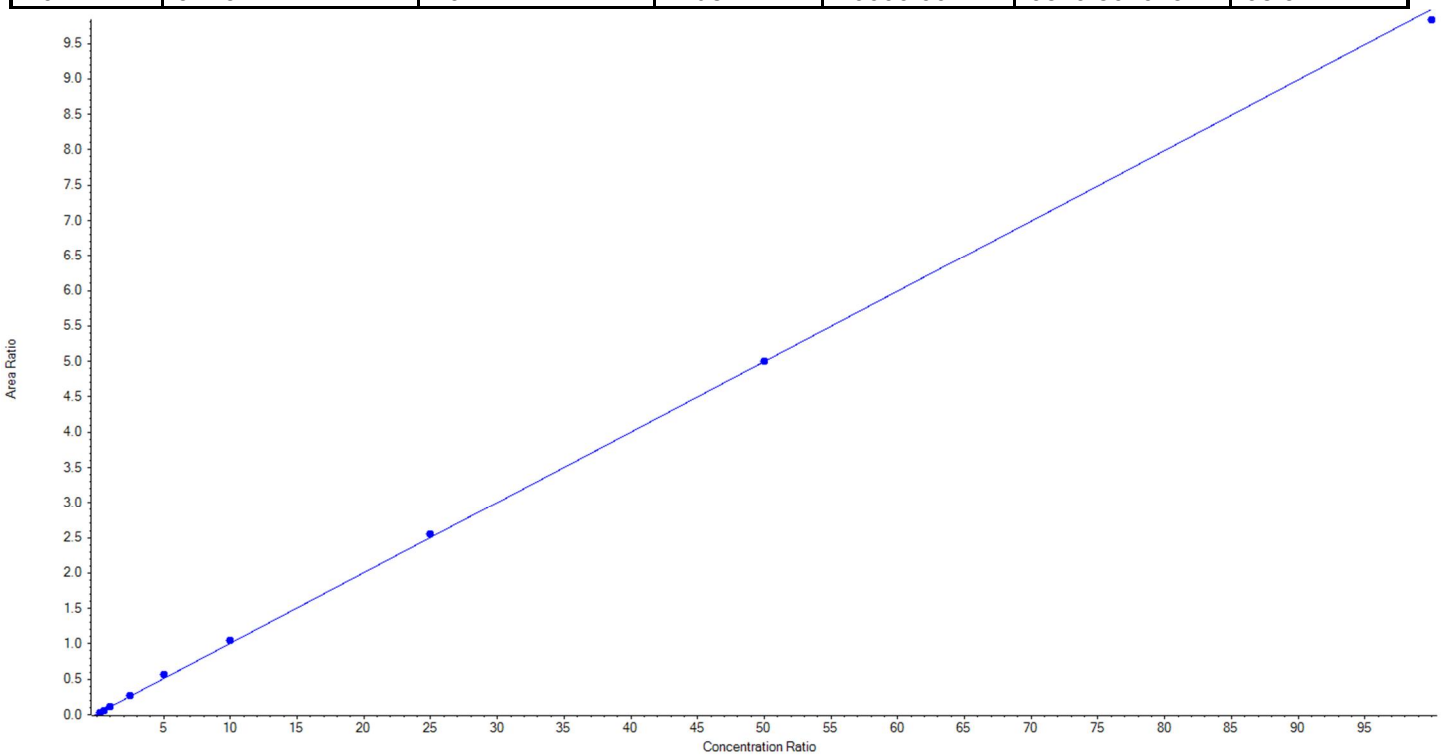
Analyte Name	PFDoA_2	**Data File**	06252018_5-371.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.09973 x + 0.01082 (r = 0.99967) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	20.603828	82.4
3	JX68	L2	True	50.00	49.166918	98.3
4	JX69	L3	True	100.00	98.860597	98.9
5	JX70	L4	True	250.00	262.630095	105.1
6	JX71	L5	True	500.00	555.711859	111.1
7	JX72	L6	True	1000.00	1035.902153	103.6
8	JX73	L7	True	2500.00	2553.060598	102.1
9	JX74	L8	True	5000.00	4999.256910	100.0
10	JX75	L9	True	10000.00	9849.807043	98.5



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Calibration Summary Report

Created with Analyst Reporter
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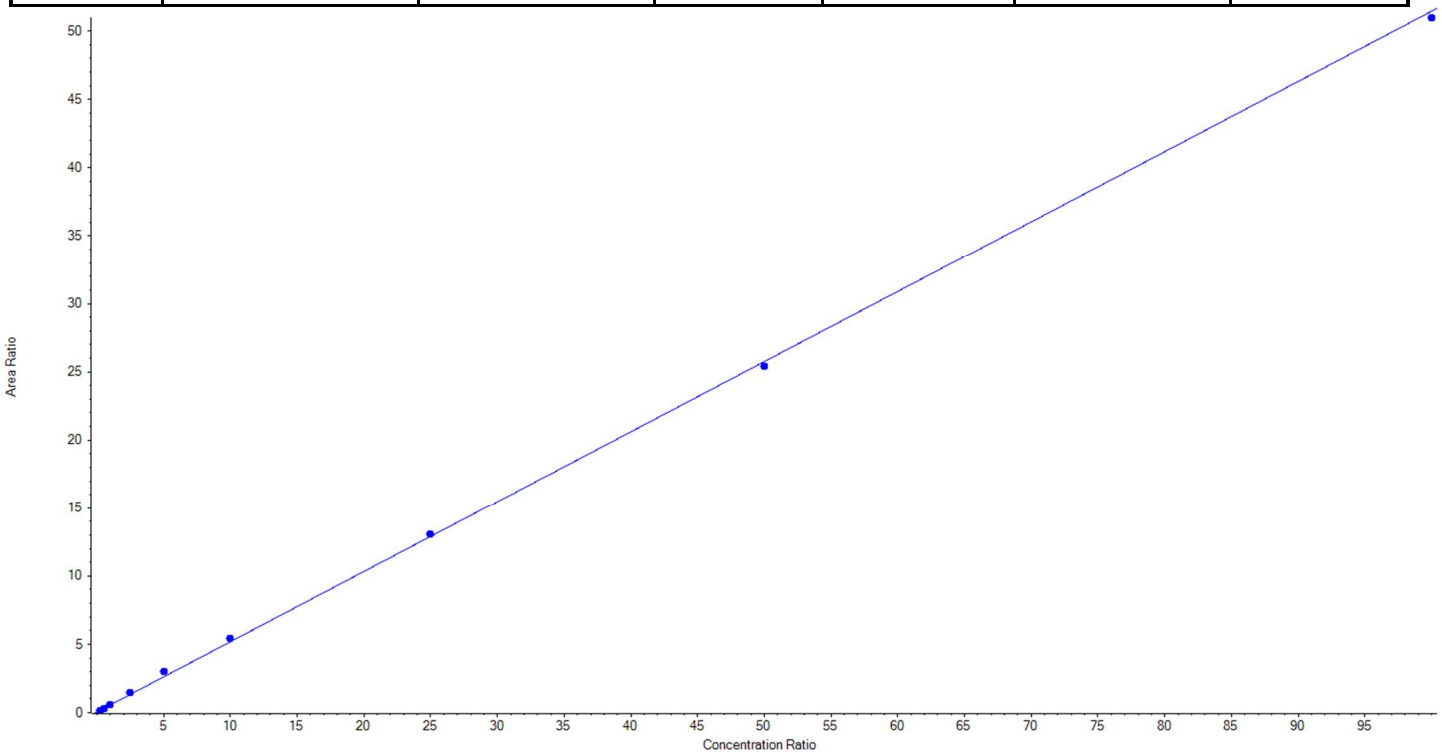
Analyte Name	PFTrDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.51402 x + 0.05199 (r = 0.99946) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	21.244818	85.0
3	JX68	L2	True	50.00	43.984299	88.0
4	JX69	L3	True	100.00	100.101285	100.1
5	JX70	L4	True	250.00	268.672318	107.5
6	JX71	L5	True	500.00	581.148596	116.2
7	JX72	L6	True	1000.00	1043.469036	104.4
8	JX73	L7	True	2500.00	2531.653493	101.3
9	JX74	L8	True	5000.00	4929.189379	98.6
10	JX75	L9	True	10000.00	9905.536776	99.1



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Calibration Summary Report

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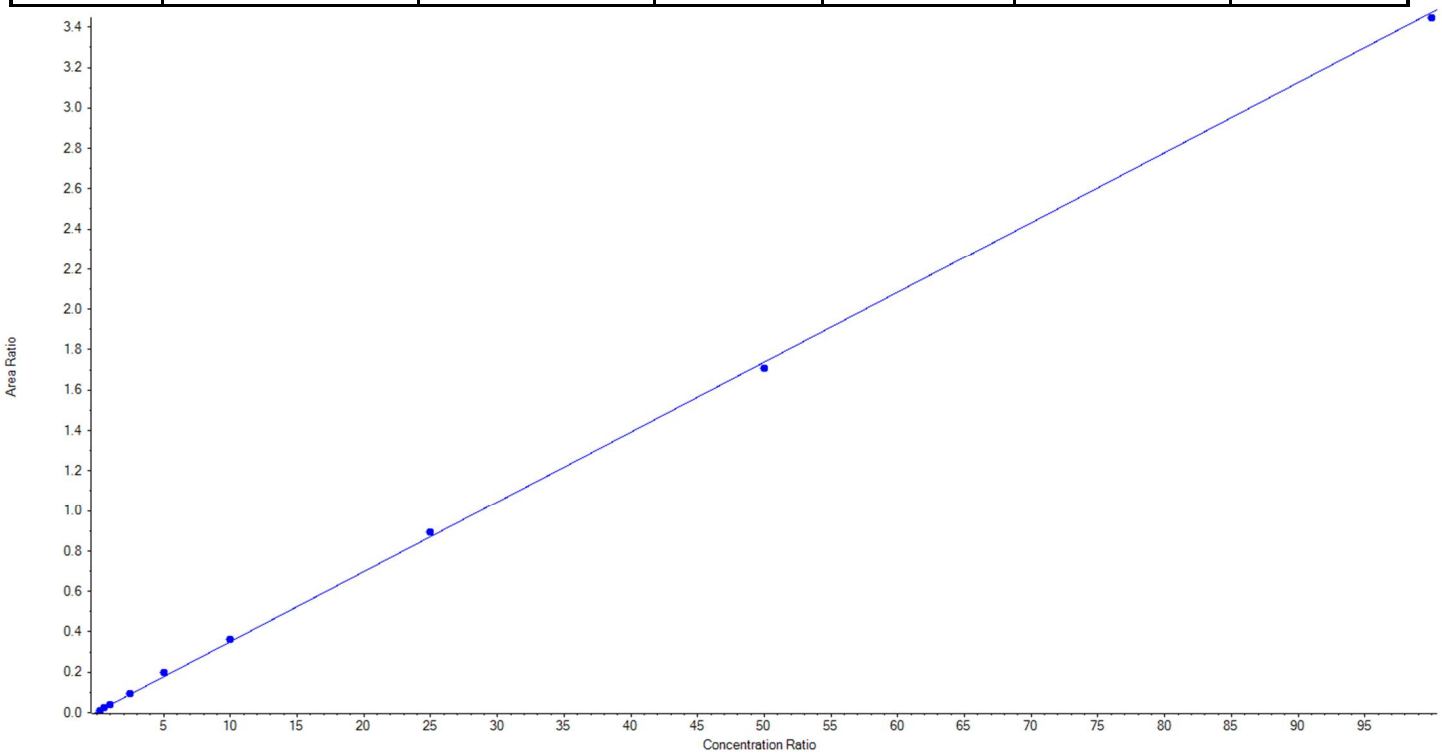
Analyte Name	PFTrDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.03468 x + 0.00436 (r = 0.99956) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	17.673504	70.7
3	JX68	L2	True	50.00	57.354613	114.7
4	JX69	L3	True	100.00	96.213165	96.2
5	JX70	L4	True	250.00	256.853828	102.7
6	JX71	L5	True	500.00	557.870213	111.6
7	JX72	L6	True	1000.00	1038.781670	103.9
8	JX73	L7	True	2500.00	2570.884235	102.8
9	JX74	L8	True	5000.00	4906.079605	98.1
10	JX75	L9	True	10000.00	9923.289167	99.2



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Calibration Summary Report

Created with Analyst Reporter
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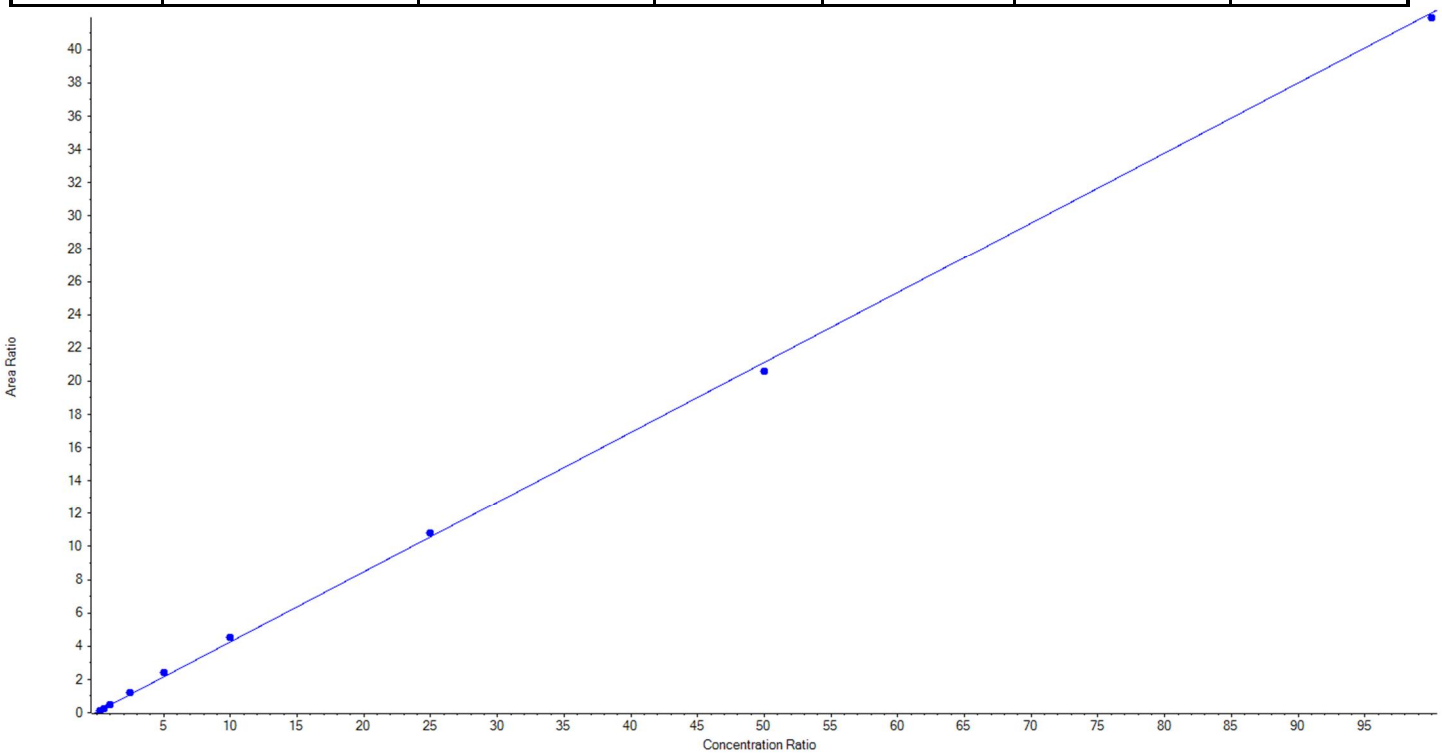
Analyte Name	PFTeDA_1	**Data File**	06252018_5-371.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.42170 x + 0.04308 (r = 0.99948) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	19.470091	77.9
3	JX68	L2	True	50.00	48.535619	97.1
4	JX69	L3	True	100.00	98.698359	98.7
5	JX70	L4	True	250.00	273.044662	109.2
6	JX71	L5	True	500.00	559.263909	111.9
7	JX72	L6	True	1000.00	1060.622970	106.1
8	JX73	L7	True	2500.00	2560.163872	102.4
9	JX74	L8	True	5000.00	4875.853328	97.5
10	JX75	L9	True	10000.00	9929.347190	99.3



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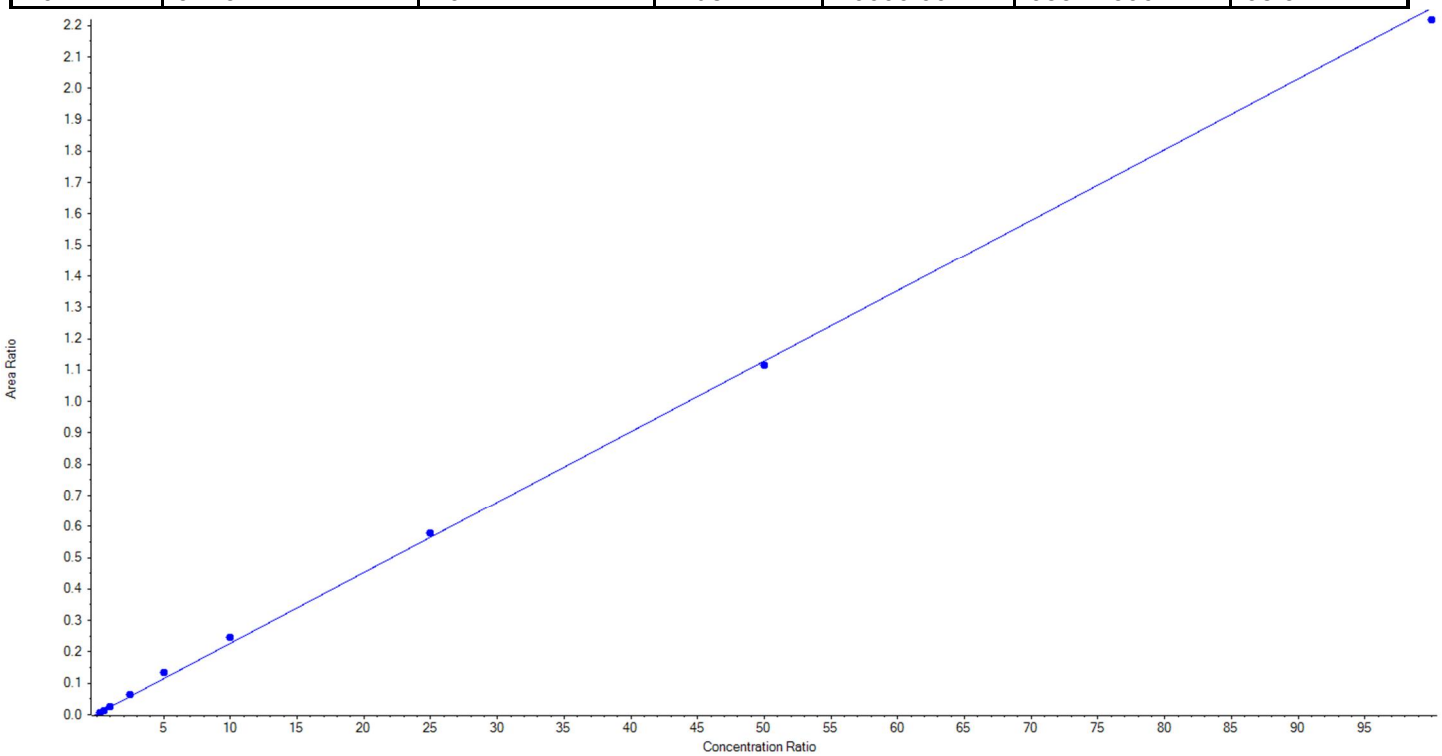
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/06/2018 1:24:40 PM

Analyte Name	PFTeDA_2	**Data File**	06252018_5-371.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0392_DW
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.02254 x + 0.00202 (r = 0.99919) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	17.926807	71.7
3	JX68	L2	True	50.00	48.266278	96.5
4	JX69	L3	True	100.00	99.954762	100.0
5	JX70	L4	True	250.00	267.694654	107.1
6	JX71	L5	True	500.00	588.228040	117.7
7	JX72	L6	True	1000.00	1078.884415	107.9
8	JX73	L7	True	2500.00	2552.861984	102.1
9	JX74	L8	True	5000.00	4936.723449	98.7
10	JX75	L9	True	10000.00	9834.459611	98.3



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Calibration Summary Report

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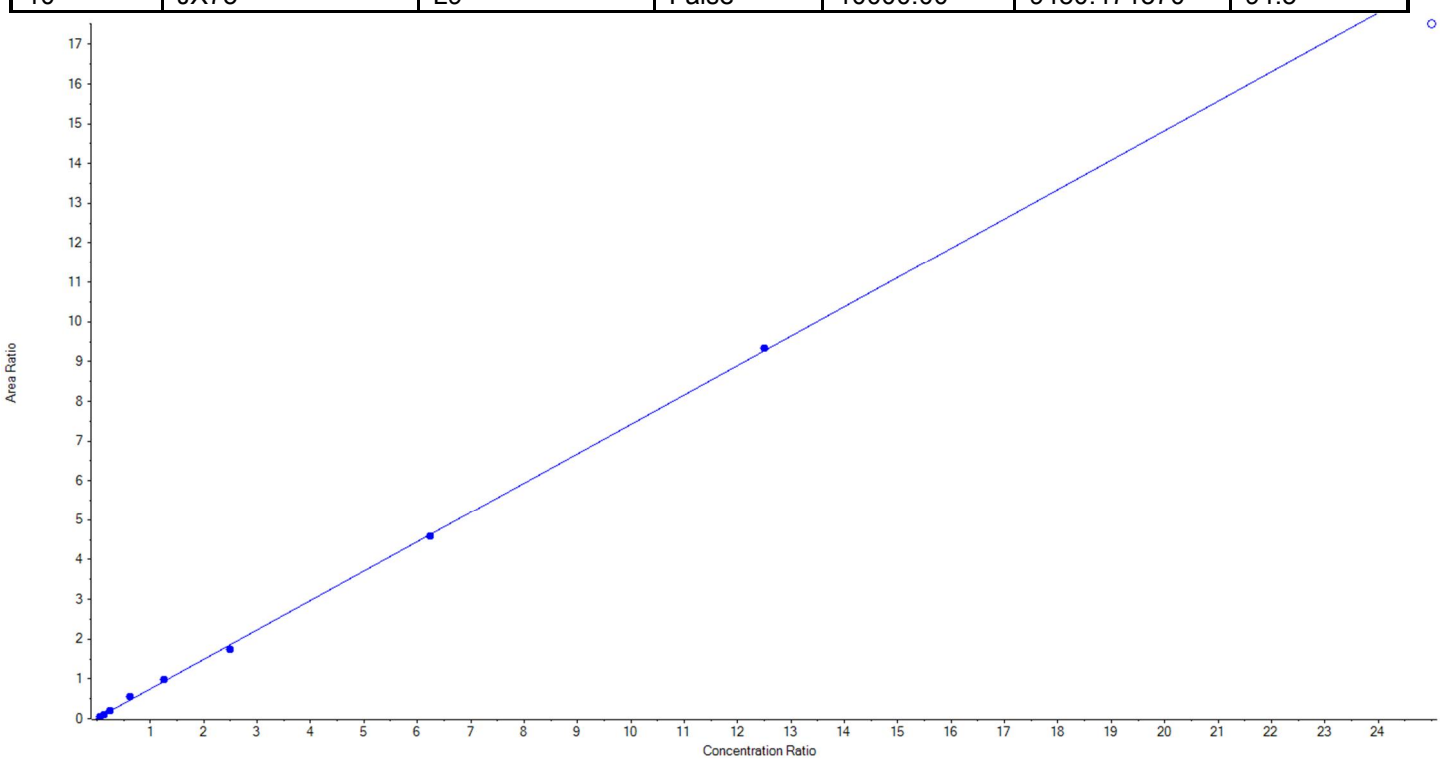
Analyte Name	NMeFOSAA_1	**Data File**	06252018_5-371.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.74089 x + 0.00821 (r = 0.99912) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	18.085431	72.3
3	JX68	L2	True	50.00	53.174009	106.4
4	JX69	L3	True	100.00	108.624579	108.6
5	JX70	L4	True	250.00	289.199456	115.7
6	JX71	L5	True	500.00	521.787284	104.4
7	JX72	L6	True	1000.00	931.699689	93.2
8	JX73	L7	True	2500.00	2471.493884	98.9
9	JX74	L8	True	5000.00	5030.935668	100.6
10	JX75	L9	False	10000.00	9450.471370	94.5



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Calibration Summary Report

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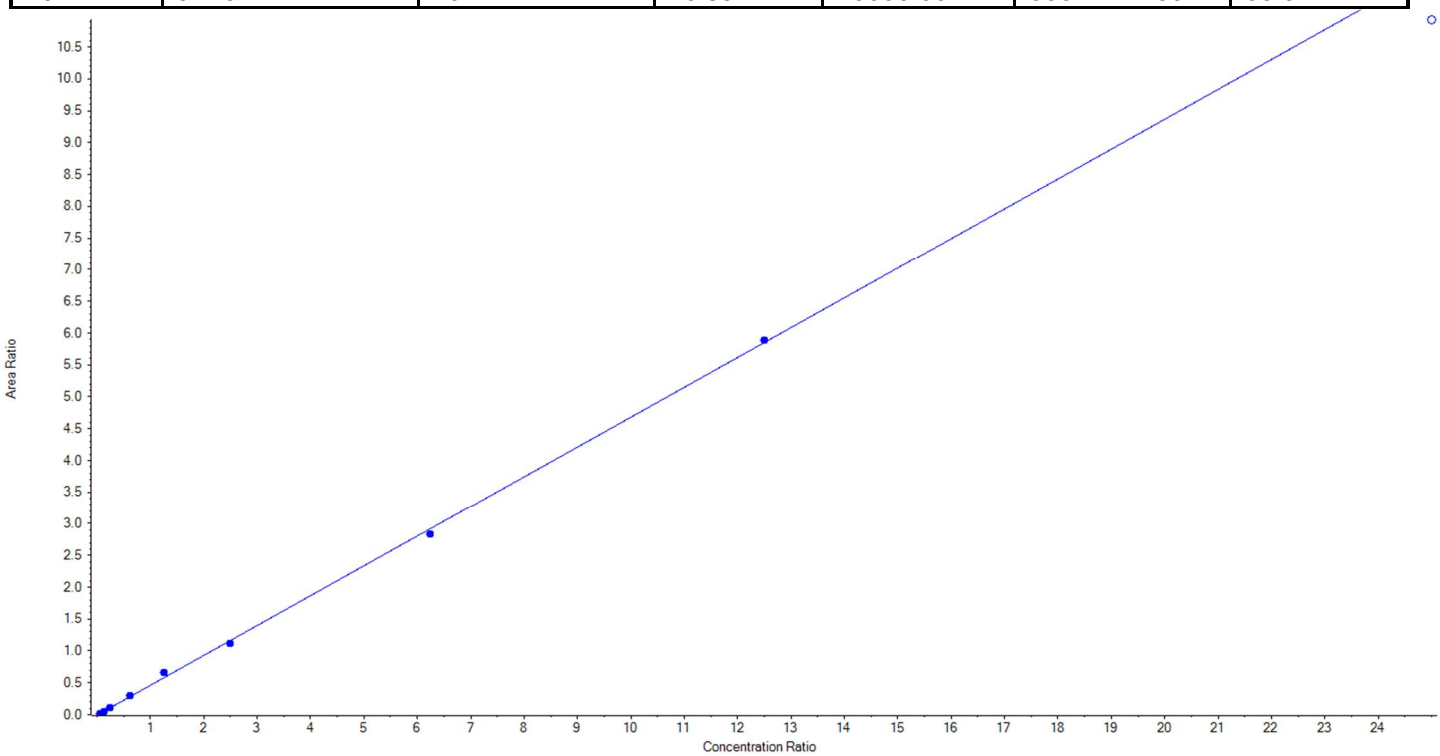
Analyte Name	NMeFOSAA_2	**Data File**	06252018_5-371.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.46874 x + -0.00848 (r = 0.99905) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	22.560963	90.2
3	JX68	L2	True	50.00	45.110155	90.2
4	JX69	L3	True	100.00	105.366291	105.4
5	JX70	L4	True	250.00	268.284285	107.3
6	JX71	L5	True	500.00	568.429090	113.7
7	JX72	L6	True	1000.00	954.871996	95.5
8	JX73	L7	True	2500.00	2423.763413	97.0
9	JX74	L8	True	5000.00	5036.613806	100.7
10	JX75	L9	False	10000.00	9331.242739	93.3



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Calibration Summary Report

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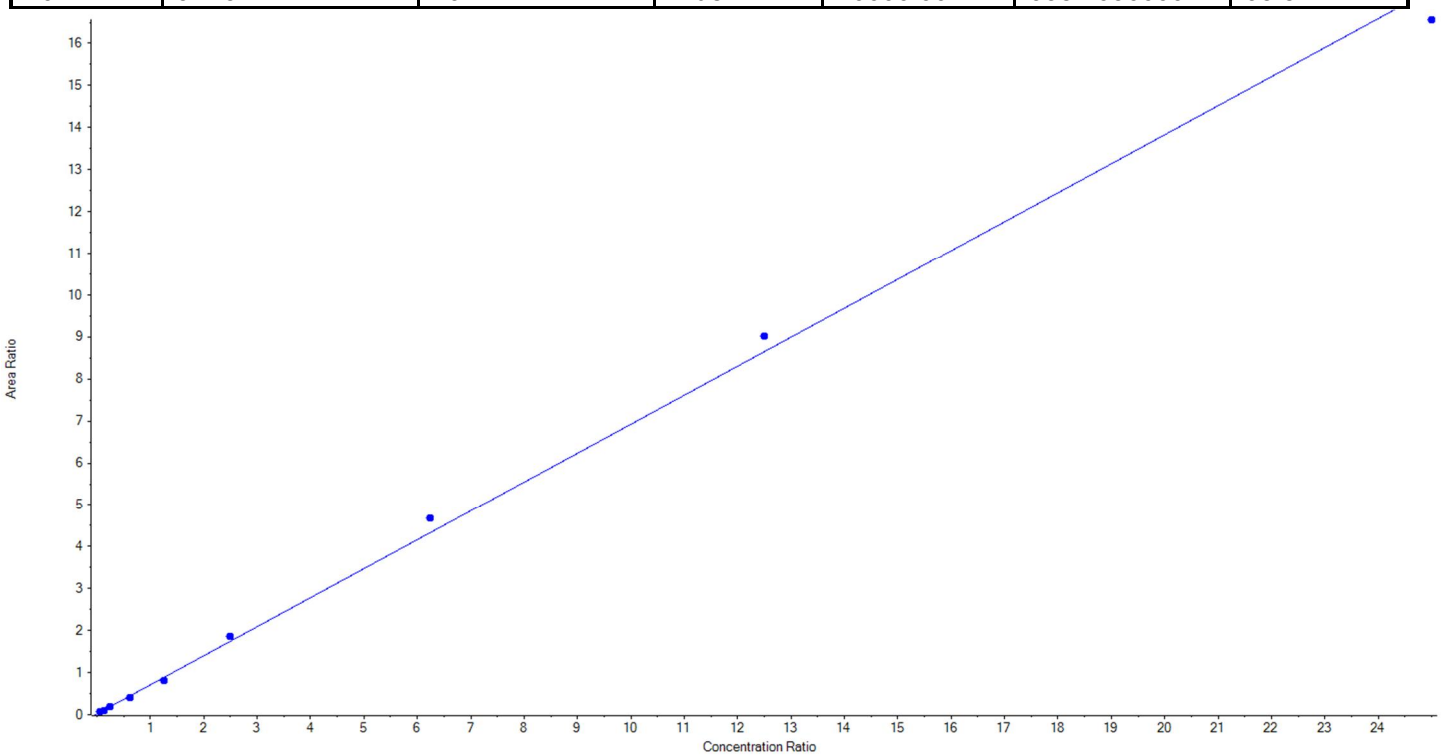
Analyte Name	NEtFOSAA_1	**Data File**	06252018_5-371.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.69046 x + 0.01938 (r = 0.99850) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	True	25.00	29.137375	116.6
3	JX68	L2	True	50.00	42.544115	85.1
4	JX69	L3	True	100.00	102.925433	102.9
5	JX70	L4	True	250.00	220.439748	88.2
6	JX71	L5	True	500.00	463.522155	92.7
7	JX72	L6	True	1000.00	1063.269684	106.3
8	JX73	L7	True	2500.00	2699.633799	108.0
9	JX74	L8	True	5000.00	5220.891030	104.4
10	JX75	L9	True	10000.00	9582.636660	95.8



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Calibration Summary Report

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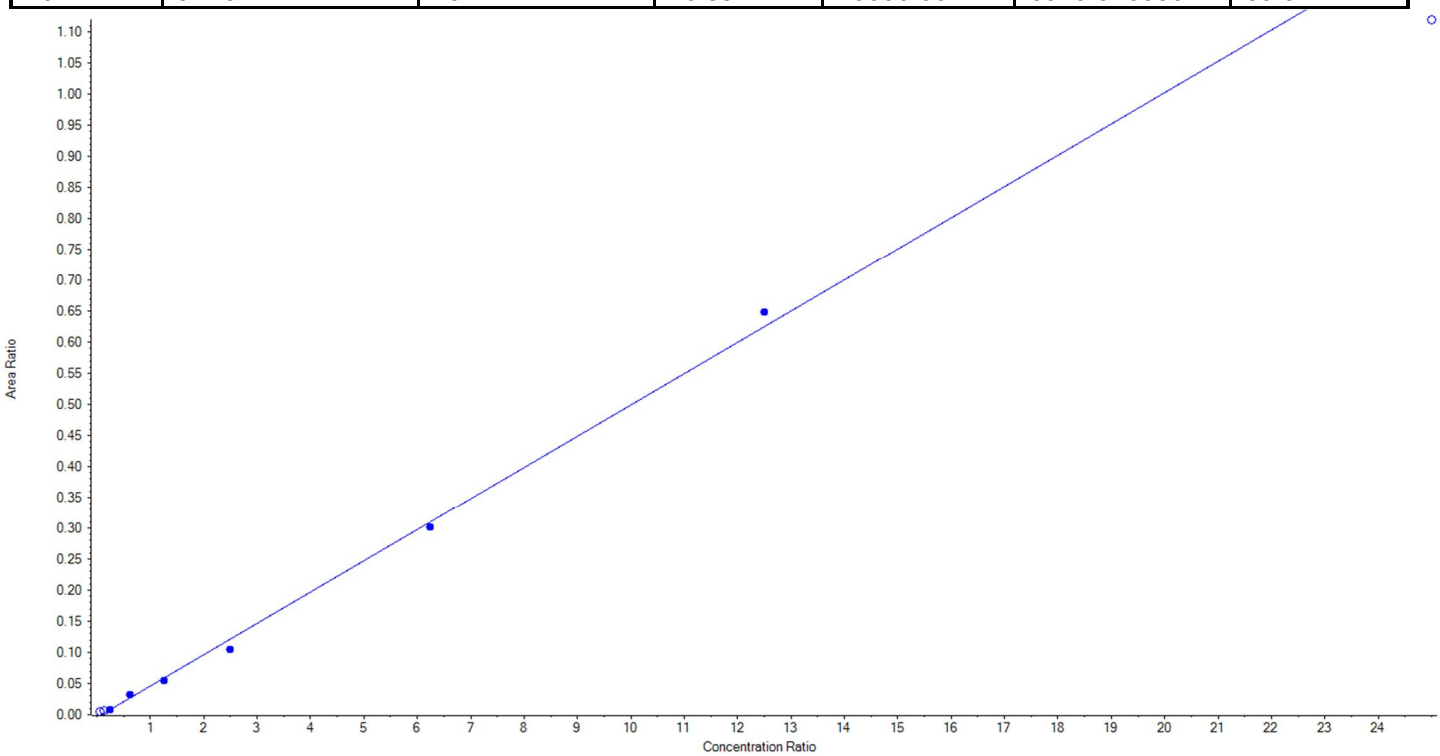
Analyte Name	NEtFOSAA_2	**Data File**	06252018_5-371.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0392_DW
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	6/27/2018 8:56:44 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05035 x + -0.00432 (r = 0.99783) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JX67	L1	False	25.00	76.800150	307.2
3	JX68	L2	False	50.00	88.632373	177.3
4	JX69	L3	True	100.00	104.202597	104.2
5	JX70	L4	True	250.00	285.076246	114.0
6	JX71	L5	True	500.00	466.286361	93.3
7	JX72	L6	True	1000.00	873.862370	87.4
8	JX73	L7	True	2500.00	2435.597359	97.4
9	JX74	L8	True	5000.00	5184.975067	103.7
10	JX75	L9	False	10000.00	8929.526880	89.3



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Summary Ion Ratio Report

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Sample Name	JX67	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:05:43	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.439	0.341	ü
PFHxA_1	313.0 / 269.0	1.79	PFHxA			
PFHxA_2	313.0 / 119.0	1.79	PFHxA	0.078	0.072	ü
PFHpA_1	363.0 / 319.0	2.15	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.037	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.343	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.082	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.90	PFNA	0.406	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.89	PFOS	0.188	0.205	ü
PFDA_1	513.0 / 469.0	3.25	PFDA			
PFDA_2	513.0 / 219.0	3.25	PFDA	0.079	0.041	
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.56	PFUnA	0.059	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.85	PFDoA	0.171	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.048	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.431	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.56	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.077	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.78				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX68	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:14:41	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.403	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.076	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.025	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.281	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.078	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.284	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.89	PFOS	0.169	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.048	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.070	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.165	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.087	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.052	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.416	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.56	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.074	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX69	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:23:38	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.346	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.064	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.026	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.294	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.069	0.074	ü
PFNA_1	463.0 / 419.0	2.90	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.304	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.90	PFOS	0.241	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.25	PFDA	0.038	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.055	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.85	PFDoA	0.155	0.161	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.549	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.045	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX70	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:32:34	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.325	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.075	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.15	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.282	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.52	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.308	0.295	ü
PFOS_1	499.0 / 80.0	2.89	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.259	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.056	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.153	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.052	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.563	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.079	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX71	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:41:29	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.316	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.070	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.023	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.296	0.295	ü
PFOA_1	413.0 / 369.0	2.52	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.071	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.289	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.198	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.043	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.156	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.065	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.056	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.675	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSAA	0.066	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX72	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:50:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.314	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.16	PFHxS			
PFHxS_2	399.0 / 99.0	2.16	PFHxS	0.297	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.072	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.296	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.190	0.205	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.24	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.048	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.164	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.39	NMeFOSAA	0.640	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.057	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX73	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T09:59:20	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.302	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.022	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.291	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.292	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.195	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.043	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.069	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.31	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.618	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.065	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX74	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:08:14	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.308	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.025	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.285	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.074	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.293	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.196	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.046	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.165	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.067	0.069	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.054	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.632	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.55	NEtFOSAA	0.072	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.23		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.54		N/A	N/A	ü

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Summary Ion Ratio Report

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Sample Name	JX75	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:17:08	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.314	0.341	ü
PFHxA_1	313.0 / 269.0	1.78	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.071	0.072	ü
PFHpA_1	363.0 / 319.0	2.14	PFHpA			
PFHpA_2	363.0 / 169.0	2.14	PFHpA	0.024	0.026	ü
PFHxS_1	399.0 / 80.0	2.15	PFHxS			
PFHxS_2	399.0 / 99.0	2.15	PFHxS	0.290	0.295	ü
PFOA_1	413.0 / 369.0	2.51	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.075	0.074	ü
PFNA_1	463.0 / 419.0	2.89	PFNA			
PFNA_2	463.0 / 219.0	2.89	PFNA	0.291	0.295	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.88	PFOS	0.190	0.205	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.55	PFUnA	0.046	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.83	PFDoA	0.159	0.161	ü
PFTrDA_1	663.0 / 619.0	4.09	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.068	0.069	ü
PFTeDA_1	713.0 / 669.0	4.30	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.053	0.053	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.624	0.565	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.54	NEtFOSAA	0.068	0.064	ü
13C2-PFHxA	315.0 / 270.0	1.77				
13C2-PFDA	515.0 / 470.0	3.22		N/A	N/A	ü
d5-EtFOSAA	589.0 / 419.0	3.53		N/A	N/A	ü

	Drinking Water Calibration Curve Concentrations (ng/L)								
	JX67	**JX68**	**JX69**	**JX70**	**JX71**	**JX72**	**JX73**	**JX74**	**JX75**
PFHxA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFHpA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFOA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFNA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFUnA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDoA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTrDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTeDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NMeFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NEtFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFBS	22.15	44.30	88.60	221.50	443.00	885.00	2,212.50	4,425.00	8,850.00
PFHxS (branched)	22.80	45.60	91.20	228.00	456.00	912.00	2,280.00	4,560.00	9,120.00
PFOS (branched)	23.15	46.30	92.60	231.50	463.00	925.60	2,314.00	4,628.00	9,256.00
	Surrogates								
13C2-PFHxA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00
13C2-PFDA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00
d5-EtFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	800.00
	Internal Standards								
13C2-PFOA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C4-PFOS	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00
d3-MeFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00

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QC Summary Report

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Sample Name	JV66 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T10:26:04	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	805.276200	885.00	90.99
PFBS_2	298.9 / 99.0	1.49	795.986368	885.00	89.94
PFHxA_1	313.0 / 269.0	1.77	996.404291	1000.00	99.64
PFHxA_2	313.0 / 119.0	1.77	997.489769	1000.00	99.75
PFHpA_1	363.0 / 319.0	2.14	1031.124835	1000.00	103.11
PFHpA_2	363.0 / 169.0	2.14	1161.534315	1000.00	116.15
PFHxS_1	399.0 / 80.0	2.15	919.917034	912.00	100.87
PFHxS_2	399.0 / 99.0	2.15	869.821102	912.00	95.38
PFOA_1	413.0 / 369.0	2.51	1050.976678	1000.00	105.10
PFOA_2	413.0 / 169.0	2.51	1048.582291	1000.00	104.86
PFNA_1	463.0 / 419.0	2.88	1000.643194	1000.00	100.06
PFNA_2	463.0 / 219.0	2.88	1035.420136	1000.00	103.54
PFOS_1	499.0 / 80.0	2.88	865.237465	925.60	93.48
PFOS_2	499.0 / 99.0	2.88	972.796760	925.60	105.10
PFDA_1	513.0 / 469.0	3.23	1068.328726	1000.00	106.83
PFDA_2	513.0 / 219.0	3.23	1022.246333	1000.00	102.22
PFUnA_1	563.0 / 519.0	3.55	1036.138808	1000.00	103.61
PFUnA_2	563.0 / 269.0	3.55	1023.503647	1000.00	102.35
PFDoA_1	613.0 / 569.0	3.83	1033.267977	1000.00	103.33
PFDoA_2	613.0 / 319.0	3.83	1036.887732	1000.00	103.69
PFTrDA_1	663.0 / 619.0	4.08	1007.914002	1000.00	100.79
PFTrDA_2	663.0 / 169.0	4.08	1068.145164	1000.00	106.81
PFTeDA_1	713.0 / 669.0	4.30	1002.952208	1000.00	100.30
PFTeDA_2	713.0 / 169.0	4.30	990.767060	1000.00	99.08
NMeFOSAA_1	570.0 / 419.0	3.38	1291.690021	1000.00	129.17
NMeFOSAA_2	570.0 / 512.0	3.38	1107.023361	1000.00	110.70
NEtFOSAA_1	584.0 / 419.0	3.54	1252.908845	1000.00	125.29
NEtFOSAA_2	584.0 / 483.0	3.54	1298.760705	1000.00	129.88
13C2-PFHxA	315.0 / 270.0	1.76	102.268470	100.00	102.27
13C2-PFDA	515.0 / 470.0	3.22	104.026718	100.00	104.03
d5-EtFOSAA	589.0 / 419.0	3.53	462.843644	400.00	115.71

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QC Summary Report

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Sample Name	JX72 CCV	**Injection Vial**	31
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T20:51:24	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	866.166863	885.00	97.87
PFBS_2	298.9 / 99.0	1.49	845.929656	885.00	95.59
PFHxA_1	313.0 / 269.0	1.77	1110.146700	1000.00	111.01
PFHxA_2	313.0 / 119.0	1.77	1114.367468	1000.00	111.44
PFHpA_1	363.0 / 319.0	2.13	1084.675205	1000.00	108.47
PFHpA_2	363.0 / 169.0	2.13	1081.069510	1000.00	108.11
PFHxS_1	399.0 / 80.0	2.15	866.313670	912.00	94.99
PFHxS_2	399.0 / 99.0	2.15	854.899584	912.00	93.74
PFOA_1	413.0 / 369.0	2.50	1121.579020	1000.00	112.16
PFOA_2	413.0 / 169.0	2.50	1136.830502	1000.00	113.68
PFNA_1	463.0 / 419.0	2.88	1114.289558	1000.00	111.43
PFNA_2	463.0 / 219.0	2.88	1056.803545	1000.00	105.68
PFOS_1	499.0 / 80.0	2.87	939.943210	925.60	101.55
PFOS_2	499.0 / 99.0	2.87	905.590378	925.60	97.84
PFDA_1	513.0 / 469.0	3.22	1177.384628	1000.00	117.74
PFDA_2	513.0 / 219.0	3.22	1216.292183	1000.00	121.63
PFUnA_1	563.0 / 519.0	3.54	1158.866697	1000.00	115.89
PFUnA_2	563.0 / 269.0	3.53	1038.065993	1000.00	103.81
PFDoA_1	613.0 / 569.0	3.82	1145.412871	1000.00	114.54
PFDoA_2	613.0 / 319.0	3.82	1080.836127	1000.00	108.08
PFTrDA_1	663.0 / 619.0	4.07	1124.100491	1000.00	112.41
PFTrDA_2	663.0 / 169.0	4.07	1090.798917	1000.00	109.08
PFTeDA_1	713.0 / 669.0	4.29	1113.837517	1000.00	111.38
PFTeDA_2	713.0 / 169.0	4.28	1179.494860	1000.00	117.95
NMeFOSAA_1	570.0 / 419.0	3.37	1155.620735	1000.00	115.56
NMeFOSAA_2	570.0 / 512.0	3.37	885.062762	1000.00	88.51
NEtFOSAA_1	584.0 / 419.0	3.53	978.588302	1000.00	97.86
NEtFOSAA_2	584.0 / 483.0	3.53	1072.935513	1000.00	107.29
13C2-PFHxA	315.0 / 270.0	1.76	102.897180	100.00	102.90
13C2-PFDA	515.0 / 470.0	3.21	110.292007	100.00	110.29
d5-EtFOSAA	589.0 / 419.0	3.52	411.937240	400.00	102.98

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QC Summary Report

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Sample Name	JX73 CCV	**Injection Vial**	41
Sample ID		**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T22:29:51	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	1987.104482	2212.50	89.81
PFBS_2	298.9 / 99.0	1.49	1986.528803	2212.50	89.79
PFHxA_1	313.0 / 269.0	1.77	2500.520078	2500.00	100.02
PFHxA_2	313.0 / 119.0	1.77	2511.176079	2500.00	100.45
PFHpA_1	363.0 / 319.0	2.13	2561.587938	2500.00	102.46
PFHpA_2	363.0 / 169.0	2.13	2446.244001	2500.00	97.85
PFHxS_1	399.0 / 80.0	2.15	2085.070400	2280.00	91.45
PFHxS_2	399.0 / 99.0	2.15	2086.686160	2280.00	91.52
PFOA_1	413.0 / 369.0	2.50	2634.075491	2500.00	105.36
PFOA_2	413.0 / 169.0	2.50	2683.560009	2500.00	107.34
PFNA_1	463.0 / 419.0	2.87	2518.780588	2500.00	100.75
PFNA_2	463.0 / 219.0	2.87	2575.921082	2500.00	103.04
PFOS_1	499.0 / 80.0	2.87	2287.448690	2314.00	98.85
PFOS_2	499.0 / 99.0	2.87	2278.767955	2314.00	98.48
PFDA_1	513.0 / 469.0	3.22	2810.068457	2500.00	112.40
PFDA_2	513.0 / 219.0	3.22	2735.099313	2500.00	109.40
PFUnA_1	563.0 / 519.0	3.53	2761.223316	2500.00	110.45
PFUnA_2	563.0 / 269.0	3.53	2703.959603	2500.00	108.16
PFDoA_1	613.0 / 569.0	3.82	2696.755918	2500.00	107.87
PFDoA_2	613.0 / 319.0	3.82	2681.823361	2500.00	107.27
PFTrDA_1	663.0 / 619.0	4.07	2613.711884	2500.00	104.55
PFTrDA_2	663.0 / 169.0	4.07	2563.005769	2500.00	102.52
PFTeDA_1	713.0 / 669.0	4.28	2731.936668	2500.00	109.28
PFTeDA_2	713.0 / 169.0	4.28	2755.246976	2500.00	110.21
NMeFOSAA_1	570.0 / 419.0	3.37	2720.879044	2500.00	108.84
NMeFOSAA_2	570.0 / 512.0	3.36	2628.484657	2500.00	105.14
NEtFOSAA_1	584.0 / 419.0	3.52	2806.356825	2500.00	112.25
NEtFOSAA_2	584.0 / 483.0	3.52	2035.702806	2500.00	81.43
13C2-PFHxA	315.0 / 270.0	1.76	105.333931	100.00	105.33
13C2-PFDA	515.0 / 470.0	3.21	113.722041	100.00	113.72
d5-EtFOSAA	589.0 / 419.0	3.52	448.447996	400.00	112.11

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QC Summary Report

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Printed: 29/06/2018 1:28:10 PM

Sample Name	JX71 CCV	**Injection Vial**	51
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-28T00:08:12	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0392_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.49	403.820637	443.00	91.16
PFBS_2	298.9 / 99.0	1.49	396.315350	443.00	89.46
PFHxA_1	313.0 / 269.0	1.77	472.768443	500.00	94.55
PFHxA_2	313.0 / 119.0	1.77	453.875187	500.00	90.78
PFHpA_1	363.0 / 319.0	2.13	490.217908	500.00	98.04
PFHpA_2	363.0 / 169.0	2.13	484.699709	500.00	96.94
PFHxS_1	399.0 / 80.0	2.14	429.156931	456.00	94.11
PFHxS_2	399.0 / 99.0	2.14	418.584466	456.00	91.79
PFOA_1	413.0 / 369.0	2.50	549.680457	500.00	109.94
PFOA_2	413.0 / 169.0	2.50	534.782583	500.00	106.96
PFNA_1	463.0 / 419.0	2.87	560.325417	500.00	112.07
PFNA_2	463.0 / 219.0	2.87	516.070101	500.00	103.21
PFOS_1	499.0 / 80.0	2.87	516.162709	463.00	111.48
PFOS_2	499.0 / 99.0	2.87	517.783110	463.00	111.83
PFDA_1	513.0 / 469.0	3.22	570.087391	500.00	114.02
PFDA_2	513.0 / 219.0	3.22	513.815927	500.00	102.76
PFUnA_1	563.0 / 519.0	3.53	563.935685	500.00	112.79
PFUnA_2	563.0 / 269.0	3.53	581.104836	500.00	116.22
PFDoA_1	613.0 / 569.0	3.82	555.617224	500.00	111.12
PFDoA_2	613.0 / 319.0	3.82	544.527339	500.00	108.91
PFTrDA_1	663.0 / 619.0	4.07	534.530683	500.00	106.91
PFTrDA_2	663.0 / 169.0	4.07	536.931422	500.00	107.39
PFTeDA_1	713.0 / 669.0	4.29	550.872725	500.00	110.17
PFTeDA_2	713.0 / 169.0	4.29	543.665961	500.00	108.73
NMeFOSAA_1	570.0 / 419.0	3.36	495.893406	500.00	99.18
NMeFOSAA_2	570.0 / 512.0	3.36	531.463404	500.00	106.29
NEtFOSAA_1	584.0 / 419.0	3.53	607.561759	500.00	121.51
NEtFOSAA_2	584.0 / 483.0	3.54	479.133448	500.00	95.83
13C2-PFHxA	315.0 / 270.0	1.76	92.492481	100.00	92.49
13C2-PFDA	515.0 / 470.0	3.21	96.317278	100.00	96.32
d5-EtFOSAA	589.0 / 419.0	3.52	430.698550	400.00	107.67

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Summary Quant Report

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Printed: 03/07/2018 12:32:17 PM

Sample Name	J6737-FS(0)	**Injection Vial**	34
Sample ID	WGNA-061118-RW-3073	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T21:27:15	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.49	9510530.11	29950.757156	1701.6	false
PFBS_2	298.9 / 99.0	1.49	2933343.43	29768.156994	2151.5	false
PFHxA_1	313.0 / 269.0	1.77	981258.64	3311.242140	156.0	false
PFHxA_2	313.0 / 119.0	1.77	67359.22	3199.970464	162.6	false
PFHpA_1	363.0 / 319.0	2.13	718474.81	2543.404770	225.6	false
PFHpA_2	363.0 / 169.0	2.12	18419.67	2732.384758	205.0	false
PFHxS_1	399.0 / 80.0	2.15	1362387.35	3877.830414	449.5	false
PFHxS_2	399.0 / 99.0	2.15	383590.11	3777.656064	696.8	false
PFOA_1	413.0 / 369.0	2.50	1373534.65	3790.290741	282.5	false
PFOA_2	413.0 / 169.0	2.50	106607.08	3941.165332	315.9	true
PFNA_1	463.0 / 419.0	2.87	231790.15	713.238509	196.4	false
PFNA_2	463.0 / 219.0	2.87	71097.24	746.603394	280.4	false
PFOS_1	499.0 / 80.0	2.87	3904665.60	8037.306756	282.6	true
PFOS_2	499.0 / 99.0	2.87	655504.93	7000.126328	450.9	true
PFDA_1	513.0 / 469.0	3.22	39359.31	93.764164	134.4	false
PFDA_2	513.0 / 219.0	3.22	2194.76	134.934243	69.0	false
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	3.81	1749.56	< 0	36.7	false
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	4.06	1320.32	< 0	52.2	false
PFTrDA_2	663.0 / 169.0	4.05	87.83	< 0	13.6	false
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
13C2-PFHxA	315.0 / 270.0	1.76	43608.76	120.470518	593.7	false
13C2-PFDA	515.0 / 470.0	3.21	45375.75	103.518341	828.0	false
d5-EtFOSAA	589.0 / 419.0	3.52	12173.89	334.427745	173.4	false

Sample Calculation
PFOA 14.04 ng/L
y= 0.76657 x + 0.23682

((1373534.65 / 46890.96) - 0.23682 / 0.76657) * 100 * 0.001 / 0.270 = 14.038 ng/L

LCS PFOA 120% 17.94 / 15 * 100 = 119.6%

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Summary Internal Standard Report

Created with Analyst Reporter
Printed: 03/07/2018 7:45:43 AM

Sample Name	J6737-FS(0)	**Injection Vial**	34
Sample ID	WGNA-061118-RW-3073	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-06-27T21:27:15	**Data File**	06252018_5-371.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0372_DW
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.49	13C4-PFOS	503.0 / 80.0	148519.20	287.00
PFBS_2	298.9 / 99.0	1.49	13C4-PFOS	503.0 / 80.0	148519.20	287.00
PFHxA_1	313.0 / 269.0	1.77	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFHxA_2	313.0 / 119.0	1.77	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFHpA_1	363.0 / 319.0	2.13	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFHpA_2	363.0 / 169.0	2.12	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFHxS_1	399.0 / 80.0	2.15	13C4-PFOS	503.0 / 80.0	148519.20	287.00
PFHxS_2	399.0 / 99.0	2.15	13C4-PFOS	503.0 / 80.0	148519.20	287.00
PFOA_1	413.0 / 369.0	2.50	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFOA_2	413.0 / 169.0	2.50	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFNA_1	463.0 / 419.0	2.87	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFNA_2	463.0 / 219.0	2.87	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFOS_1	499.0 / 80.0	2.87	13C4-PFOS	503.0 / 80.0	148519.20	287.00
PFOS_2	499.0 / 99.0	2.87	13C4-PFOS	503.0 / 80.0	148519.20	287.00
PFDA_1	513.0 / 469.0	3.22	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFDA_2	513.0 / 219.0	3.22	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFDoA_1	613.0 / 569.0	3.81	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFTrDA_1	663.0 / 619.0	4.06	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFTrDA_2	663.0 / 169.0	4.05	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	46890.96	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	46890.96	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14556.85	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	14556.85	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14556.85	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	14556.85	400.00
13C2-PFHxA	315.0 / 270.0	1.76	13C2-PFOA	415.0 / 370.0	46890.96	100.00
13C2-PFDA	515.0 / 470.0	3.21	13C2-PFOA	415.0 / 370.0	46890.96	100.00
d5-EtFOSAA	589.0 / 419.0	3.52	d3-MeFOSAA	573.0 / 419.0	14556.85	400.00

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	WILLOW_GROVE_NAS	18-0392							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-061218-FRB-3382	Water for QC samples	Field Reagent Blank	12-Jun-18	PFAS_QSM5.1	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	18-0392							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-061118-FRB-3073	Water for QC samples	Field Reagent Blank	11-Jun-18	PFAS_QSM5.1	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	18-0392							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-061118-FRB-0437	Water for QC samples	Field Reagent Blank	11-Jun-18	PFAS_QSM5.1	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	18-0392							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-061218-FRB-3283	Water for QC samples	Field Reagent Blank	12-Jun-18	PFAS_QSM5.1	Perfluoroalkyl Compounds