



**Off-Base Drinking Water Sample Results,
Combined Level 2 and Level 4 Laboratory Report,
Electronic Data Deliverable,
and the Sample Location Figure, SDG 320-28708-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

N62269_001152
WARMINSTER_NAWC
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-28708-1, NAS WILLOW GROVE NAWC
WARMINSTER PA**

06/23/2017
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-28708-1

Job Description: TetraT: PFAS, NAS JRB Willow Grove

For:
Tetra Tech, Inc.
234 Mall Boulevard
Suite 260
King of Prussia, PA 19406
Attention: Andy Frebowitz



Approved for release.
David R Alltucker
Project Manager I
6/23/2017 12:11 PM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
06/23/2017

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Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative
320-28708-1

Receipt

The samples were received on 6/1/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.5° C.

LCMS

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 537: The following sample: NAWC-053117-RW-106 (320-28708-1) was decanted prior to preparation due to the excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Client Sample ID: NAWC-053117-RW-106

Lab Sample ID: 320-28708-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J	40	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.9	J	30	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.2	J	9.9	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-053117-FRB-106

Lab Sample ID: 320-28708-2

No Detections.

Client Sample ID: NAWC-053117-RW-10

Lab Sample ID: 320-28708-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	31	J	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.6	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-053117-FRB-10

Lab Sample ID: 320-28708-4

No Detections.

Client Sample ID: NAWC-053117-RW-111

Lab Sample ID: 320-28708-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	27	J	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	19		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	16	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.9	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-053117-FRB-111

Lab Sample ID: 320-28708-6

No Detections.

Client Sample ID: NAWC-053117-RW-161

Lab Sample ID: 320-28708-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	41		38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	21		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	16	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.1	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-053117-FRB-161

Lab Sample ID: 320-28708-8

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Client Sample ID: NAWC-053117-RW-106

Date Collected: 05/31/17 08:25

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-1

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	17	J	40	6.7	ng/L	—	06/14/17 08:33	06/19/17 19:49	1
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L		06/14/17 08:33	06/19/17 19:49	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		06/14/17 08:33	06/19/17 19:49	1
Perfluorohexanesulfonic acid (PFHxS)	9.9	J	30	5.4	ng/L		06/14/17 08:33	06/19/17 19:49	1
Perfluoroheptanoic acid (PFHpA)	8.2	J	9.9	1.9	ng/L		06/14/17 08:33	06/19/17 19:49	1
Perfluorobutanesulfonic acid (PFBS)	36	U M	89	16	ng/L		06/14/17 08:33	06/19/17 19:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	74		70 - 130				06/14/17 08:33	06/19/17 19:49	1
13C2 PFDA	91		70 - 130				06/14/17 08:33	06/19/17 19:49	1

Client Sample ID: NAWC-053117-FRB-106

Date Collected: 05/31/17 08:20

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-2

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.7	ng/L	—	06/14/17 08:33	06/19/17 19:53	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.7	ng/L		06/14/17 08:33	06/19/17 19:53	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		06/14/17 08:33	06/19/17 19:53	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		06/14/17 08:33	06/19/17 19:53	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		06/14/17 08:33	06/19/17 19:53	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		06/14/17 08:33	06/19/17 19:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				06/14/17 08:33	06/19/17 19:53	1
13C2 PFDA	89		70 - 130				06/14/17 08:33	06/19/17 19:53	1

Client Sample ID: NAWC-053117-RW-10

Date Collected: 05/31/17 09:45

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-3

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	31	J	38	6.4	ng/L	—	06/14/17 08:33	06/19/17 19:58	1
Perfluorooctanoic acid (PFOA)	23		19	2.6	ng/L		06/14/17 08:33	06/19/17 19:58	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		06/14/17 08:33	06/19/17 19:58	1
Perfluorohexanesulfonic acid (PFHxS)	20	J	28	5.2	ng/L		06/14/17 08:33	06/19/17 19:58	1
Perfluoroheptanoic acid (PFHpA)	6.6	J	9.4	1.8	ng/L		06/14/17 08:33	06/19/17 19:58	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	84	15	ng/L		06/14/17 08:33	06/19/17 19:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	82		70 - 130				06/14/17 08:33	06/19/17 19:58	1
13C2 PFDA	86		70 - 130				06/14/17 08:33	06/19/17 19:58	1

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Client Sample ID: NAWC-053117-FRB-10

Date Collected: 05/31/17 09:40

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-4

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	36	6.2	ng/L		06/14/17 08:33	06/19/17 20:12	1
Perfluorooctanoic acid (PFOA)	7.3	U	18	2.6	ng/L		06/14/17 08:33	06/19/17 20:12	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		06/14/17 08:33	06/19/17 20:12	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		06/14/17 08:33	06/19/17 20:12	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	1.7	ng/L		06/14/17 08:33	06/19/17 20:12	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		06/14/17 08:33	06/19/17 20:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		70 - 130	06/14/17 08:33	06/19/17 20:12	1
13C2 PFDA	84		70 - 130	06/14/17 08:33	06/19/17 20:12	1

Client Sample ID: NAWC-053117-RW-111

Date Collected: 05/31/17 10:25

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-5

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	27	J	38	6.5	ng/L		06/14/17 08:33	06/19/17 20:17	1
Perfluorooctanoic acid (PFOA)	19		19	2.7	ng/L		06/14/17 08:33	06/19/17 20:17	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		06/14/17 08:33	06/19/17 20:17	1
Perfluorohexanesulfonic acid (PFHxS)	16	J	29	5.3	ng/L		06/14/17 08:33	06/19/17 20:17	1
Perfluoroheptanoic acid (PFHpA)	4.9	J	9.6	1.8	ng/L		06/14/17 08:33	06/19/17 20:17	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	86	15	ng/L		06/14/17 08:33	06/19/17 20:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		70 - 130	06/14/17 08:33	06/19/17 20:17	1
13C2 PFDA	88		70 - 130	06/14/17 08:33	06/19/17 20:17	1

Client Sample ID: NAWC-053117-FRB-111

Date Collected: 05/31/17 10:20

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-6

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.3	ng/L		06/14/17 08:33	06/19/17 20:22	1
Perfluorooctanoic acid (PFOA)	7.4	U	18	2.6	ng/L		06/14/17 08:33	06/19/17 20:22	1
Perfluorononanoic acid (PFNA)	18	U	22	7.4	ng/L		06/14/17 08:33	06/19/17 20:22	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L		06/14/17 08:33	06/19/17 20:22	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	1.8	ng/L		06/14/17 08:33	06/19/17 20:22	1
Perfluorobutanesulfonic acid (PFBS)	33	U	83	15	ng/L		06/14/17 08:33	06/19/17 20:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		70 - 130	06/14/17 08:33	06/19/17 20:22	1
13C2 PFDA	84		70 - 130	06/14/17 08:33	06/19/17 20:22	1

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Client Sample ID: NAWC-053117-RW-161

Date Collected: 05/31/17 11:25

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-7

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	41		38	6.4	ng/L		06/14/17 08:33	06/19/17 20:36	1
Perfluorooctanoic acid (PFOA)	21		19	2.6	ng/L		06/14/17 08:33	06/19/17 20:36	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		06/14/17 08:33	06/19/17 20:36	1
Perfluorohexanesulfonic acid (PFHxS)	16	J	28	5.2	ng/L		06/14/17 08:33	06/19/17 20:36	1
Perfluoroheptanoic acid (PFHpA)	6.1	J	9.4	1.8	ng/L		06/14/17 08:33	06/19/17 20:36	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	84	15	ng/L		06/14/17 08:33	06/19/17 20:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		70 - 130				06/14/17 08:33	06/19/17 20:36	1
13C2 PFDA	89		70 - 130				06/14/17 08:33	06/19/17 20:36	1

Client Sample ID: NAWC-053117-FRB-161

Date Collected: 05/31/17 11:20

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-8

Matrix: Water

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.4	ng/L		06/14/17 08:33	06/19/17 20:41	1
Perfluorooctanoic acid (PFOA)	7.5	U	19	2.6	ng/L		06/14/17 08:33	06/19/17 20:41	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		06/14/17 08:33	06/19/17 20:41	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		06/14/17 08:33	06/19/17 20:41	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	1.8	ng/L		06/14/17 08:33	06/19/17 20:41	1
Perfluorobutanesulfonic acid (PFBS)	34	U	84	15	ng/L		06/14/17 08:33	06/19/17 20:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		70 - 130				06/14/17 08:33	06/19/17 20:41	1
13C2 PFDA	87		70 - 130				06/14/17 08:33	06/19/17 20:41	1

Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-28708-1

Project/Site: TetraT: PFAS, NAS JRB Willow Grove

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Prep: 537

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	90	16	ng/L	537
Perfluoroheptanoic acid (PFHpA)	10	1.9	ng/L	537
Perfluorohexanesulfonic acid (PFHxS)	30	5.5	ng/L	537
Perfluorononanoic acid (PFNA)	24	8.0	ng/L	537
Perfluorooctanesulfonic acid (PFOS)	40	6.8	ng/L	537
Perfluorooctanoic acid (PFOA)	20	2.8	ng/L	537

Surrogate Summary

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	3C2 PFHx	3C2 PFD/
		(70-130)	(70-130)
320-28708-1	NAWC-053117-RW-106	74	91
320-28708-2	NAWC-053117-FRB-106	89	89
320-28708-3	NAWC-053117-RW-10	82	86
320-28708-3 MS	NAWC-053117-RW-10	86	91
320-28708-3 MSD	NAWC-053117-RW-10	82	87
320-28708-4	NAWC-053117-FRB-10	87	84
320-28708-5	NAWC-053117-RW-111	83	88
320-28708-6	NAWC-053117-FRB-111	85	84
320-28708-7	NAWC-053117-RW-161	79	89
320-28708-8	NAWC-053117-FRB-161	85	87
LCS 320-169193/2-A	Lab Control Sample	82	86
MB 320-169193/1-A	Method Blank	86	88

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-169193/1-A

Matrix: Water

Analysis Batch: 169962

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 169193

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		06/14/17 08:33	06/19/17 18:47	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		06/14/17 08:33	06/19/17 18:47	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		06/14/17 08:33	06/19/17 18:47	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		06/14/17 08:33	06/19/17 18:47	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		06/14/17 08:33	06/19/17 18:47	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		06/14/17 08:33	06/19/17 18:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130	06/14/17 08:33	06/19/17 18:47	1
13C2 PFDA	88		70 - 130	06/14/17 08:33	06/19/17 18:47	1

Lab Sample ID: LCS 320-169193/2-A

Matrix: Water

Analysis Batch: 169962

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 169193

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	160	150		ng/L		94	70 - 130
Perfluorooctanoic acid (PFOA)	79.9	68.5		ng/L		86	70 - 130
Perfluorononanoic acid (PFNA)	77.0	64.9		ng/L		84	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	120	120		ng/L		100	70 - 130
Perfluoroheptanoic acid (PFHpA)	39.6	36.0		ng/L		91	70 - 130
Perfluorobutanesulfonic acid (PFBS)	353	364		ng/L		103	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	82		70 - 130
13C2 PFDA	86		70 - 130

Lab Sample ID: 320-28708-3 MS

Matrix: Water

Analysis Batch: 169964

Client Sample ID: NAWC-053117-RW-10

Prep Type: Total/NA

Prep Batch: 169193

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	31	J	150	169		ng/L		92	70 - 130
Perfluorooctanoic acid (PFOA)	23		74.8	92.2		ng/L		92	70 - 130
Perfluorononanoic acid (PFNA)	19	U	72.1	67.0		ng/L		93	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	20	J	113	128		ng/L		96	70 - 130
Perfluoroheptanoic acid (PFHpA)	6.6	J	37.1	39.5		ng/L		89	70 - 130
Perfluorobutanesulfonic acid (PFBS)	34	U M	331	333		ng/L		101	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
13C2 PFHxA	86		70 - 130
13C2 PFDA	91		70 - 130

TestAmerica Sacramento

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Method: 537 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: 320-28708-3 MSD

Matrix: Water

Analysis Batch: 169964

Client Sample ID: NAWC-053117-RW-10

Prep Type: Total/NA

Prep Batch: 169193

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	31	J	151	170		ng/L		92	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	23		75.5	93.5		ng/L		93	70 - 130	1	30
Perfluorononanoic acid (PFNA)	19	U	72.8	67.3		ng/L		92	70 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	20	J	114	129		ng/L		96	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	6.6	J	37.4	38.0		ng/L		84	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	34	U M	334	339		ng/L		101	70 - 130	2	30
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
13C2 PFHxA	82		70 - 130								
13C2 PFDA	87		70 - 130								

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

LCMS

Prep Batch: 169193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-28708-1	NAWC-053117-RW-106	Total/NA	Water	537	
320-28708-2	NAWC-053117-FRB-106	Total/NA	Water	537	
320-28708-3	NAWC-053117-RW-10	Total/NA	Water	537	
320-28708-4	NAWC-053117-FRB-10	Total/NA	Water	537	
320-28708-5	NAWC-053117-RW-111	Total/NA	Water	537	
320-28708-6	NAWC-053117-FRB-111	Total/NA	Water	537	
320-28708-7	NAWC-053117-RW-161	Total/NA	Water	537	
320-28708-8	NAWC-053117-FRB-161	Total/NA	Water	537	
MB 320-169193/1-A	Method Blank	Total/NA	Water	537	
LCS 320-169193/2-A	Lab Control Sample	Total/NA	Water	537	
320-28708-3 MS	NAWC-053117-RW-10	Total/NA	Water	537	
320-28708-3 MSD	NAWC-053117-RW-10	Total/NA	Water	537	

Analysis Batch: 169962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-169193/1-A	Method Blank	Total/NA	Water	537	169193
LCS 320-169193/2-A	Lab Control Sample	Total/NA	Water	537	169193

Analysis Batch: 169964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-28708-1	NAWC-053117-RW-106	Total/NA	Water	537	169193
320-28708-2	NAWC-053117-FRB-106	Total/NA	Water	537	169193
320-28708-3	NAWC-053117-RW-10	Total/NA	Water	537	169193
320-28708-4	NAWC-053117-FRB-10	Total/NA	Water	537	169193
320-28708-5	NAWC-053117-RW-111	Total/NA	Water	537	169193
320-28708-6	NAWC-053117-FRB-111	Total/NA	Water	537	169193
320-28708-3 MS	NAWC-053117-RW-10	Total/NA	Water	537	169193
320-28708-3 MSD	NAWC-053117-RW-10	Total/NA	Water	537	169193

Analysis Batch: 169966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-28708-7	NAWC-053117-RW-161	Total/NA	Water	537	169193
320-28708-8	NAWC-053117-FRB-161	Total/NA	Water	537	169193

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Client Sample ID: NAWC-053117-RW-106

Date Collected: 05/31/17 08:25

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169964	06/19/17 19:49	JRB	TAL SAC

Client Sample ID: NAWC-053117-FRB-106

Date Collected: 05/31/17 08:20

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169964	06/19/17 19:53	JRB	TAL SAC

Client Sample ID: NAWC-053117-RW-10

Date Collected: 05/31/17 09:45

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169964	06/19/17 19:58	JRB	TAL SAC

Client Sample ID: NAWC-053117-FRB-10

Date Collected: 05/31/17 09:40

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169964	06/19/17 20:12	JRB	TAL SAC

Client Sample ID: NAWC-053117-RW-111

Date Collected: 05/31/17 10:25

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169964	06/19/17 20:17	JRB	TAL SAC

Client Sample ID: NAWC-053117-FRB-111

Date Collected: 05/31/17 10:20

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169964	06/19/17 20:22	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Client Sample ID: NAWC-053117-RW-161

Date Collected: 05/31/17 11:25

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169966	06/19/17 20:36	JRB	TAL SAC

Client Sample ID: NAWC-053117-FRB-161

Date Collected: 05/31/17 11:20

Date Received: 06/01/17 09:30

Lab Sample ID: 320-28708-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169193	06/14/17 08:33	NS1	TAL SAC
Total/NA	Analysis	537		1	169966	06/19/17 20:41	JRB	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Laboratory: TestAmerica Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-28-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
537	537	Water	Perfluorobutanesulfonic acid (PFBS)
537	537	Water	Perfluoroheptanoic acid (PFHpA)
537	537	Water	Perfluorohexanesulfonic acid (PFHxS)
537	537	Water	Perfluorononanoic acid (PFNA)
537	537	Water	Perfluorooctanesulfonic acid (PFOS)
537	537	Water	Perfluorooctanoic acid (PFOA)

Method Summary

Client: Tetra Tech, Inc.
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28708-1

Method	Method Description	Protocol	Laboratory
537	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-28708-1

Project/Site: TetraT: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-28708-1	NAWC-053117-RW-106	Water	05/31/17 08:25	06/01/17 09:30
320-28708-2	NAWC-053117-FRB-106	Water	05/31/17 08:20	06/01/17 09:30
320-28708-3	NAWC-053117-RW-10	Water	05/31/17 09:45	06/01/17 09:30
320-28708-4	NAWC-053117-FRB-10	Water	05/31/17 09:40	06/01/17 09:30
320-28708-5	NAWC-053117-RW-111	Water	05/31/17 10:25	06/01/17 09:30
320-28708-6	NAWC-053117-FRB-111	Water	05/31/17 10:20	06/01/17 09:30
320-28708-7	NAWC-053117-RW-161	Water	05/31/17 11:25	06/01/17 09:30
320-28708-8	NAWC-053117-FRB-161	Water	05/31/17 11:20	06/01/17 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 169964Lab Sample ID: 320-28708-1 Client Sample ID: NAWC-053117-RW-106Date Analyzed: 06/19/17 19:49 Lab File ID: 2017.06.19_537B_017.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.17	Incomplete Integration	barnettj	06/20/17 15:06

Lab Sample ID: 320-28708-3 Client Sample ID: NAWC-053117-RW-10Date Analyzed: 06/19/17 19:58 Lab File ID: 2017.06.19_537B_019.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.17	Incomplete Integration	barnettj	06/20/17 15:07

Lab Sample ID: 320-28708-5 Client Sample ID: NAWC-053117-RW-111Date Analyzed: 06/19/17 20:17 Lab File ID: 2017.06.19_537B_023.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.19	Incomplete Integration	barnettj	06/20/17 14:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 169966Lab Sample ID: 320-28708-7 Client Sample ID: NAWC-053117-RW-161Date Analyzed: 06/19/17 20:36 Lab File ID: 2017.06.19_537B_027.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.19	Incomplete Integration	barnettj	06/20/17 14:46

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00020	07/25/17	02/21/17	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00031	200 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00031	07/31/17	01/31/17	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			LCMPFOS_00019	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816					13C2-PFOA	50 ug/mL
LC537-ICV_00020	07/25/17	02/21/17	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00030	500 uL	13C2 PFDA	10 ng/mL
					LC537ICIM_00015	20 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	100.676 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10.08 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	21.1854 ng/mL
							Perfluorononanoic acid (PFNA)	20.0076 ng/mL
							Perfluorooctanoic acid (PFOA)	20.0186 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.6936 ng/mL
.LC537-SU_00030	07/31/17	01/31/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	80 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00013	80 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416					13C2 PFDA	50 ug/mL
.LC537ICIM_00015	07/25/17	02/21/17	Methanol, Lot 090285	25 mL	LC537-PFBS2_00007	0.55 mL	13C2 PFHxA	50 ug/mL
					LC537-PFHpA2_00010	0.05 mL	Perfluorobutanesulfonic acid (PFBS)	50.3381 ug/mL
					LC537-PFHxS2_00007	0.13 mL	Perfluoroheptanoic acid (PFHpA)	5.04 ug/mL
					LC537-PFNA2_00008	0.093 mL	Perfluorohexanesulfonic acid (PFHxS)	10.5927 ug/mL
					LC537-PFOA2_00008	0.142 mL	Perfluorononanoic acid (PFNA)	10.0038 ug/mL
					LC537-PFOS2_00007	0.21 mL	Perfluorooctanoic acid (PFOA)	10.0093 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	10.3468 ug/mL
..LC537-PFBS2_00007	08/09/17	02/20/17	Methanol, Lot 090285	8.2 mL	LC537_PFBS2_00001	0.0188 g	Perfluorobutanesulfonic acid (PFBS)	2288.1 ug/mL
...LC537_PFBS2_00001	08/09/17	Santa Cruz Biotechnology, Lot H0112					Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFHpA2_00010	07/25/17	12/20/16	Methanol, Lot 09092	25 mL	LC537_PFHpA2_00001	0.063 g	Perfluoroheptanoic acid (PFHpA)	2520 ug/mL
...LC537_PFHpA2_00001	07/25/17	Afla Aesar, Lot 10160443					Perfluoroheptanoic acid (PFHpA)	1 g/g
..LC537-PFHxS2_00007	07/25/17	02/20/17	Methanol, Lot 090285	10 mL	LC537_PFHxS2_00001	0.0224 g	Perfluorohexanesulfonic acid (PFHxS)	2037.06 ug/mL
...LC537_PFHxS2_00001	07/25/17	Santa Cruz Biotechnology, Lot F2612					Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA2_00008	07/25/17	12/20/16	Methanol, Lot 090285	10 mL	LC537 PFNA2_00001	0.027 g	Perfluorononanoic acid (PFNA)	2689.2 ug/mL
...LC537 PFNA2_00001	07/25/17	Aldrich, Lot MKBJ2926V					Perfluorononanoic acid (PFNA)	0.996 g/g
..LC537-PFOA2_00008	07/25/17	12/20/16	Methanol, Lot 090285	10 mL	LC537 PFOA2_00001	0.0178 g	Perfluorooctanoic acid (PFOA)	1762.2 ug/mL
...LC537_PFOA2_00001	07/25/17	Afla Aesar, Lot D24Y026					Perfluorooctanoic acid (PFOA)	0.99 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LC537-PFOS2_00007	07/26/17	02/20/17	Methanol, Lot 090285	11 mL	LC537_PFOS2_00001	0.0174 g	Perfluorooctanesulfonic acid (PFOS)	1231.76 ug/mL
...LC537_PFOS2_00001	07/26/17	Sigma, Lot BCBF5116V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00041	11/09/17	05/09/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00005	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	180 uL	13C4 PFOS	0.2868 ug/mL
.LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00018	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-MSP_00022	50 uL	Perfluorobutanesulfonic acid (PFBS)	8.83417 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.99 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.00607 ng/mL
							Perfluorononanoic acid (PFNA)	1.926 ng/mL
							Perfluorooctanoic acid (PFOA)	1.998 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.00329 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00022	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	200 uL	Perfluorobutanesulfonic acid (PFBS)	883.417 ng/mL
							Perfluoroheptanoic acid (PFHpA)	99 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	300.607 ng/mL
							Perfluorononanoic acid (PFNA)	192.6 ng/mL
							Perfluorooctanoic acid (PFOA)	199.8 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	400.329 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFBs_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBs)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537 PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00018	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	64 uL	Perfluorobutanesulfonic acid (PFBs)	21.202 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.376 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	7.21457 ng/mL
							Perfluorononanoic acid (PFNA)	4.6224 ng/mL
							Perfluorooctanoic acid (PFOA)	4.7952 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	9.6079 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
		13C2 PFHxA	10 ng/mL					
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutanesulfonic acid (PFBs)	1656.41 ng/mL
						Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL	
						Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL	
						Perfluorononanoic acid (PFNA)	361.125 ng/mL	
						Perfluorooctanoic acid (PFOA)	374.625 ng/mL	
						Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL	
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBs_00007	440 uL	Perfluorobutanesulfonic acid (PFBs)	88.3417 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
..LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00020	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	134 uL	Perfluorobutanesulfonic acid (PFBS)	44.3917 ng/mL
							Perfluoroheptanoic acid (PFHpA)	4.97475 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.1055 ng/mL
							Perfluorononanoic acid (PFNA)	9.67815 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0399 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1165 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
							Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
							Perfluorononanoic acid (PFNA)	19.26 ug/mL
							Perfluorooctanoic acid (PFOA)	19.98 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537 PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537 PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537 PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00013	40 uL	13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
							13C2 PFDA	50 ug/mL
							13C2 PFHxA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

 Lab Name: TestAmerica Sacramento

 Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
LC537-L4_00018	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	270 uL	Perfluorobutanesulfonic acid (PFBS)	89.446 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	10.0238 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	30.4365 ng/mL		
							Perfluorononanoic acid (PFNA)	19.5008 ng/mL		
							Perfluorooctanoic acid (PFOA)	20.2297 ng/mL		
					Perfluorooctanesulfonic acid (PFOS)	40.5333 ng/mL				
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL		
					LC537-SU_00035	500 uL	13C4 PFOS	28.68 ng/mL		
							13C2 PFDA	10 ng/mL		
LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	13C2 PFHxA	10 ng/mL		
							Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL		
							Perfluorononanoic acid (PFNA)	361.125 ng/mL		
Perfluorooctanoic acid (PFOA)	374.625 ng/mL									
Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL									
LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL		
							LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
							LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
							LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
							LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL							
LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL		
LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g		
LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL		
LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g		
LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL		
LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g		
LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL		
LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g		
LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL		
LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA 00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS 00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA 00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS 00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA 00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA 00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA 00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA 00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00021	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	400 uL	Perfluorobutanesulfonic acid (PFBS)	132.513 ng/mL
							Perfluoroheptanoic acid (PFHpA)	14.85 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0911 ng/mL
							Perfluorononanoic acid (PFNA)	28.89 ng/mL
							Perfluorooctanoic acid (PFOA)	29.97 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.0494 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
					LC537-SU_00035	500 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
					LC537-PFHpA_00014	100 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFNA 00012	200 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFOA 00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFBs_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537 PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537 PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537 PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00019	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFDA	50 ug/mL
LC537-L6_00017	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	530 uL	Perfluorobutanesulfonic acid (PFBS)	175.579 ng/mL
							Perfluoroheptanoic acid (PFHpA)	19.6763 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	59.7457 ng/mL
							Perfluorononanoic acid (PFNA)	38.2792 ng/mL
							Perfluorooctanoic acid (PFOA)	39.7103 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	79.5654 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537 PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537 PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
LC537-MSP_00021	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	200 uL	Perfluorobutane Sulfonate	883.417 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	883.417 ng/mL
							Perfluoroheptanoic acid (PFHpA)	99 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	300.607 ng/mL
							Perfluorononanoic acid (PFNA)	192.6 ng/mL
							Perfluorooctanoic acid (PFOA)	199.8 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-28708-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	400.329 ng/mL
.LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutane Sulfonate	88.3417 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
..LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutane Sulfonate	2007.77 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537 PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
..LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537 PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
...LC537 PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
...LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-SU_00042	11/09/17	05/09/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFB_00002

4/1/15 SPV

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3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:

Nonafluorobutane-1-sulfonic acid - 97%

Product Number:

562629

Batch Number:

MKBP8842V

Brand:

ALDRICH

CAS Number:

375-73-5

MDL Number:

MFCD01320794

Formula:

C₄HF₉O₃S

Formula Weight:

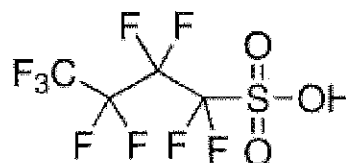
300.10 g/mol

Storage Temperature:

Store at 2 - 8 °C

Quality Release Date:

11 OCT 2013



PFBS

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
Infrared Spectrum	Conforms to Structure	Conforms
Fluorine NMR Spectrum	Conforms to Structure	Conforms
Purity (Titration by NaOH)	96.5 - 103.5 %	101.6 %

Jamie Gleason

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Reagent

LC537_PFBBS2_00001



The Power to Question

CERTIFICATE OF ANALYSIS

Catalog Number: sc-236187
Product Name: Nonafluorobutane-1-sulfonic acid
CAS Number: 375-73-5
Molecular Formula: $C_4HF_9O_3S$
Molecular Weight: 300.10
Lot Number: H0112

Test		Result
Refractive Index	1.3200 to 1.3290	1.3219
Purity (Titration)	min. 98.0%	99.8%

Test Conditions: Refractive Index: $n_{20/D}$

Reagent

LC537_PFHpA_00002

Certificate of Analysis

Product Name: PERFLUOROHEPTANOIC ACID
99 %
Product Number: 342041
Batch Number: BCBM2579V
Brand: Aldrich
CAS Number: 375-85-9
Formula: $\text{CF}_3(\text{CF}_2)_5\text{CO}_2\text{H}$
Formula Weight: 364.06
Quality Release Date: 06 DEC 2013
Recommended Retest Date: OCT 2018

PFH₇A

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	COLORLESS OR WHITE	WHITE
APPEARANCE (FORM)	LIQUID OR SOLID	SOLID
TITRATION	98.5 - 101.5 %	99.8 %
TITRATION (METHOD)	-	BACK TITRATION
PURITY (GC AREA %)	≥ 98.5 %	99.5 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS



Dr. Claudia Geithner
Manager Quality Control
Buchs, Switzerland

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Reagent

LC537_PFHpA2_00001

Certificate of Analysis

Alfa Aesar
A Johnson Matthey Company

Product No.: A12092
Product: Perfluoroheptanoic acid, 98+%
Lot No.: 10160443

PFHpA

Appearance: White crystalline powder
Melting Point: 28.2 (slip point)
Assay (Aqueous acid-base titration): 100.2%

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NORTH AMERICA
Tel: +1-800-343-0660 or
+1-978-521-6300
Fax: +1-800-322-4757
Email: info@alfa.com

GERMANY
Tel: 00800 4566 4566 or
+49 721 84007 280
Fax: 00800 4577 4577 or
+49 721 84007 300
Email: Eurosales@alfa.com

UNITED KINGDOM
Tel: 0800-801812 or
+44 (0)1524-850506
Fax: +44 (0)1524-850608
Email: UKsales@alfa.com

FRANCE
Tel: 0800 03 51 47 or
+33 (0)3 8862 2690
Fax: 0800 10 20 67 or
+33 (0)3 8862 6864
Email: france@alfa.com

INDIA
Tel: +91 8008 812424 or
+91 8008 812525 or
+91 8008 812626
Fax: +91 8418 260060
Email: india@alfa.com

CHINA
Tel: +86 (010) 8567-8600
Fax: +86 (010) 8567-8601
Email: saleschina@alfa-asia.com

KOREA
Tel: +82-2-3140-6000
Fax: +82-2-3140-6002
Email: saleskorea@alfa-asia.com

Reagent

LC537_PFHxS_00002

r: 4/11/15 stw

Certificate of Analysis

Product Name: TRIDECAFLUOROHXANE-1-SULFONIC ACID POTASSIUM SALT
Product Number: 50929
Batch Number: BCBL3545V
Brand: Aldrich
CAS Number: 3871-99-6
Formula: $C_{13}F_{27}KO_2S$
Formula Weight: 438.20
Quality Release Date: 20 JUN 2013

PFH₁₃S-K

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO FAINT BEIGE	WHITE
APPEARANCE (FORM)	POWDER OR CRYSTALS	POWDER
TITRATION (ION EXCHANGE)	≥ 98.0 %	99.5 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS



Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

$$MW_{corr} = \frac{(k_{form}) - (k) + (H)}{438.20 (k_{form})} = \frac{(438.20 - 3910 + 101)}{438.20 (k_{form})} = 0.91307 \text{ (anion form)}$$

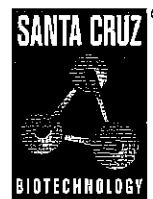
$$Purity = 90.94 \% \text{ w/m.w correction}$$

stw 4/11/15

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Reagent

LC537_PFHxS2_00001

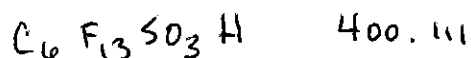
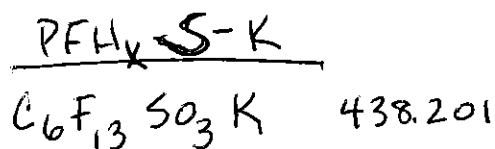


CERTIFICATE OF ANALYSIS

The Power to Question

Catalog Number: sc-237289
Product Name: Tridecafluorohexane-1-sulfonic acid potassium salt
CAS Number: 3871-99-6
Molecular Formula: $C_6F_{13}KO_3S$
Molecular Weight: 438.20
Lot Number: F2612

Test	Specification	Result
Appearance	White to faint beige powder or crystals	White powder
Infrared Spectrum	Conforms to structure	Complies
Purity (Titration, Ion Exchange)	$\geq 98.0\%$	99.6 %



$$\text{MW correction} = \frac{400.111}{438.201} = 0.91307 \quad \begin{array}{l} \text{PFH}_x\text{S} \\ \text{CAS } 355-46-4 \end{array}$$

$$\text{Purity} \times \text{MW correction} = 90.9\%$$

Reagent

LC537_PFNA_00002

R: 4/1/15 SKV



Certificate of Analysis

Apr 2, 2015 (JST)

TOKYO CHEMICAL INDUSTRY CO.,LTD.
4-10-1 Nihonbashi-Honcho, Chuo-ku, Tokyo 103-0023 Japan

Chemical Name: Heptadecafluorononanoic Acid		
Product Number: H0843	Lot: QN44F	
CAS: 375-95-1		

Tests	Results	Specifications
Purity(GC)	96.3 %	min. 95.0 %
Purity(Neutralization titration)	98.1 %	min. 95.0 %
Melting point	63.3 deg-C	62.0 to 67.0 deg-C

TCI Lot numbers are 4-5 characters in length.
Characters listed after the first 4-5 characters are control numbers for internal purpose only.

Customer service:

TCI AMERICA
Tel: +1-800-423-8616 / +1-503-283-1681
Fax: +1-888-520-1075 / +1-503-283-1987
E-mail: Sales-US@TCIchemicals.com

PFNA

Reagent

LC537_PFNA2_00001

3050 Spruce Street, Saint Louis, MO 63103, USA

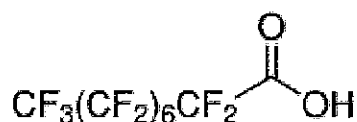
Website: www.sigmaaldrich.comEmail USA: techserv@sial.comOutside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:

Perfluorononanoic acid - 97%

Product Number: 394459
Lot Number: MKBJ2926V
Brand: ALDRICH
CAS Number: 375-95-1
MDL Number: MFCD00039605
Formula: C₉H₁₇O₂
Formula Weight: 464.08 g/mol
Quality Release Date: 20 OCT 2011



Test	Specification	Result
Appearance (Color)	White to Off-White	White
Appearance (Form)	Powder or Crystals or	Powder
Crystalline Chunk(s) or Granule or Flakes or Solid		
Infrared spectrum	Conforms to Structure	Conforms
Purity (Titration by NaOH)	96.5 - 103.5 %	100.3 %
GC (area %)	≥ 96.5 %	99.6 %

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

PFNA

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Reagent

LC537_PFOA_00002

3/20/15

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CERTIFICATE OF ANALYSIS

Sigma-Aldrich Laborchemikalien GmbH D-30918 Seelze
Telefon: +49 5137 8238-150

Seelze, 13.11.2013/505378/13/24029

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 04.Nov.2013

Expiry Date: 04.Nov.2018

Article/Product: 33824

Batch : SZBD308XV

Pentadecafluorooctanoic acid OEKANAL®

PFOA

Reference Material (RM)

1. General Information

Formula: C₈HF₁₅O₂

CAS-No.: [335-67-1]

Usage : PFOA

Molar mass: 414.07 g/Mole

Recomm. storage temp.: roomtemp.

The estimated uncertainty of a single measurement of the assay can be expected to be 0.5 % relative (confidence level = 95%, n= 6) whereby the assay measurements are calculated by 100% minus found impurities.

2. Batch Analysis

identity (GC-MS)

Assay (GCMS)

Date of Analysis

complying

99.4 %

13.Nov.2013

3. Advice and Remarks

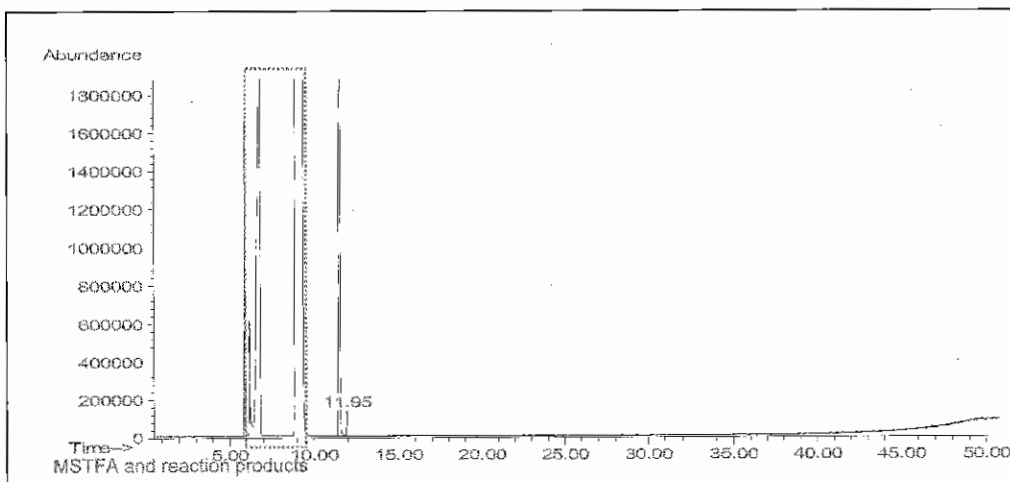
- The expiry date is based on the current knowledge and holds only for proper storage conditions in the originally closed flasks/ packages.
- Whenever the container is opened for removal of aliquot portions of the substance, the person handling the substance must assure, that the integrity of the substance is maintained and proper records of all its handlings are kept. Special care has to be taken to avoid any contamination or adulteration of the substance.
- We herewith confirm that the delivery is effected according to the technical delivery conditions agreed.
- Particular properties of the products or the suitability for a particular area of application are not assured.
- We guarantee a proper quality within our General Conditions of Sales.

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

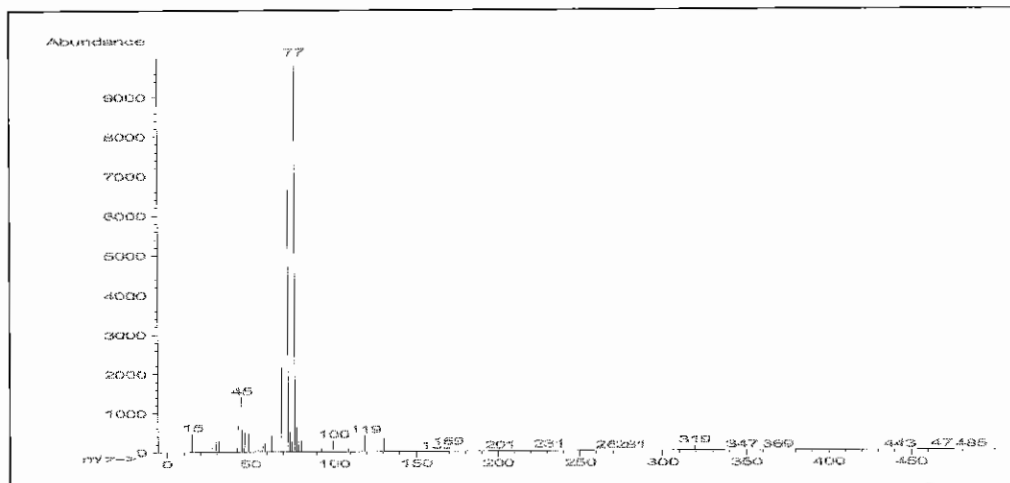
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GC/MS-Method**Analytical Department****Article:** Pentadecafluorooctanoic acid OEKANAL**Article-No.:** 33824**Batch:** SZBD308XV**Column:** XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df**Injector:** Split mode**Injection:** approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)**Inj.-temp.:** 280°C**Oven-temp.:** 40°C (for 2 min) to 320°C (6°C/min) hold for 2 min**Split:** 1:100**Flow:** 1 ml He/min (Constant flow mode)**Detector:** MSD**Mass range:** 10-600 amu (Scan mode)**Evaluation:** Purity: Total Ion Chromatogram
(MSTFA and reaction products blinded out in report)

Identity: Mass spectrum complies

Operator: Ahrens / 2013-11-13**Total Ion Chromatogram:**

Ret.time	Area	Area-%	Com
11.54	565.1670	99.4	Pentadecafluorooctanoic acid (as TMS-ester)
11.95	3.6792	0.64	

Mass spectrum (rt = 11.54 min):

Reagent

LC537_PFOA2_00001

Certificate of Analysis

Alfa Aesar
A Johnson Matthey Company

Product No.: L08862
Product: Perfluorooctanoic acid, 95%
Lot No.: D24Y026

PFOA

Appearance White solid
Melting point 58 - 60°C
Assay 99 %
Identity Matches reference

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NORTH AMERICA
Tel: +1-800-343-0660 or
+1-978-521-6300
Fax: +1-800-322-4757
Email: info@alfa.com

GERMANY
Tel: 00800 4566 4566 or
+49 721 84007 280
Fax: 00800 4577 4577 or
+49 721 84007 300
Email: Eurosales@alfa.com

UNITED KINGDOM
Tel: 0800-801812 or
+44 (0)1524-850506
Fax: +44 (0)1524-850608
Email: UKsales@alfa.com

FRANCE
Tel: 0800 03 51 47 or
+33 (0)3 8862 2690
Fax: 0800 10 20 67 or
+33 (0)3 8862 6864
Email: frventes@alfa.com

INDIA
Tel: +91 8008 812424 or
+91 8008 812525 or
+91 8008 812626
Fax: +91 8418 260060
Email: India@alfa.com

CHINA
Tel: +86 (010) 8567-8600
Fax: +86 (010) 8567-8601
Email: saleschina@alfa-asia.com

KOREA
Tel: +82-2-3140-6000
Fax: +82-2-3140-6002
Email: saleskorea@alfa-asia.com

Reagent

LC537_PFOS_00002

F: 4/1/15 SV

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CERTIFICATE OF ANALYSIS

Sigma-Aldrich Laborchemikalien GmbH D-30918 Seelze
Telefon: +49 5137 8238-150

Seelze, 13.08.2012/419060/12/17583

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 09.Aug.2012

Expiry Date: 09.Aug.2017 - *ex date*

Article/Product: 33829

Batch : SZBC222XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

PFOS-K⁺

Reference Material (RM)

1. General Information

Formula: C8F17KO3S

CAS-No.: [2795-39-3]

Usage : PFOS

Molar mass: 538.22 g/Mole

Recomm. storage temp.: roomtemp.

The estimated uncertainty of a single measurement of the assay can be expected to be 0.5 % relative (confidence level = 95%, n= 6) whereby the assay measurements are calculated by 100% minus found impurities.

2. Batch Analysis

Identity

complying

Assay (LC-MS)

98 %

Date of Analysis

10.Aug.2012

PW-correction:

$$\frac{538.22 - 39.10 + 1.01}{538.22} = \frac{500.13}{538.22} = 0.92923$$

Purity = 91.66%

3. Advice and Remarks

- The minimum shelf life is based on the current knowledge and holds only for proper storage conditions in the originally closed flasks/ packages.
- Whenever the container is opened for removal of aliquot portions of the substance, the person handling the substance must assure, that the integrity of the substance is maintained and proper records of all its handlings are kept. Special care has to be taken to avoid any contamination or adulteration of the substance.
- We herewith confirm that the delivery is effected according to the technical delivery conditions agreed.
- Particular properties of the products or the suitability for a particular area of application are not assured.
- We guarantee a proper quality within our General Conditions of Sales.

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_PFOS2_00001

Certificate of Analysis

Inv 820
12LCMS 0579

Product Name:	HEPTADEC AFLUORO OCTANES ULFONIC ACID TETRAETHYLAMMONIUM SALT
	98 %
Product Number:	365289
Product Brand:	Aldrich
Molecular Formula:	C ₁₆ H ₂₀ F ₁₇ NO ₃ S
Molecular Mass:	629.37
CAS Number:	56773-42-3

TEST	SPECIFICATION	LOT BCBF5116V RESULTS
APPEARANCE (COLOR)	OFF-WHITE TO WHITE	WHITE
APPEARANCE (FORM)	POWDER, LUMPS OR CHUNKS	POWDER WITH LUMPS
CARBON CONTENT	29.77 % - 31.29 %	30.52
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

QC RELEASE DATE 13/APR/11

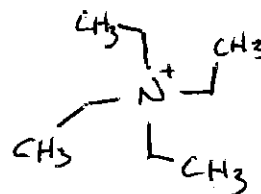
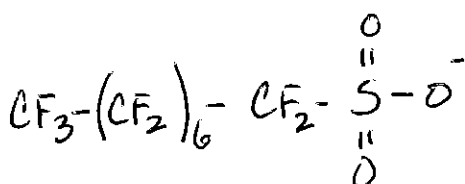
$$\text{Mass correction} = \frac{500.125}{629.37} = 0.7946$$

~~Mass = 79.46%~~ Jeh 7-26-12

Purity + MW Correction = 77.87%.

E. Schönl

Edeltraud Schwärzler, Manager
Quality Control
Buchs, Switzerland



	<u>C₈F₁₇SO₃ + H</u>
C = 12.011	96.088
F = 18.998	322.966
S = 32.066	32.066
O = 15.999	47.997
H = 1.008	1.008
N = 14.007	-
	500.125

$$\begin{array}{r} \text{C}_8\text{H}_{20}\text{N} \\ \hline 96.088 \\ - \\ - \\ - \\ - \\ 20.160 \\ 14.007 \\ \hline 130.255 \end{array} \rightarrow$$

Sigma-Aldrich warrants, that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice for additional terms and conditions of sale. The values given on the 'Certificate of Analysis' are the results determined at the time of analysis.

Certificate of Origin

Product Name: Heptadecafluorooctanesulfonic acid tetraethylammonium salt
98 %
Product Number: 365289
Product Brand: Aldrich
Lot: BCBF5116V
Molecular Formula: $C_{16}H_{20}F_{17}NO_3S$
Molecular Mass: 629.37
CAS Number: 56773-42-3
Date of Issue: 30-MAR-11

Country of Origin China

product is of synthetic origin	yes
only synthetic materials used in the manufacturing process	yes
compounds of animal origin used	no
genetically modified organisms used	no
allergenic materials used	no
procedures in place to avoid cross contamination with residue of animal, human, GMO or allergenes in manufacturing process	yes

Sigma-Aldrich has quality systems and procedures in place for monitoring the production process, traceability and batch consistency.

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This information is to be used for the purpose of determining animal or other biological origin only and not to be confused with "Country of Origin" for import/export purposes. Data provided on this document are property of Sigma-Aldrich.

This information is considered accurate and reliable as of the date appearing on the document and is presented in good faith.

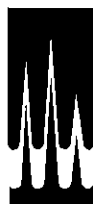
Sigma-Aldrich shall not be held liable for any damage resulting from handling or from processing the above product(s). This document does not make any warranty, express or implied, of fitness for any particular use of the product(s). Purchaser must determine the suitability of the product(s) for its use under the applicable law and regulations.

For further questions please contact your local Sigma-Aldrich representative.

We are committed to the success of our Customers, Employees and Shareholders through leadership in Life Science, High Technology and Service.

Reagent

LCM2PFOA_00005



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFOA

LOT NUMBER:

M2PFOA0613

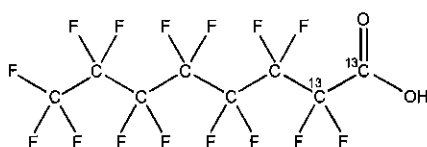
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₆H₁₅O₂

MOLECULAR WEIGHT:

416.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

06/19/2013

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

06/19/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

Certified By:

B.G. Chittim

Date: 07/16/2013

(mm/dd/yyyy)

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. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

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. Material Safety Data Sheets (MSDSs) 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, 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 and/or LC/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 are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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

$x_1, x_2, \dots, x_n$ on which it depends is:

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all 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 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is 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 for the period of time specified by the 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.

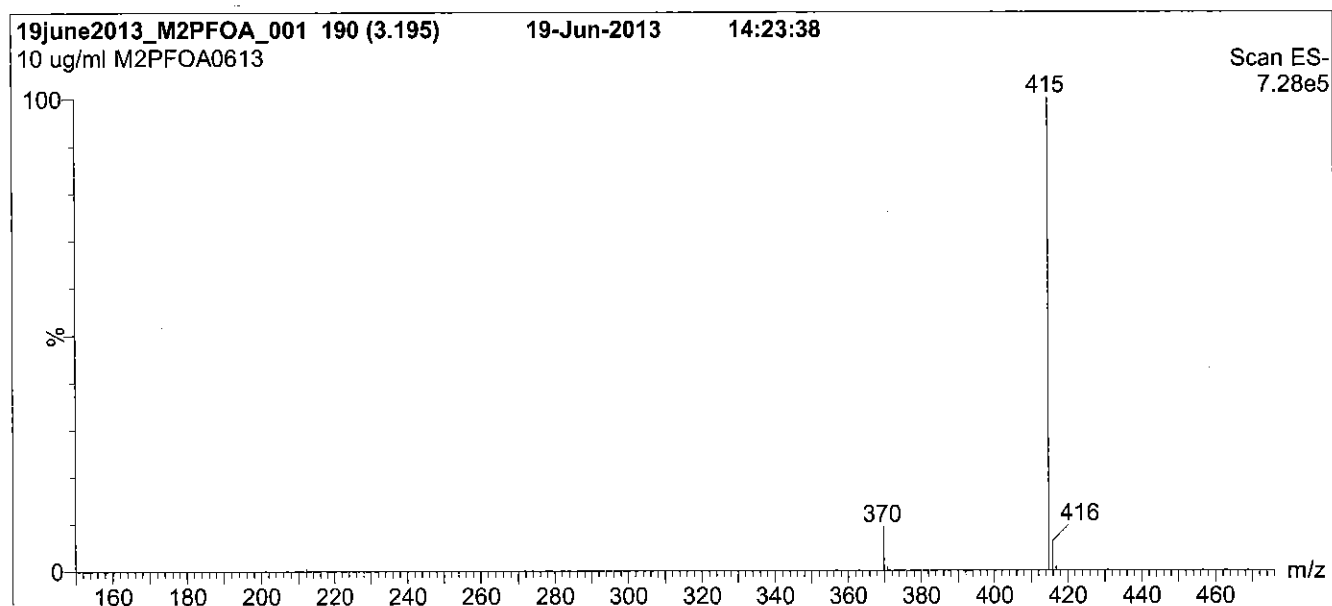
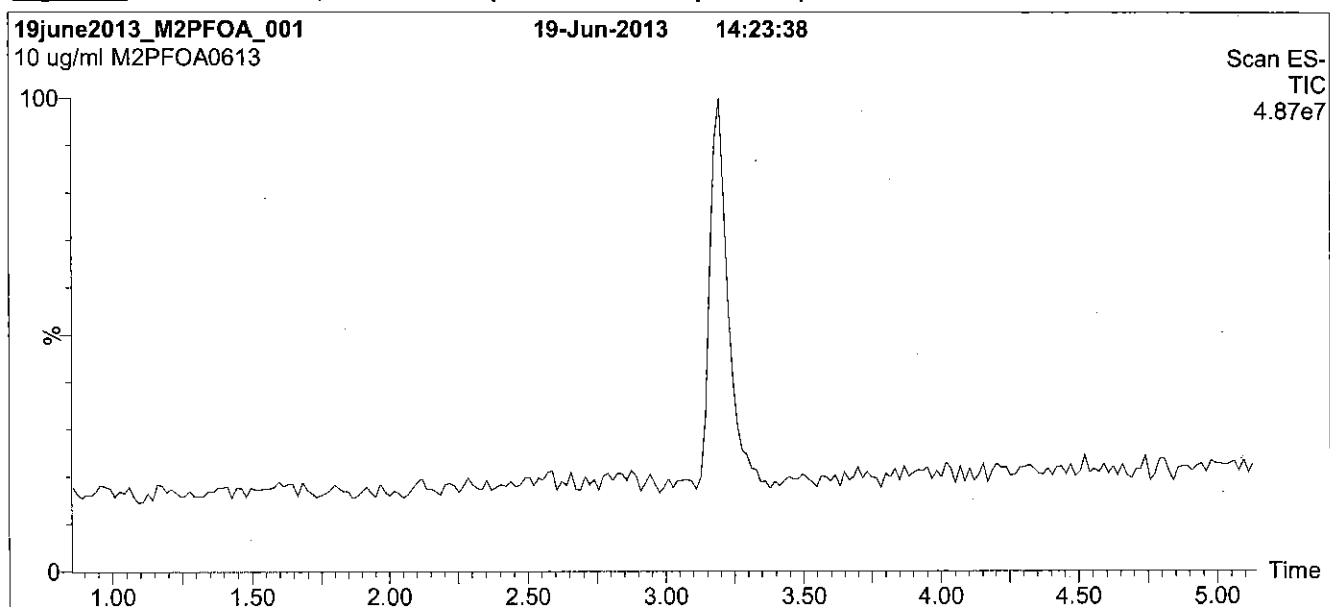
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).



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

Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

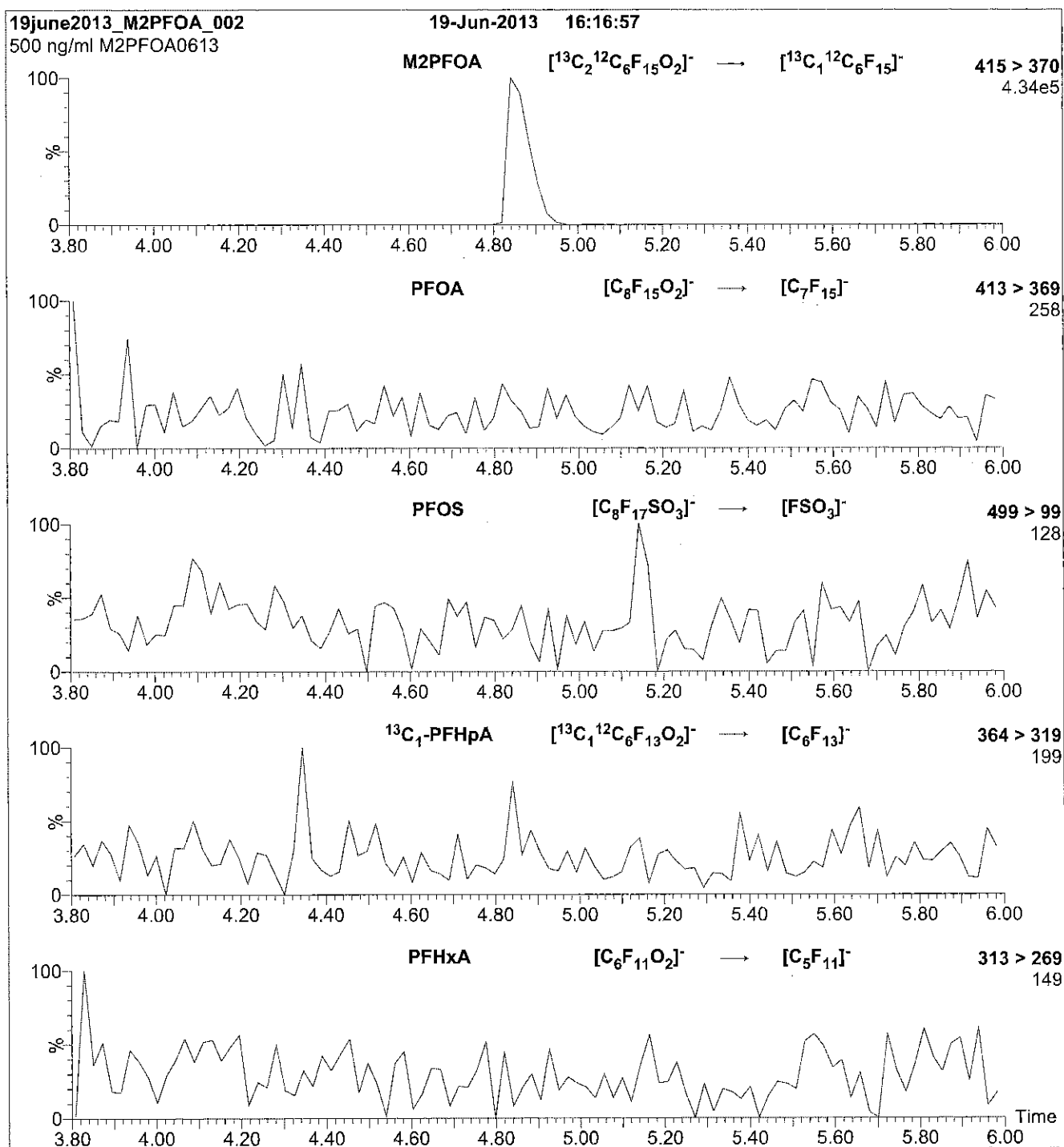
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 11

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255

ID: LCMFDA_00012

Exp: 09/30/21 Prod: SBC

¹³C2-Perfluorodecanoic a



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFDA

COMPOUND:

Perfluoro-n-[1,2-¹³C₂]decanoic acid

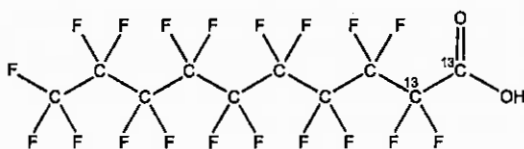
LOT NUMBER:

MPFDA0916

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₈HF₁₉O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

516.07

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2-¹³C₂)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

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.
- Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chritton

Date: 10/07/2016

(mm/dd/yyyy)

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 compound 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.

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

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

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 $\pm 5\%$ (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 NIST and/or NRC traceable external weights. All volumetric glassware used is 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:

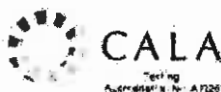
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

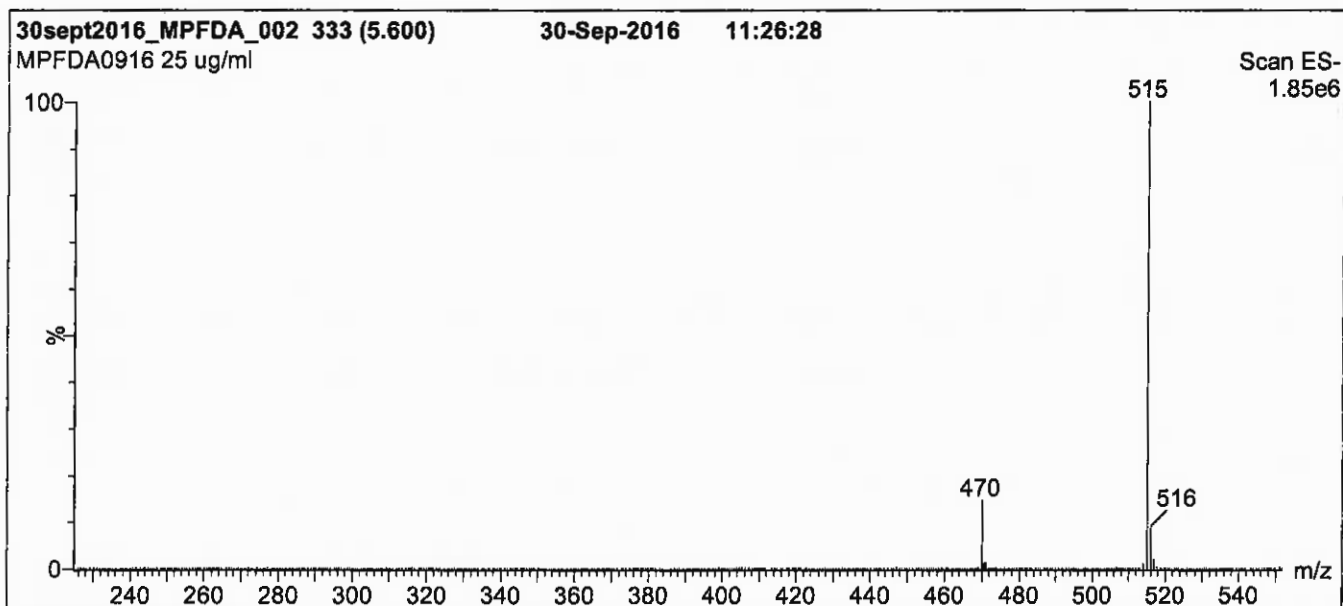
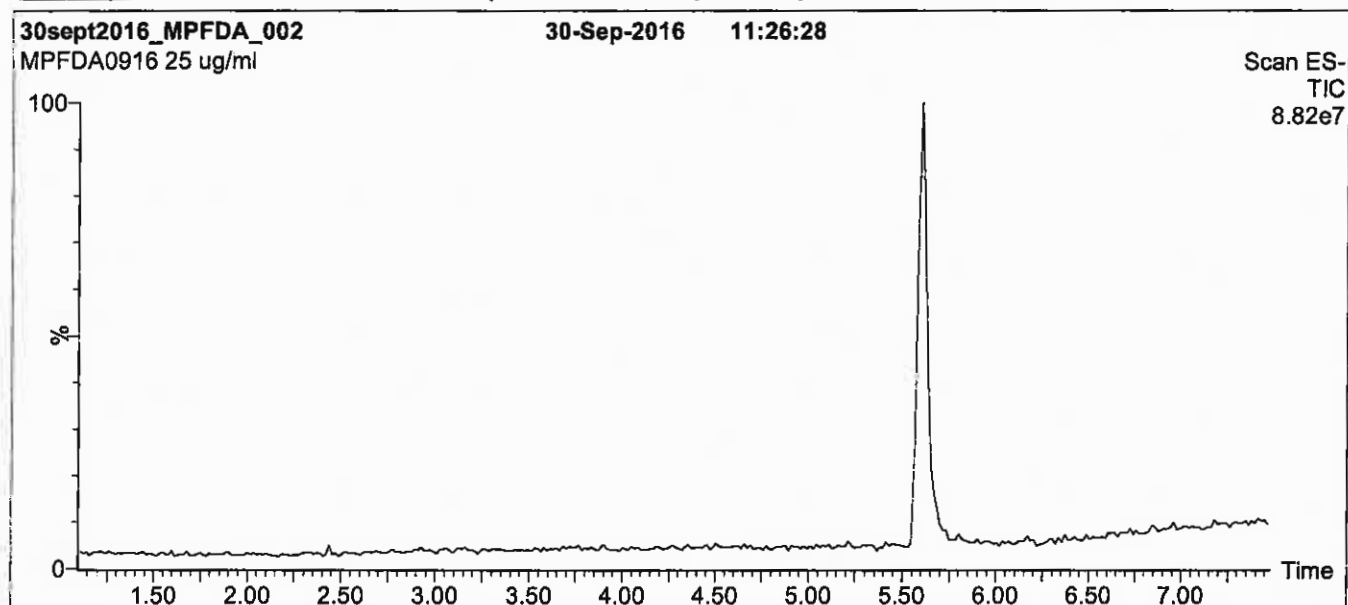
QUALITY MANAGEMENT:

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).



****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****

Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

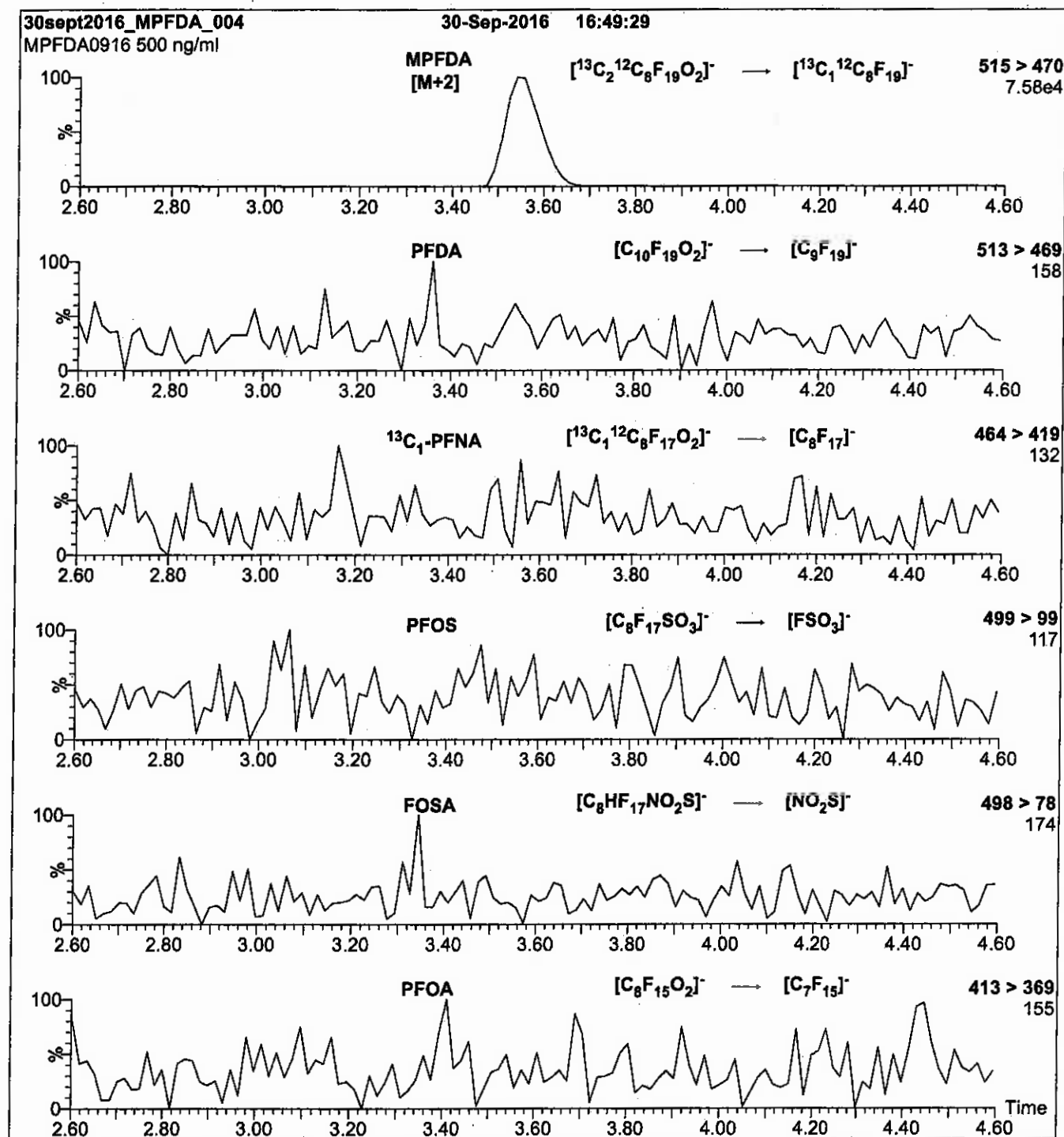
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.31e-3$
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00013

R: SBC 12/21/16



814258

ID: LCMPFHxA_00013

Exp: 04/08/21 Ppdt: SBC

13C2-Perfluorohexanoic ac



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

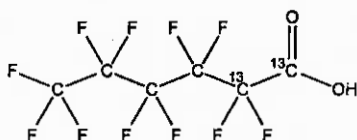
MPFHxA

LOT NUMBER:

MPFHxA0416

COMPOUND:Perfluoro-n-[1,2-¹³C₂]hexanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₄HF₁₁O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

316.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99%¹³C**LAST TESTED:** (mm/dd/yyyy)

04/08/2016

(1,2-¹³C₂)**EXPIRY DATE:** (mm/dd/yyyy)

04/08/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

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.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/29/2016

(mm/dd/yyyy)

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

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

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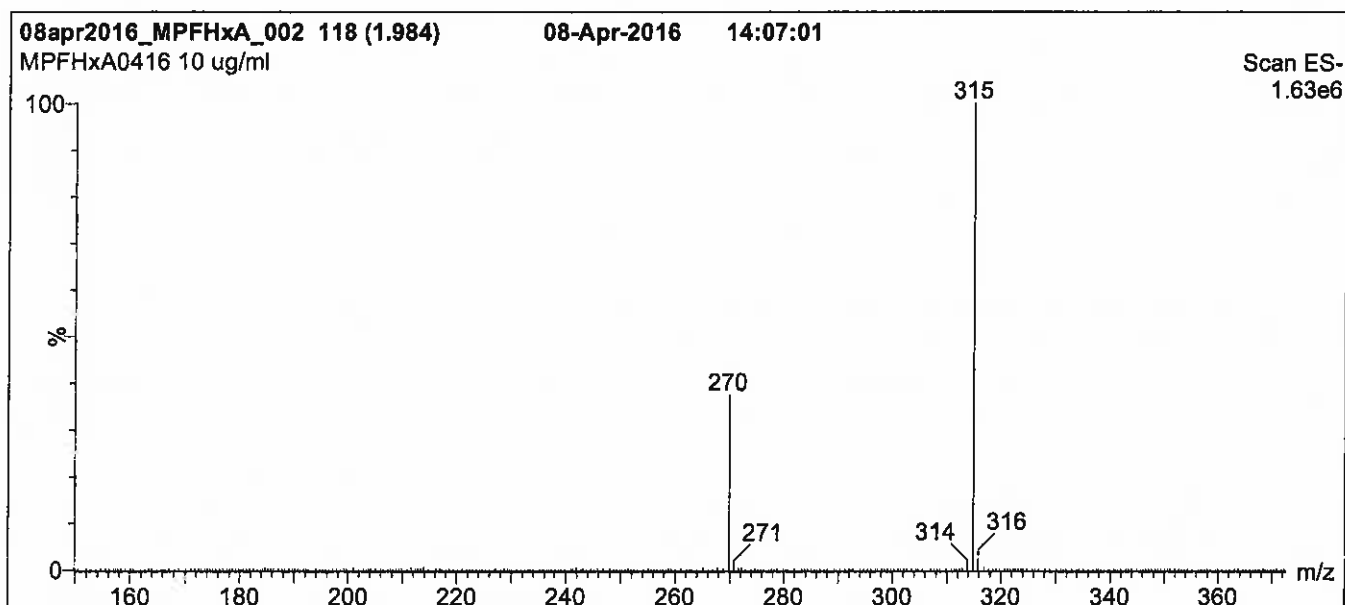
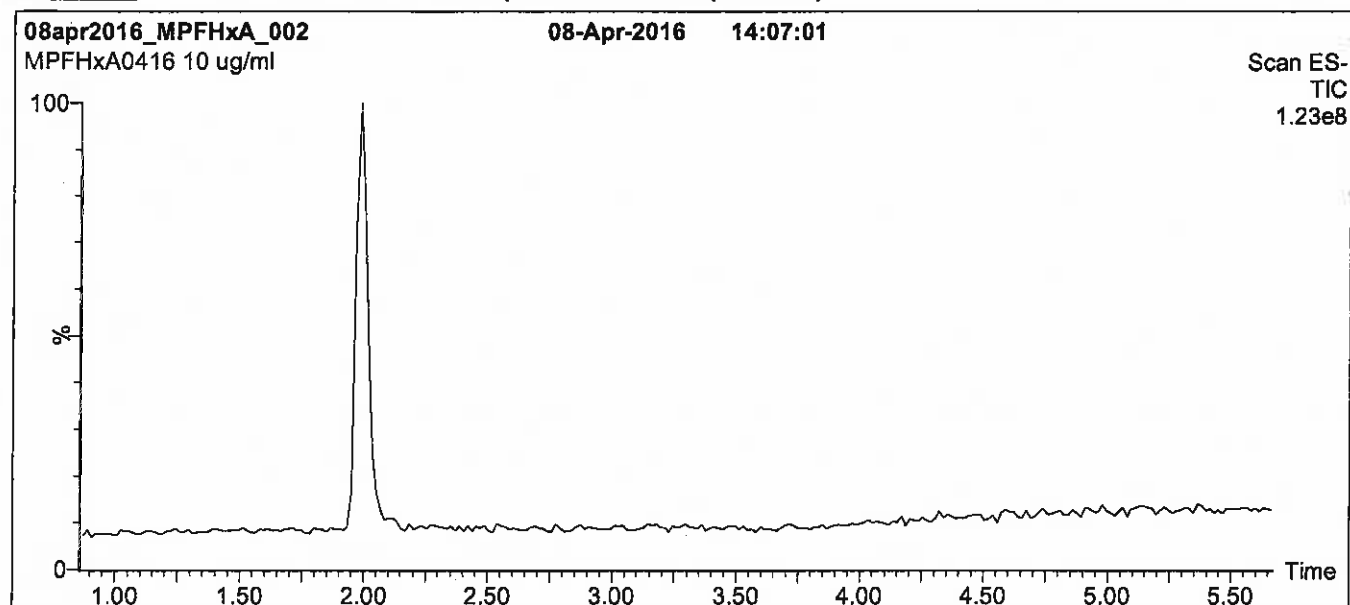
QUALITY MANAGEMENT:

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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

Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

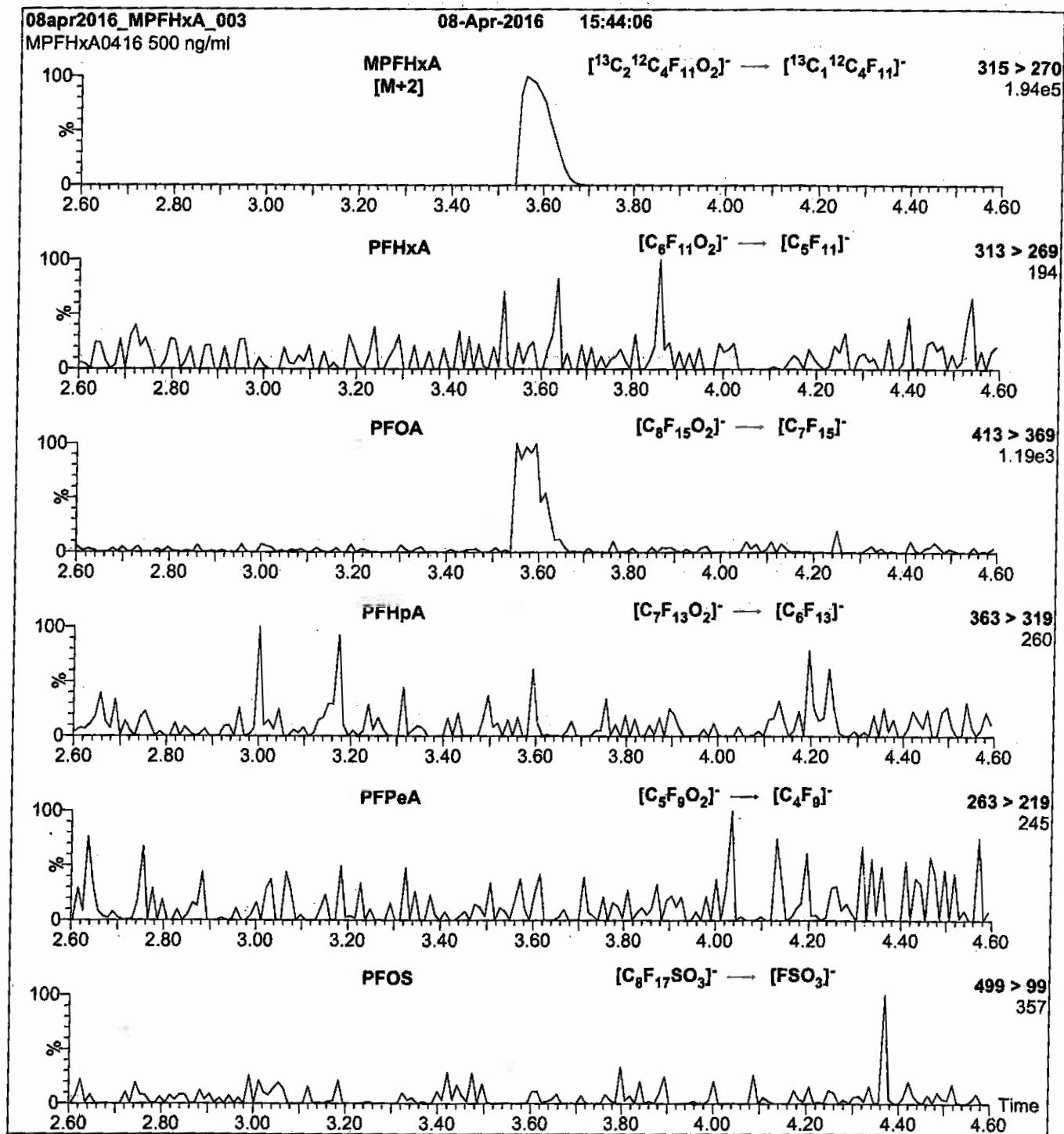
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.39\text{e-}3$
Collision Energy (eV) = 10

Reagent

LCMPFOS_00019

R: SBC 12/21/16



814253

ID: LCMFOS_00019

Exp: 08/03/21 Pipd: SBC

13C4-Perfluorooctanesulfo

WELLINGTON
LABORATORIESCERTIFICATE OF ANALYSIS
DOCUMENTATION**PRODUCT CODE:**

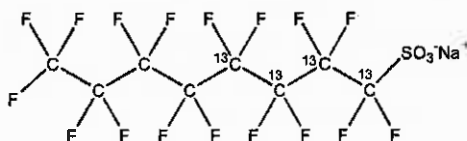
MPFOS

LOT NUMBER:

MPFOS0816

COMPOUND:Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₄¹²C₄F₁₇SO₃Na**CONCENTRATION:**

50.0 ± 2.5 µg/ml (Na salt)

47.8 ± 2.4 µg/ml (MPFOS anion)

MOLECULAR WEIGHT:

526.08

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

08/03/2016

(1,2,3,4-¹³C₄)**EXPIRY DATE:** (mm/dd/yyyy)

08/03/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/05/2016

(mm/dd/yyyy)

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 compound 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 are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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 $x_1, x_2, \dots, x_n$ on which it depends is:

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

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 $\pm 5\%$ (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 NIST and/or NRC traceable external weights. All volumetric glassware used is 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:

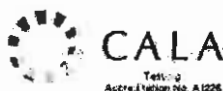
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

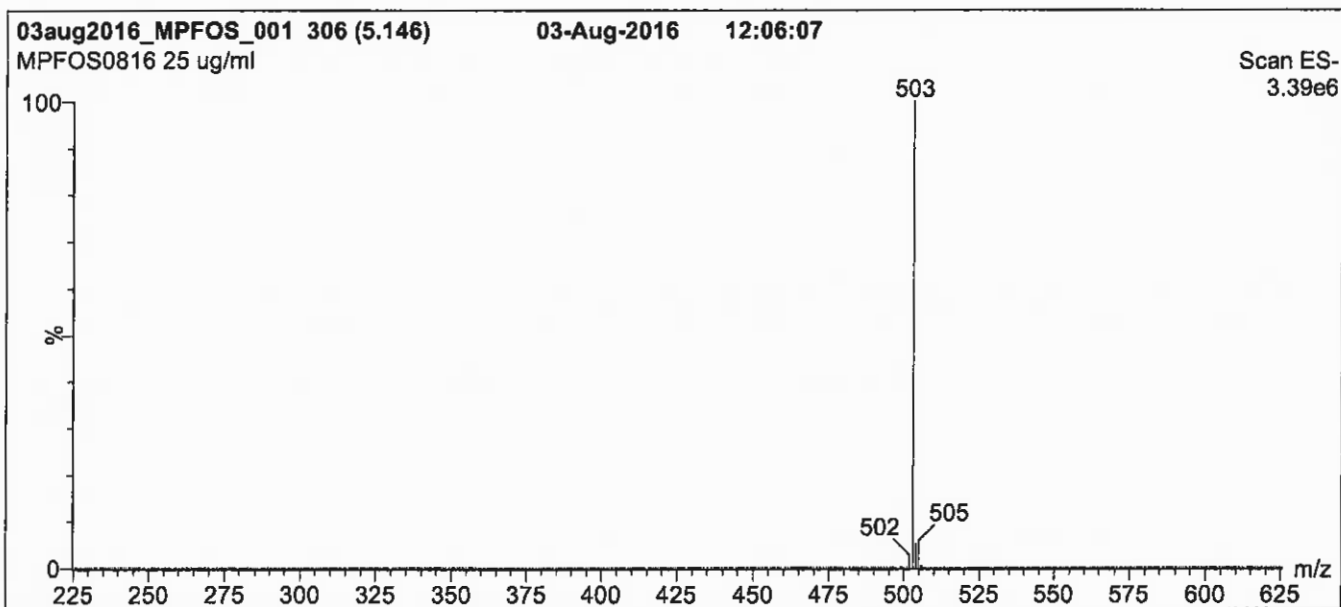
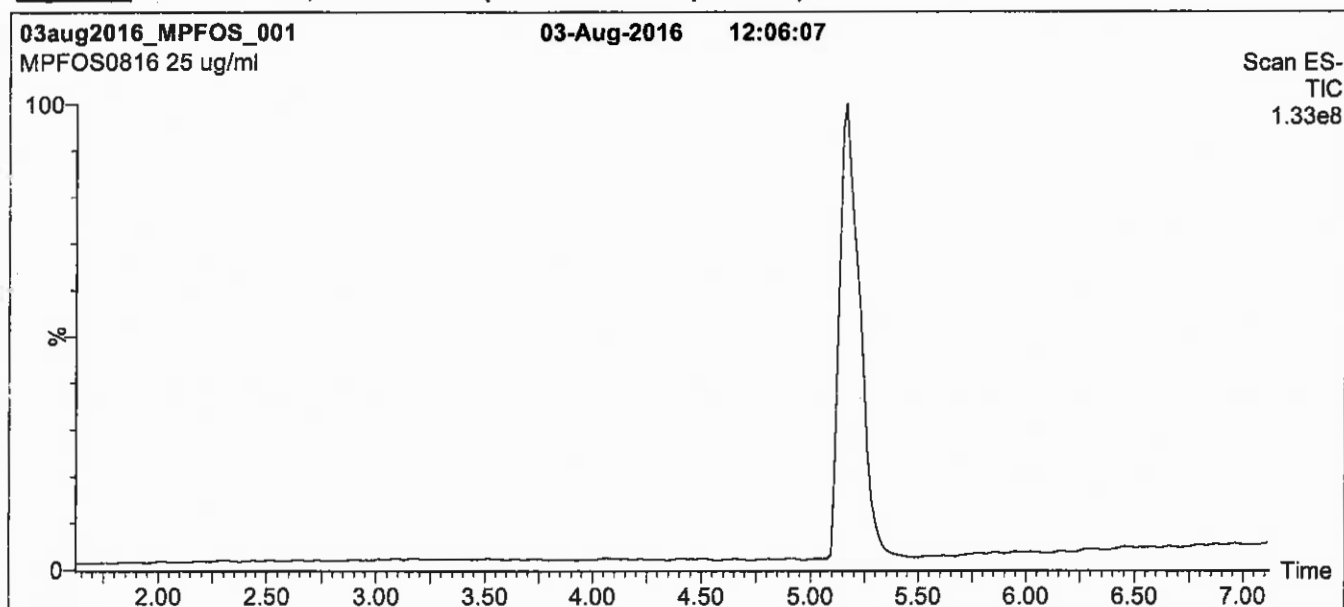
QUALITY MANAGEMENT:

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).



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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

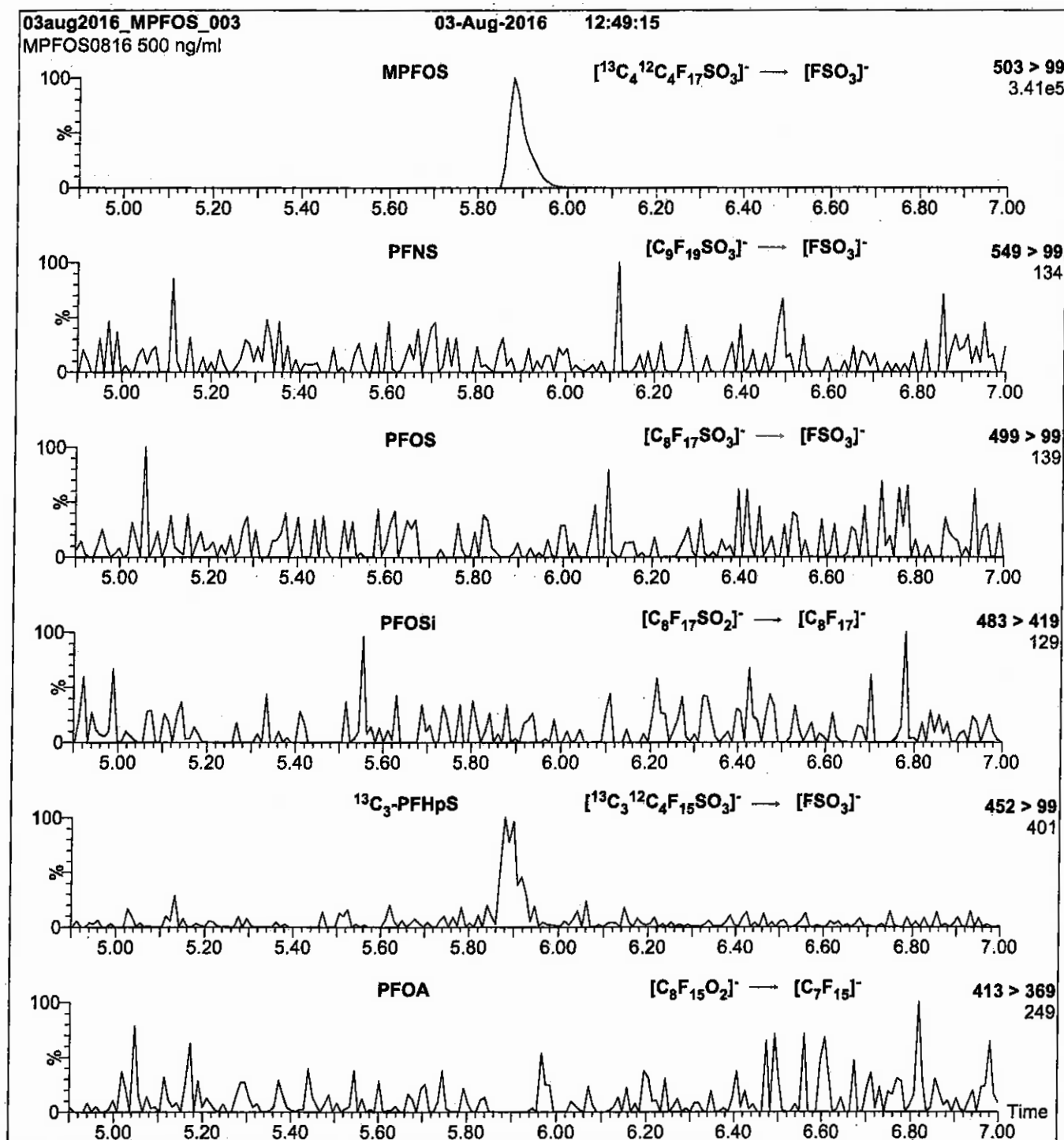
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 40

Method 537 DOD

Perfluorinated Alkyl Acids (LC/MS)
by Method 537 DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-053117-RW-106	320-28708-1	74	91
NAWC-053117-FRB-106	320-28708-2	89	89
NAWC-053117-RW-10	320-28708-3	82	86
NAWC-053117-FRB-10	320-28708-4	87	84
NAWC-053117-RW-111	320-28708-5	83	88
NAWC-053117-FRB-111	320-28708-6	85	84
NAWC-053117-RW-161	320-28708-7	79	89
NAWC-053117-FRB-161	320-28708-8	85	87
	MB 320-169193/1-A	86	88
	LCS 320-169193/2-A	82	86
NAWC-053117-RW-10 MS	320-28708-3 MS	86	91
NAWC-053117-RW-10 MSD	320-28708-3 MSD	82	87

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.06.19_537B_005.d
 Lab ID: LCS 320-169193/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	160	150	94	70-130	
Perfluorooctanoic acid (PFOA)	79.9	68.5	86	70-130	
Perfluorononanoic acid (PFNA)	77.0	64.9	84	70-130	
Perfluorohexanesulfonic acid (PFHxS)	120	120	100	70-130	
Perfluoroheptanoic acid (PFHpA)	39.6	36.0	91	70-130	
Perfluorobutanesulfonic acid (PFBS)	353	364	103	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.06.19_537B_020.d
 Lab ID: 320-28708-3 MS Client ID: NAWC-053117-RW-10 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	150	31 J	169	92	70-130	
Perfluorooctanoic acid (PFOA)	74.8	23	92.2	92	70-130	
Perfluorononanoic acid (PFNA)	72.1	19 U	67.0	93	70-130	
Perfluorohexanesulfonic acid (PFHxS)	113	20 J	128	96	70-130	
Perfluoroheptanoic acid (PFHpA)	37.1	6.6 J	39.5	89	70-130	
Perfluorobutanesulfonic acid (PFBS)	331	34 U	333	101	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.06.19_537B_021.d
 Lab ID: 320-28708-3 MSD Client ID: NAWC-053117-RW-10 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	151	170	92	1	30	70-130	
Perfluorooctanoic acid (PFOA)	75.5	93.5	93	1	30	70-130	
Perfluorononanoic acid (PFNA)	72.8	67.3	92	1	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	114	129	96	1	30	70-130	
Perfluoroheptanoic acid (PFHpA)	37.4	38.0	84	4	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	334	339	101	2	30	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
SDG No.: _____
Lab File ID: 2017.06.19_537B_004.d Lab Sample ID: MB 320-169193/1-A
Matrix: Water Date Extracted: 06/14/2017 08:33
Instrument ID: A8_N Date Analyzed: 06/19/2017 18:47
Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-169193/2-A	2017.06.19_537B 005.d	06/19/2017 18:52
NAWC-053117-RW-106	320-28708-1	2017.06.19_537B 017.d	06/19/2017 19:49
NAWC-053117-FRB-106	320-28708-2	2017.06.19_537B 018.d	06/19/2017 19:53
NAWC-053117-RW-10	320-28708-3	2017.06.19_537B 019.d	06/19/2017 19:58
NAWC-053117-RW-10 MS	320-28708-3 MS	2017.06.19_537B 020.d	06/19/2017 20:03
NAWC-053117-RW-10 MSD	320-28708-3 MSD	2017.06.19_537B 021.d	06/19/2017 20:07
NAWC-053117-FRB-10	320-28708-4	2017.06.19_537B 022.d	06/19/2017 20:12
NAWC-053117-RW-111	320-28708-5	2017.06.19_537B 023.d	06/19/2017 20:17
NAWC-053117-FRB-111	320-28708-6	2017.06.19_537B 024.d	06/19/2017 20:22
NAWC-053117-RW-161	320-28708-7	2017.06.19_537B 027.d	06/19/2017 20:36
NAWC-053117-FRB-161	320-28708-8	2017.06.19_537B 028.d	06/19/2017 20:41

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 06/19/2017 18:04
 Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		3870975	2.86	9204122	2.99		
UPPER LIMIT		5806463	3.36	13806183	3.49		
LOWER LIMIT		1935488	2.36	4602061	2.49		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-169955/11		3724287	2.86	8759638	2.99		
ICV 320-169955/13		3818724	2.85	9420237	2.99		
CCV 320-169962/1 CCVIS		3862838	2.86	9159685	2.99		
MB 320-169193/1-A		4627333	2.86	9307960	2.99		
LCS 320-169193/2-A		4374463	2.85	8985523	2.99		
CCV 320-169962/13 CCVIS		4271839	2.85	9487679	2.98		
CCV 320-169964/13 CCVIS		4271839	2.85	9487679	2.98		
320-28708-1	NAWC-053117-RW-106	4182409	2.85	8983685	2.97		
320-28708-2	NAWC-053117-FRB-106	4513723	2.85	9625179	2.97		
320-28708-3	NAWC-053117-RW-10	4199912	2.85	9120565	2.98		
320-28708-3 MS	NAWC-053117-RW-10 MS	4035947	2.85	8674283	2.98		
320-28708-3 MSD	NAWC-053117-RW-10 MSD	4204686	2.85	8858238	2.97		
320-28708-4	NAWC-053117-FRB-10	4067345	2.85	8557275	2.99		
320-28708-5	NAWC-053117-RW-111	4189424	2.86	9116046	3.00		
320-28708-6	NAWC-053117-FRB-111	4440652	2.85	9010808	2.99		
CCV 320-169964/25 CCVIS		4094794	2.86	8881256	2.99		
CCV 320-169966/25 CCVIS		4094794	2.86	8881256	2.99		
320-28708-7	NAWC-053117-RW-161	4364875	2.86	8714354	2.99		
320-28708-8	NAWC-053117-FRB-161	4594387	2.86	9259310	3.00		
CCV 320-169966/37 CCVIS		4256821	2.86	10132995	3.00		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area

RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Sample No.: CCV 320-169962/1 Date Analyzed: 06/19/2017 18:33
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.06.19_537B_001 Heated Purge: (Y/N) N
 Calibration ID: 31800

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	3862838	2.86	9159685	2.99		
UPPER LIMIT	5407973	3.36	12823559	3.49		
LOWER LIMIT	2703987	2.36	6411780	2.49		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-169193/1-A		4627333	2.86	9307960	2.99	
LCS 320-169193/2-A		4374463	2.85	8985523	2.99	

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Sample No.: CCV 320-169962/13 Date Analyzed: 06/19/2017 19:30
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.06.19_537B_013 Heated Purge: (Y/N) N
 Calibration ID: 31800

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	4271839	2.85	9487679	2.98		
UPPER LIMIT	5980575	3.35	13282751	3.48		
LOWER LIMIT	2990287	2.35	6641375	2.48		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-169193/1-A		4627333	2.86	9307960	2.99	
LCS 320-169193/2-A		4374463	2.85	8985523	2.99	

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Sample No.: CCV 320-169964/13 Date Analyzed: 06/19/2017 19:30
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.06.19_537B_013 Heated Purge: (Y/N) N
 Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4271839	2.85	9487679	2.98		
UPPER LIMIT		5980575	3.35	13282751	3.48		
LOWER LIMIT		2990287	2.35	6641375	2.48		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-28708-1	NAWC-053117-RW-106	4182409	2.85	8983685	2.97		
320-28708-2	NAWC-053117-FRB-106	4513723	2.85	9625179	2.97		
320-28708-3	NAWC-053117-RW-10	4199912	2.85	9120565	2.98		
320-28708-3 MS	NAWC-053117-RW-10 MS	4035947	2.85	8674283	2.98		
320-28708-3 MSD	NAWC-053117-RW-10 MSD	4204686	2.85	8858238	2.97		
320-28708-4	NAWC-053117-FRB-10	4067345	2.85	8557275	2.99		
320-28708-5	NAWC-053117-RW-111	4189424	2.86	9116046	3.00		
320-28708-6	NAWC-053117-FRB-111	4440652	2.85	9010808	2.99		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Sample No.: CCV 320-169964/25 Date Analyzed: 06/19/2017 20:26
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.06.19_537B_025 Heated Purge: (Y/N) N
 Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4094794	2.86	8881256	2.99		
UPPER LIMIT		5732712	3.36	12433758	3.49		
LOWER LIMIT		2866356	2.36	6216879	2.49		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-28708-1	NAWC-053117-RW-106	4182409	2.85	8983685	2.97		
320-28708-2	NAWC-053117-FRB-106	4513723	2.85	9625179	2.97		
320-28708-3	NAWC-053117-RW-10	4199912	2.85	9120565	2.98		
320-28708-3 MS	NAWC-053117-RW-10 MS	4035947	2.85	8674283	2.98		
320-28708-3 MSD	NAWC-053117-RW-10 MSD	4204686	2.85	8858238	2.97		
320-28708-4	NAWC-053117-FRB-10	4067345	2.85	8557275	2.99		
320-28708-5	NAWC-053117-RW-111	4189424	2.86	9116046	3.00		
320-28708-6	NAWC-053117-FRB-111	4440652	2.85	9010808	2.99		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Sample No.: CCV 320-169966/25 Date Analyzed: 06/19/2017 20:26
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.06.19_537B_025 Heated Purge: (Y/N) N
 Calibration ID: 31800

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	4094794	2.86	8881256	2.99		
UPPER LIMIT	5732712	3.36	12433758	3.49		
LOWER LIMIT	2866356	2.36	6216879	2.49		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-28708-7	NAWC-053117-RW-161		4364875	2.86	8714354	2.99
320-28708-8	NAWC-053117-FRB-161		4594387	2.86	9259310	3.00

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Sample No.: CCV 320-169966/37 Date Analyzed: 06/19/2017 21:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.06.19_537B_037 Heated Purge: (Y/N) N
 Calibration ID: 31800

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	4256821	2.86	10132995	3.00		
UPPER LIMIT	5959549	3.36	14186193	3.50		
LOWER LIMIT	2979775	2.36	7093097	2.50		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-28708-7	NAWC-053117-RW-161		4364875	2.86	8714354	2.99
320-28708-8	NAWC-053117-FRB-161		4594387	2.86	9259310	3.00

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Client Sample ID: NAWC-053117-RW-106 Lab Sample ID: 320-28708-1
 Matrix: Water Lab File ID: 2017.06.19_537B_017.d
 Analysis Method: 537 Date Collected: 05/31/2017 08:25
 Extraction Method: 537 Date Extracted: 06/14/2017 08:33
 Sample wt/vol: 253.1(mL) Date Analyzed: 06/19/2017 19:49
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 169964 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.9	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.2	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_017.d
 Lims ID: 320-28708-A-1-A
 Client ID: NAWC-053117-RW-106
 Sample Type: Client
 Inject. Date: 19-Jun-2017 19:49:00 ALS Bottle#: 13 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 15:07:39 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 15:06:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.170	2.183	-0.013	1.000	545468	2.01		12.3	M
298.90 > 99.00	2.170	2.183	-0.013	1.000	471672		1.16(0.00-0.00)	56.8	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.367	2.381	-0.014	1.000	3225848	7.43		2719	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.610	2.625	-0.015	1.000	917274	2.51		29.5	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.618	2.630	-0.012	1.000	730303	2.07		15.2	
* 6 13C2-PFOA									
415.00 > 370.00	2.845	2.859	-0.014		4182409	10.0		7368	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.845	2.859	-0.014	1.000	2125175	5.80		84.6	
413.00 > 169.00	2.845	2.859	-0.014	1.000	1233014		1.72(0.00-0.00)	598	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.974	2.989	-0.015	1.000	1389884	4.37		140	
499.00 > 99.00	2.974	2.989	-0.015	1.000	231130		6.01(0.00-0.00)	120	
* 7 13C4 PFOS									
503.00 > 80.00	2.974	2.991	-0.017		8983685	28.7		1656	
9 Perfluorononanoic acid									
463.00 > 419.00	2.989	3.003	-0.014	1.000	354937	0.99		27.4	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.111	3.123	-0.012	1.000	3662347	9.10		11280	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_017.d

Injection Date: 19-Jun-2017 19:49:00

Instrument ID: A8_N

Lims ID: 320-28708-A-1-A

Lab Sample ID: 320-28708-1

Client ID: NAWC-053117-RW-106

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

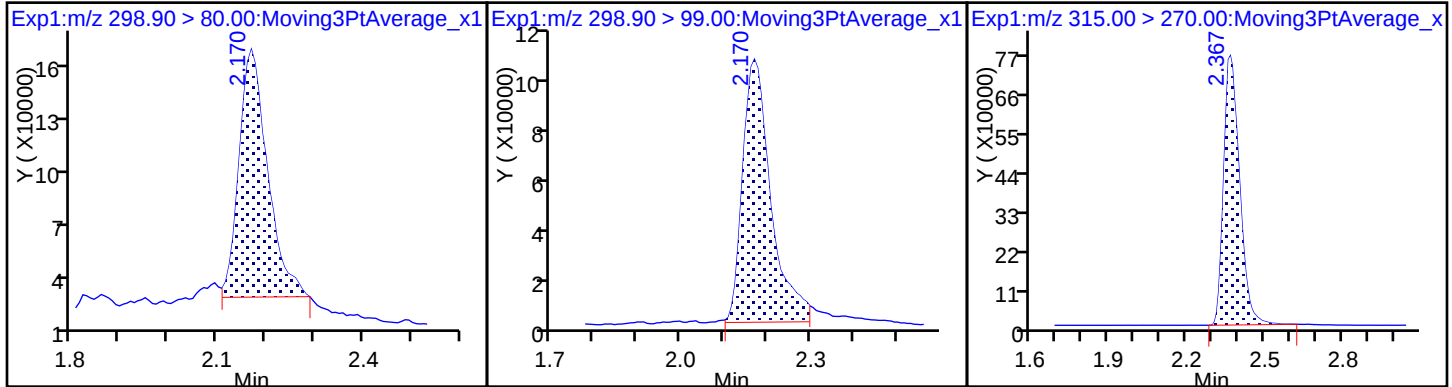
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

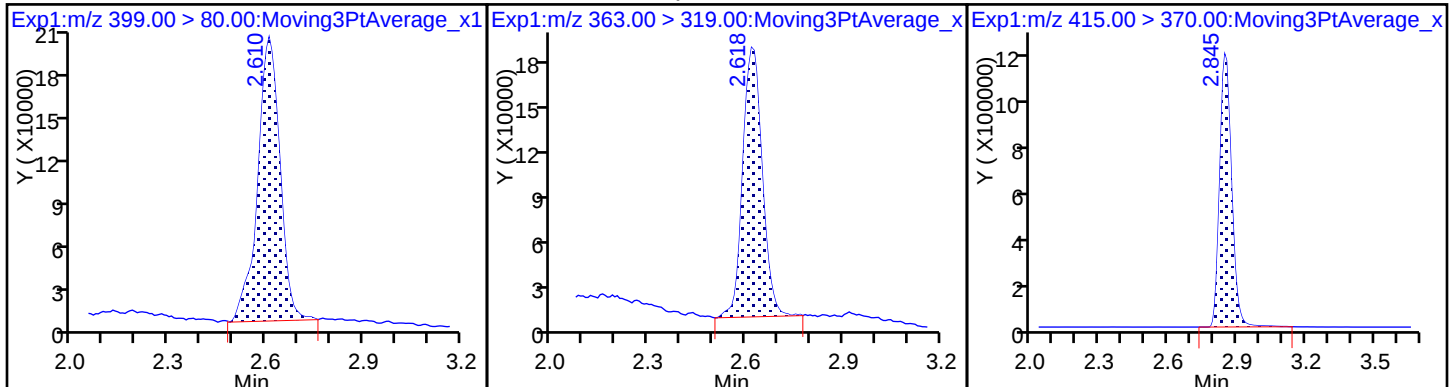
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

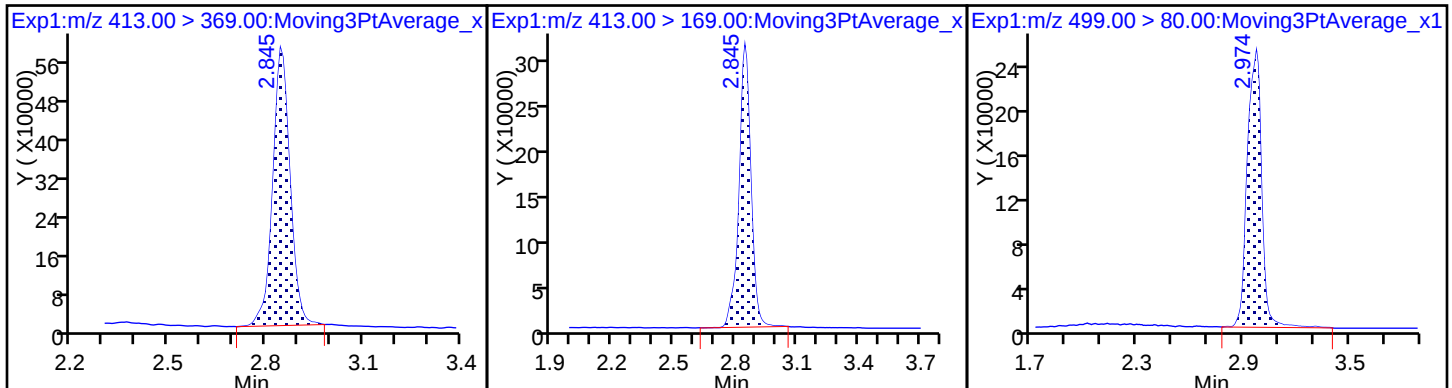
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

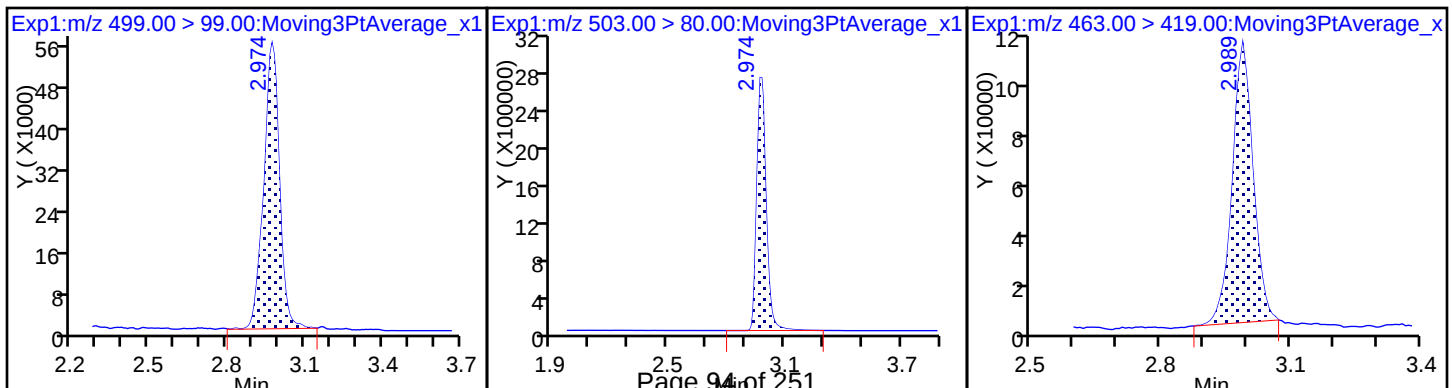
8 Perfluorooctane sulfonic acid



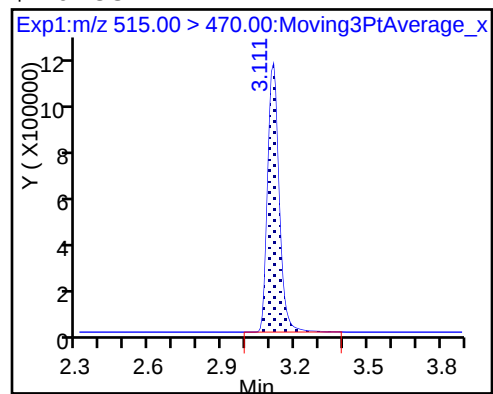
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_017.d
Lims ID: 320-28708-A-1-A
Client ID: NAWC-053117-RW-106
Sample Type: Client
Inject. Date: 19-Jun-2017 19:49:00 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 15:07:39 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 15:06:46

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.43	74.33
\$ 10 13C2 PFDA	10.0	9.10	91.00

TestAmerica Sacramento

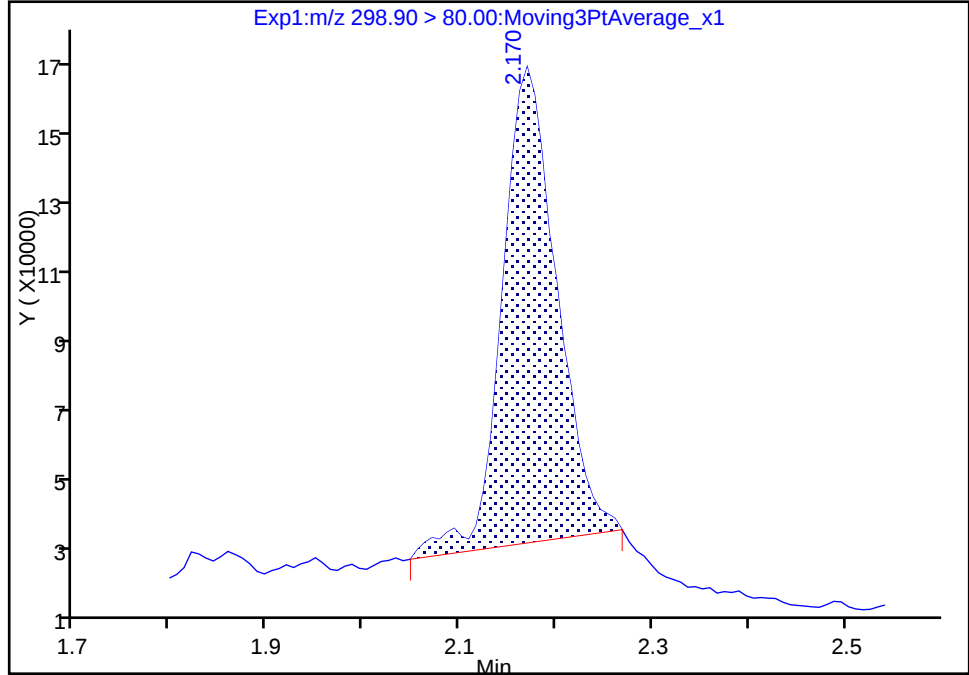
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_017.d				
Injection Date:	19-Jun-2017 19:49:00	Instrument ID:	A8_N		
Lims ID:	320-28708-A-1-A	Lab Sample ID:	320-28708-1		
Client ID:	NAWC-053117-RW-106				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

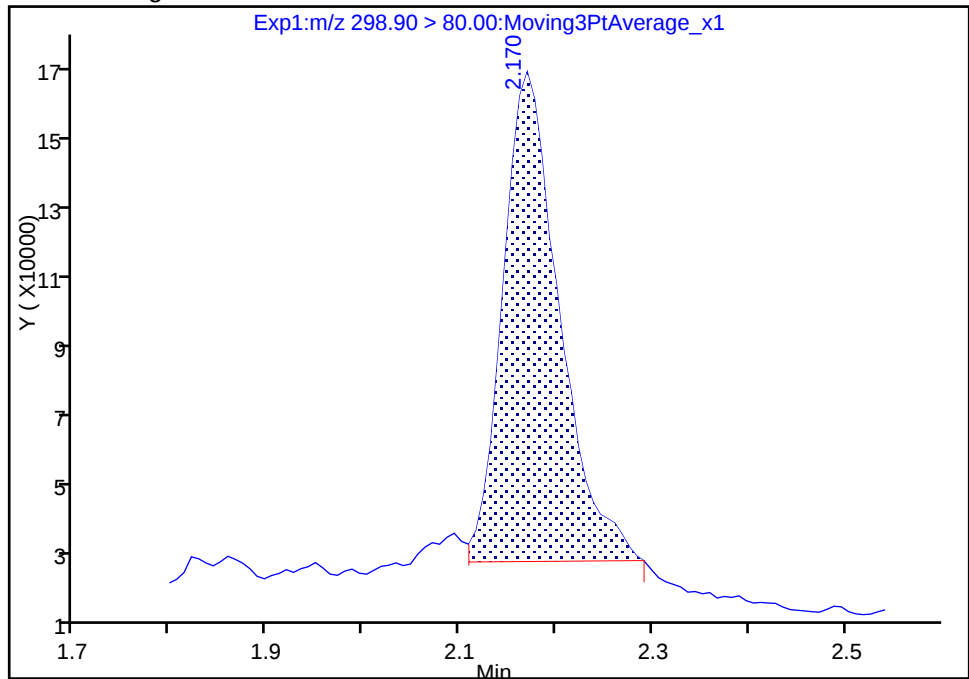
RT: 2.17
Area: 515113
Amount: 1.902265
Amount Units: ng/ml

Processing Integration Results



RT: 2.17
Area: 545468
Amount: 2.014363
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 15:06:11
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
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TestAmerica Sacramento

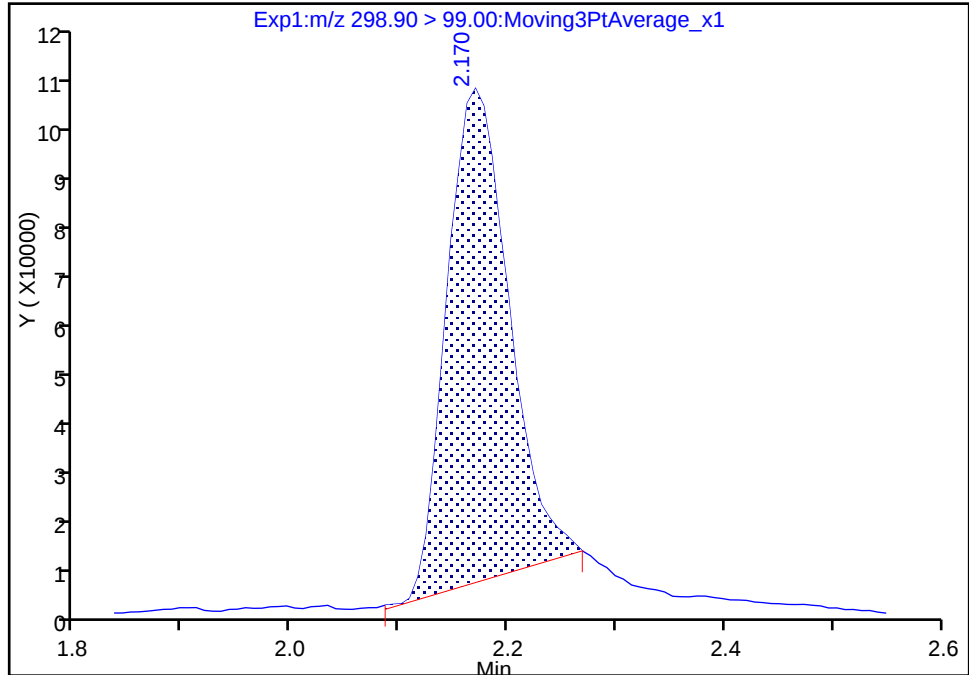
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_017.d				
Injection Date:	19-Jun-2017 19:49:00	Instrument ID:	A8_N		
Lims ID:	320-28708-A-1-A	Lab Sample ID:	320-28708-1		
Client ID:	NAWC-053117-RW-106				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

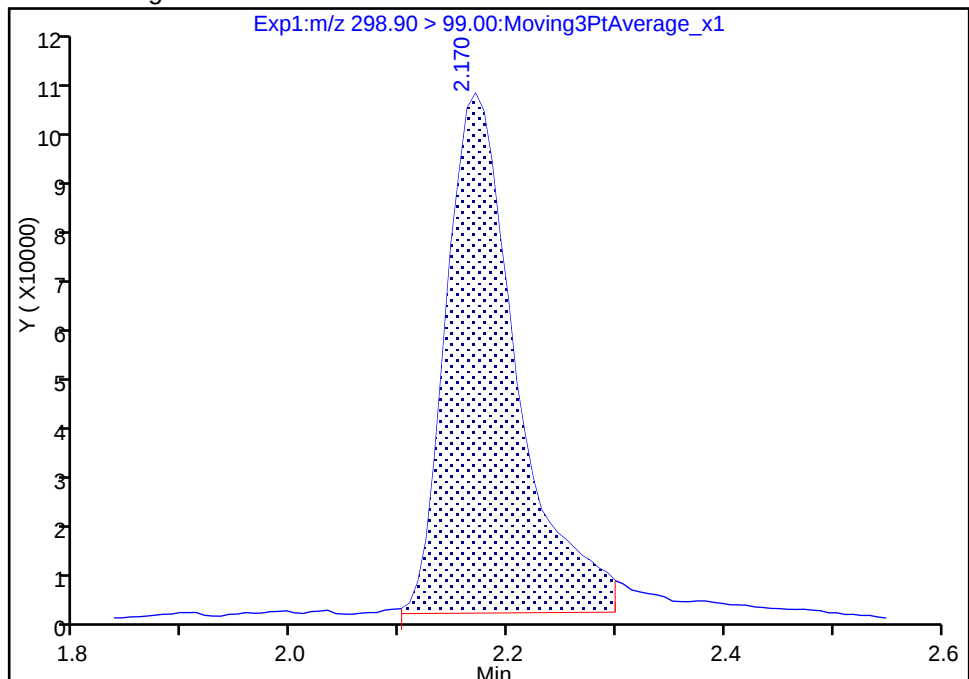
RT: 2.17
Area: 394656
Amount: 1.902265
Amount Units: ng/ml

Processing Integration Results



RT: 2.17
Area: 471672
Amount: 2.014363
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 15:06:31

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-28708-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-053117-FRB-106</u>	Lab Sample ID: <u>320-28708-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.06.19_537B_018.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>05/31/2017 08:20</u>
Extraction Method: <u>537</u>	Date Extracted: <u>06/14/2017 08:33</u>
Sample wt/vol: <u>254.7(mL)</u>	Date Analyzed: <u>06/19/2017 19:53</u>
Con. Extract Vol.: <u>1.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>169964</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_018.d
 Lims ID: 320-28708-A-2-A
 Client ID: NAWC-053117-FRB-106
 Sample Type: Client
 Inject. Date: 19-Jun-2017 19:53:44 ALS Bottle#: 14 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.367	2.381	-0.014	1.000	4170403	8.90		3071	
* 6 13C2-PFOA									
415.00 > 370.00	2.845	2.859	-0.014		4513723	10.0		6625	
* 7 13C4 PFOS									
503.00 > 80.00	2.974	2.991	-0.017		9625179	28.7		15232	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.103	3.123	-0.020	1.000	3870374	8.91		14110	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_018.d

Injection Date: 19-Jun-2017 19:53:44

Instrument ID: A8_N

Lims ID: 320-28708-A-2-A

Lab Sample ID: 320-28708-2

Client ID: NAWC-053117-FRB-106

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

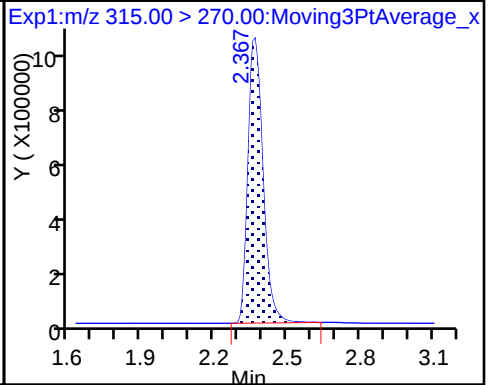
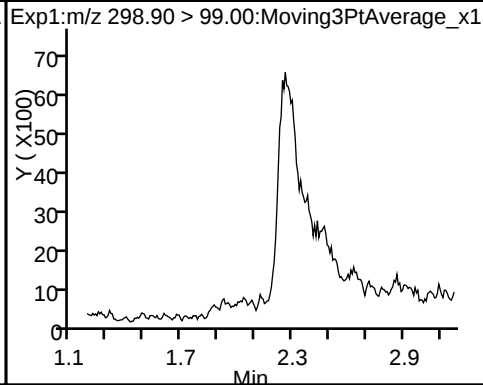
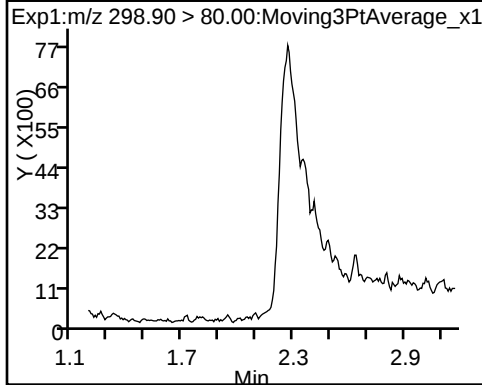
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

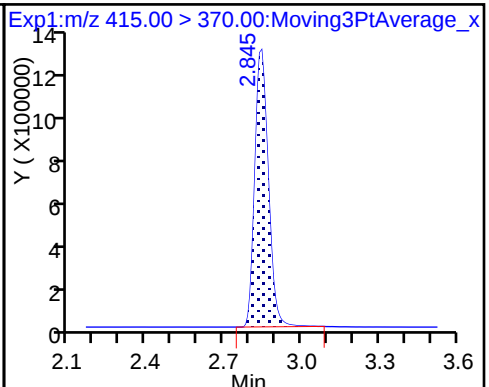
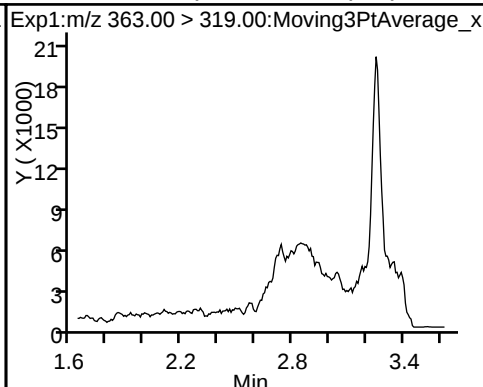
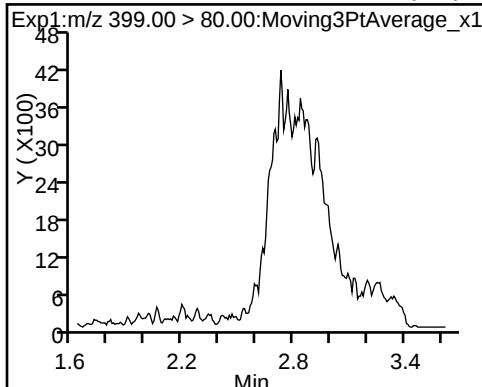
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

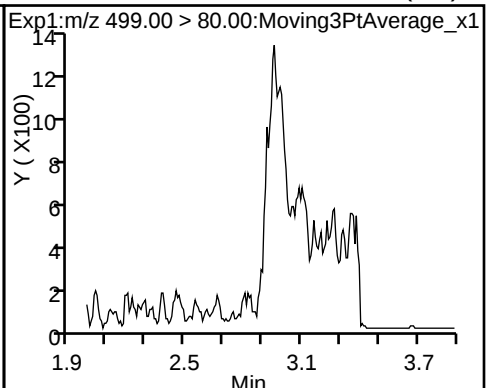
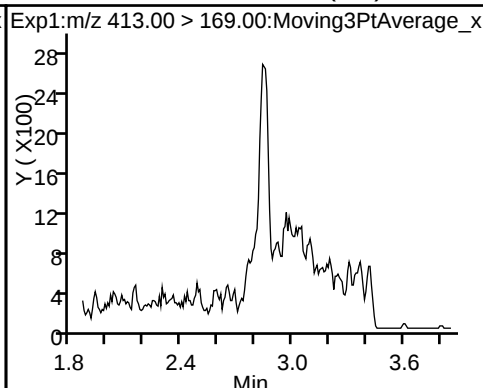
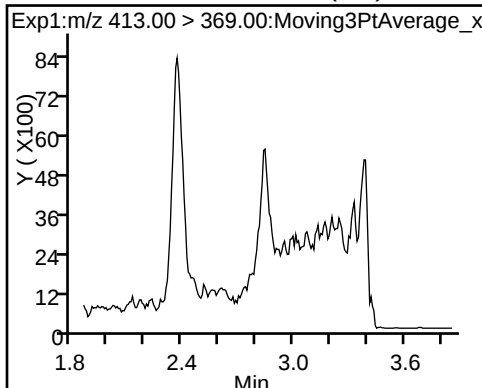
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

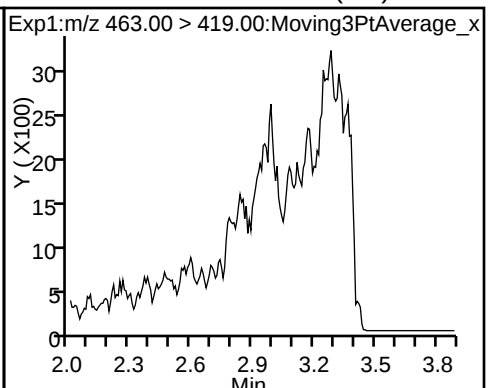
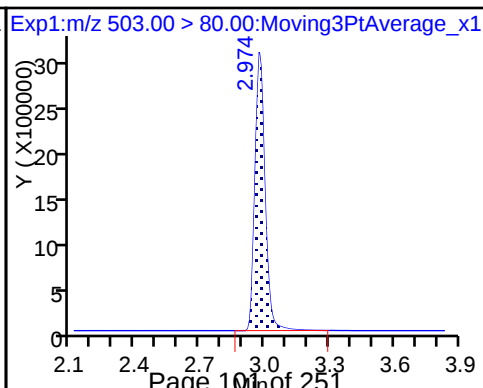
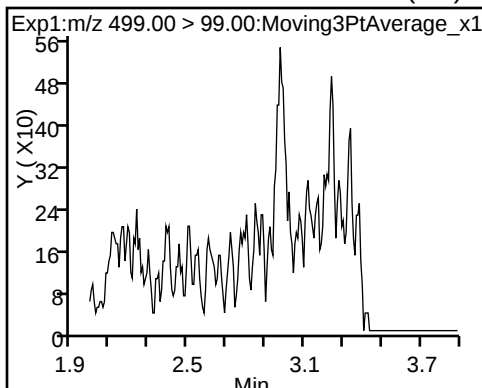
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

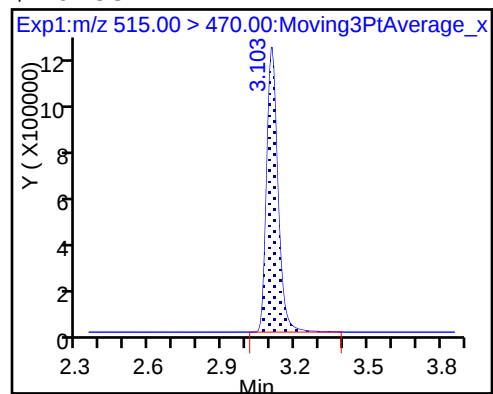


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_018.d
Lims ID: 320-28708-A-2-A
Client ID: NAWC-053117-FRB-106
Sample Type: Client
Inject. Date: 19-Jun-2017 19:53:44 ALS Bottle#: 14 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.90	89.04
\$ 10 13C2 PFDA	10.0	8.91	89.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-28708-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-053117-RW-10</u>	Lab Sample ID: <u>320-28708-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.06.19_537B_019.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>05/31/2017 09:45</u>
Extraction Method: <u>537</u>	Date Extracted: <u>06/14/2017 08:33</u>
Sample wt/vol: <u>266.4 (mL)</u>	Date Analyzed: <u>06/19/2017 19:58</u>
Con. Extract Vol.: <u>1.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>169964</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	23		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	20	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	86		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_019.d
 Lims ID: 320-28708-A-3-A
 Client ID: NAWC-053117-RW-10
 Sample Type: Client
 Inject. Date: 19-Jun-2017 19:58:28 ALS Bottle#: 15 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 15:07:39 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:41:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.170	2.183	-0.013	1.000	314511	1.14		16.1	M
298.90 > 99.00	2.170	2.183	-0.013	1.000	243575		1.29(0.00-0.00)	41.6	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.367	2.381	-0.014	1.000	3568862	8.19		2416	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.610	2.625	-0.015	1.000	1996522	5.38		113	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.618	2.630	-0.012	1.000	625478	1.77		22.0	
* 6 13C2-PFOA									
415.00 > 370.00	2.845	2.859	-0.014		4199912	10.0		6239	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.845	2.859	-0.014	1.000	2298484	6.25		124	
413.00 > 169.00	2.845	2.859	-0.014	1.000	1422968		1.62(0.00-0.00)	823	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.974	2.989	-0.015	1.000	2686109	8.32		529	
499.00 > 99.00	2.974	2.989	-0.015	1.000	511110		5.26(0.00-0.00)	432	
* 7 13C4 PFOS									
503.00 > 80.00	2.982	2.991	-0.009		9120565	28.7		2687	
9 Perfluorononanoic acid									
463.00 > 419.00	2.989	3.003	-0.014	1.000	293113	0.8181		35.4	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.111	3.123	-0.012	1.000	3482016	8.62		13205	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_019.d

Injection Date: 19-Jun-2017 19:58:28

Instrument ID: A8_N

Lims ID: 320-28708-A-3-A

Lab Sample ID: 320-28708-3

Client ID: NAWC-053117-RW-10

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

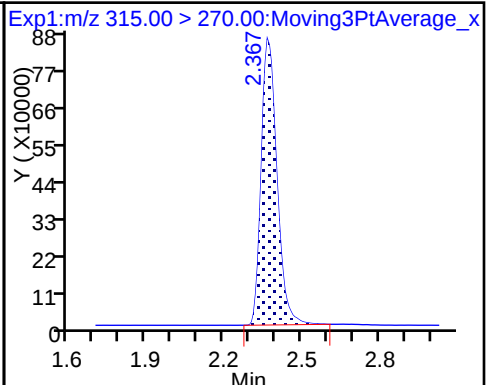
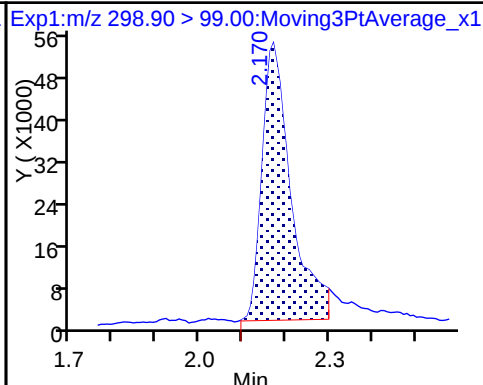
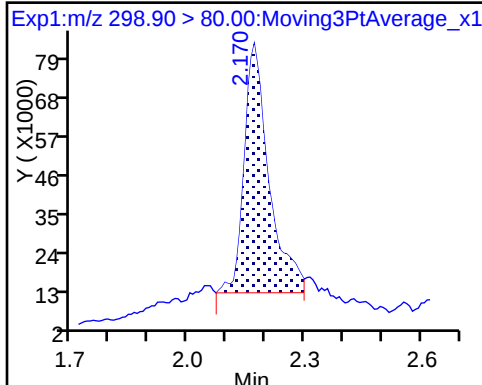
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

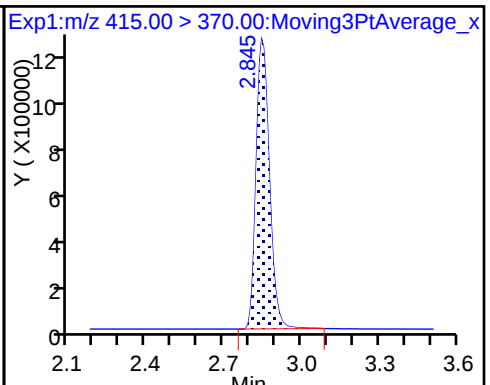
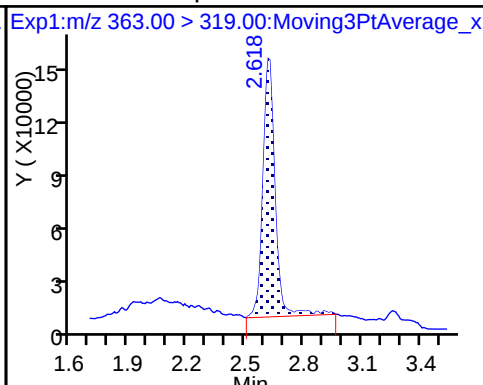
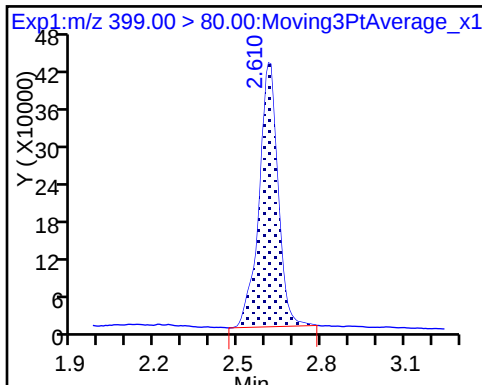
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

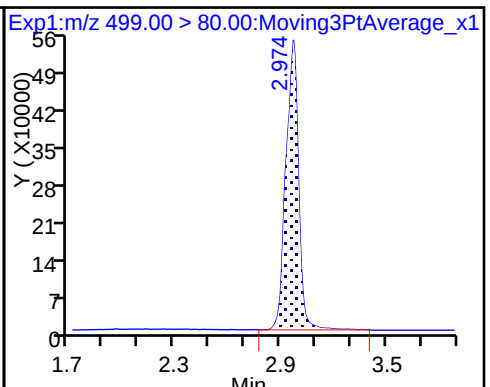
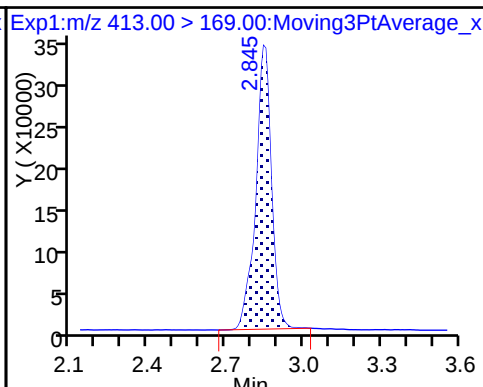
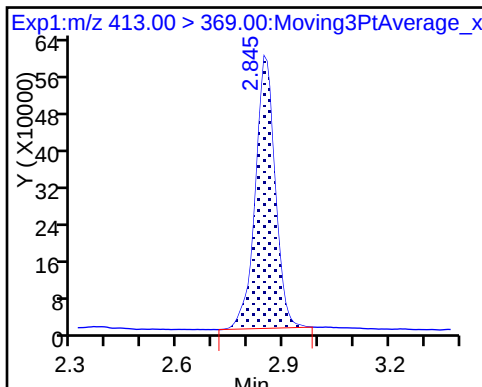
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

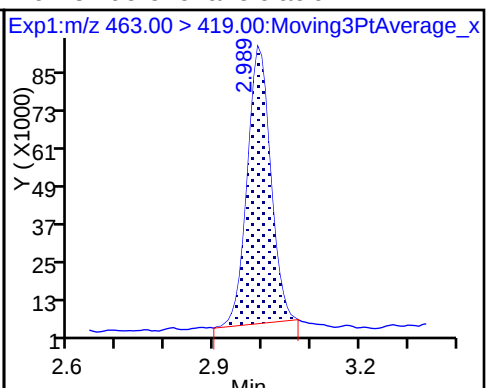
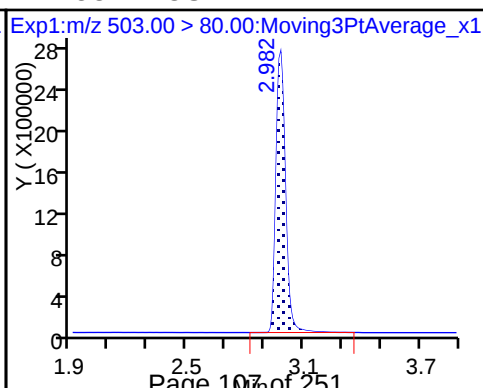
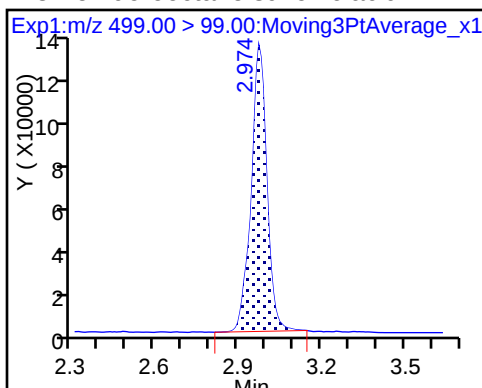
8 Perfluorooctane sulfonic acid



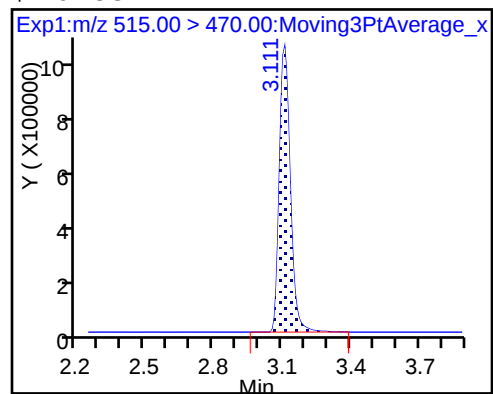
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_019.d
Lims ID: 320-28708-A-3-A
Client ID: NAWC-053117-RW-10
Sample Type: Client
Inject. Date: 19-Jun-2017 19:58:28 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 15:07:39 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:41:27

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.19	81.89
\$ 10 13C2 PFDA	10.0	8.62	86.16

TestAmerica Sacramento

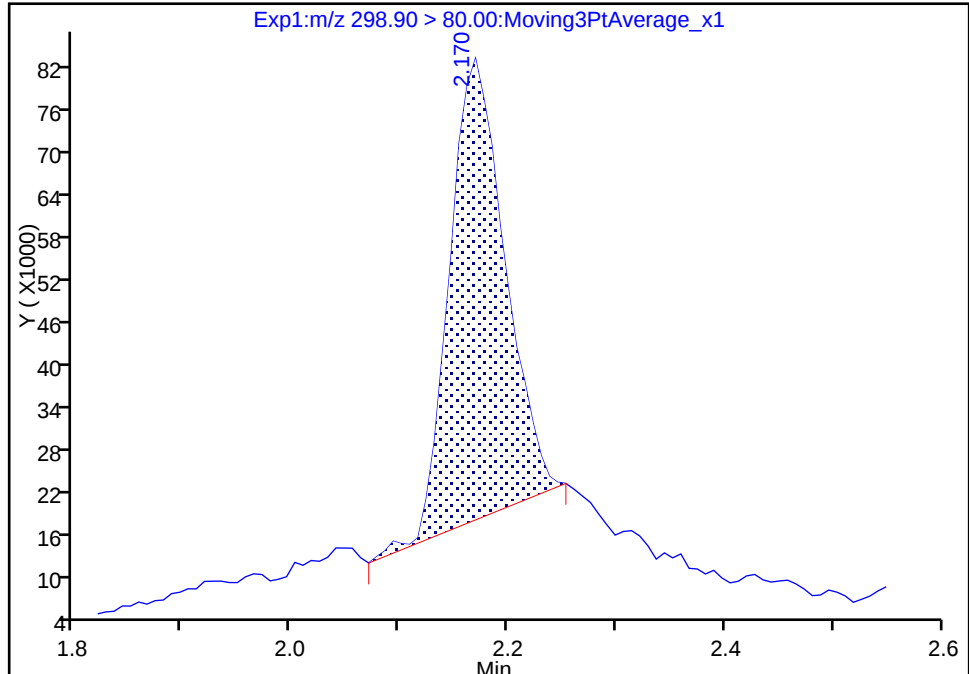
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_019.d				
Injection Date:	19-Jun-2017 19:58:28	Instrument ID:	A8_N		
Lims ID:	320-28708-A-3-A	Lab Sample ID:	320-28708-3		
Client ID:	NAWC-053117-RW-10				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

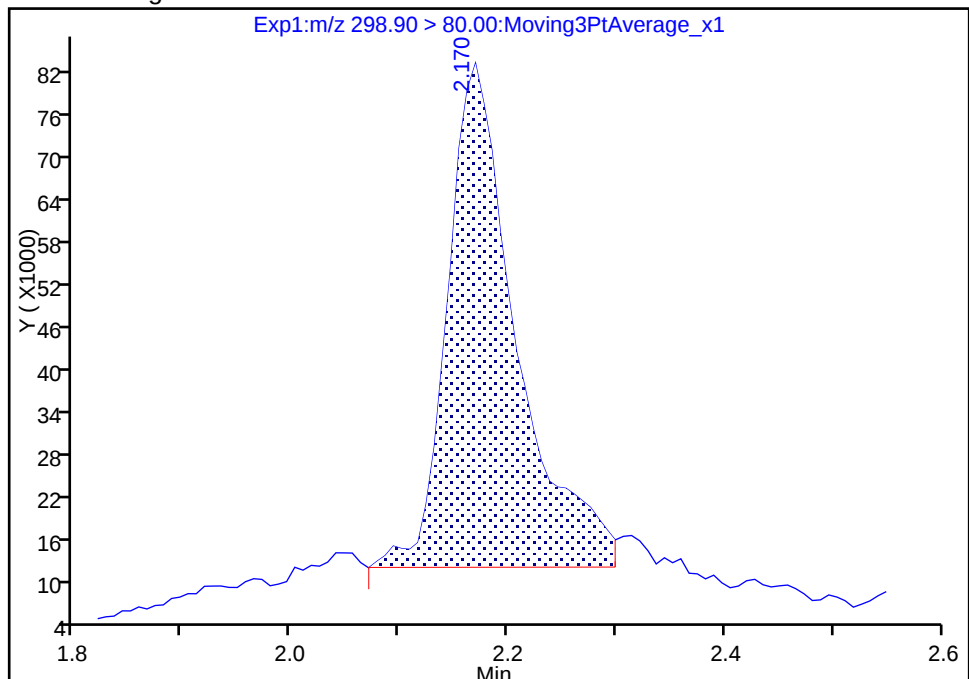
RT: 2.17
Area: 232064
Amount: 0.844129
Amount Units: ng/ml

Processing Integration Results



RT: 2.17
Area: 314511
Amount: 1.144029
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 15:07:03
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 110 of 251

TestAmerica Sacramento

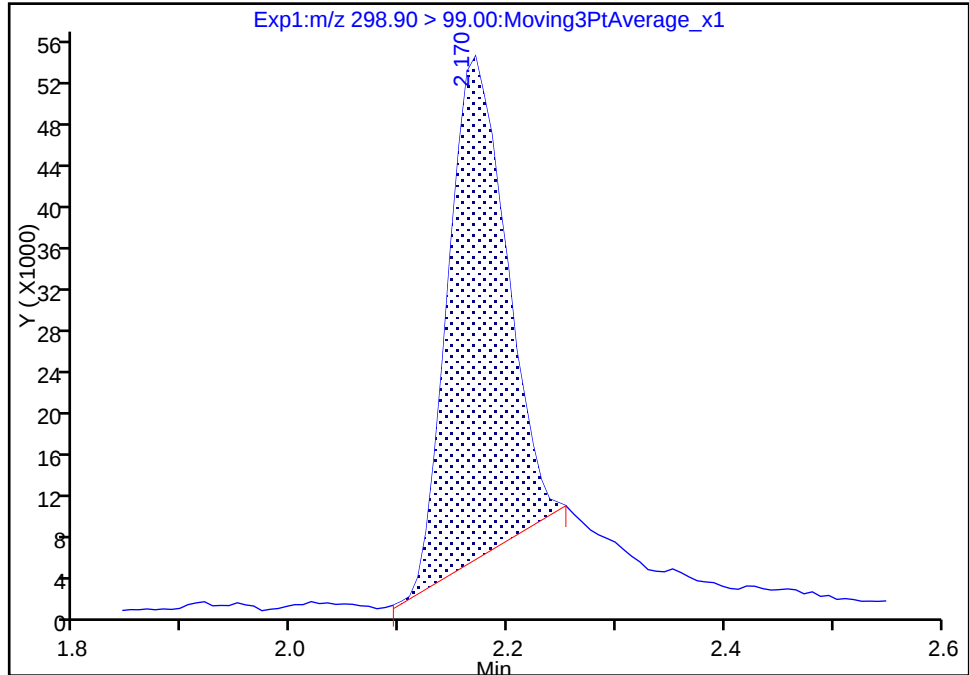
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_019.d
Injection Date: 19-Jun-2017 19:58:28 Instrument ID: A8_N
Lims ID: 320-28708-A-3-A Lab Sample ID: 320-28708-3
Client ID: NAWC-053117-RW-10
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

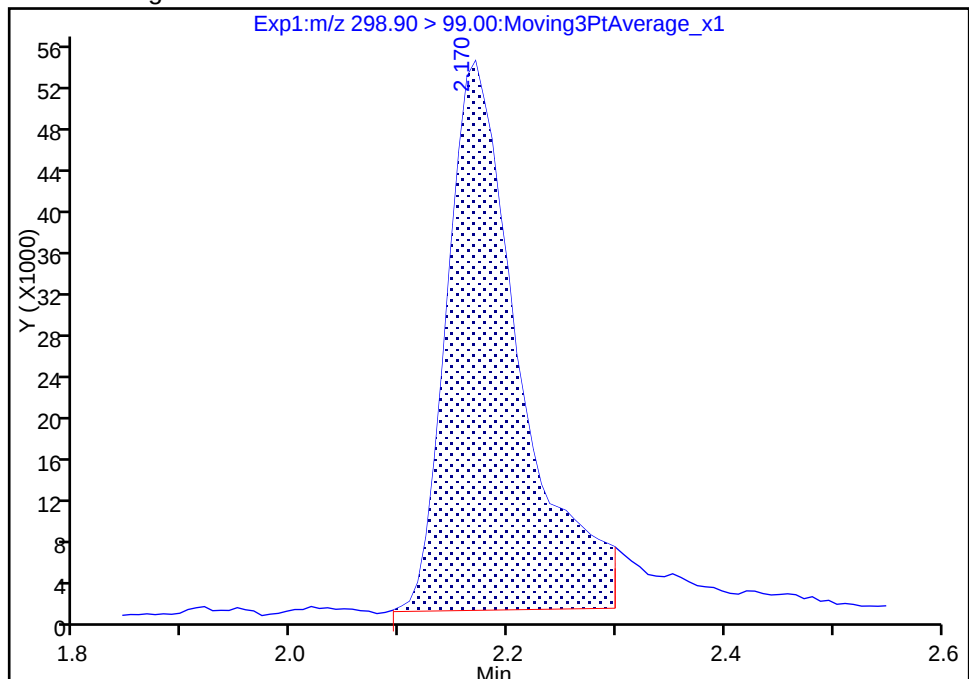
RT: 2.17
Area: 179656
Amount: 0.844129
Amount Units: ng/ml

Processing Integration Results



RT: 2.17
Area: 243575
Amount: 1.144029
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 15:07:23

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-28708-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-053117-FRB-10</u>	Lab Sample ID: <u>320-28708-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.06.19_537B_022.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>05/31/2017 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>06/14/2017 08:33</u>
Sample wt/vol: <u>274.3 (mL)</u>	Date Analyzed: <u>06/19/2017 20:12</u>
Con. Extract Vol.: <u>1.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>169964</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_022.d
 Lims ID: 320-28708-A-4-A
 Client ID: NAWC-053117-FRB-10
 Sample Type: Client
 Inject. Date: 19-Jun-2017 20:12:42 ALS Bottle#: 18 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	3672167	8.70		3248	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4067345	10.0		4755	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8557275	28.7		15067	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3296452	8.42		11342	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_022.d

Injection Date: 19-Jun-2017 20:12:42

Instrument ID: A8_N

Lims ID: 320-28708-A-4-A

Lab Sample ID: 320-28708-4

Client ID: NAWC-053117-FRB-10

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

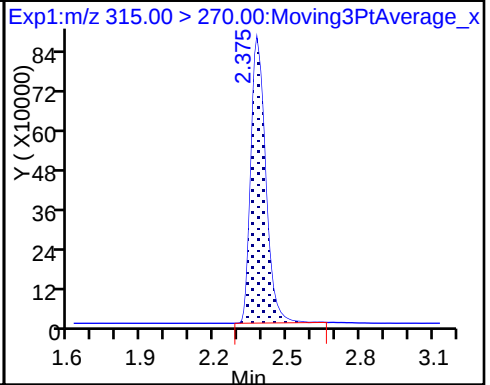
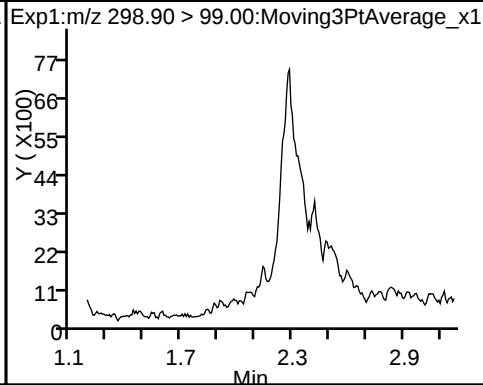
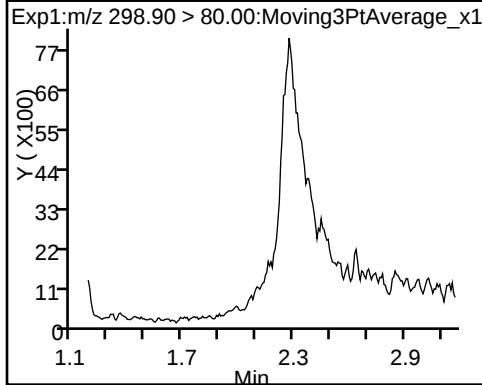
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

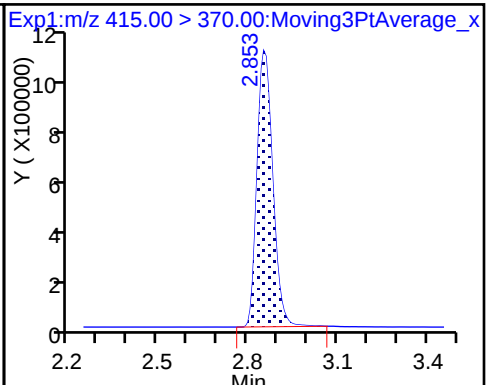
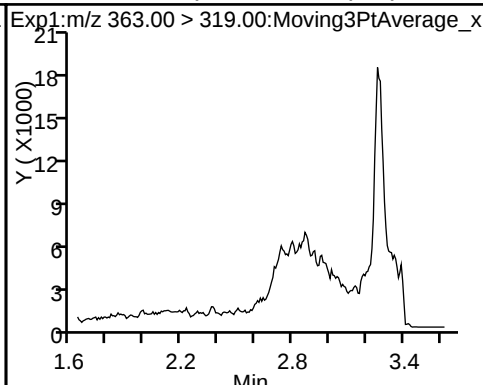
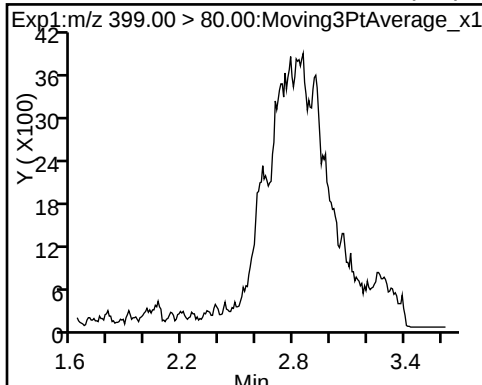
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

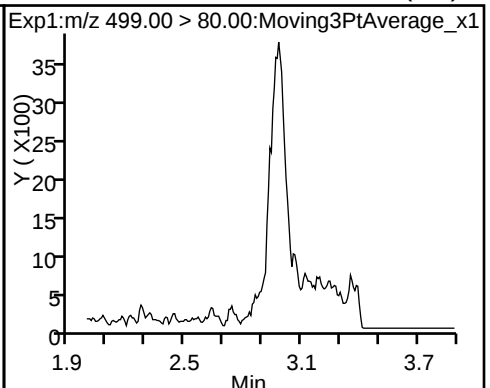
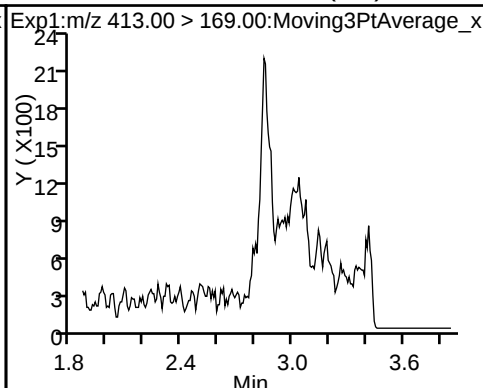
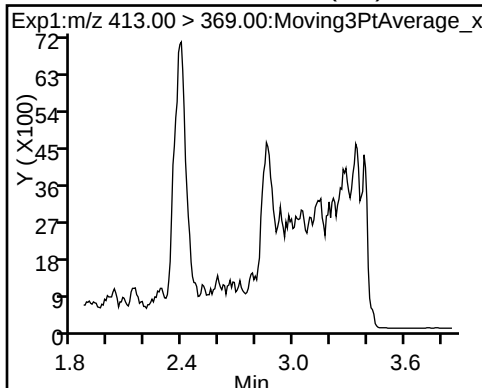
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

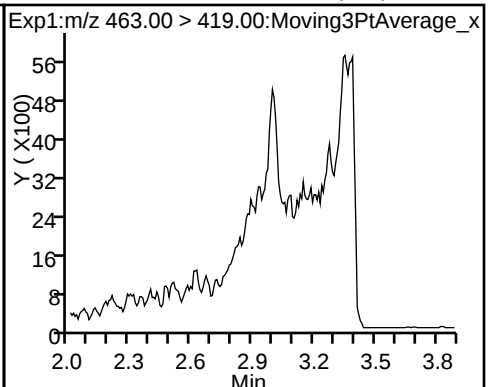
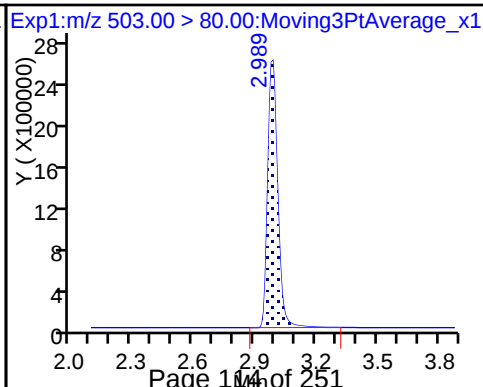
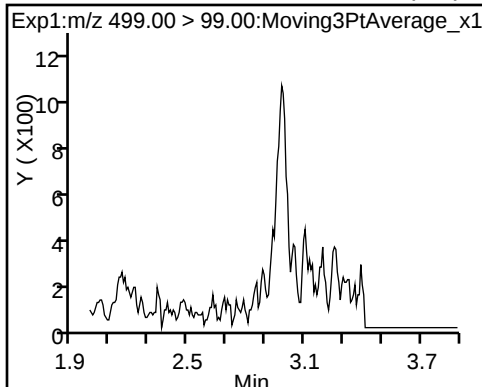
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

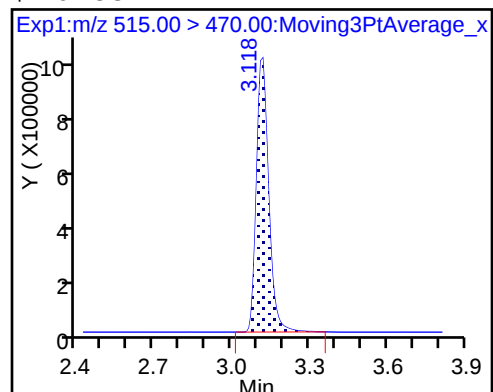


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_022.d
Lims ID: 320-28708-A-4-A
Client ID: NAWC-053117-FRB-10
Sample Type: Client
Inject. Date: 19-Jun-2017 20:12:42 ALS Bottle#: 18 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 :

Det: EXP1

Process Host: XAWRK019

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.70	87.01
\$ 10 13C2 PFDA	10.0	8.42	84.23

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Client Sample ID: NAWC-053117-RW-111 Lab Sample ID: 320-28708-5
 Matrix: Water Lab File ID: 2017.06.19_537B_023.d
 Analysis Method: 537 Date Collected: 05/31/2017 10:25
 Extraction Method: 537 Date Extracted: 06/14/2017 08:33
 Sample wt/vol: 261.7(mL) Date Analyzed: 06/19/2017 20:17
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 169964 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	19		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.9	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_023.d
 Lims ID: 320-28708-A-5-A
 Client ID: NAWC-053117-RW-111
 Sample Type: Client
 Inject. Date: 19-Jun-2017 20:17:28 ALS Bottle#: 19 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:42:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.185	2.183	0.002	1.000	275156	1.00		13.3	M
298.90 > 99.00	2.185	2.183	0.002	1.000	221890		1.24(0.00-0.00)	46.2	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3618225	8.32		2770	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	1554088	4.19		118	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	450492	1.28		17.6	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4189424	10.0		7268	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	1833625	5.00		132	
413.00 > 169.00	2.860	2.859	0.001	1.000	1132172		1.62(0.00-0.00)	881	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	2307432	7.15		682	
499.00 > 99.00	2.989	2.989	0.0	1.000	428437		5.39(0.00-0.00)	442	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		9116046	28.7		3711	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	218921	0.6126		32.3	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3535145	8.77		13688	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_023.d

Injection Date: 19-Jun-2017 20:17:28

Instrument ID: A8_N

Lims ID: 320-28708-A-5-A

Lab Sample ID: 320-28708-5

Client ID: NAWC-053117-RW-111

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

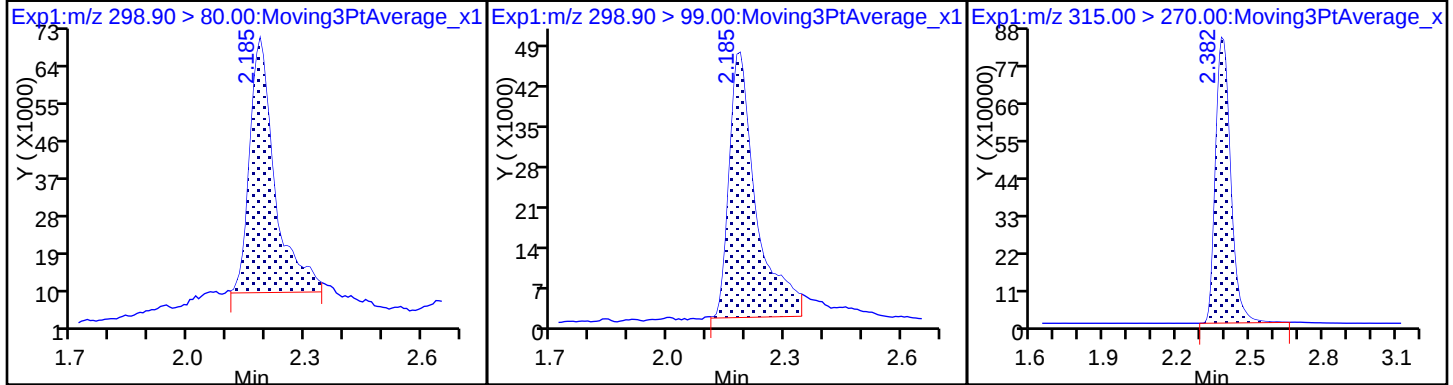
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

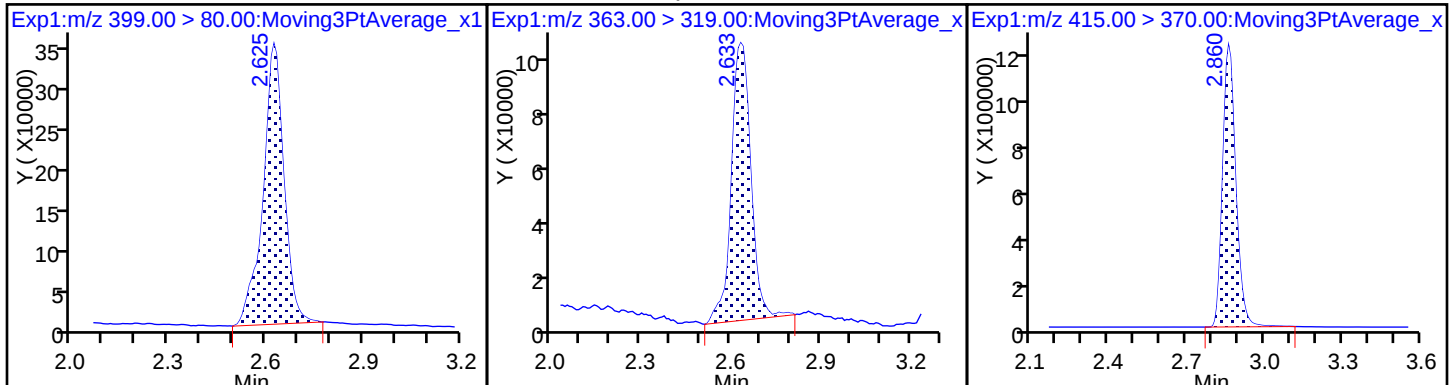
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

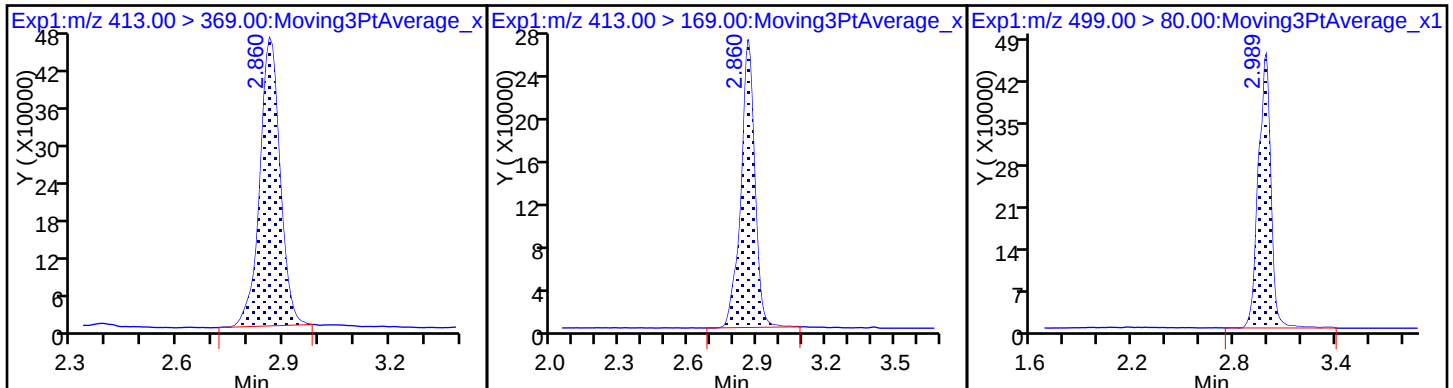
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

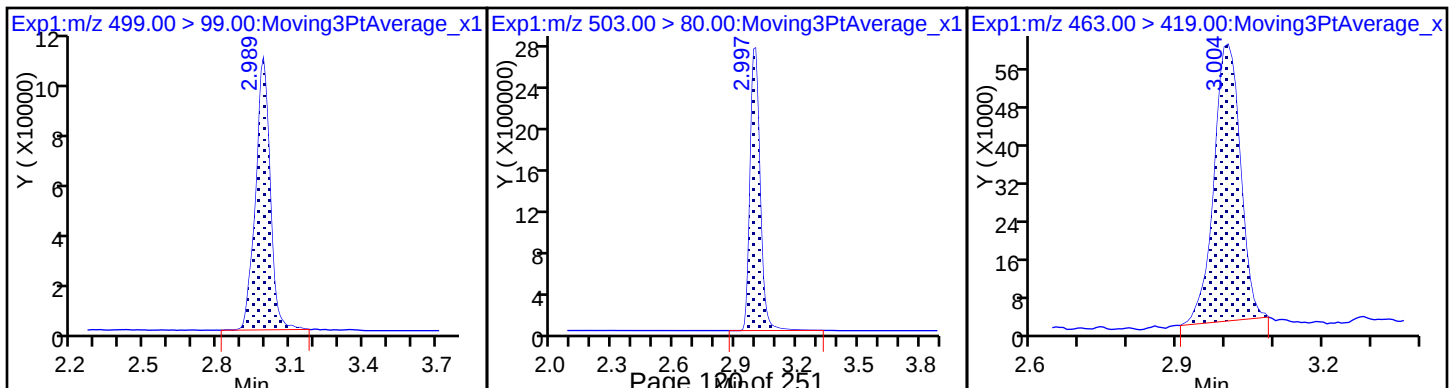
8 Perfluorooctane sulfonic acid



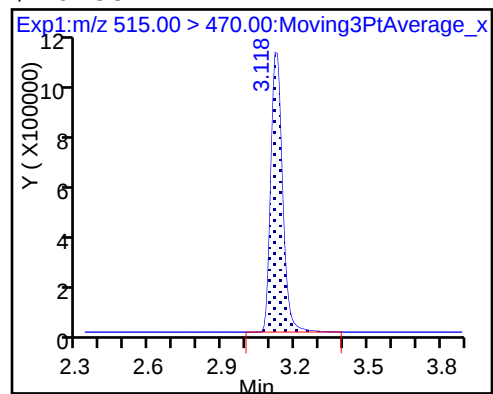
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_023.d
Lims ID: 320-28708-A-5-A
Client ID: NAWC-053117-RW-111
Sample Type: Client
Inject. Date: 19-Jun-2017 20:17:28 ALS Bottle#: 19 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:42:13

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.32	83.23
\$ 10 13C2 PFDA	10.0	8.77	87.69

TestAmerica Sacramento

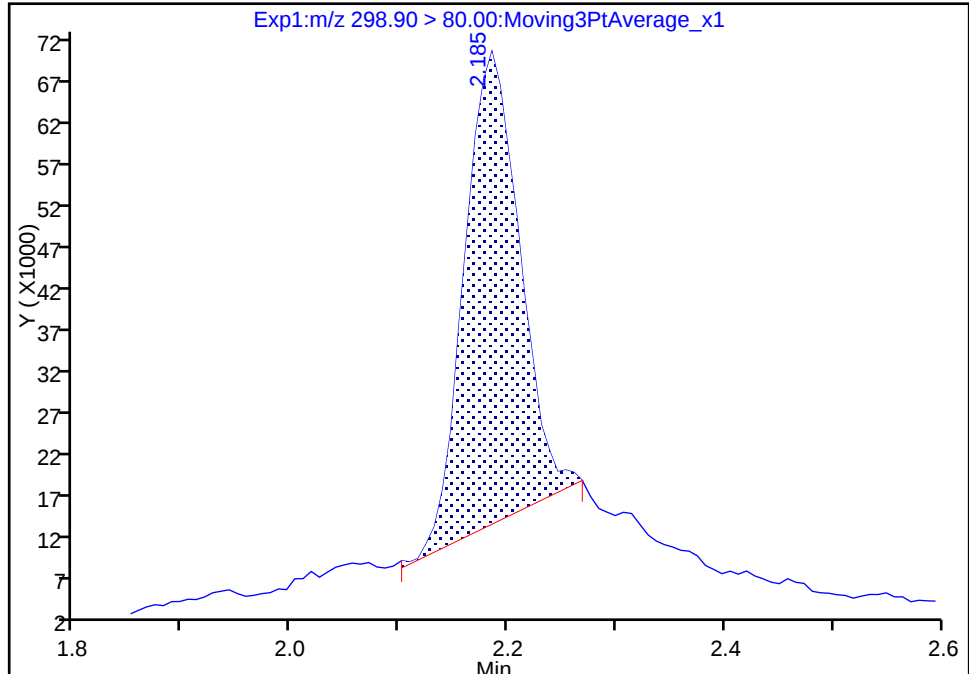
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_023.d
Injection Date: 19-Jun-2017 20:17:28 Instrument ID: A8_N
Lims ID: 320-28708-A-5-A Lab Sample ID: 320-28708-5
Client ID: NAWC-053117-RW-111
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

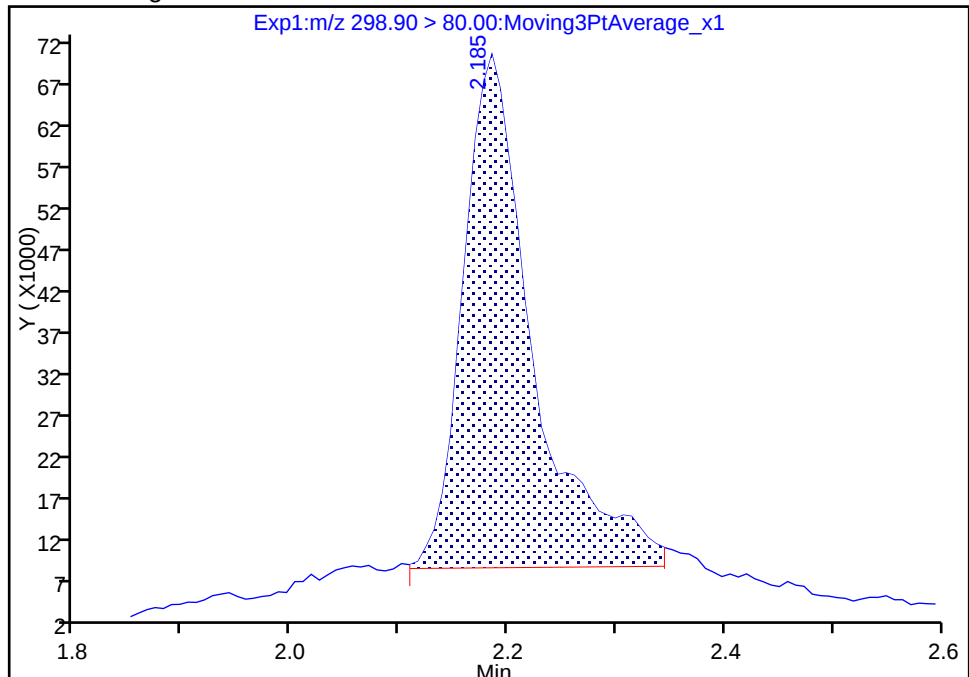
RT: 2.19
Area: 201059
Amount: 0.731712
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 275156
Amount: 1.001372
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 14:45:40
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 123 of 251

TestAmerica Sacramento

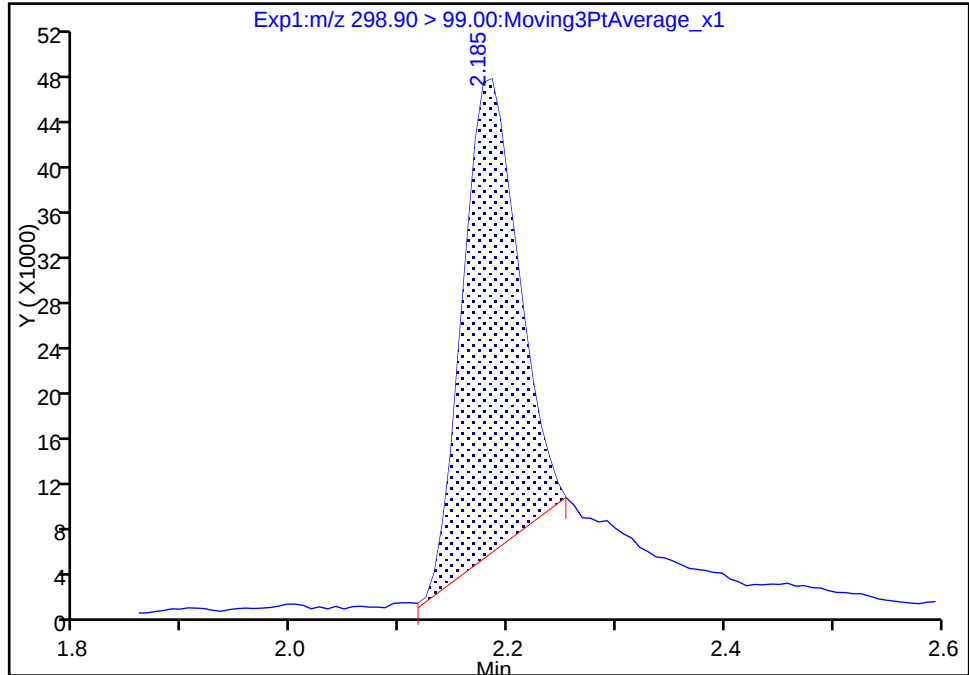
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Injection Date: 19-Jun-2017 20:17:28 Instrument ID: A8_N
Lims ID: 320-28708-A-5-A Lab Sample ID: 320-28708-5
Client ID: NAWC-053117-RW-111
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

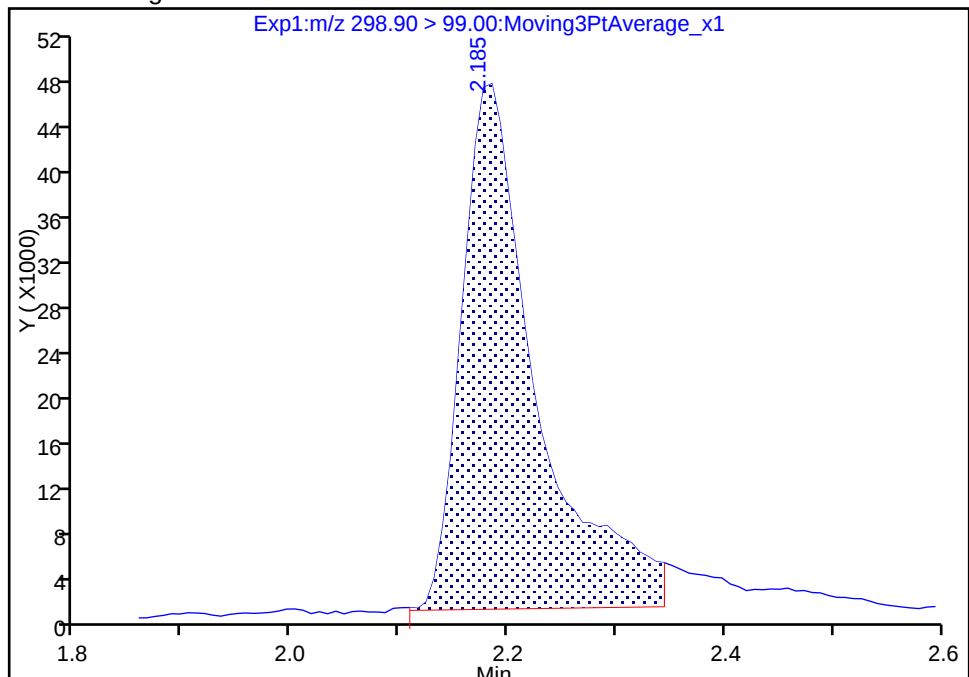
RT: 2.19
Area: 149925
Amount: 0.731712
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 221890
Amount: 1.001372
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 14:45:51

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Client Sample ID: NAWC-053117-FRB-111 Lab Sample ID: 320-28708-6

Matrix: Water Lab File ID: 2017.06.19_537B_024.d

Analysis Method: 537 Date Collected: 05/31/2017 10:20

Extraction Method: 537 Date Extracted: 06/14/2017 08:33

Sample wt/vol: 271.1 (mL) Date Analyzed: 06/19/2017 20:22

Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1

Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 169964 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_024.d
 Lims ID: 320-28708-A-6-A
 Client ID: NAWC-053117-FRB-111
 Sample Type: Client
 Inject. Date: 19-Jun-2017 20:22:14 ALS Bottle#: 20 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3921920	8.51		3224	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4440652	10.0		6226	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9010808	28.7		16354	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3593676	8.41		12886	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_024.d

Injection Date: 19-Jun-2017 20:22:14

Instrument ID: A8_N

Lims ID: 320-28708-A-6-A

Lab Sample ID: 320-28708-6

Client ID: NAWC-053117-FRB-111

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

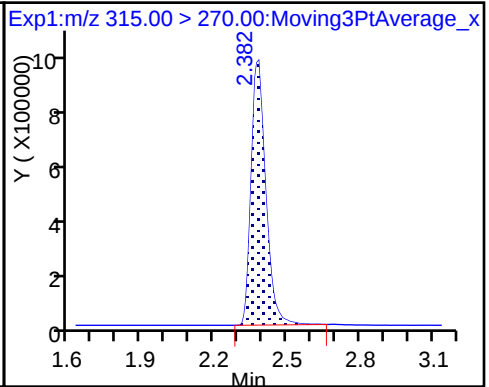
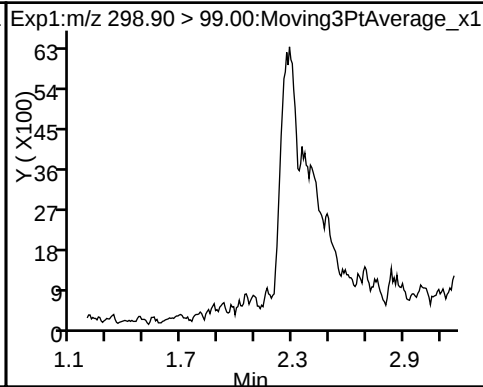
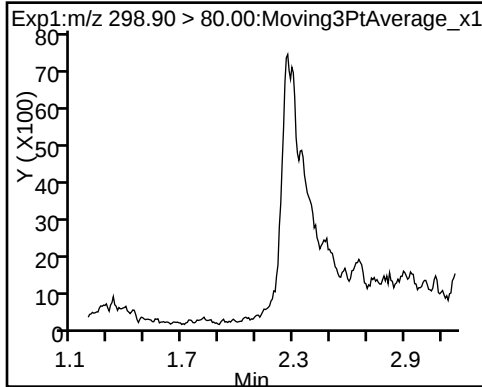
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

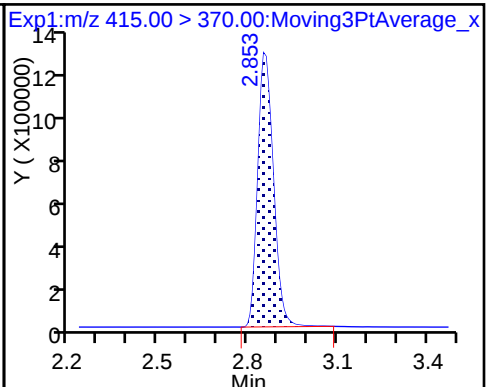
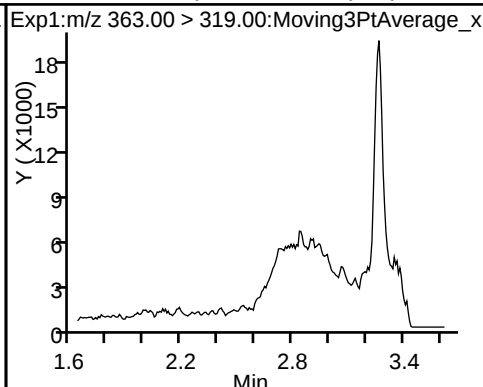
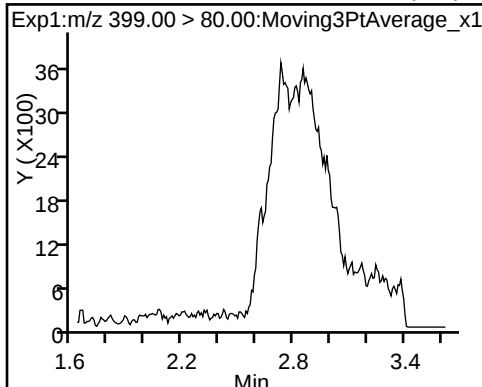
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

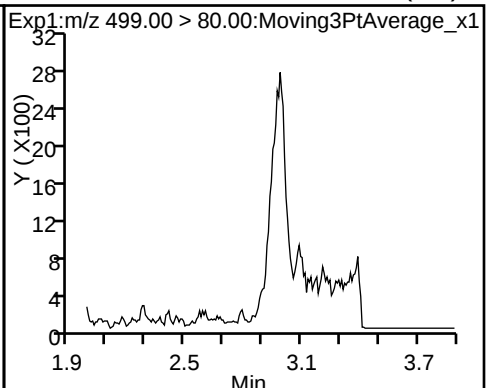
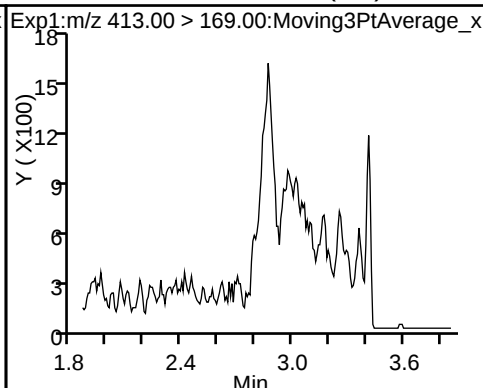
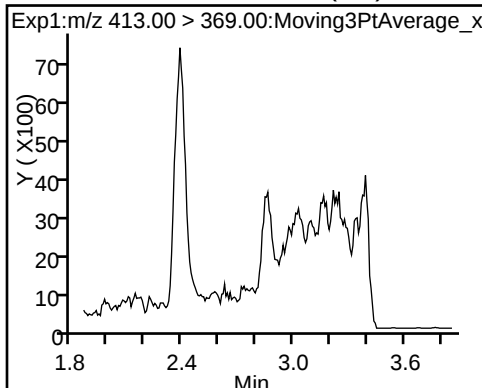
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

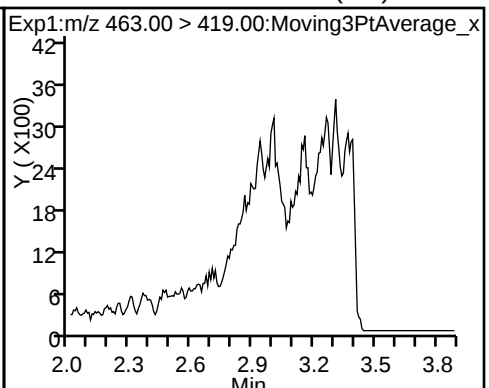
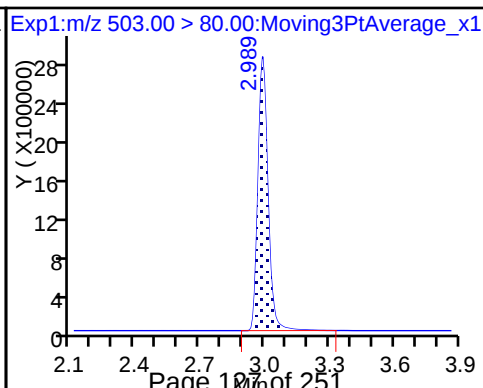
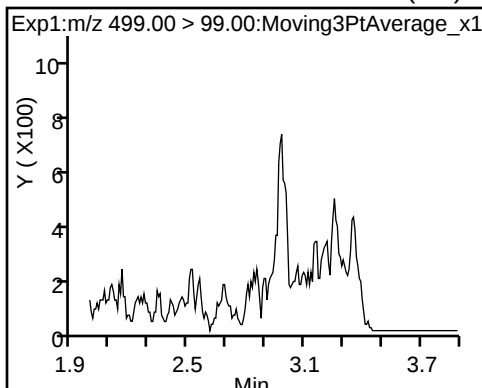
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

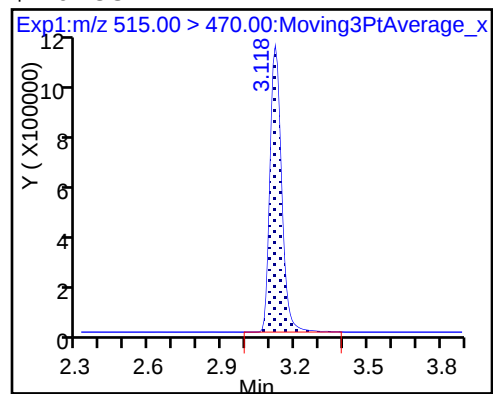


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_024.d
Lims ID: 320-28708-A-6-A
Client ID: NAWC-053117-FRB-111
Sample Type: Client
Inject. Date: 19-Jun-2017 20:22:14 ALS Bottle#: 20 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.51	85.11
\$ 10 13C2 PFDA	10.0	8.41	84.10

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-28708-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-053117-RW-161</u>	Lab Sample ID: <u>320-28708-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.06.19_537B_027.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>05/31/2017 11:25</u>
Extraction Method: <u>537</u>	Date Extracted: <u>06/14/2017 08:33</u>
Sample wt/vol: <u>266.6(mL)</u>	Date Analyzed: <u>06/19/2017 20:36</u>
Con. Extract Vol.: <u>1.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>169966</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41		38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	21		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_027.d
 Lims ID: 320-28708-A-7-A
 Client ID: NAWC-053117-RW-161
 Sample Type: Client
 Inject. Date: 19-Jun-2017 20:36:27 ALS Bottle#: 21 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 14:12:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.185	2.183	0.002	1.000	620740	2.36		29.1	M
298.90 > 99.00	2.185	2.183	0.002	1.000	524998		1.18(0.00-0.00)	95.4	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3565372	7.87		2498	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	1507787	4.25		69.9	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	603155	1.64		13.4	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4364875	10.0		9014	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	2097086	5.49		83.9	
413.00 > 169.00	2.860	2.859	0.001	1.000	1259302		1.67(0.00-0.00)	728	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	3404973	11.0		471	
499.00 > 99.00	2.989	2.989	0.0	1.000	553319		6.15(0.00-0.00)	359	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8714354	28.7		2041	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	297964	0.8002		27.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3734569	8.89		17886	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_027.d

Injection Date: 19-Jun-2017 20:36:27

Instrument ID: A8_N

Lims ID: 320-28708-A-7-A

Lab Sample ID: 320-28708-7

Client ID: NAWC-053117-RW-161

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

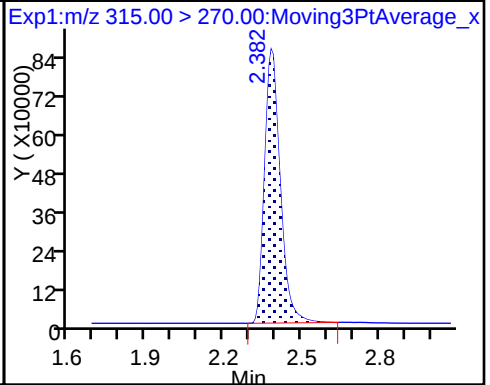
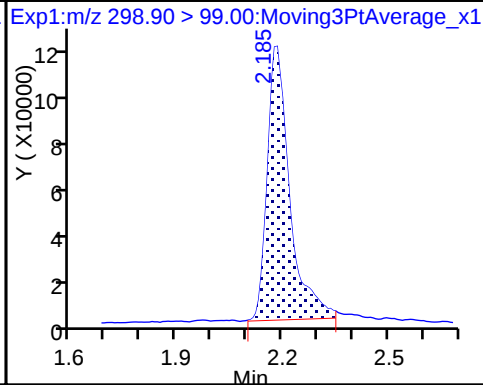
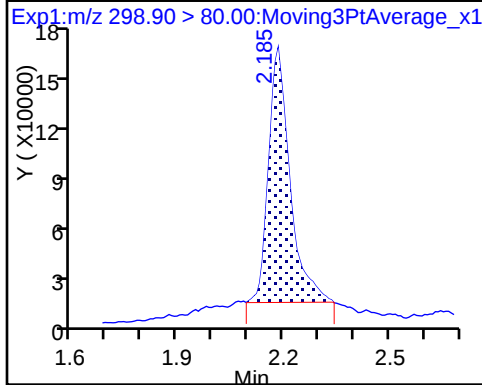
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

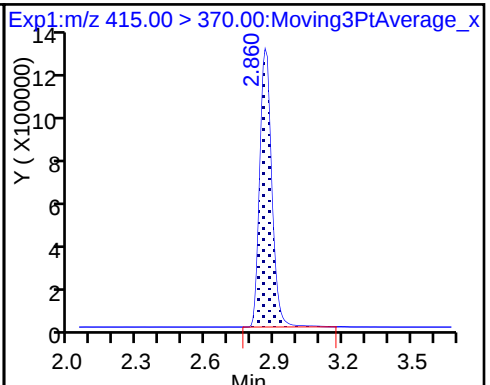
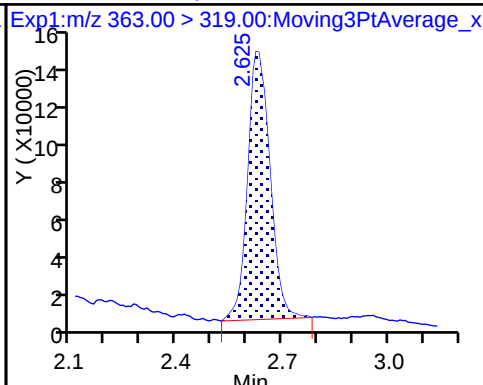
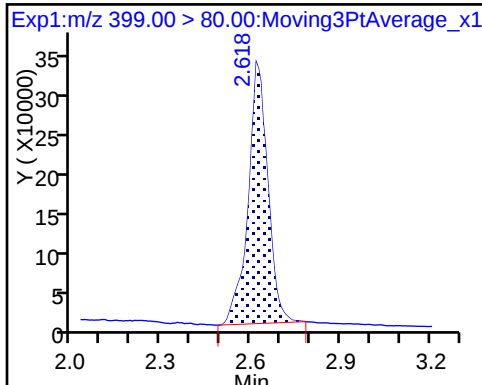
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

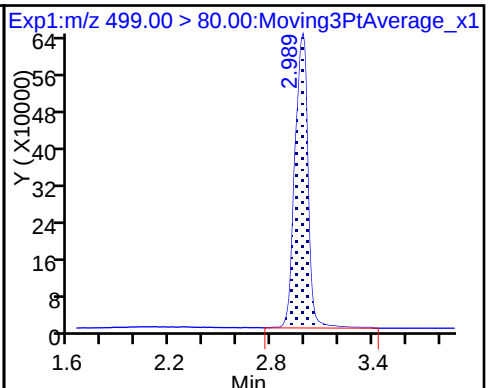
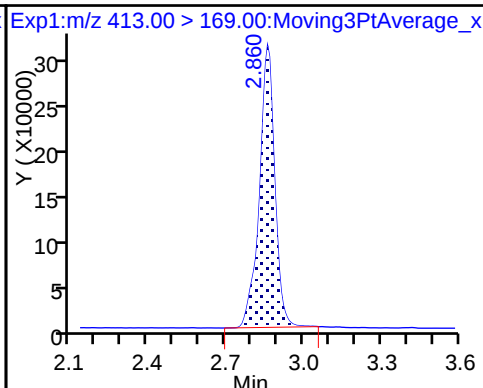
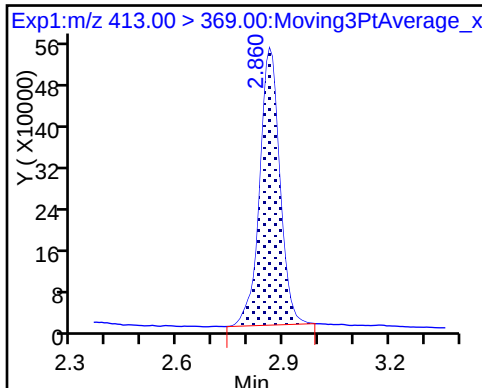
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

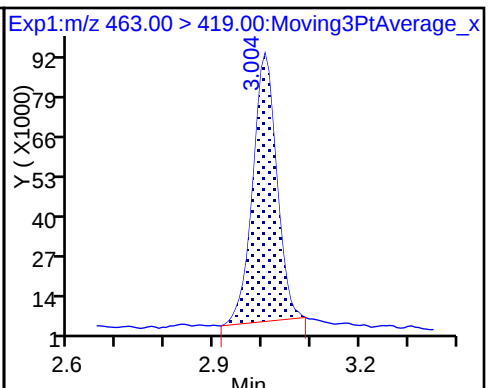
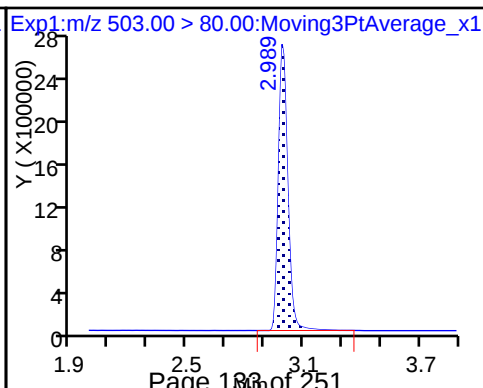
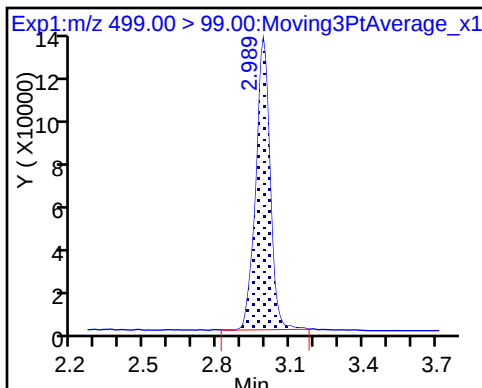
8 Perfluorooctane sulfonic acid



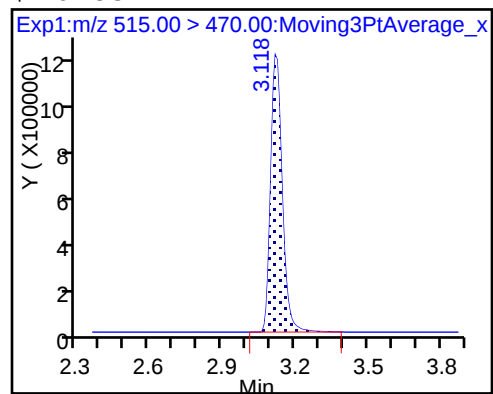
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_027.d
Lims ID: 320-28708-A-7-A
Client ID: NAWC-053117-RW-161
Sample Type: Client
Inject. Date: 19-Jun-2017 20:36:27 ALS Bottle#: 21 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 14:12:47

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.87	78.72
\$ 10 13C2 PFDA	10.0	8.89	88.92

TestAmerica Sacramento

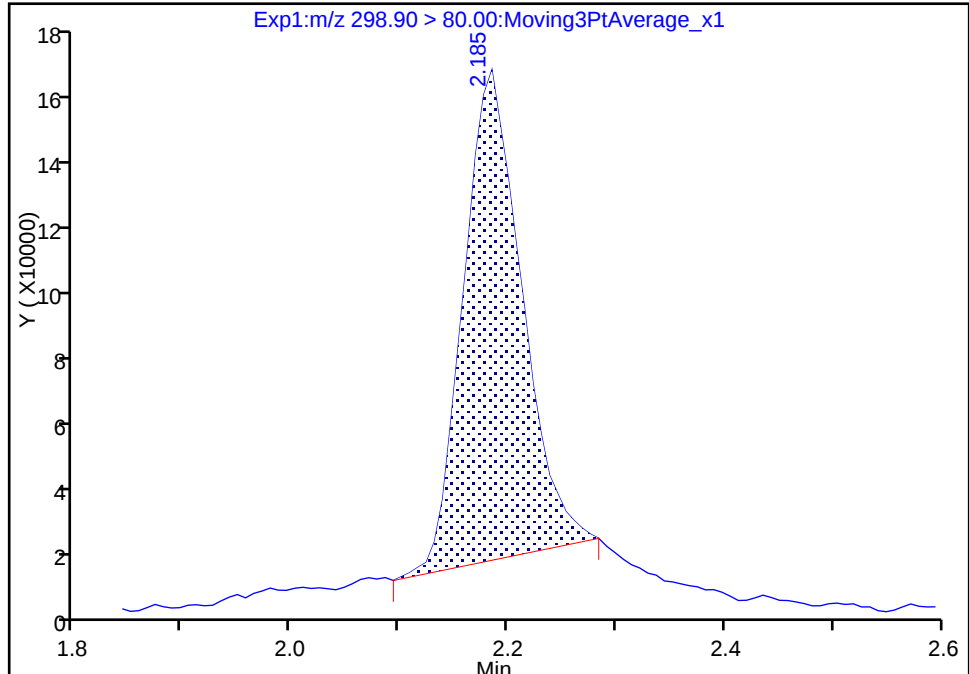
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_027.d				
Injection Date:	19-Jun-2017 20:36:27	Instrument ID:	A8_N		
Lims ID:	320-28708-A-7-A	Lab Sample ID:	320-28708-7		
Client ID:	NAWC-053117-RW-161				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector:	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

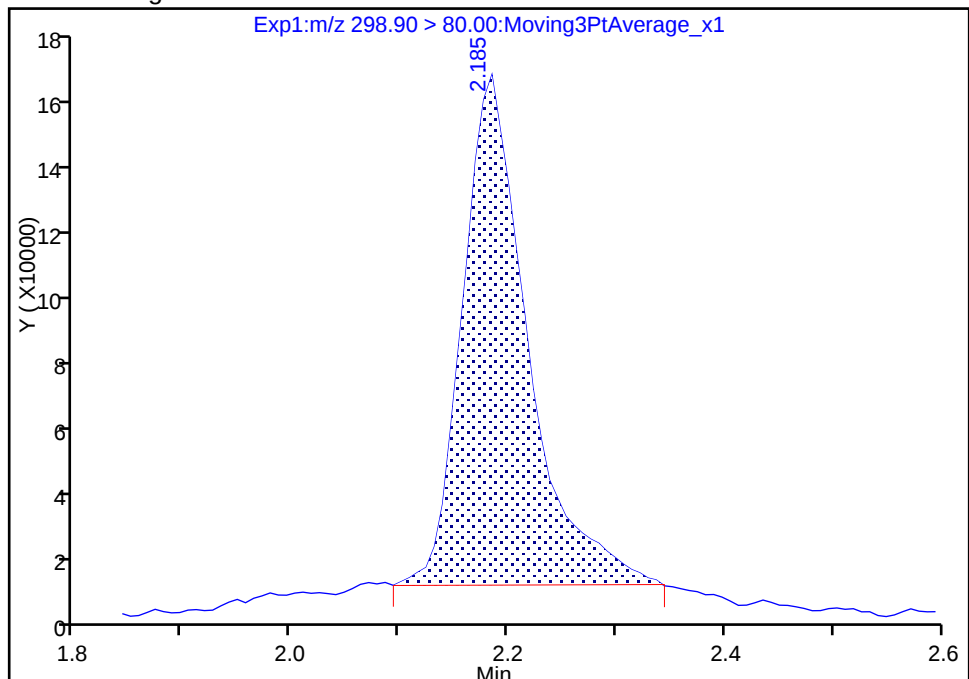
RT: 2.19
Area: 533485
Amount: 2.031001
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 620740
Amount: 2.363184
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 14:46:38
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

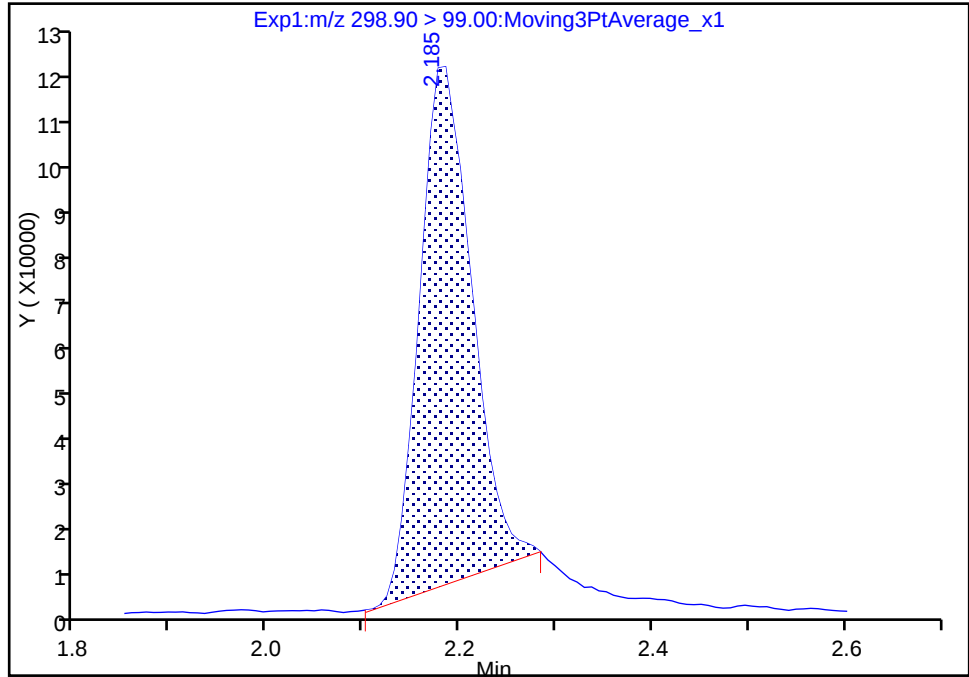
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_027.d
Injection Date: 19-Jun-2017 20:36:27 Instrument ID: A8_N
Lims ID: 320-28708-A-7-A Lab Sample ID: 320-28708-7
Client ID: NAWC-053117-RW-161
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

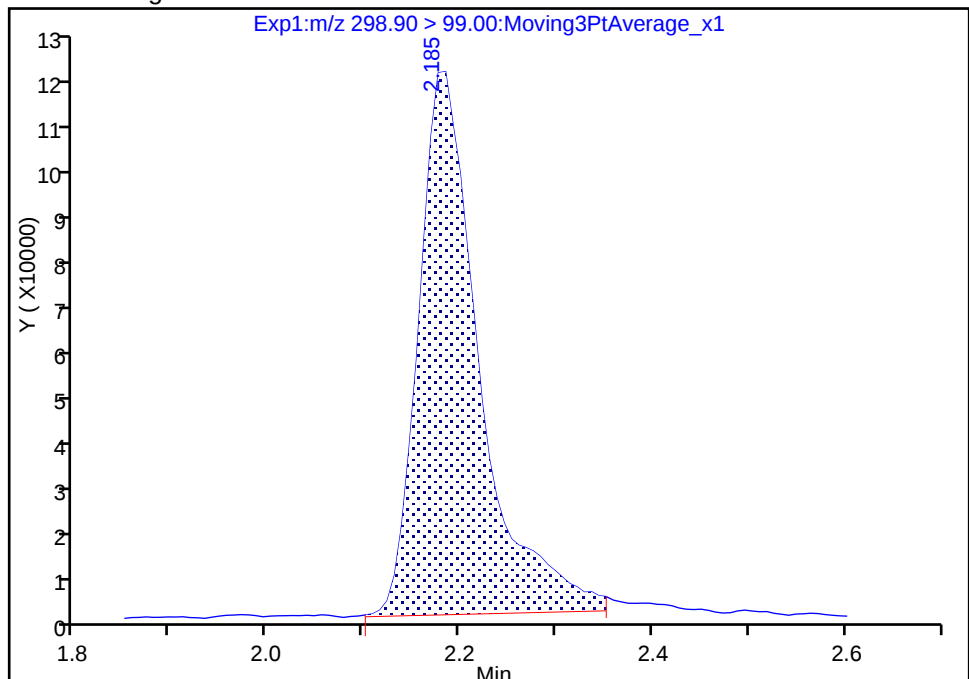
RT: 2.19
Area: 432124
Amount: 2.031001
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 524998
Amount: 2.363184
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Jun-2017 14:47:00

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-28708-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-053117-FRB-161</u>	Lab Sample ID: <u>320-28708-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.06.19_537B_028.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>05/31/2017 11:20</u>
Extraction Method: <u>537</u>	Date Extracted: <u>06/14/2017 08:33</u>
Sample wt/vol: <u>266.4 (mL)</u>	Date Analyzed: <u>06/19/2017 20:41</u>
Con. Extract Vol.: <u>1.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>169966</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	U	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_028.d
 Lims ID: 320-28708-A-8-A
 Client ID: NAWC-053117-FRB-161
 Sample Type: Client
 Inject. Date: 19-Jun-2017 20:41:11 ALS Bottle#: 22 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4049513	8.49		2981	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4594387	10.0		10329	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		9259310	28.7		16306	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3825927	8.65		13401	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_028.d

Injection Date: 19-Jun-2017 20:41:11

Instrument ID: A8_N

Lims ID: 320-28708-A-8-A

Lab Sample ID: 320-28708-8

Client ID: NAWC-053117-FRB-161

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

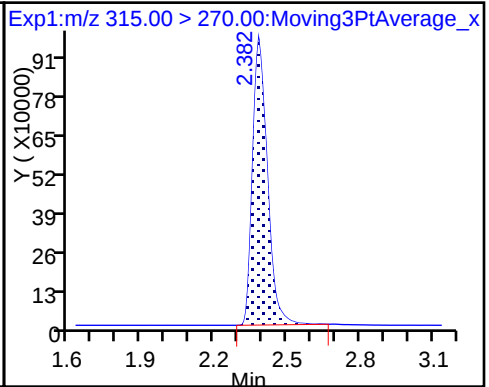
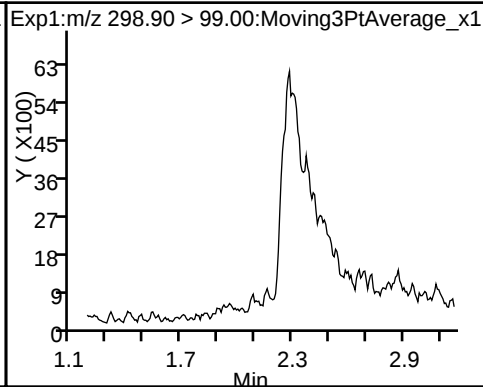
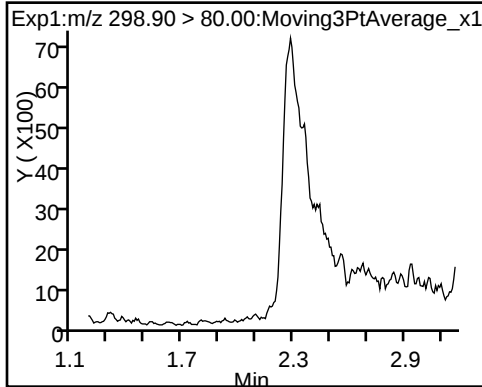
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

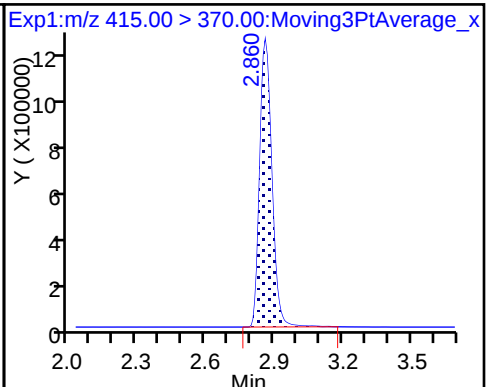
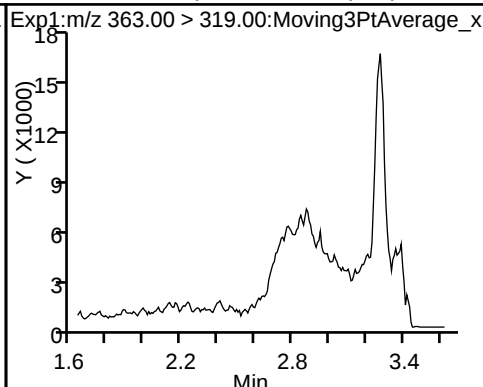
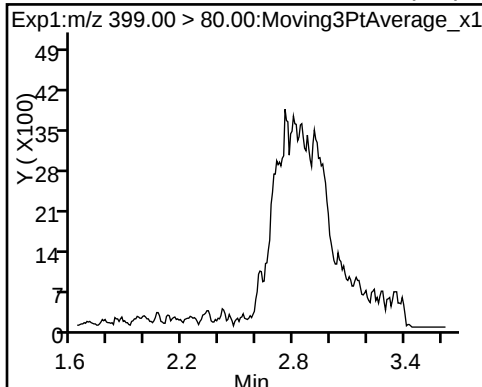
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

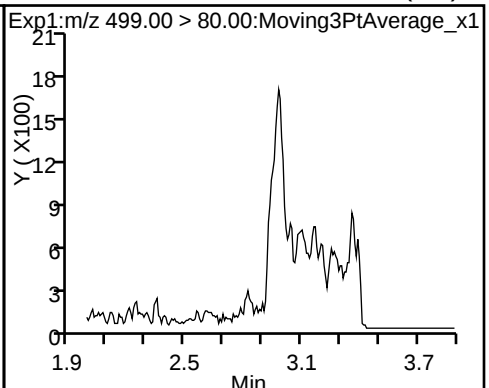
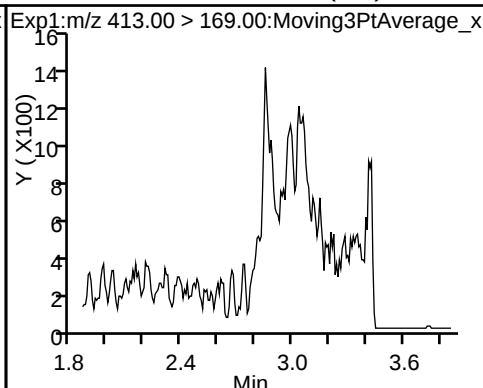
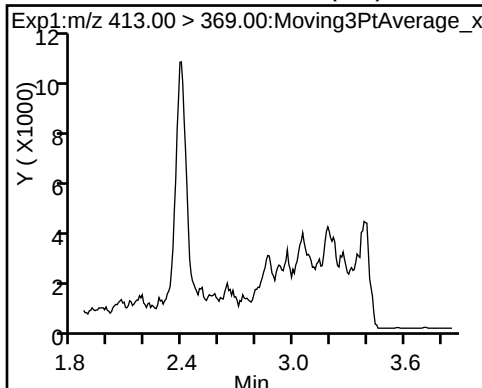
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

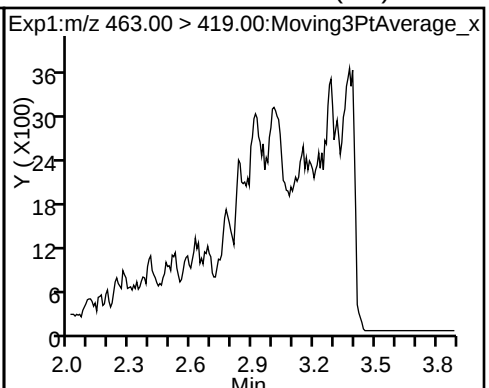
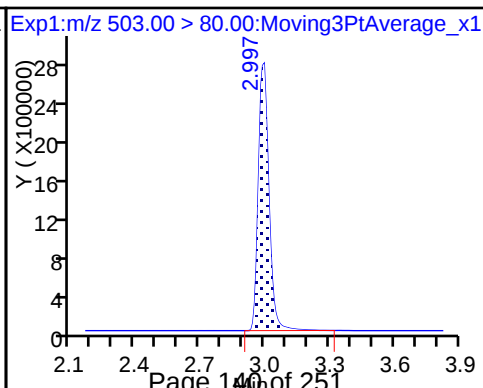
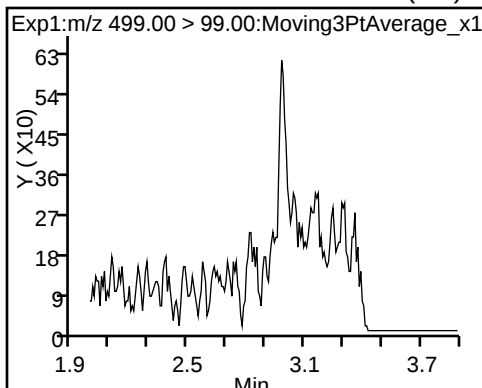
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

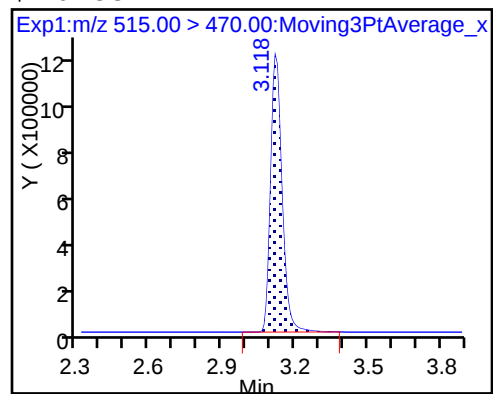


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_028.d
Lims ID: 320-28708-A-8-A
Client ID: NAWC-053117-FRB-161
Sample Type: Client
Inject. Date: 19-Jun-2017 20:41:11 ALS Bottle#: 22 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.49	84.94
\$ 10 13C2 PFDA	10.0	8.65	86.54

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1 Analy Batch No.: 169955

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 06/19/2017 17:40 Calibration End Date: 06/19/2017 18:04 Calibration ID: 31800

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-169955/4	2017.06.19_537A_ICAL_004.d
Level 2	IC 320-169955/5	2017.06.19_537A_ICAL_005.d
Level 3	IC 320-169955/6	2017.06.19_537A_ICAL_006.d
Level 4	IC 320-169955/7	2017.06.19_537A_ICAL_007.d
Level 5	IC 320-169955/8	2017.06.19_537A_ICAL_008.d
Level 6	IC 320-169955/9	2017.06.19_537A_ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	0.8507 0.7713	0.9245	0.9209	0.8993	0.8202	Ave		0.8645				7.1		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.0986 1.2032	1.1398	1.1650	1.2147	1.1817	Ave		1.1672				3.7		30.0			
Perfluoroheptanoic acid (PFHpA)	0.7891 0.8718	0.8248	0.8229	0.8642	0.8866	Ave		0.8433				4.4		30.0			
Perfluorooctanoic acid (PFOA)	0.8301 0.8992	0.8817	0.8545	0.8779	0.9114	Ave		0.8758				3.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.9620 1.0275	1.0017	1.0209	1.0440	1.0387	Ave		1.0158				3.0		30.0			
Perfluorononanoic acid (PFNA)	0.8823 0.8046	0.8981	0.8287	0.8656	0.8391	Ave		0.8531				4.1		30.0			
13C2 PFHxA	0.9940 1.0771	1.0270	1.0324	1.0293	1.0661	Ave		1.0377				2.9		30.0			
13C2 PFDA	0.9372 1.0284	0.9499	0.8947	0.9980	0.9652	Ave		0.9622				4.9		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1 Analy Batch No.: 169955

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 06/19/2017 17:40 Calibration End Date: 06/19/2017 18:04 Calibration ID: 31800

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-169955/4	2017.06.19_537A_ICAL_004.d
Level 2	IC 320-169955/5	2017.06.19_537A_ICAL_005.d
Level 3	IC 320-169955/6	2017.06.19_537A_ICAL_006.d
Level 4	IC 320-169955/7	2017.06.19_537A_ICAL_007.d
Level 5	IC 320-169955/8	2017.06.19_537A_ICAL_008.d
Level 6	IC 320-169955/9	2017.06.19_537A_ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	2332510 46244402	5989080	14078909	23681909	35795970	8.83 176	21.2	44.4	89.4	133
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	1024970 24546576	2512643	6060498	10884436	17549225	3.01 59.7	7.21	15.1	30.4	45.1
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	289244 7166616	730235	1714811	3092048	5084081	0.990 19.7	2.38	4.97	10.0	14.9
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	614079 14918357	1575504	3593653	6339348	10547603	2.00 39.7	4.80	10.0	20.2	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	1195186 27918279	2940776	7072765	12458294	20543461	4.00 79.6	9.61	20.1	40.5	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	629127 12866660	1546914	3359467	6025078	9360498	1.93 38.3	4.62	9.68	19.5	28.9
13C2 PFHxA	13PF OA	Ave	3680309 4499723	3826956	4324388	3674058	4116656	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	3469979 4296473	3539389	3747801	3562371	3726982	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1 Analy Batch No.: 169955

SDG No.: _____

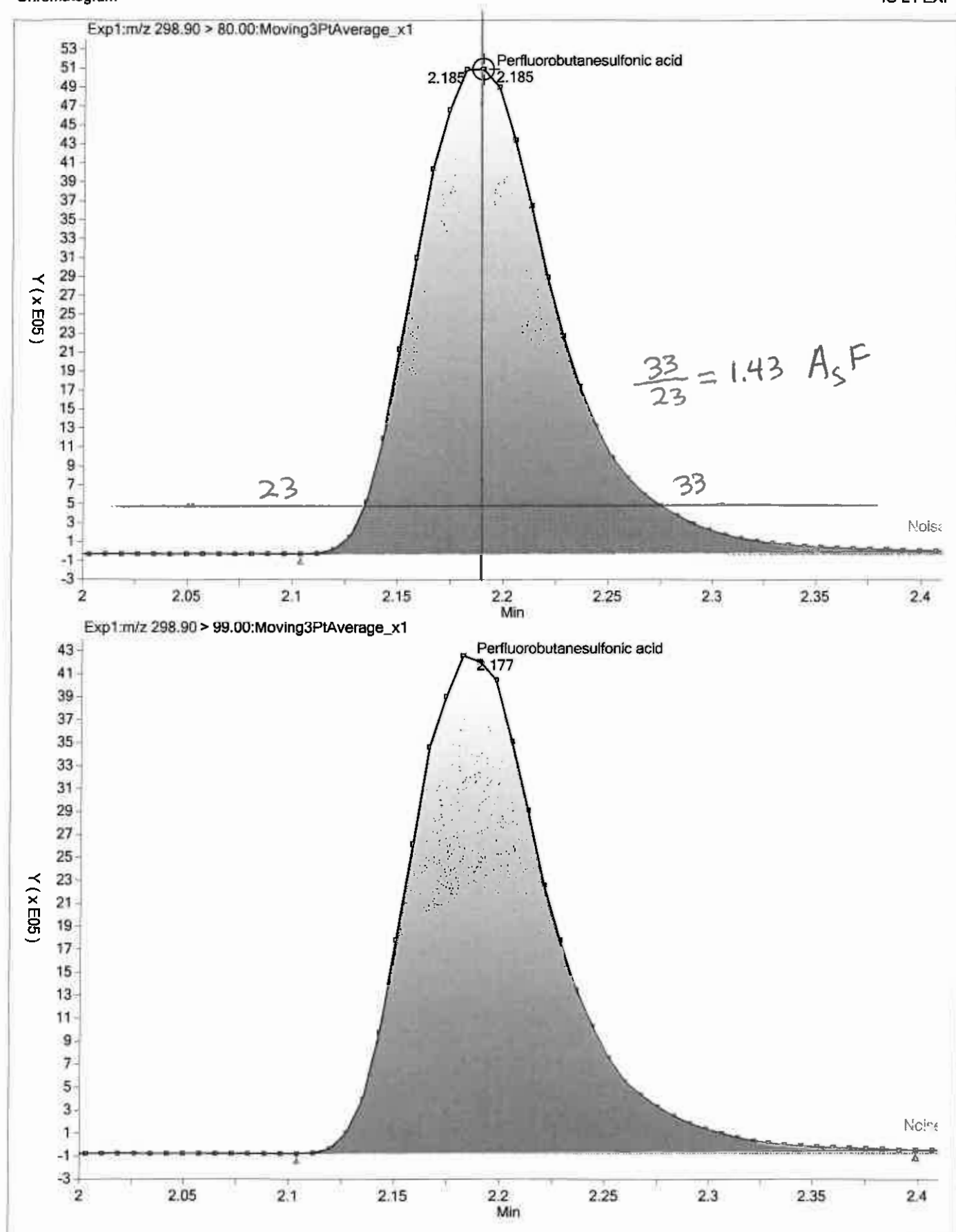
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

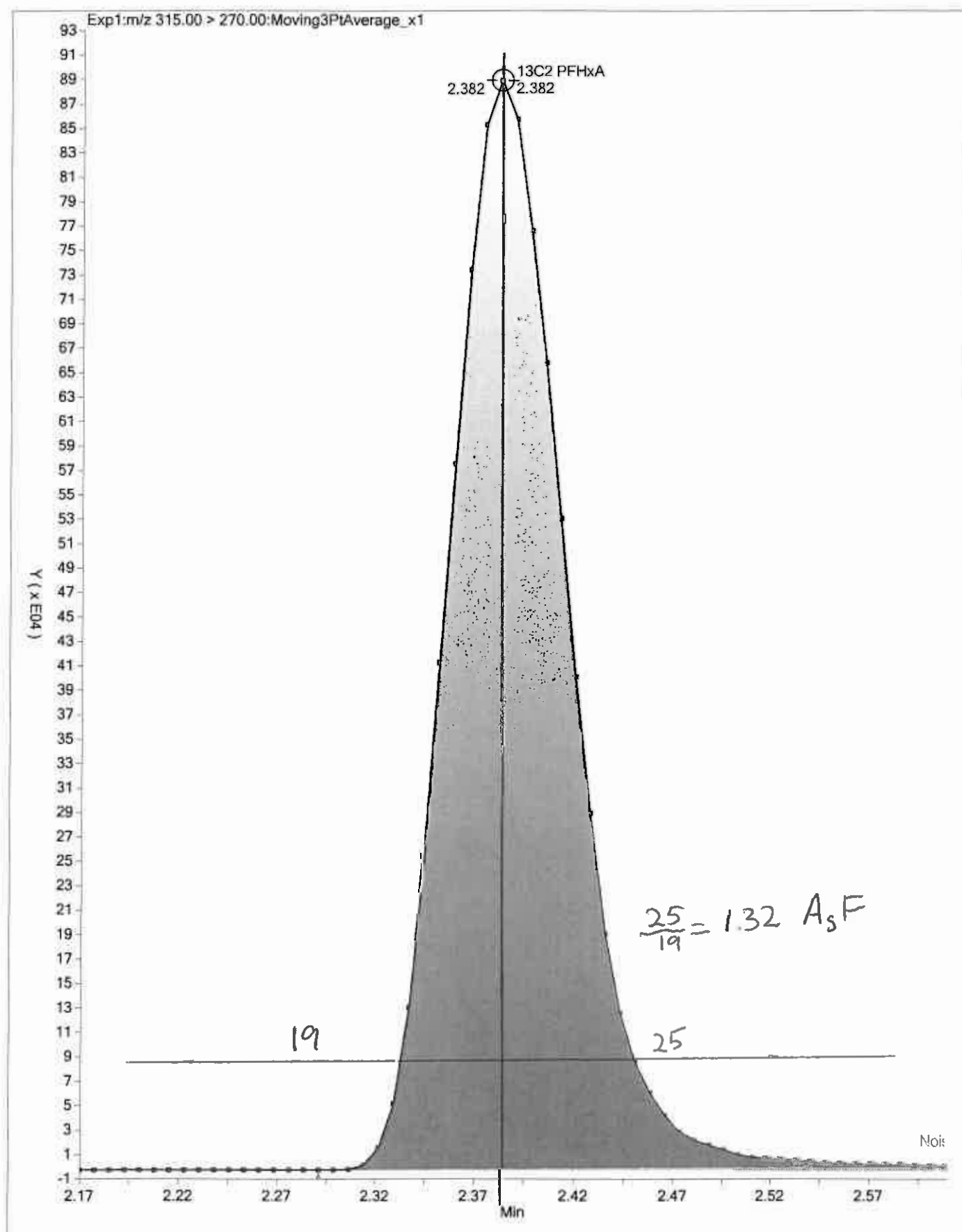
Calibration Start Date: 06/19/2017 17:40 Calibration End Date: 06/19/2017 18:04 Calibration ID: 31800

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-169955/4	2017.06.19_537A_ICAL_004.d
Level 2	IC 320-169955/5	2017.06.19_537A_ICAL_005.d
Level 3	IC 320-169955/6	2017.06.19_537A_ICAL_006.d
Level 4	IC 320-169955/7	2017.06.19_537A_ICAL_007.d
Level 5	IC 320-169955/8	2017.06.19_537A_ICAL_008.d
Level 6	IC 320-169955/9	2017.06.19_537A_ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-1.6	6.9	6.5	4.0	-5.1	-10.8	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-5.9	-2.3	-0.2	4.1	1.2	3.1	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-6.4	-2.2	-2.4	2.5	5.1	3.4	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-5.2	0.7	-2.4	0.2	4.1	2.7	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-5.3	-1.4	0.5	2.8	2.3	1.2	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	3.4	5.3	-2.9	1.5	-1.6	-5.7	50	50	50	50	50	50
13C2 PFHxA	-4.2	-1.0	-0.5	-0.8	2.7	3.8	30	30	30	30	30	30
13C2 PFDA	-2.6	-1.3	-7.0	3.7	0.3	6.9	30	30	30	30	30	30





TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 19-Jun-2017 17:40:57 ALS Bottle#: 1 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:40 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:22:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	2332510	8.69		505	
298.90 > 99.00	2.185	2.183	0.002	1.003	1908008		1.22(0.00-0.00)	450	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3680309	9.58		3596	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.633	2.625	0.008	1.000	1024970	2.83		411	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	289244	0.9264		43.6	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	614079	1.89		110	
413.00 > 169.00	2.860	2.859	0.001	1.000	349047		1.76(0.00-0.00)	389	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3702444	10.0		7418	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	1195186	3.79		3927	
499.00 > 99.00	2.989	2.982	0.007	1.000	252400		4.74(0.00-0.00)	772	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8901064	28.7		12694	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	629127	1.99		317	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3469979	9.74		12506	

Reagents:

LC537-L1_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_004.d

Injection Date: 19-Jun-2017 17:40:57

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

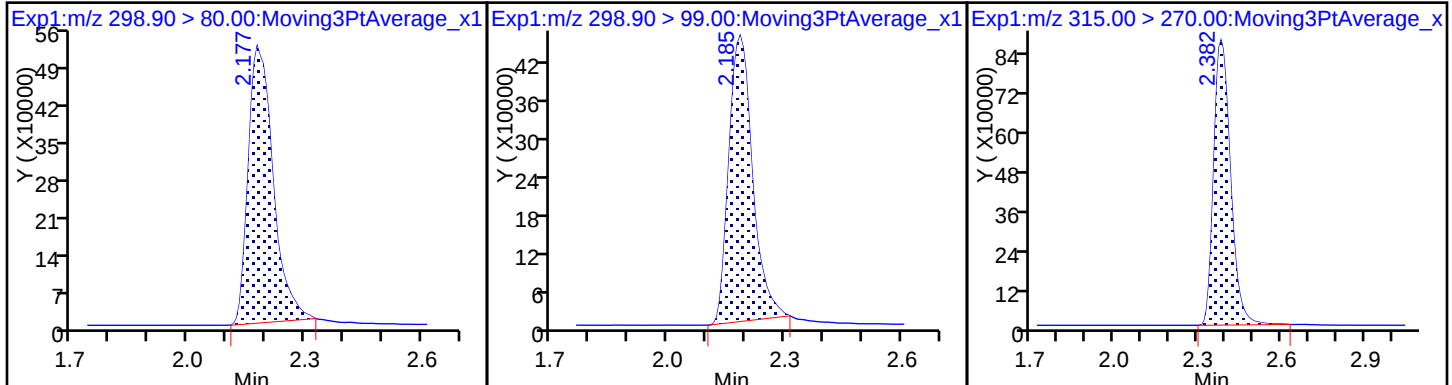
Method: 537_A8_N

Limit Group: LC 537 ICA

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

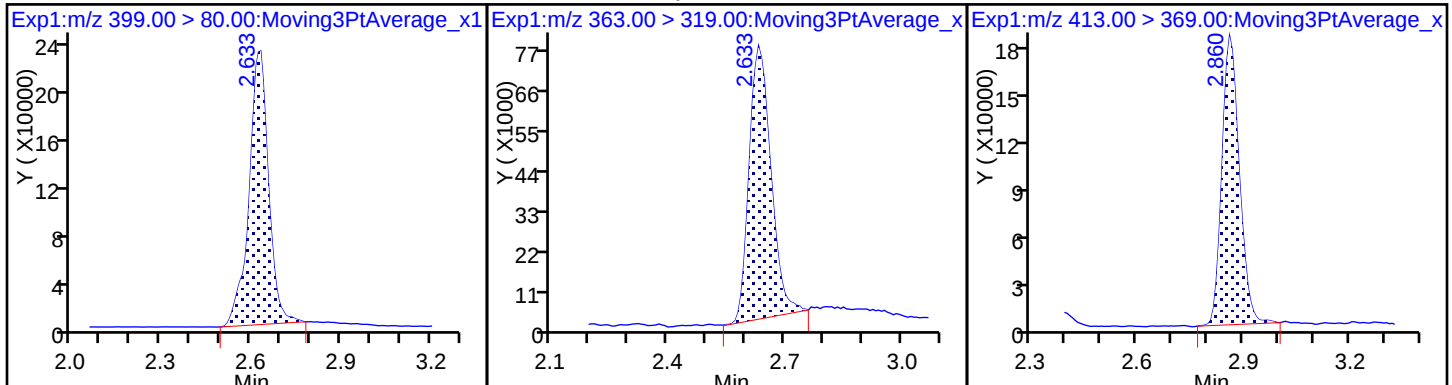
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

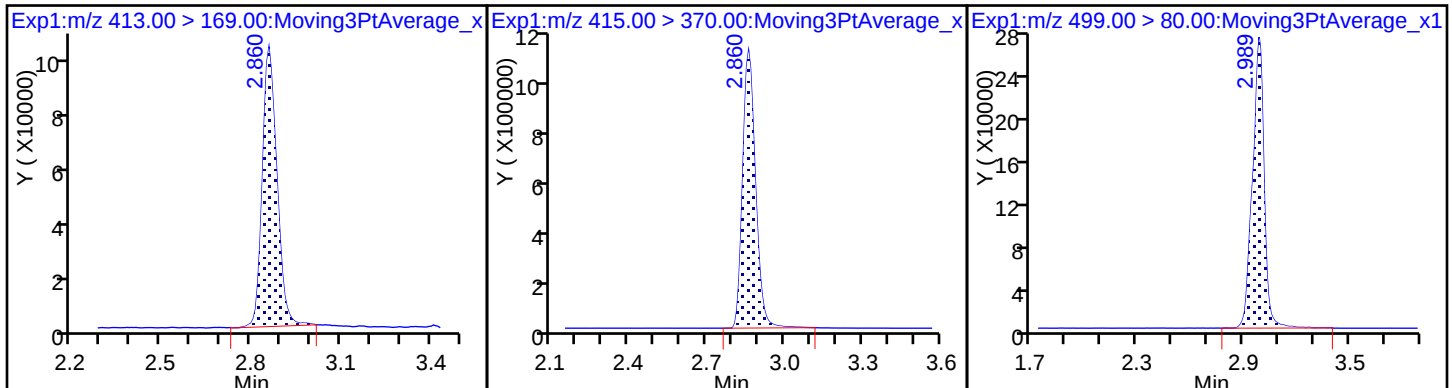
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

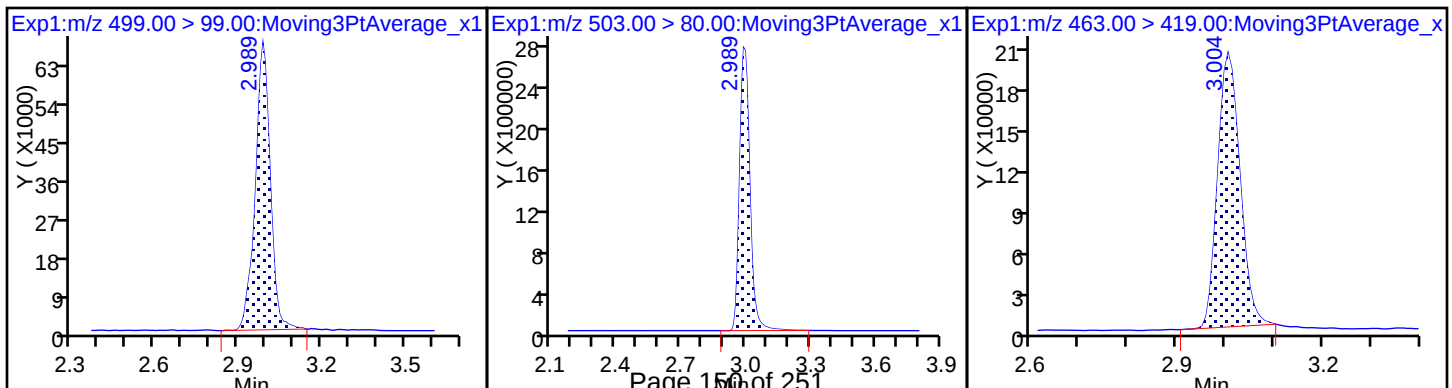
8 Perfluorooctane sulfonic acid



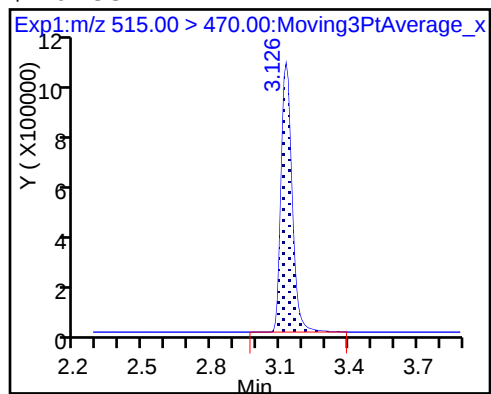
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 19-Jun-2017 17:45:45 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:41 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:22:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	5989080	22.7		1091	
298.90 > 99.00	2.185	2.183	0.002	1.000	4863302		1.23(0.00-0.00)	925	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3826956	9.90		4102	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	2512643	7.05		933	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	730235	2.32		97.2	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3726225	10.0		7660	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	1575504	4.83		271	
413.00 > 169.00	2.860	2.859	0.001	1.000	868749		1.81(0.00-0.00)	913	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	2940776	9.47		8105	
499.00 > 99.00	2.989	2.982	0.007	1.000	644706		4.56(0.00-0.00)	1875	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		8763141	28.7		16058	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	1546914	4.87		742	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3539389	9.87		10257	

Reagents:

LC537-L2_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_005.d

Injection Date: 19-Jun-2017 17:45:45

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

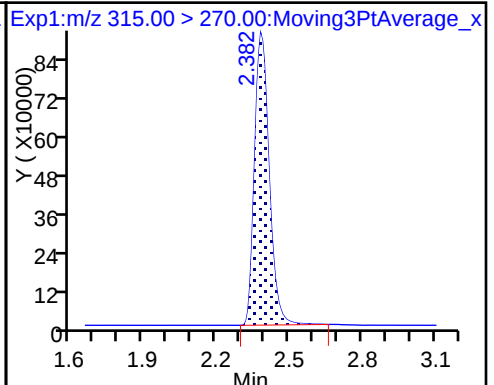
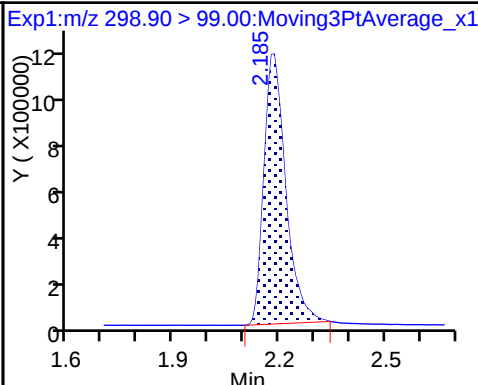
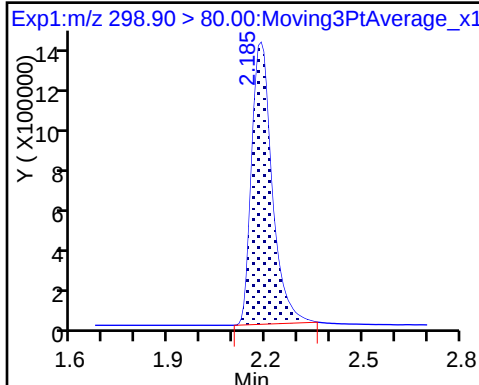
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

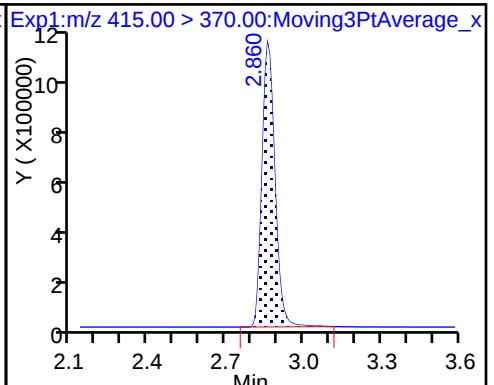
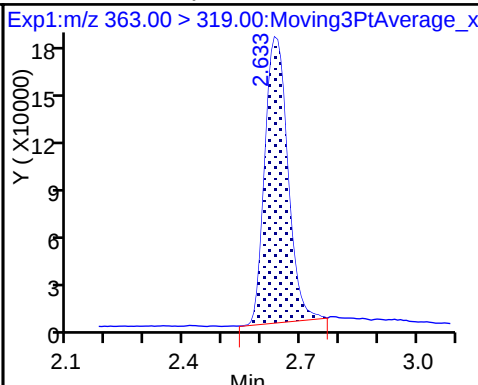
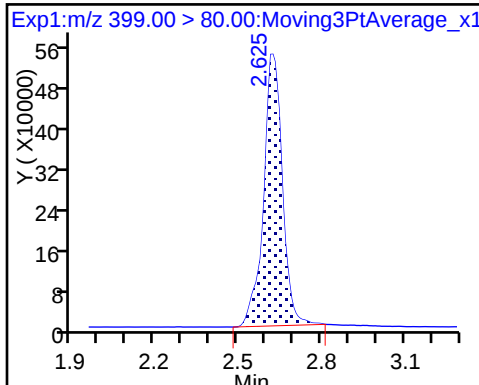
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

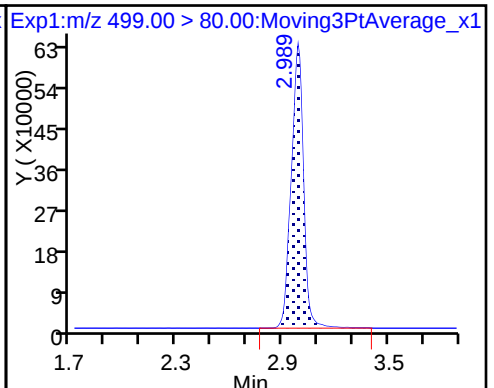
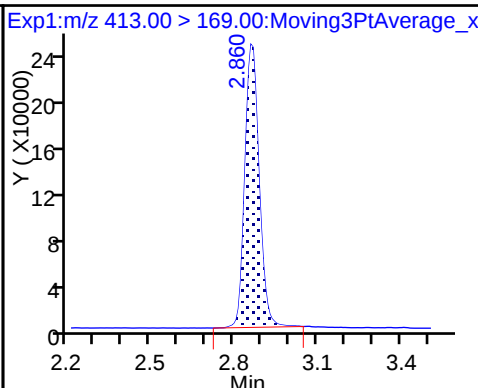
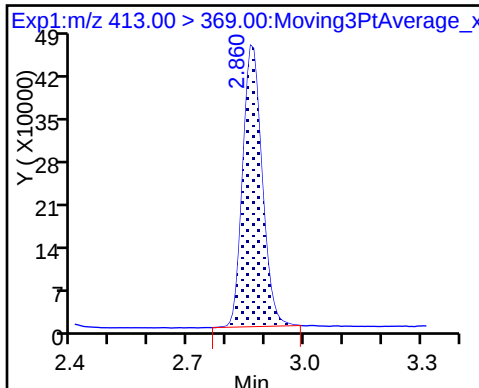
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

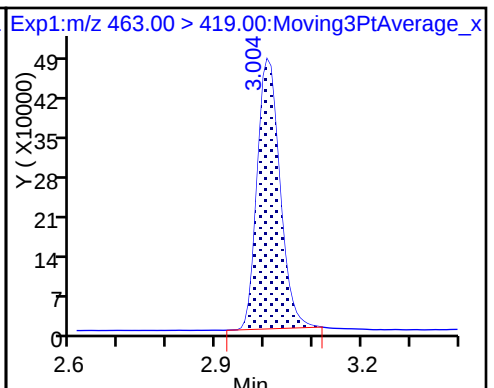
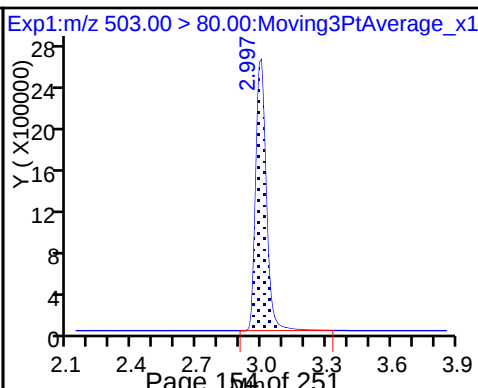
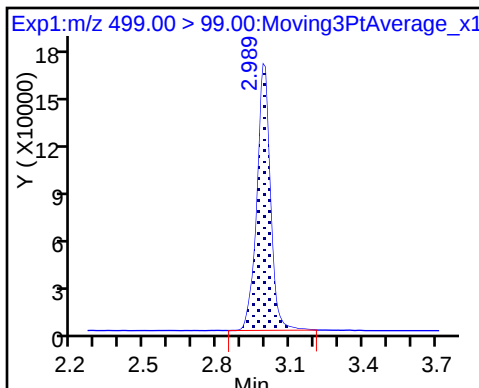
8 Perfluorooctane sulfonic acid



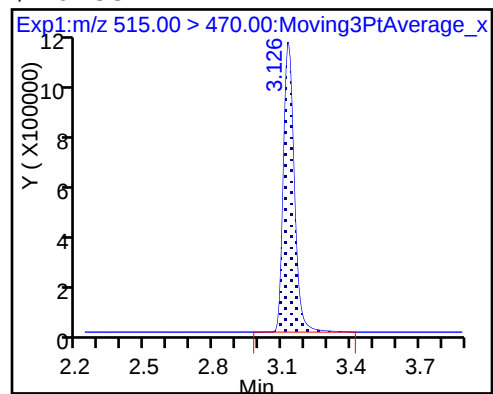
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 19-Jun-2017 17:50:31 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:42 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:23:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	14078909	47.3		1725	
298.90 > 99.00	2.177	2.183	-0.006	1.000	11416286		1.23(0.00-0.00)	1531	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	4324388	9.95		4628	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	6060498	15.1		2120	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	1714811	4.85		230	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	3593653	9.80		599	
413.00 > 169.00	2.860	2.859	0.001	1.000	2004974		1.79(0.00-0.00)	2034	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4188714	10.0		10342	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	7072765	20.2		16591	
499.00 > 99.00	2.989	2.982	0.007	1.000	1570517		4.50(0.00-0.00)	4323	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9877270	28.7		17530	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	3359467	9.40		1478	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3747801	9.30		10298	

Reagents:

LC537-L3_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_006.d

Injection Date: 19-Jun-2017 17:50:31

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

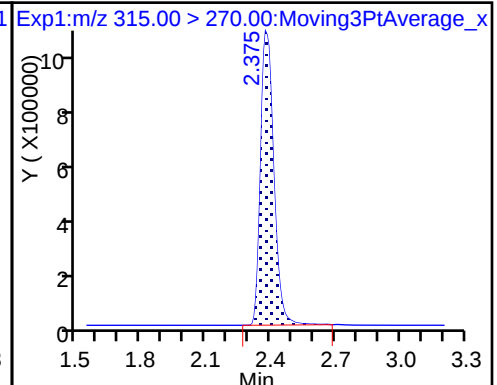
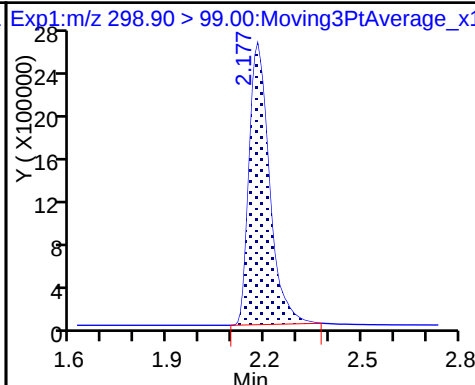
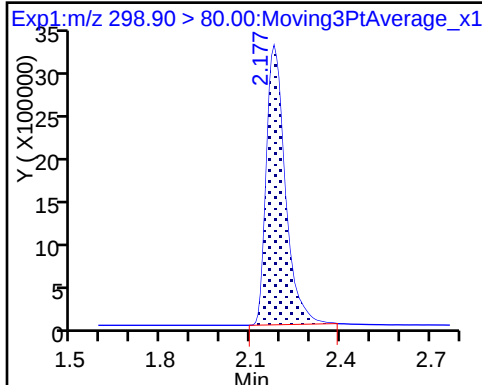
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

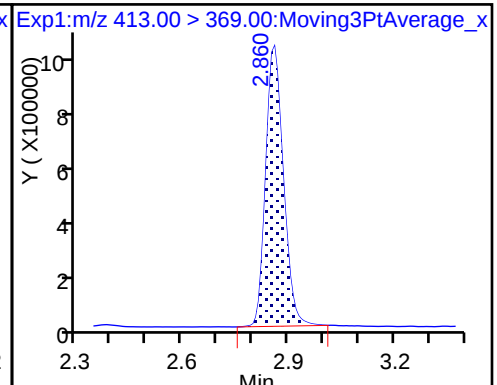
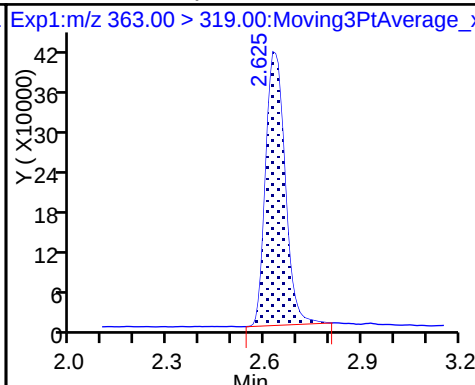
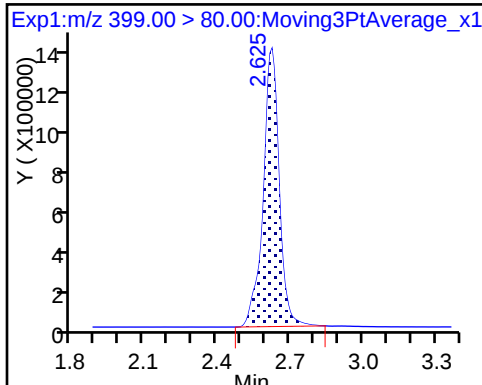
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

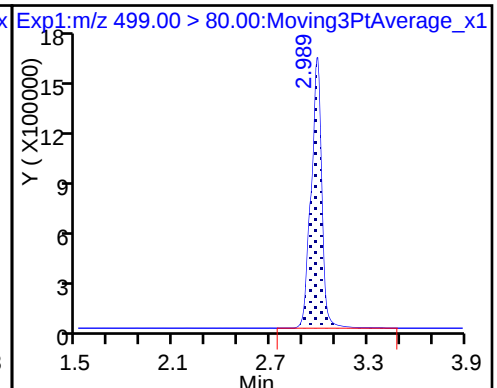
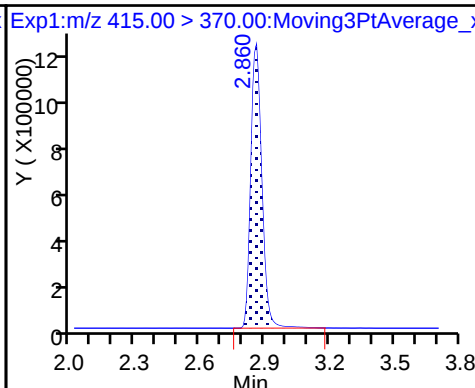
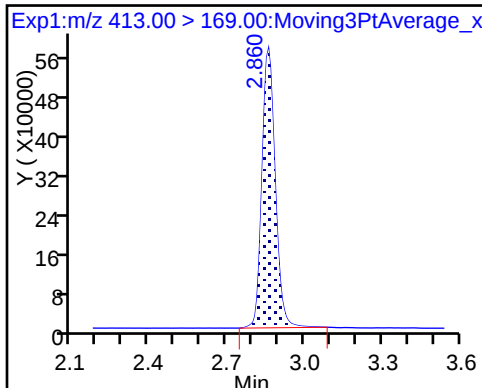
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

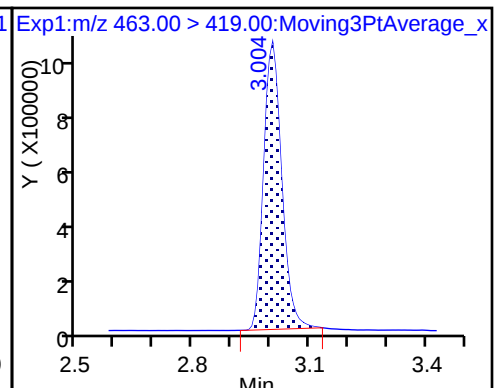
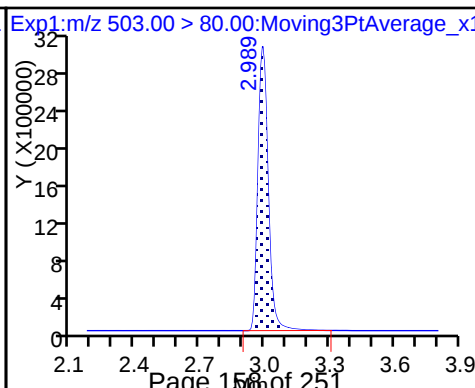
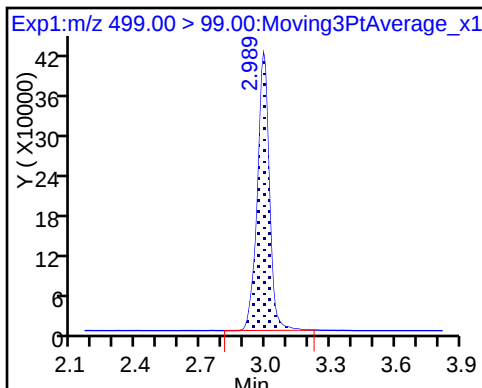
8 Perfluorooctane sulfonic acid



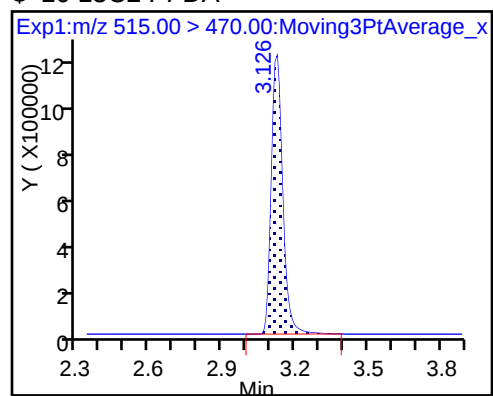
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 19-Jun-2017 17:55:14 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:43 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:22:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	23681909	93.0		2103	
298.90 > 99.00	2.177	2.183	-0.006	0.997	19279111		1.23(0.00-0.00)	1851	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3674058	9.92		3533	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	10884436	31.7		2979	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	3092048	10.3		423	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3569446	10.0		7613	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	6339348	20.3		910	
413.00 > 169.00	2.860	2.859	0.001	1.000	3614623		1.75(0.00-0.00)	2747	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	12458294	41.7		22549	
499.00 > 99.00	2.989	2.982	0.007	1.000	2773908		4.49(0.00-0.00)	6283	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8443710	28.7		17037	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	6025078	19.8		2149	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3562371	10.4		8880	

Reagents:

LC537-L4_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_007.d

Injection Date: 19-Jun-2017 17:55:14

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

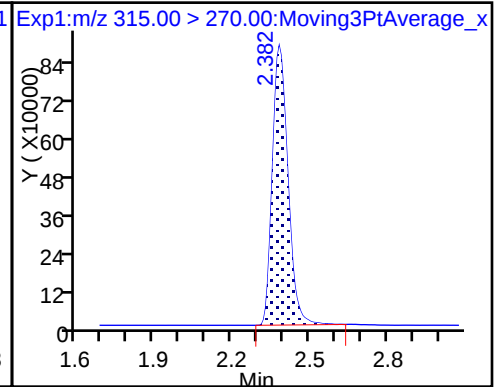
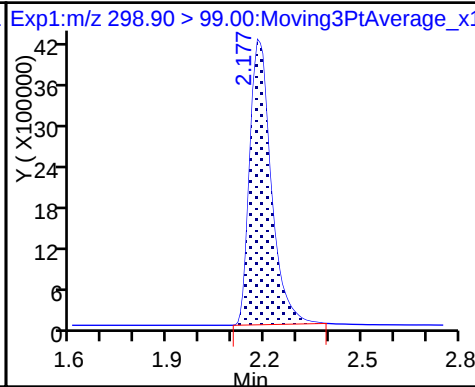
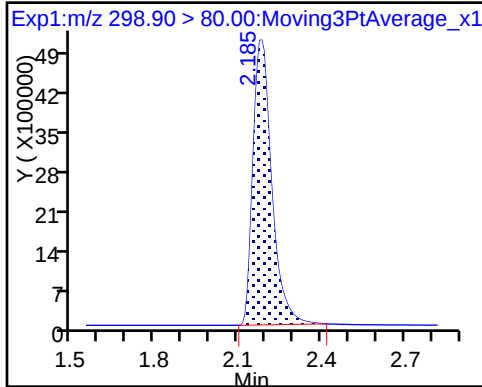
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

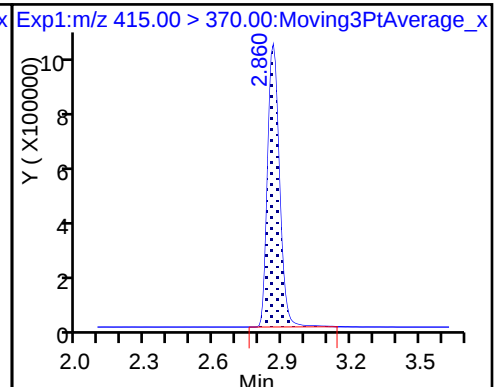
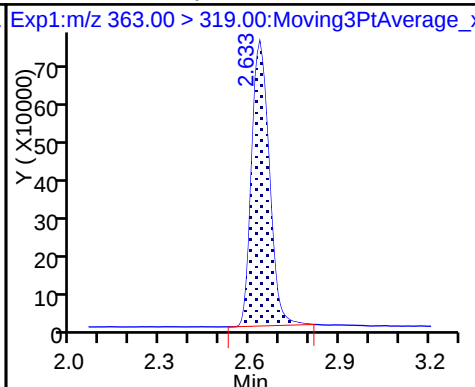
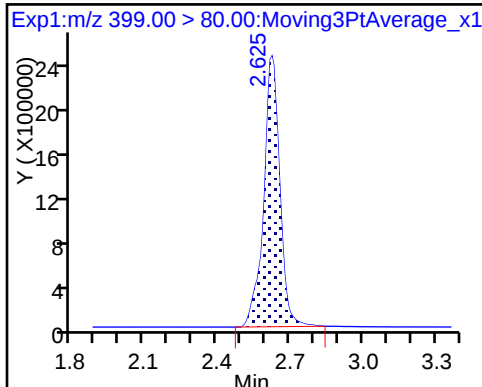
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

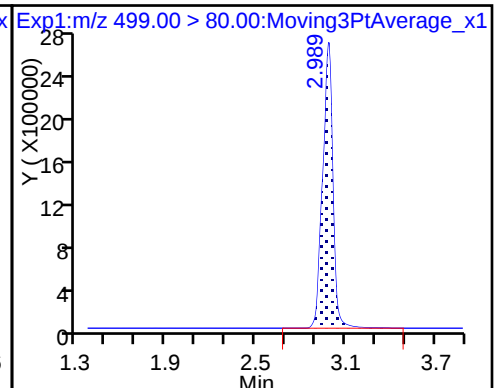
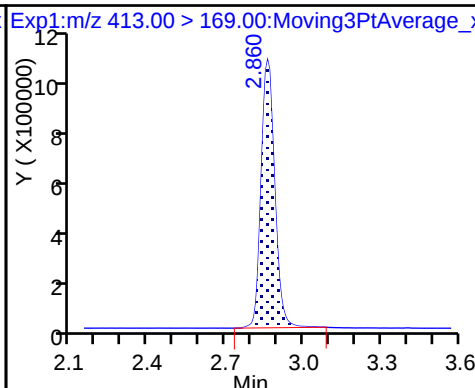
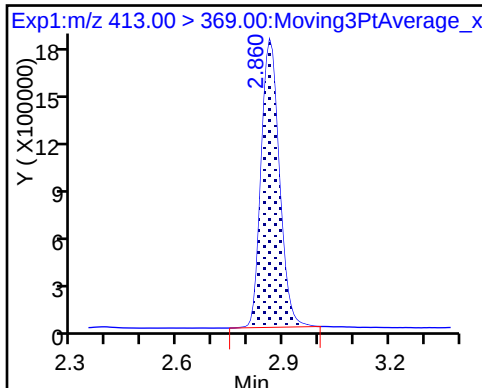
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

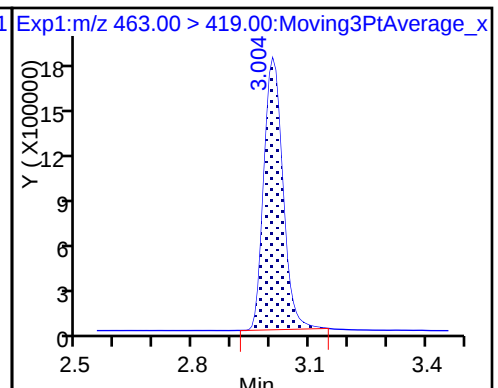
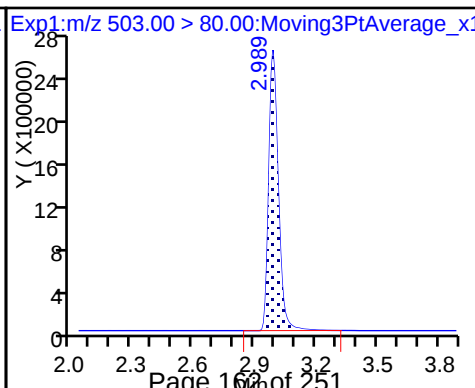
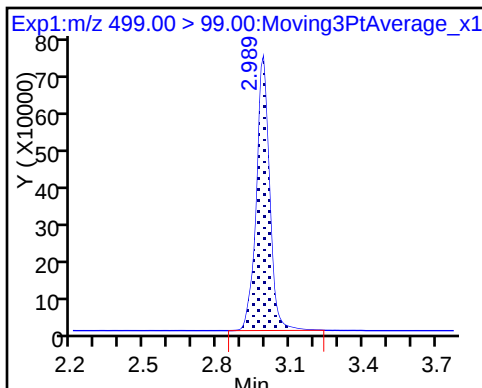
8 Perfluorooctane sulfonic acid



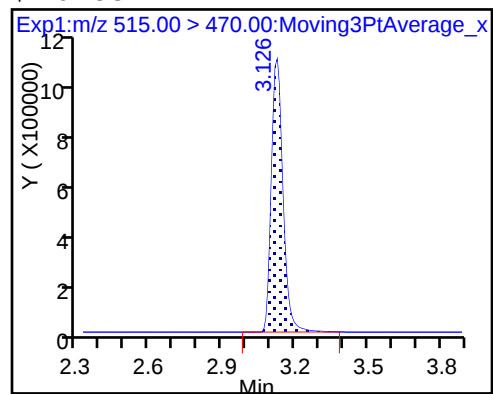
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 19-Jun-2017 17:59:58 ALS Bottle#: 5 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:44 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:23:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	35795970	125.7		2021	
298.90 > 99.00	2.185	2.183	0.002	1.000	29851648		1.20(0.00-0.00)	2318	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4116656	10.3		3234	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	17549225	45.7		4202	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	5084081	15.6		737	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	10547603	31.2		1518	
413.00 > 169.00	2.860	2.859	0.001	1.000	5893768		1.79(0.00-0.00)	5500	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3861310	10.0		6380	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	20543461	61.4		27604	
499.00 > 99.00	2.989	2.982	0.007	1.000	4568104		4.50(0.00-0.00)	9840	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9445975	28.7		13989	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	9360498	28.4		2543	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3726982	10.0		9457	

Reagents:

LC537-L5_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_008.d

Injection Date: 19-Jun-2017 17:59:58

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

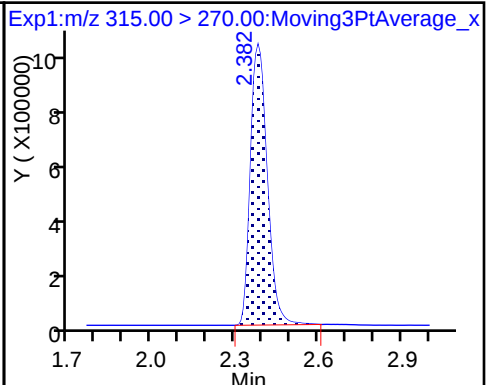
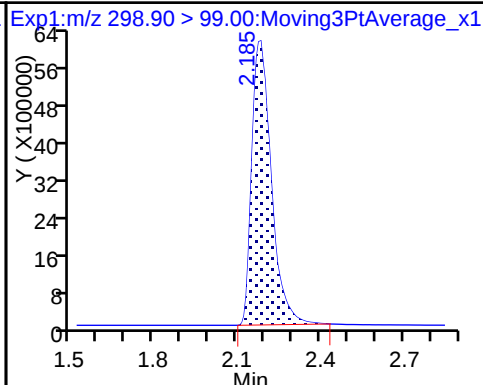
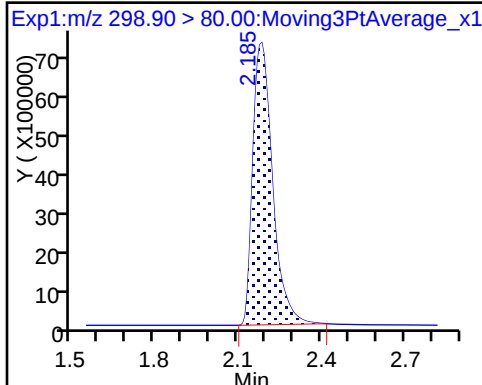
Method: 537_A8_N

Limit Group: LC 537 ICA

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

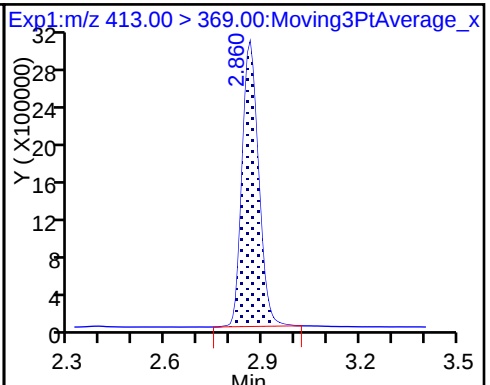
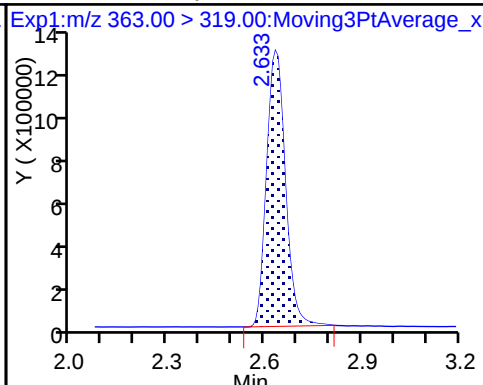
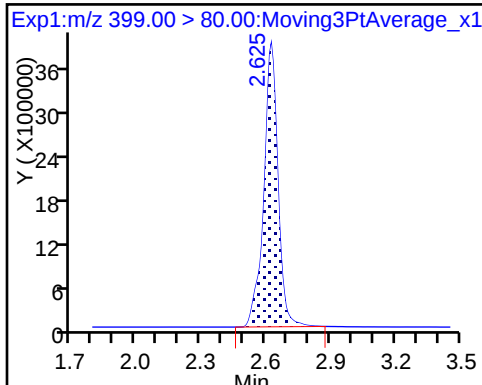
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

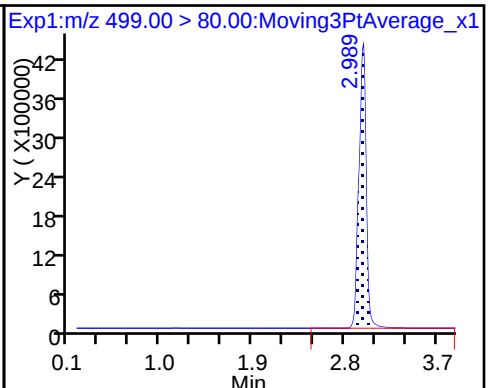
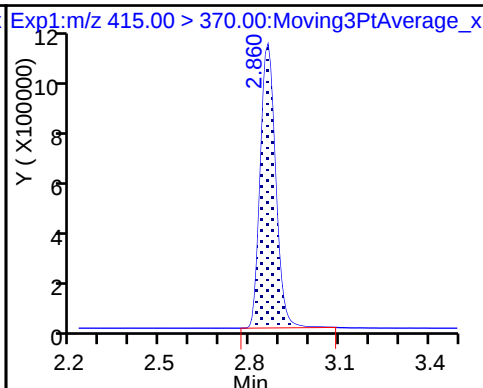
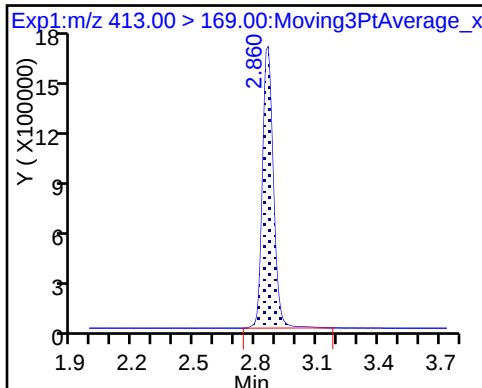
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

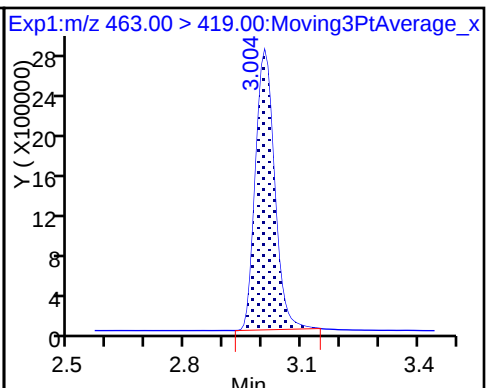
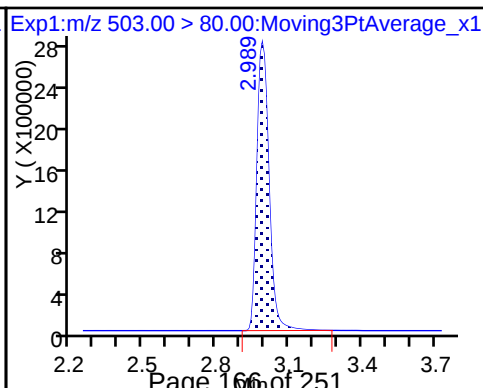
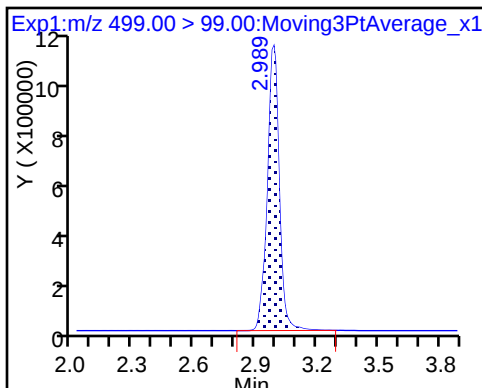
8 Perfluorooctane sulfonic acid



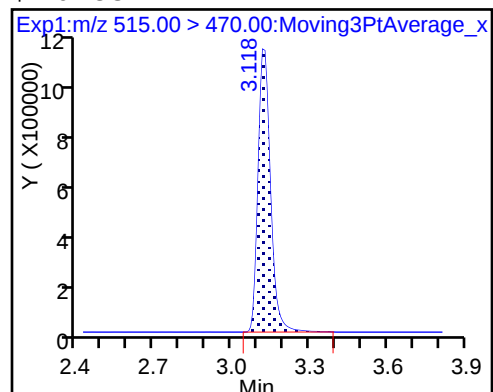
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 19-Jun-2017 18:04:42 ALS Bottle#: 6 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:45 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:23:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	46244402	156.7		1994	
298.90 > 99.00	2.177	2.183	-0.006	0.997	38450203		1.20(0.00-0.00)	2037	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4499723	10.4		3470	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	24546576	61.6		4971	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	7166616	20.3		1025	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4177713	10.0		6058	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.853	2.859	-0.006	1.000	14918357	40.8		1802	
413.00 > 169.00	2.853	2.859	-0.006	1.000	8666954		1.72(0.00-0.00)	8092	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.982	0.0	1.000	27918279	80.5		31072	
499.00 > 99.00	2.982	2.982	0.0	1.000	6349926		4.40(0.00-0.00)	18668	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9793572	28.7		19130	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	12866660	36.1		3609	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	4296473	10.7		11949	

Reagents:

LC537-L6_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Injection Date: 19-Jun-2017 18:04:42

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

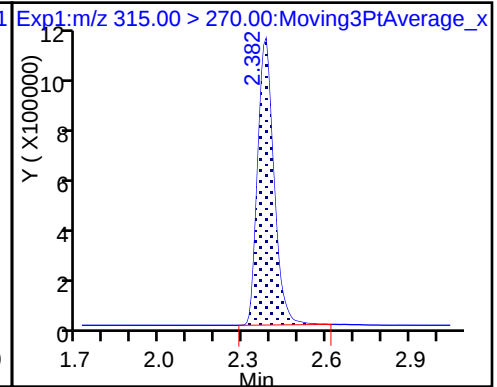
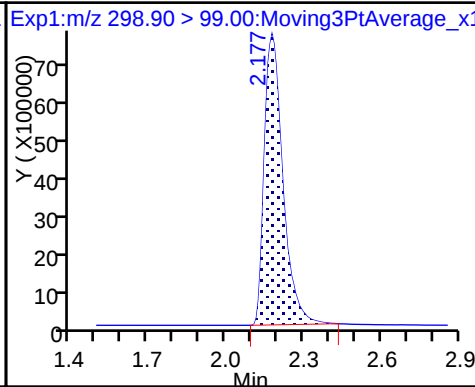
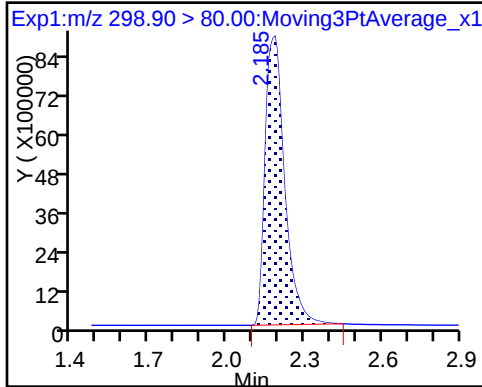
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

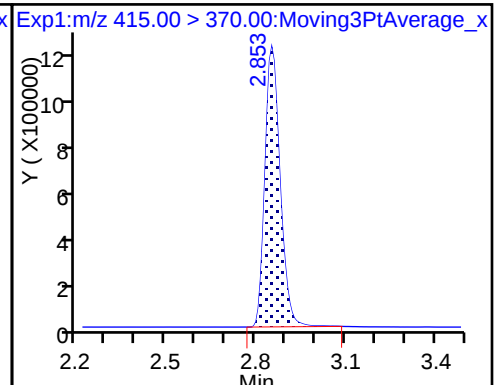
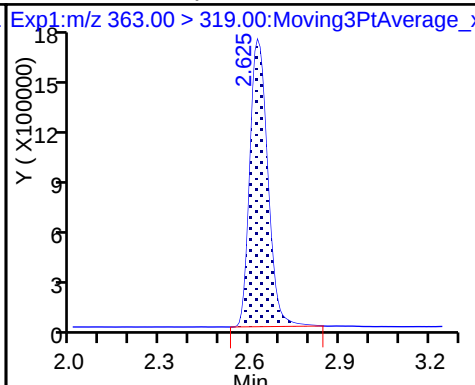
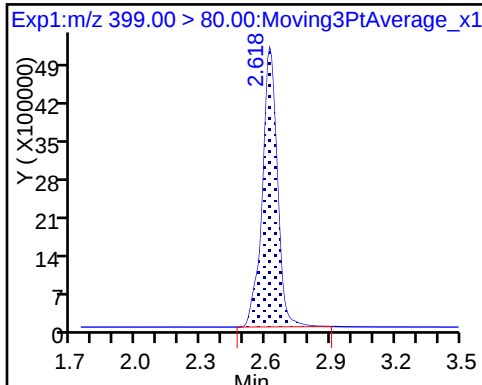
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

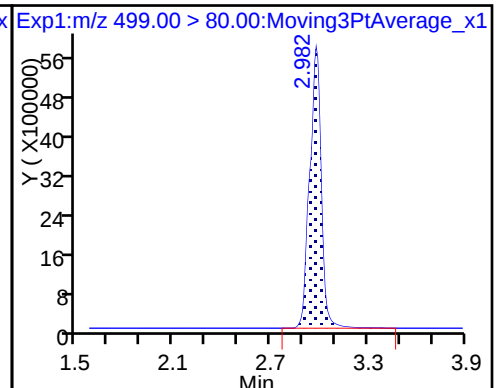
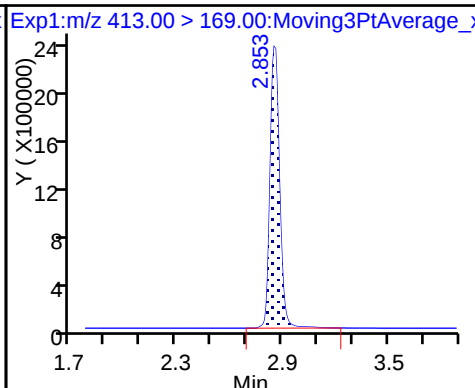
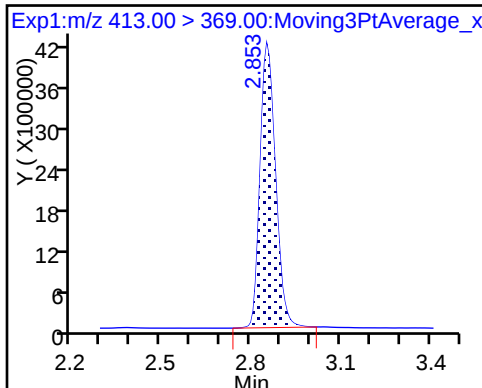
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

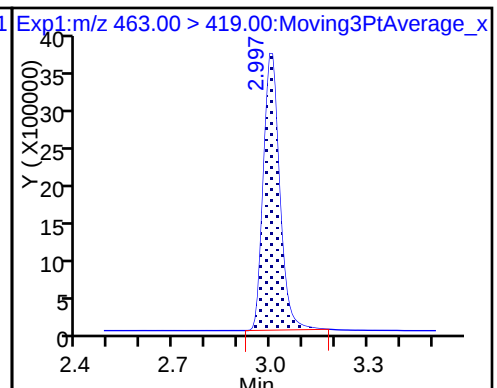
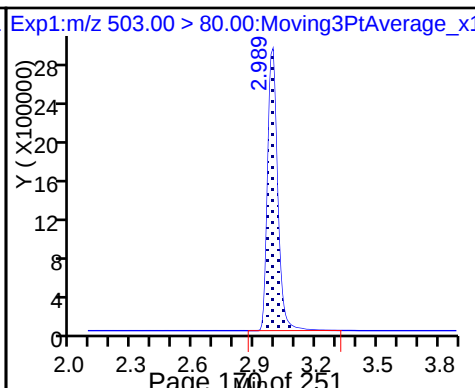
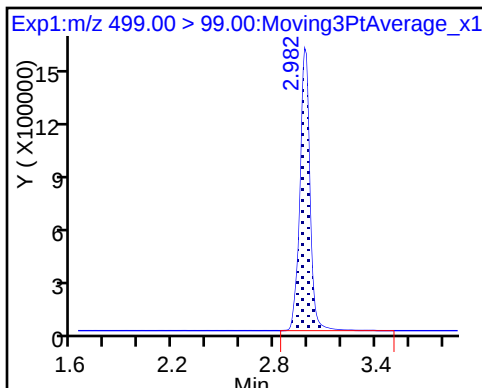
8 Perfluorooctane sulfonic acid



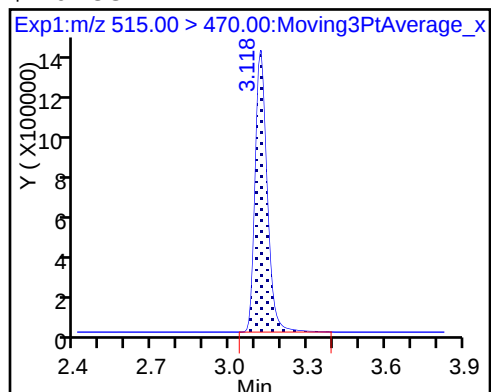
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-169955/11 Calibration Date: 06/19/2017 18:14
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537A_ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.9450		23.2	21.2	9.3	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.179		7.29	7.21	1.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8532		2.40	2.38	1.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8753		4.79	4.80	-0.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.024		9.69	9.61	0.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8772		4.75	4.62	2.8	50.0
13C2 PFHxA	Ave	1.038	1.019		9.82	10.0	-1.8	30.0
13C2 PFDA	Ave	0.9622	0.9654		10.0	10.0	0.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 19-Jun-2017 18:14:11 ALS Bottle#: 2 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:47 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:26:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	6119266	23.2		1090	
298.90 > 99.00	2.177	2.183	-0.006	1.000	4828214		1.27(0.00-0.00)	940	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	3793675	9.82		3005	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	2598248	7.29		1032	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	754972	2.40		111	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	1563113	4.79		276	
413.00 > 169.00	2.860	2.859	0.001	1.000	891112		1.75(0.00-0.00)	972	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3724287	10.0		7530	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	3005378	9.69		8873	
499.00 > 99.00	2.989	2.982	0.007	1.000	647078		4.64(0.00-0.00)	1786	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8759638	28.7		18344	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	1510040	4.75		678	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3595473	10.0		12802	

Reagents:

LC537-L2_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_011.d

Injection Date: 19-Jun-2017 18:14:11

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

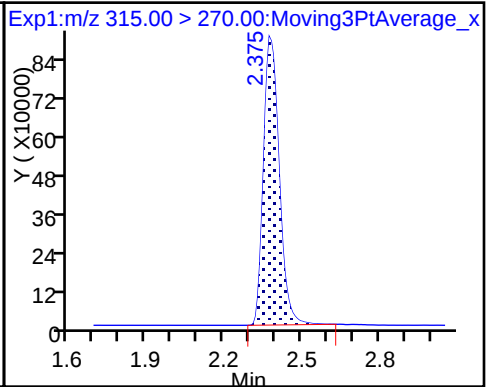
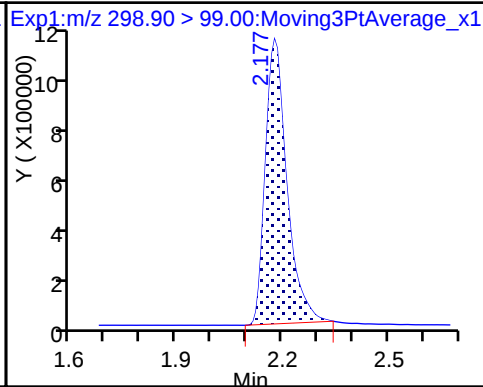
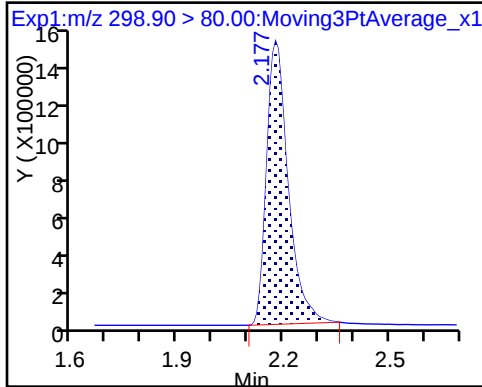
Method: 537_A8_N

Limit Group: LC 537 ICA

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

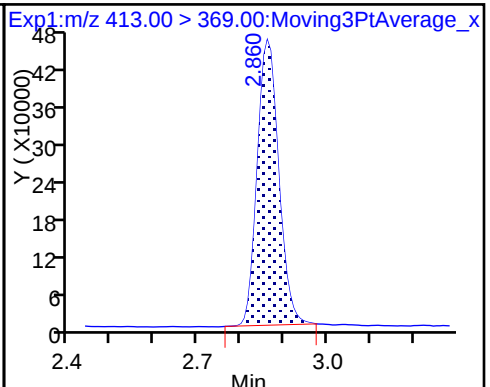
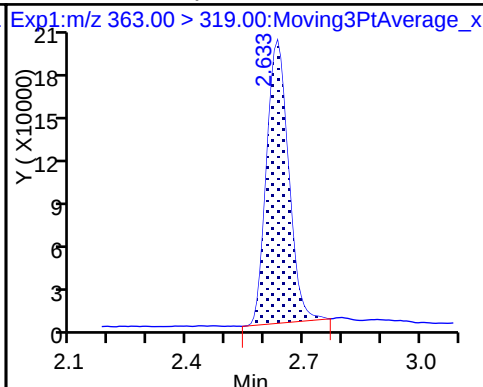
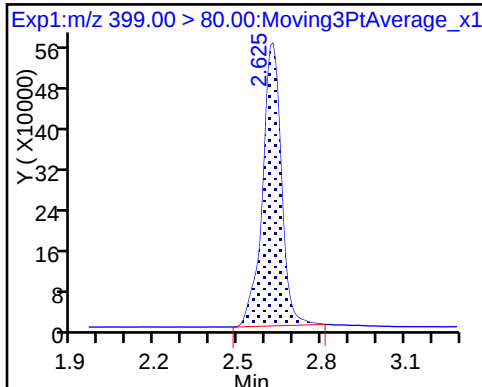
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

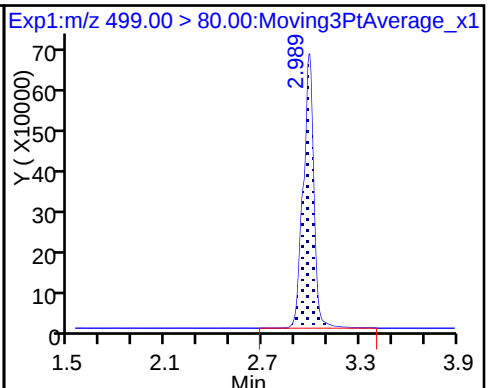
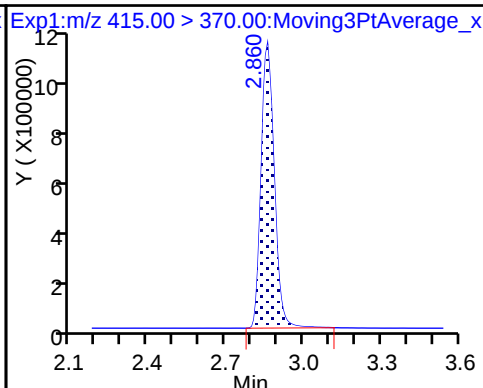
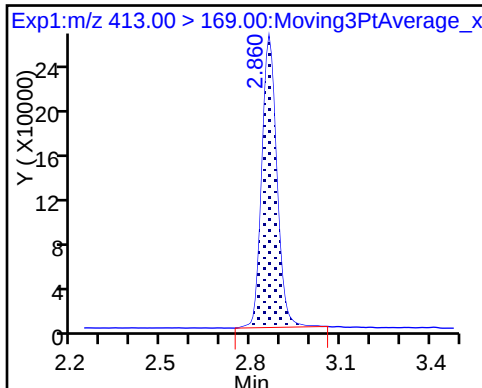
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

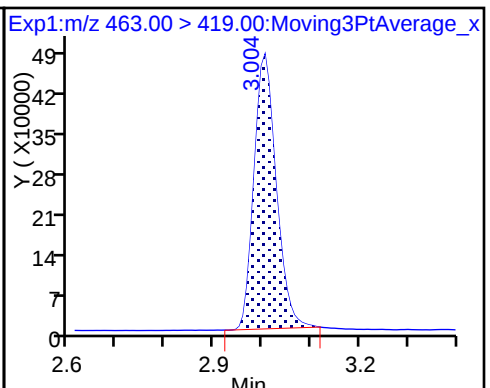
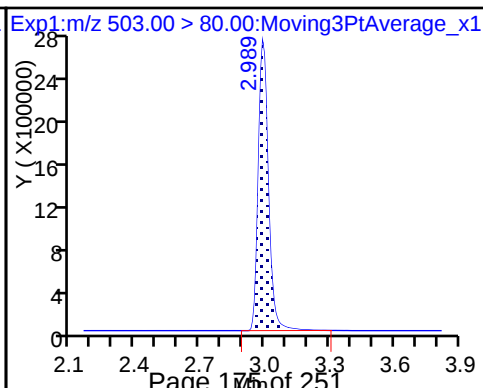
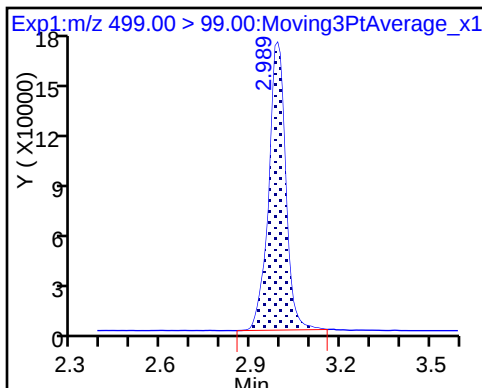
8 Perfluorooctane sulfonic acid



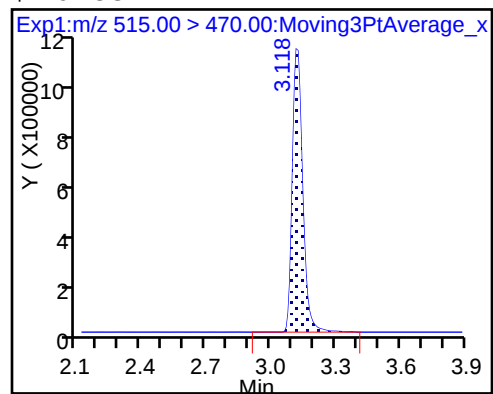
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: ICV 320-169955/13 Calibration Date: 06/19/2017 18:23
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537A_ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.8921		104	101	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.265		23.0	21.2	8.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8190		9.79	10.1	-2.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.9521		21.8	20.0	8.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.080		22.0	20.7	6.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8825		20.7	20.0	3.5	30.0
13C2 PFHxA	Ave	1.038	1.057		10.2	10.0	1.8	30.0
13C2 PFDA	Ave	0.9622	1.049		10.9	10.0	9.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 19-Jun-2017 18:23:38 ALS Bottle#: 7 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 10:57:48 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: phomsophat

Date: 19-Jun-2017 19:34:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	29499258	103.9		2039	
298.90 > 99.00	2.177	2.183	-0.006	1.000	24839559		1.19(0.00-0.00)	1897	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	4035623	10.2		4361	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	8802712	23.0		2710	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	3152523	9.79		444	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	7278322	21.8		1054	
413.00 > 169.00	2.860	2.859	0.001	1.000	3946679		1.84(0.00-0.00)	3880	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		3818724	10.0		6298	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.982	0.0	1.000	7338229	22.0		20107	
499.00 > 99.00	2.982	2.982	0.0	1.000	1253171		5.86(0.00-0.00)	3549	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9420237	28.7		22623	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	6742905	20.7		2160	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	4006098	10.9		14118	

Reagents:

LC537-ICV_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_013.d

Injection Date: 19-Jun-2017 18:23:38

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

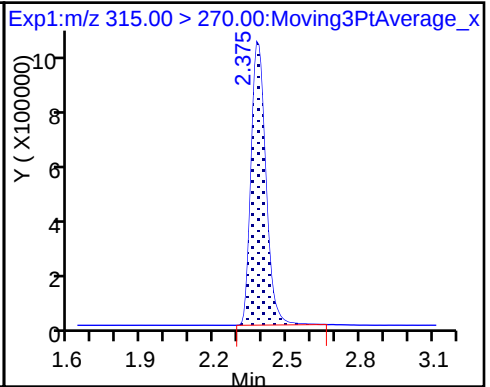
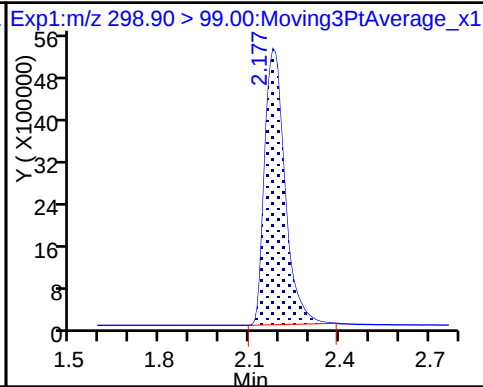
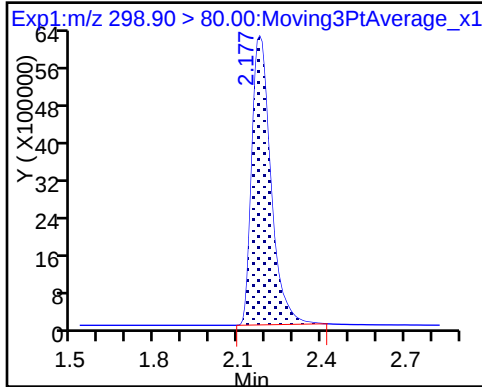
Method: 537_A8_N

Limit Group: LC 537 ICA

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

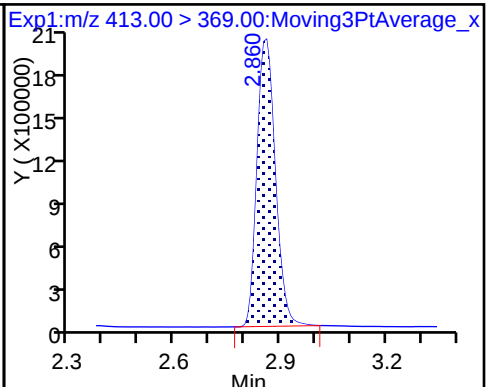
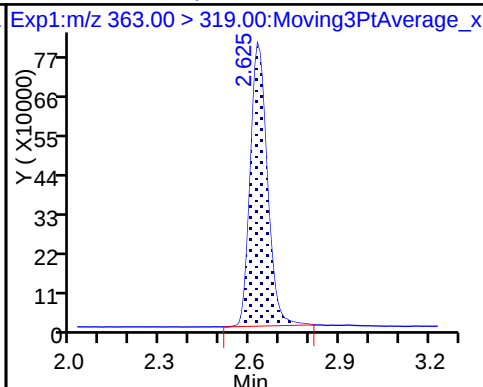
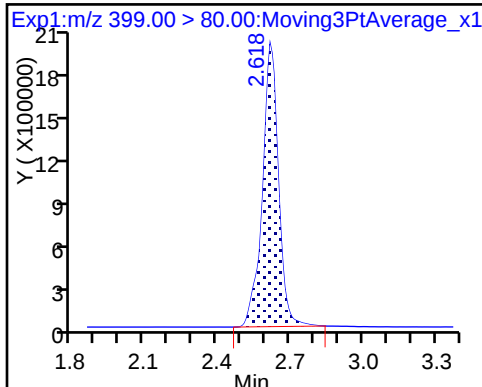
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

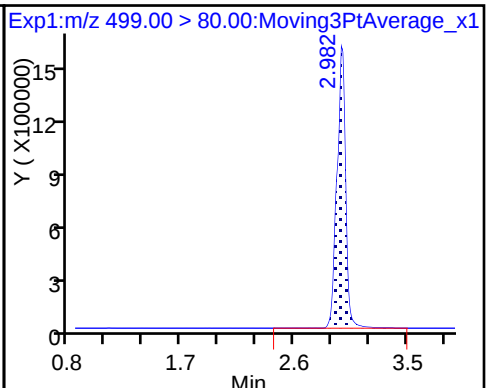
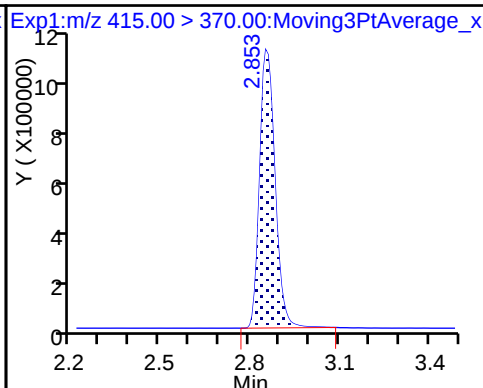
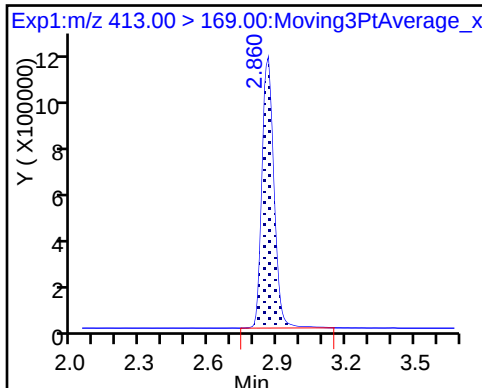
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

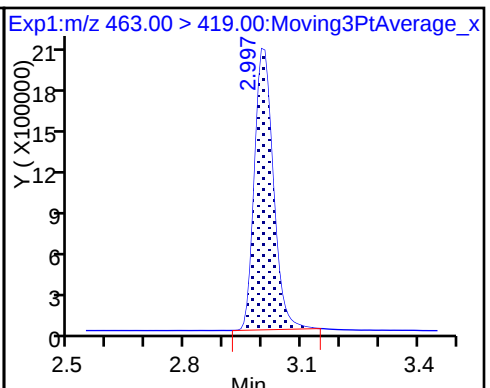
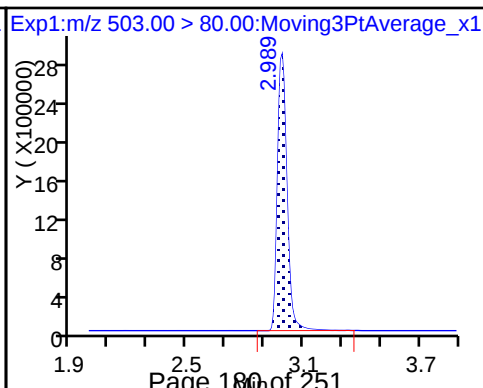
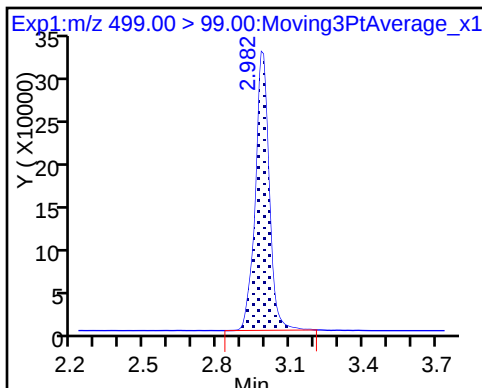
8 Perfluorooctane sulfonic acid



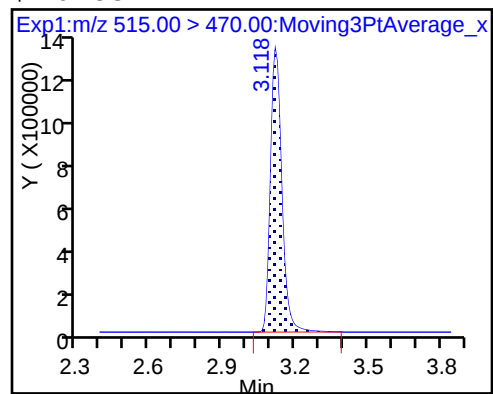
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: CCV 320-169962/1 Calibration Date: 06/19/2017 18:33
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537B_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.8195		126	133	-5.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8545		15.0	14.9	1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.192		46.1	45.1	2.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8890		30.4	30.0	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.023		60.5	60.0	0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8217		27.8	28.9	-3.7	30.0
13C2 PFHxA	Ave	1.038	1.041		10.0	10.0	0.3	30.0
13C2 PFDA	Ave	0.9622	0.9713		10.1	10.0	0.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_001.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 19-Jun-2017 18:33:08 ALS Bottle#: 5 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Jun-2017 11:05:10 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK005

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:19:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	34683749	125.6		1980	
298.90 > 99.00	2.177	2.183	-0.006	1.000	28514952		1.22(0.00-0.00)	2004	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4020511	10.0		4252	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	17168191	46.1		4264	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	4901644	15.0		698	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3862838	10.0		8641	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	10292116	30.4		1356	
413.00 > 169.00	2.860	2.859	0.001	1.000	5939126		1.73(0.00-0.00)	5672	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	19613063	60.5		51714	
499.00 > 99.00	2.989	2.989	0.0	1.000	4458859		4.40(0.00-0.00)	10798	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9159685	28.7		16681	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	9170093	27.8		2754	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3752144	10.1		12276	

Reagents:

LC537-L5_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_001.d

Injection Date: 19-Jun-2017 18:33:08

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

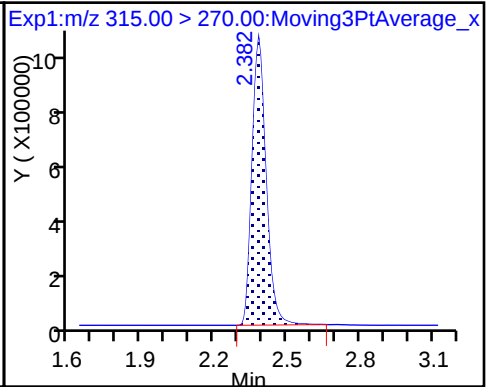
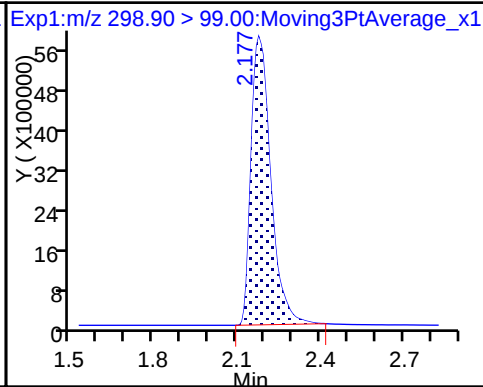
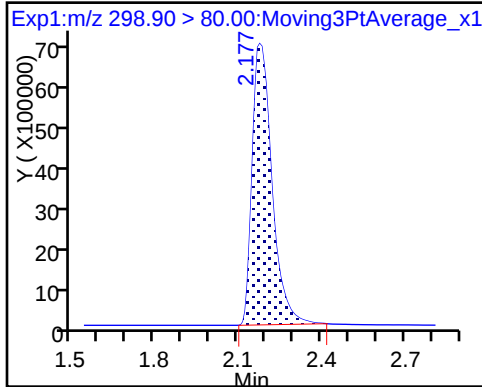
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

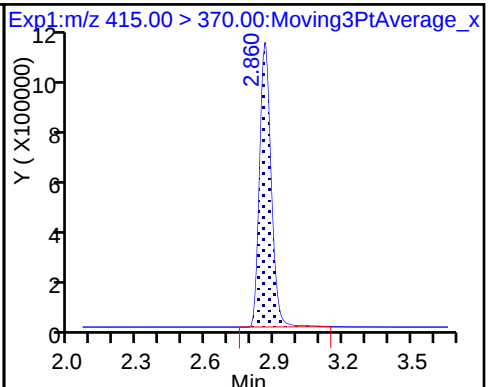
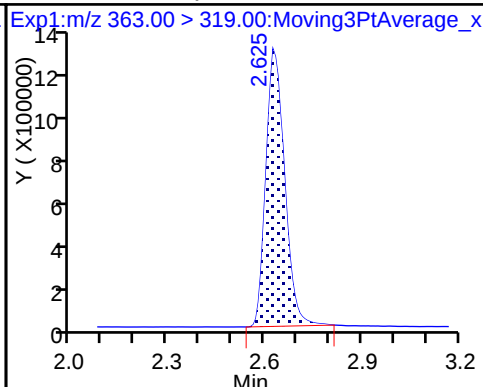
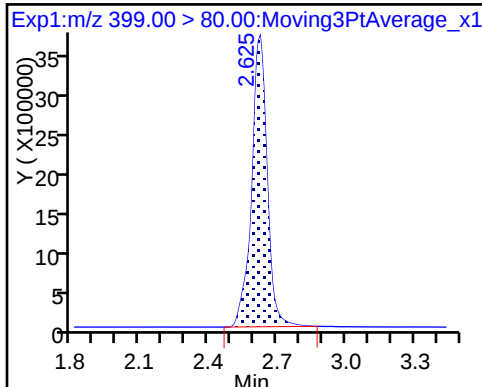
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

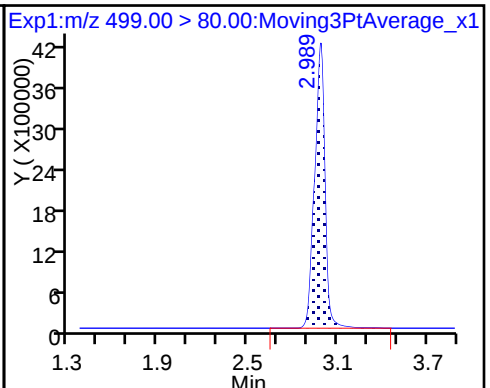
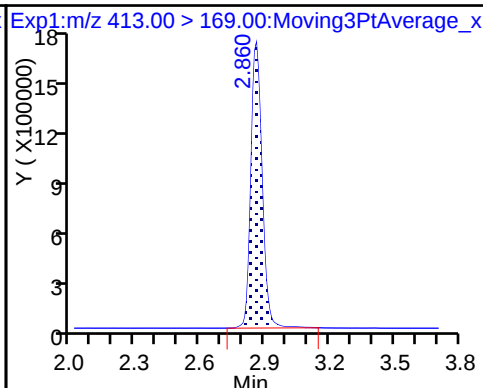
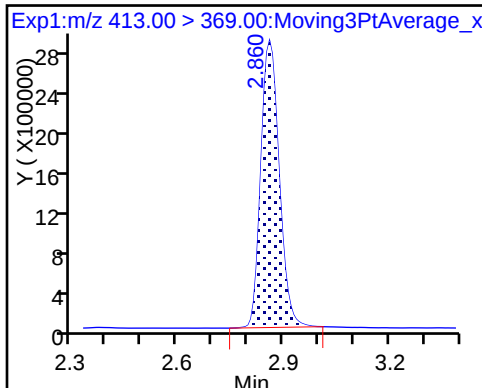
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

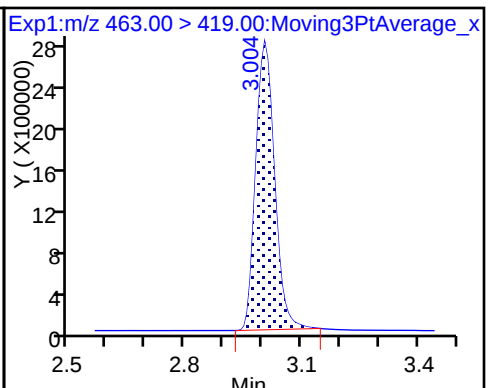
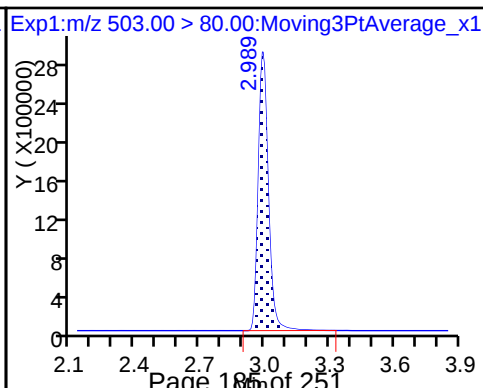
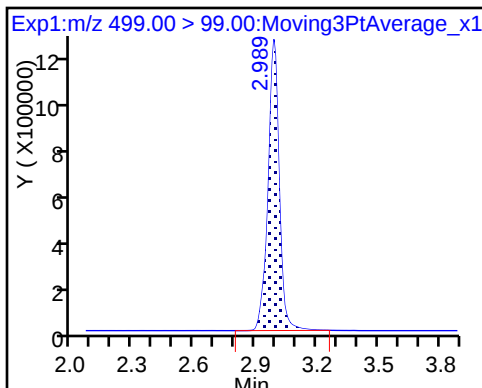
8 Perfluorooctane sulfonic acid



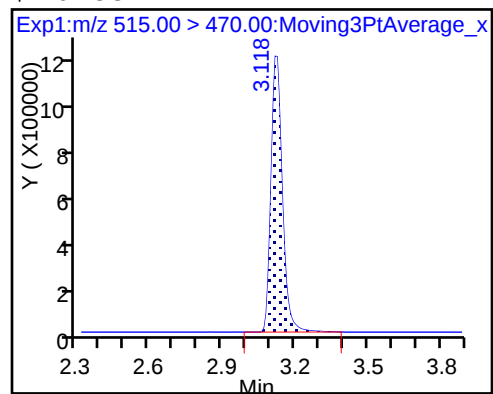
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: CCV 320-169962/13 Calibration Date: 06/19/2017 19:30
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537B_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.9376		48.1	44.4	8.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.206		15.6	15.1	3.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8243		4.86	4.97	-2.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8797		10.1	10.0	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.043		20.7	20.1	2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8201		9.30	9.68	-3.9	30.0
13C2 PFHxA	Ave	1.038	0.9757		9.40	10.0	-6.0	30.0
13C2 PFDA	Ave	0.9622	0.8361		8.69	10.0	-13.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: CCV 320-169964/13 Calibration Date: 06/19/2017 19:30
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537B_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.9376		48.1	44.4	8.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.206		15.6	15.1	3.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8243		4.86	4.97	-2.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8797		10.1	10.0	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.043		20.7	20.1	2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8201		9.30	9.68	-3.9	30.0
13C2 PFHxA	Ave	1.038	0.9757		9.40	10.0	-6.0	30.0
13C2 PFDA	Ave	0.9622	0.8361		8.69	10.0	-13.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_013.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 19-Jun-2017 19:30:04 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 11:42:36 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:27:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	13769256	48.1		1531	
298.90 > 99.00	2.170	2.183	-0.013	0.997	11067899		1.24(0.00-0.00)	1382	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	4167896	9.40		2955	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	6024408	15.6		1977	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	1751802	4.86		251	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4271839	10.0		8083	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.853	2.859	-0.006	1.000	3773002	10.1		638	
413.00 > 169.00	2.853	2.859	-0.006	1.000	2071027		1.82(0.00-0.00)	1922	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.982	0.0	1.000	6939433	20.7		16945	
499.00 > 99.00	2.982	2.982	0.0	1.000	1512150		4.59(0.00-0.00)	4860	
* 7 13C4 PFOS									
503.00 > 80.00	2.982	2.991	-0.009		9487679	28.7		14650	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	3390603	9.30		1029	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.111	3.123	-0.012	1.000	3571460	8.69		8314	

Reagents:

LC537-L3_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_013.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 19-Jun-2017 19:30:04 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 11:42:36 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:27:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	13769256	48.1		1531	
298.90 > 99.00	2.170	2.183	-0.013	0.997	11067899		1.24(0.00-0.00)	1382	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	4167896	9.40		2955	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	6024408	15.6		1977	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	1751802	4.86		251	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4271839	10.0		8083	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.853	2.859	-0.006	1.000	3773002	10.1		638	
413.00 > 169.00	2.853	2.859	-0.006	1.000	2071027		1.82(0.00-0.00)	1922	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.982	0.0	1.000	6939433	20.7		16945	
499.00 > 99.00	2.982	2.982	0.0	1.000	1512150		4.59(0.00-0.00)	4860	
* 7 13C4 PFOS									
503.00 > 80.00	2.982	2.991	-0.009		9487679	28.7		14650	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	3390603	9.30		1029	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.111	3.123	-0.012	1.000	3571460	8.69		8314	

Reagents:

LC537-L3_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_013.d

Injection Date: 19-Jun-2017 19:30:04

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

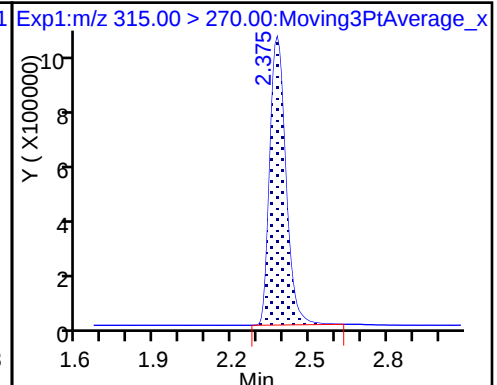
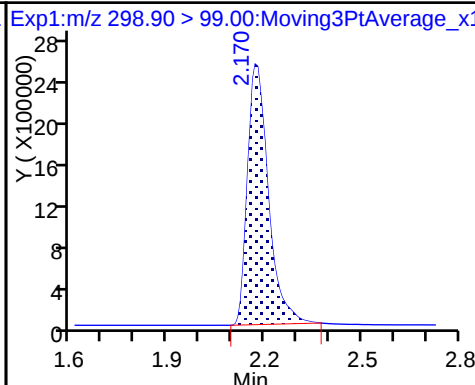
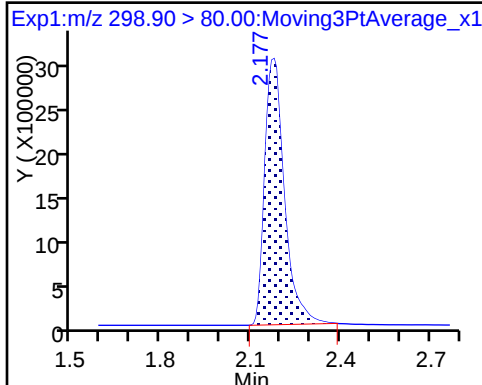
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

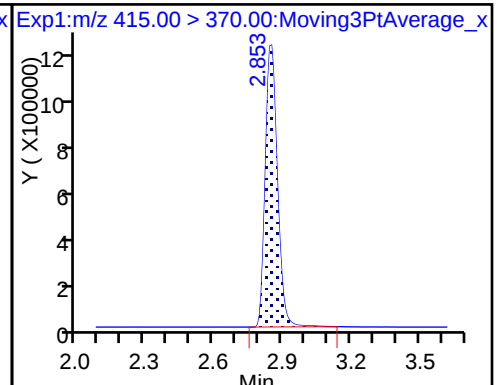
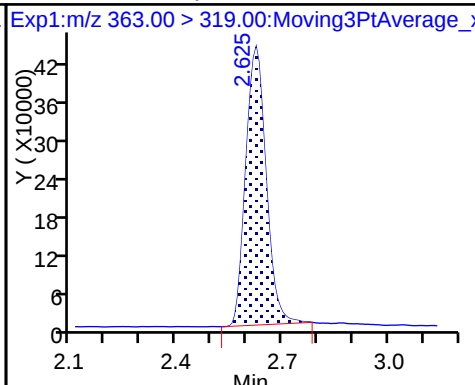
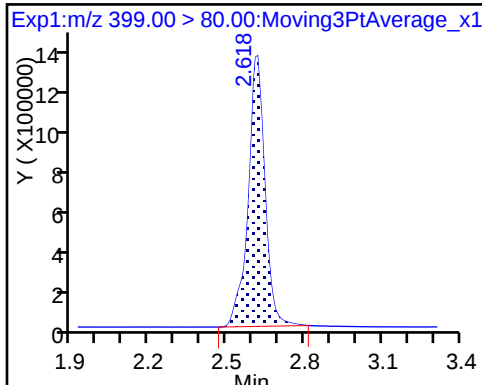
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

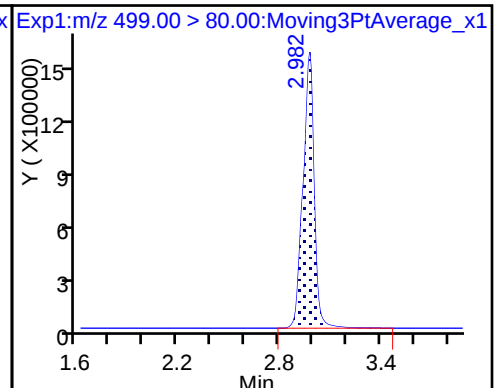
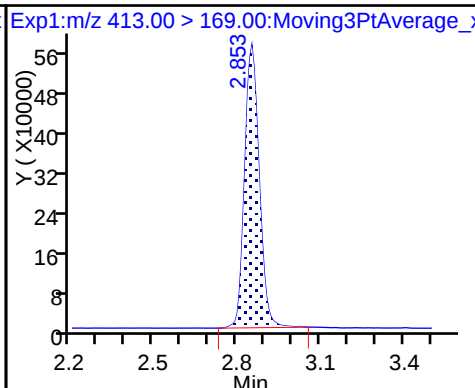
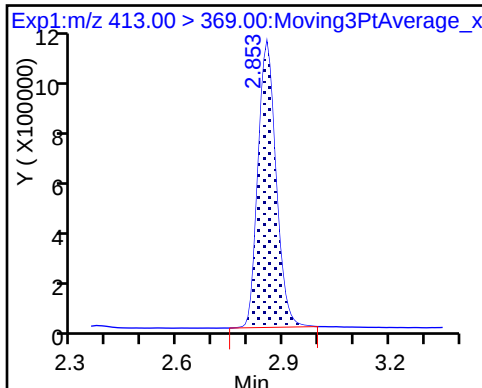
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

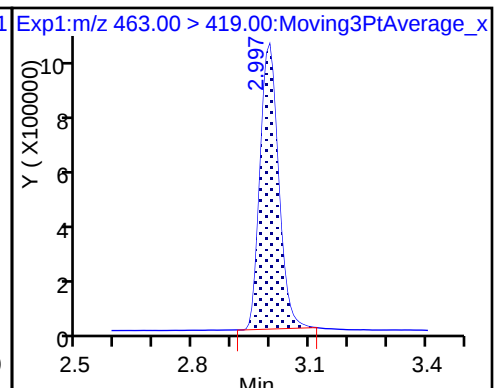
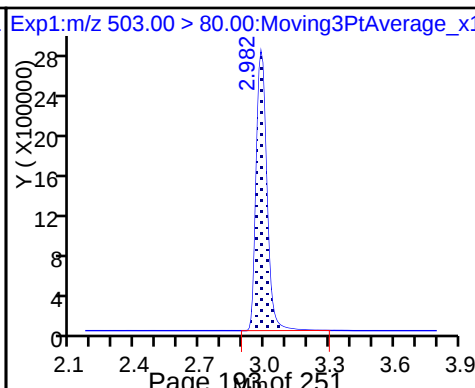
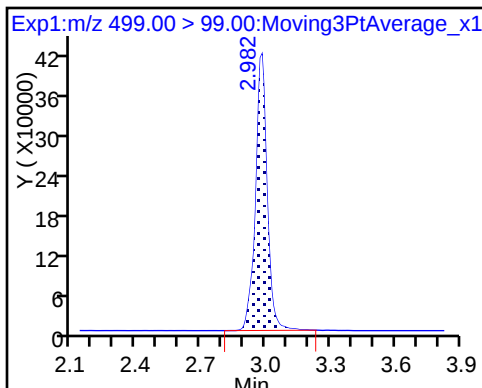
8 Perfluorooctane sulfonic acid



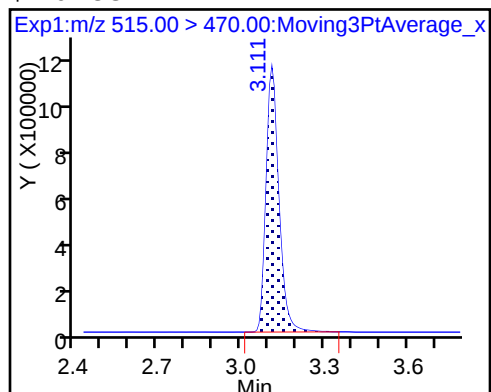
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_013.d

Injection Date: 19-Jun-2017 19:30:04

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

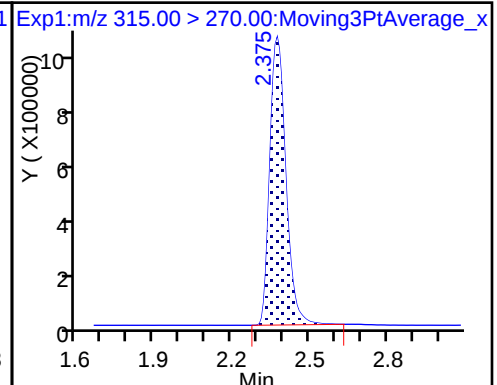
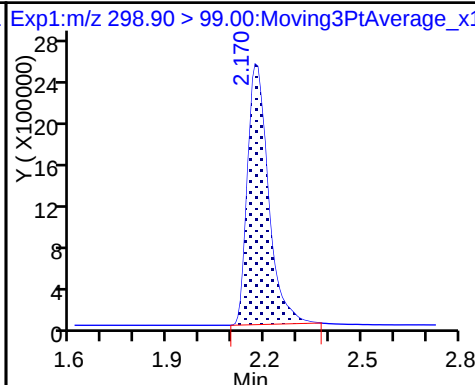
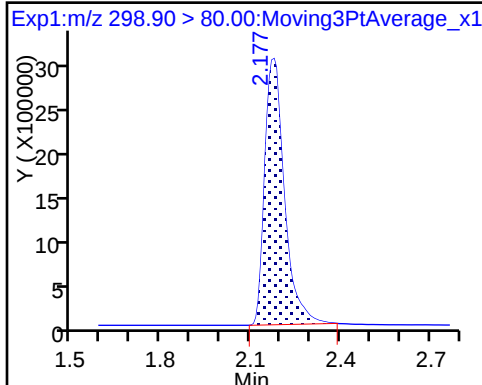
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

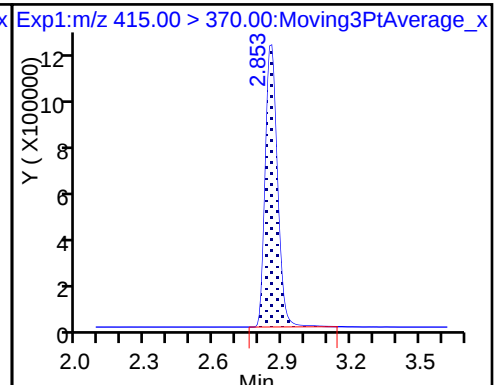
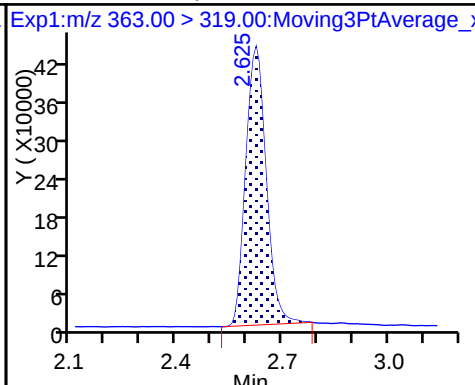
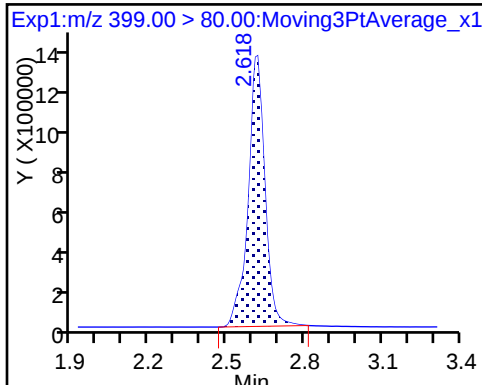
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

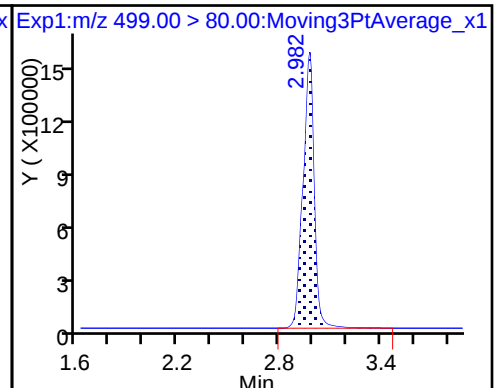
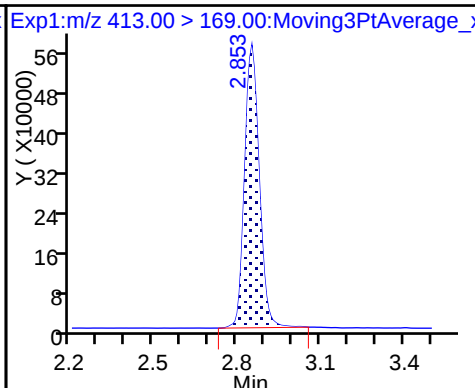
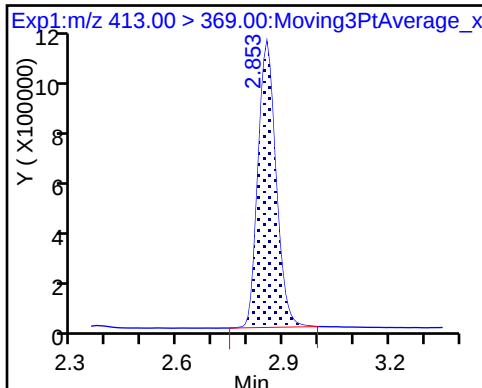
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

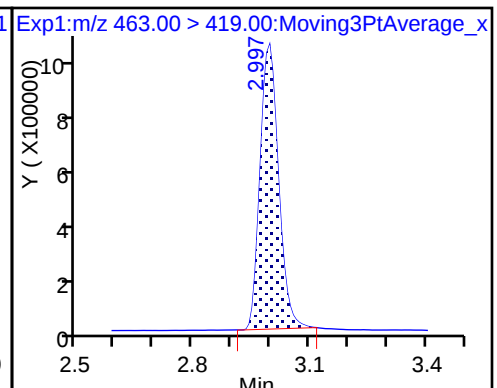
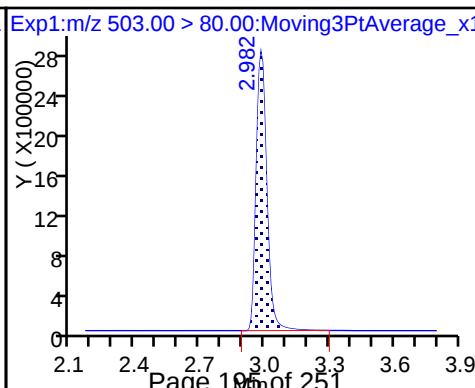
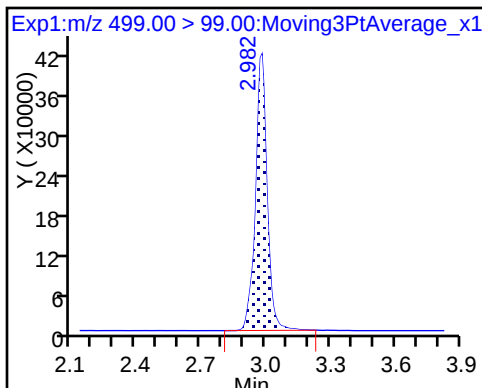
8 Perfluorooctane sulfonic acid



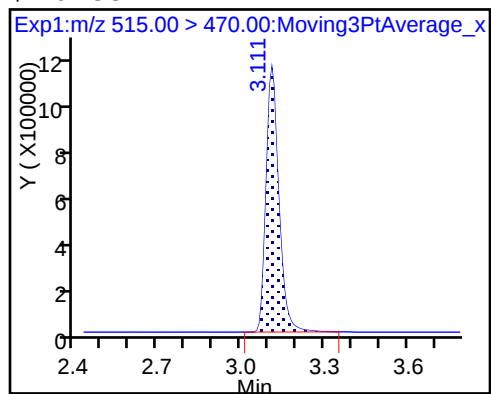
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: CCV 320-169964/25 Calibration Date: 06/19/2017 20:26
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537B_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.8911		137	133	3.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.263		48.8	45.1	8.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8602		15.1	14.9	2.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.9150		31.3	30.0	4.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.042		61.6	60.0	2.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8034		27.2	28.9	-5.8	30.0
13C2 PFHxA	Ave	1.038	1.043		10.1	10.0	0.5	30.0
13C2 PFDA	Ave	0.9622	0.8895		9.24	10.0	-7.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: CCV 320-169966/25 Calibration Date: 06/19/2017 20:26
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537B_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.8911		137	133	3.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.263		48.8	45.1	8.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8602		15.1	14.9	2.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.9150		31.3	30.0	4.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.042		61.6	60.0	2.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8034		27.2	28.9	-5.8	30.0
13C2 PFHxA	Ave	1.038	1.043		10.1	10.0	0.5	30.0
13C2 PFDA	Ave	0.9622	0.8895		9.24	10.0	-7.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_025.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 19-Jun-2017 20:26:59 ALS Bottle#: 5 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 11:42:44 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:27:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	36564898	136.6		1873	
298.90 > 99.00	2.177	2.183	-0.006	0.997	29435282		1.24(0.00-0.00)	2067	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4271021	10.1		3608	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	17635515	48.8		3841	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	5230886	15.1		693	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4094794	10.0		5123	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	11228763	31.3		1393	
413.00 > 169.00	2.860	2.859	0.001	1.000	6337943		1.77(0.00-0.00)	3879	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	19374308	61.6		39895	
499.00 > 99.00	2.989	2.982	0.007	1.000	4332432		4.47(0.00-0.00)	11545	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8881256	28.7		17625	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	9504246	27.2		1835	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3642105	9.24		8408	

Reagents:

LC537-L5_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_025.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 19-Jun-2017 20:26:59 ALS Bottle#: 5 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 11:42:44 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:27:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	36564898	136.6		1873	
298.90 > 99.00	2.177	2.183	-0.006	0.997	29435282		1.24(0.00-0.00)	2067	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4271021	10.1		3608	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	17635515	48.8		3841	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	5230886	15.1		693	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4094794	10.0		5123	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	11228763	31.3		1393	
413.00 > 169.00	2.860	2.859	0.001	1.000	6337943		1.77(0.00-0.00)	3879	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	19374308	61.6		39895	
499.00 > 99.00	2.989	2.982	0.007	1.000	4332432		4.47(0.00-0.00)	11545	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8881256	28.7		17625	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	9504246	27.2		1835	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3642105	9.24		8408	

Reagents:

LC537-L5_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_025.d

Injection Date: 19-Jun-2017 20:26:59

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

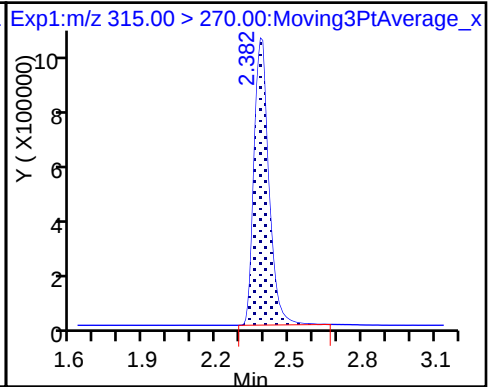
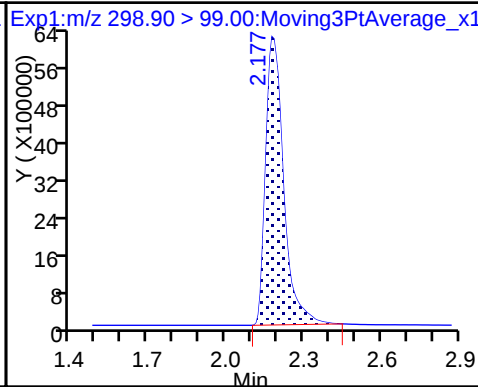
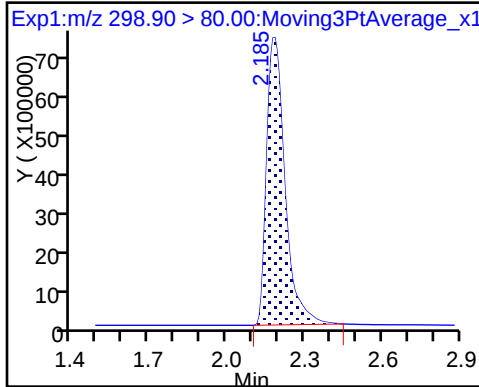
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

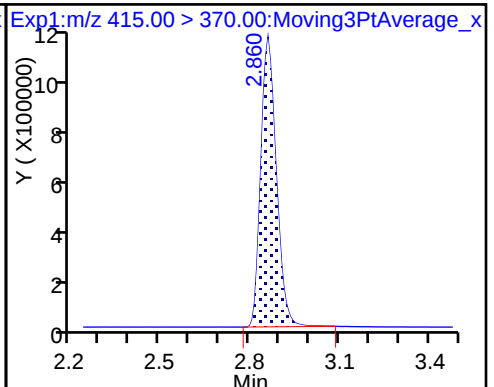
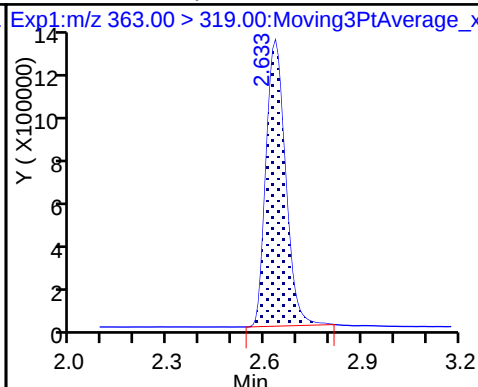
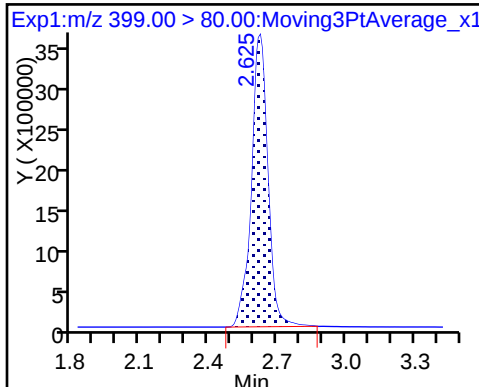
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

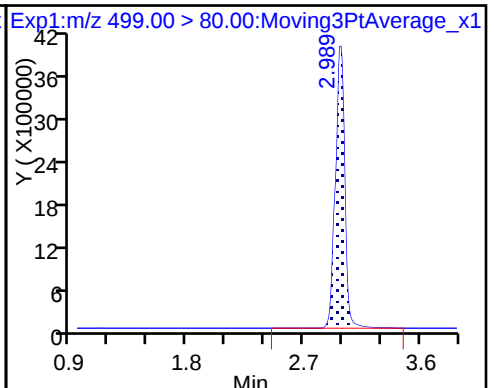
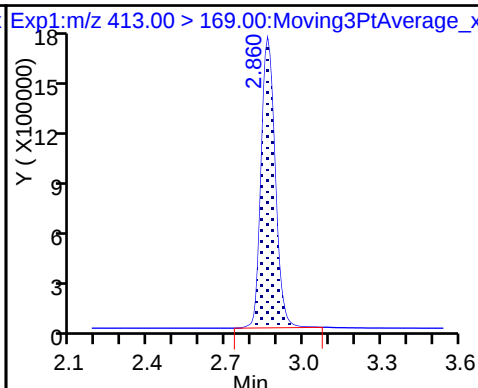
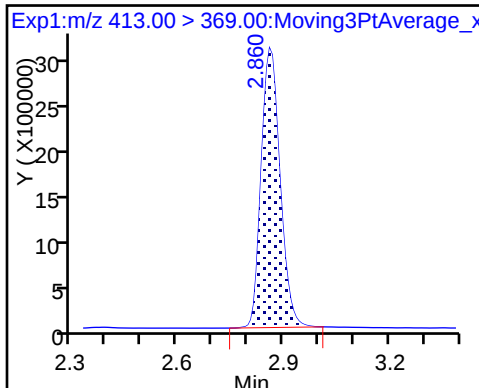
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

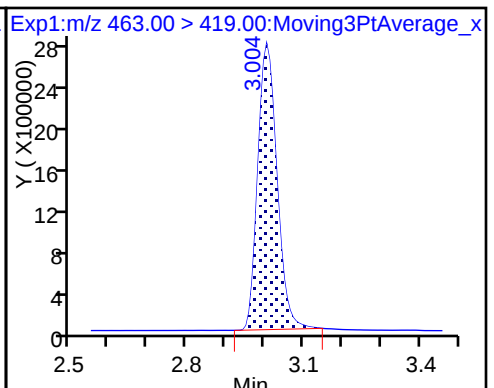
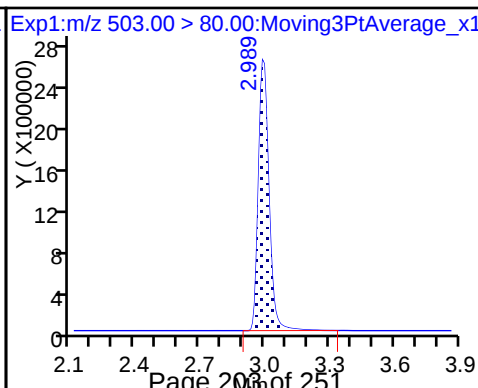
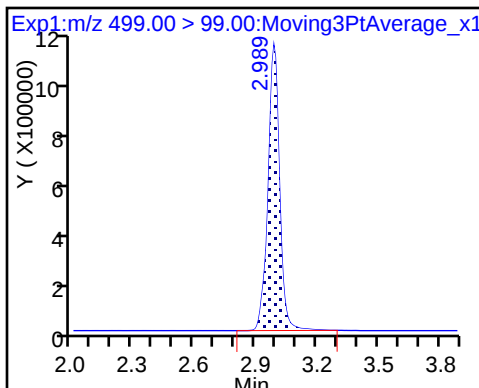
8 Perfluorooctane sulfonic acid



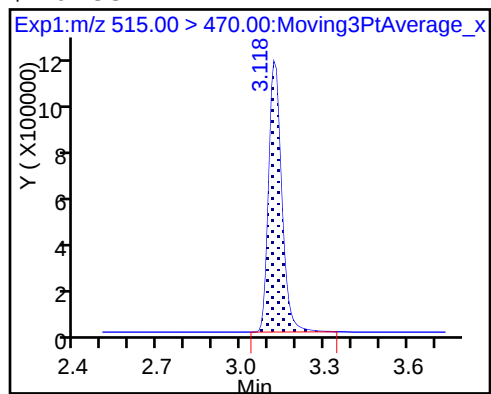
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_025.d

Injection Date: 19-Jun-2017 20:26:59

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

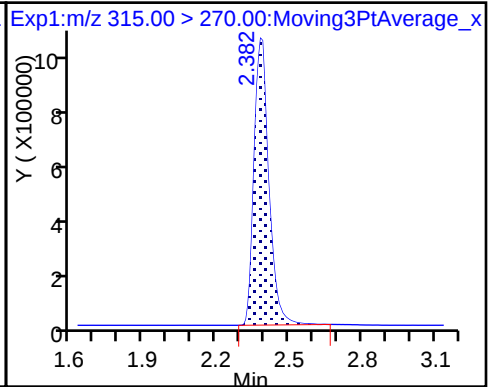
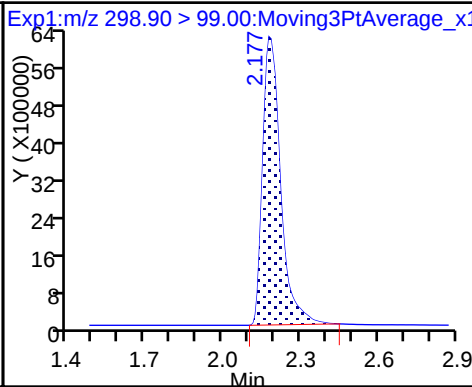
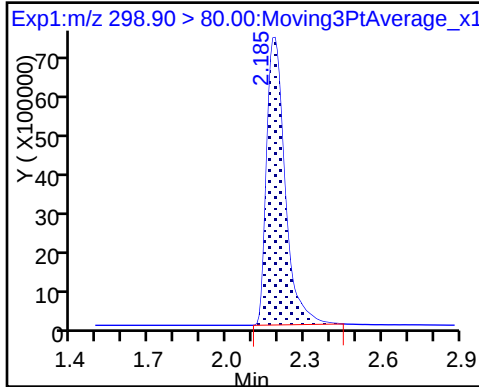
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

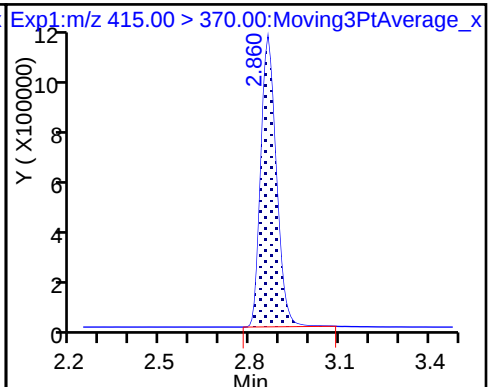
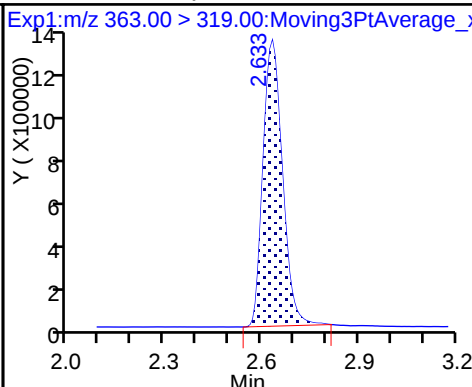
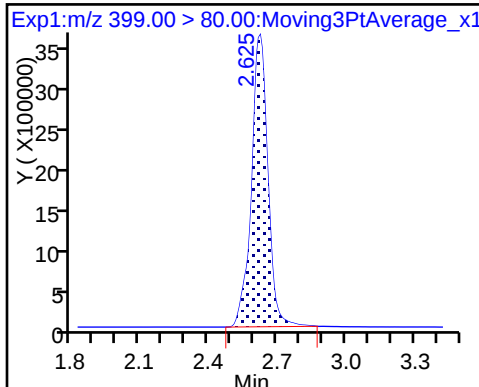
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

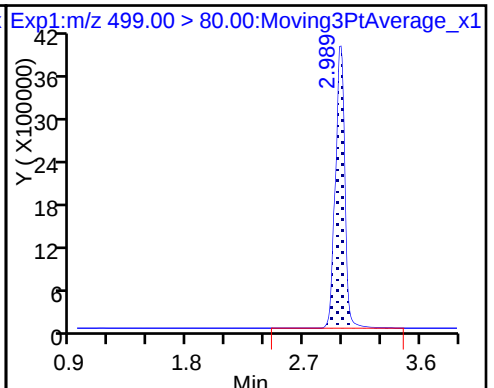
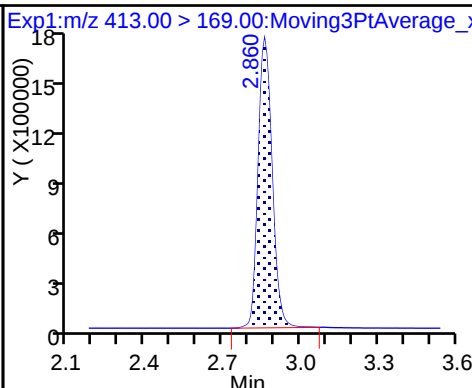
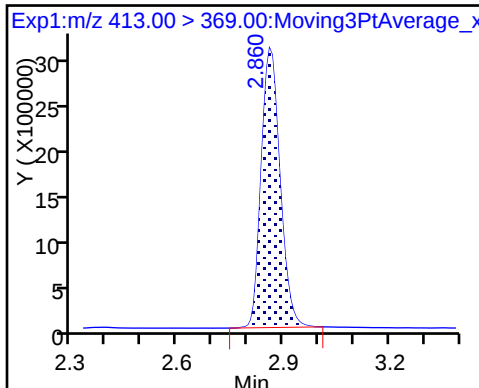
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

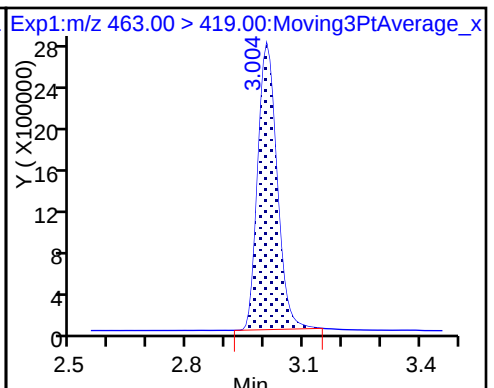
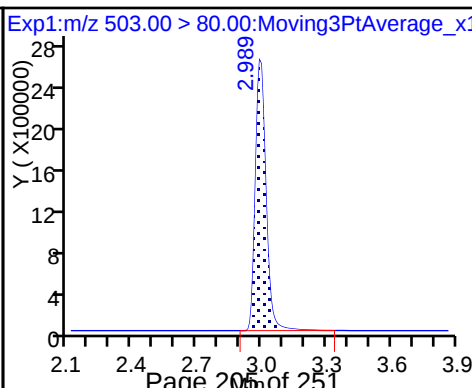
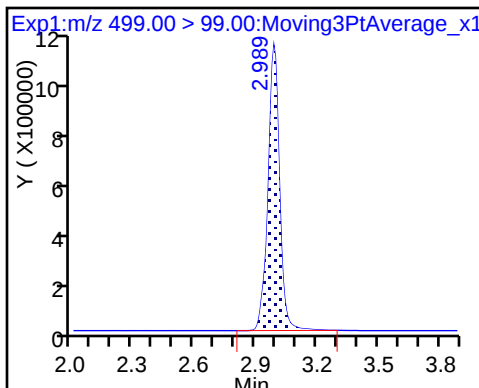
8 Perfluorooctane sulfonic acid



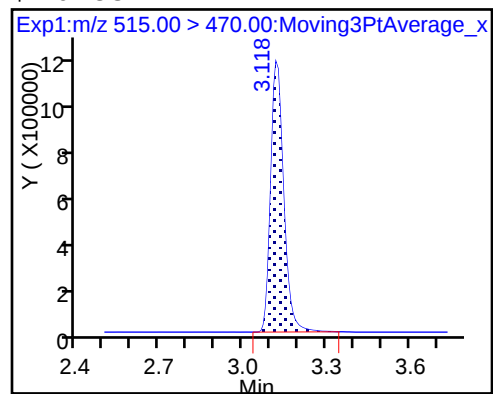
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Lab Sample ID: CCV 320-169966/37 Calibration Date: 06/19/2017 21:23
 Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 06/19/2017 18:04
 Lab File ID: 2017.06.19_537B_037.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.9190		47.2	44.4	6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.147		14.8	15.1	-1.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8161		4.81	4.97	-3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8955		10.3	10.0	2.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	0.997		19.7	20.1	-1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8375		9.50	9.68	-1.8	30.0
13C2 PFHxA	Ave	1.038	0.9910		9.55	10.0	-4.5	30.0
13C2 PFDA	Ave	0.9622	0.8690		9.03	10.0	-9.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_037.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 19-Jun-2017 21:23:55 ALS Bottle#: 3 Worklist Smp#: 37
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK005

First Level Reviewer: barnettj

Date: 20-Jun-2017 14:48:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	14413570	47.2		1486	
298.90 > 99.00	2.185	2.183	0.002	1.000	11388978		1.27(0.00-0.00)	1458	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.390	2.381	0.009	1.000	4218349	9.55		2588	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	6123638	14.8		1817	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.640	2.630	0.010	1.000	1728166	4.81		235	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4256821	10.0		5724	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	3827093	10.3		613	
413.00 > 169.00	2.868	2.859	0.009	1.003	2119551		1.81(0.00-0.00)	1990	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	7082558	19.7		14732	
499.00 > 99.00	2.989	2.989	0.0	1.000	1597143		4.43(0.00-0.00)	4148	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		10132995	28.7		19137	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	3450273	9.50		1013	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3699307	9.03		7791	

Reagents:

LC537-L3_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_037.d

Injection Date: 19-Jun-2017 21:23:55

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 37

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

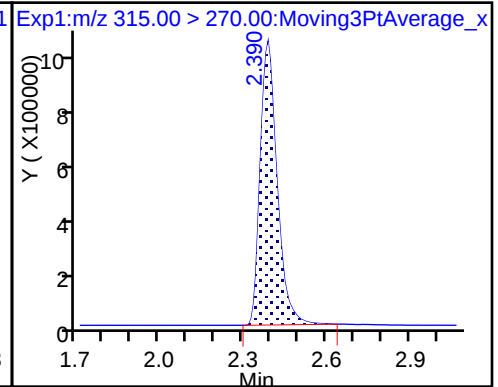
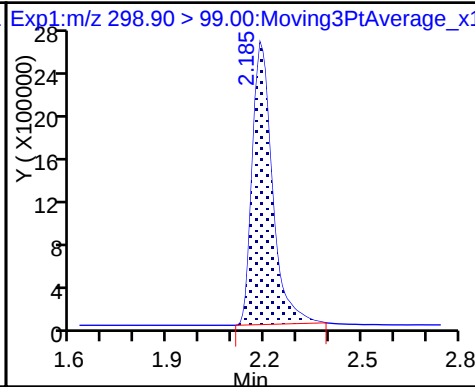
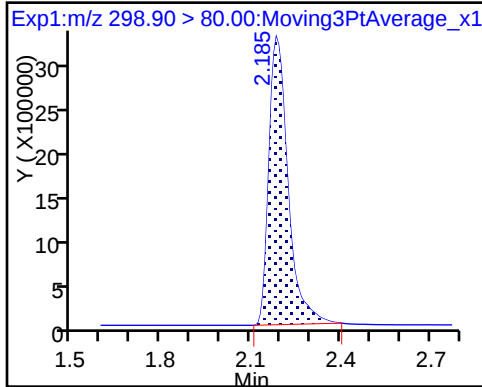
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

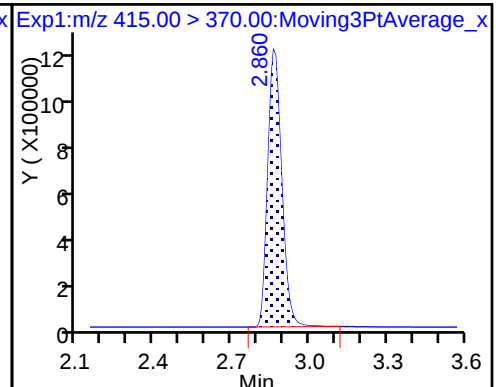
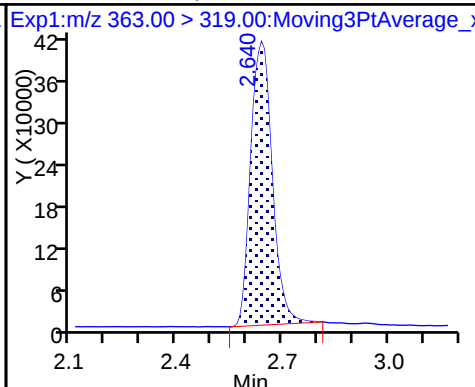
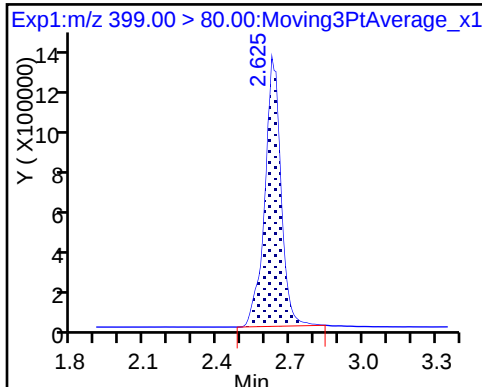
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

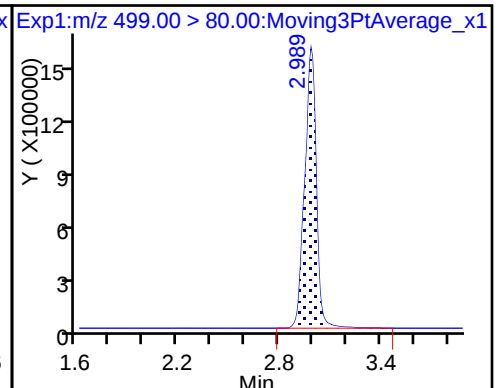
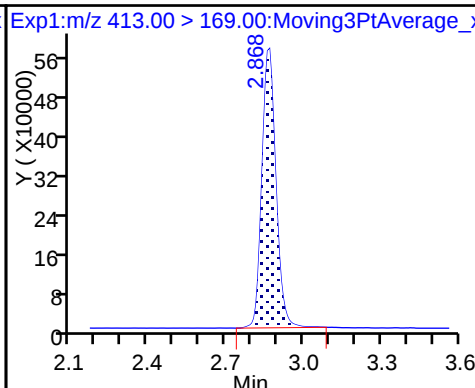
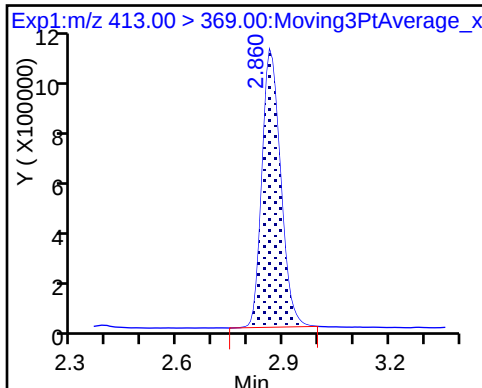
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

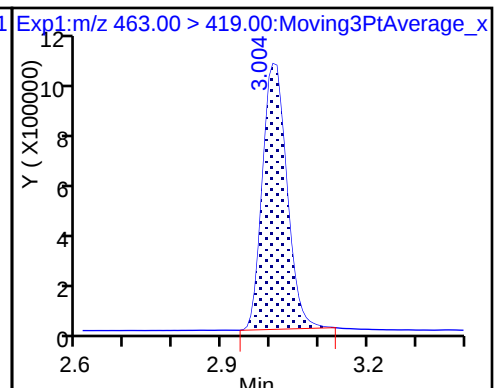
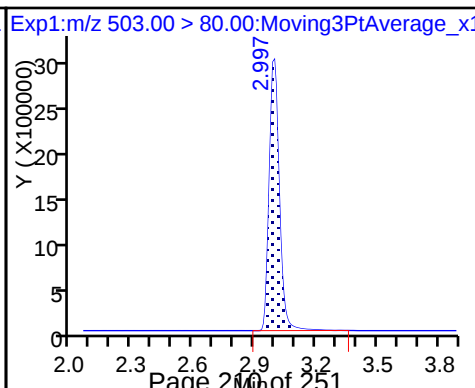
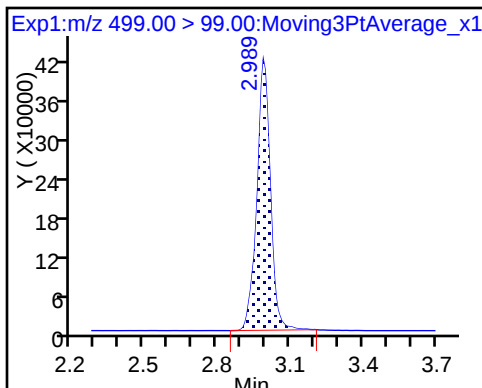
8 Perfluorooctane sulfonic acid



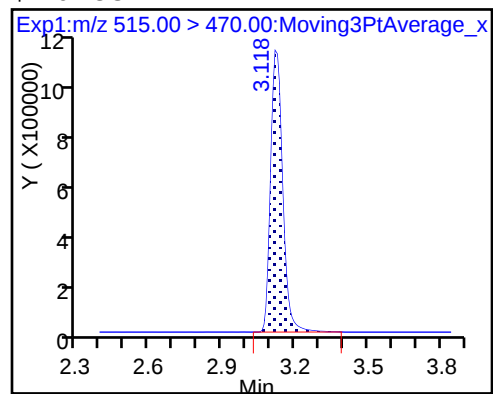
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-169193/1-A
 Matrix: Water Lab File ID: 2017.06.19_537B_004.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 06/14/2017 08:33
 Sample wt/vol: 250 (mL) Date Analyzed: 06/19/2017 18:47
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 169962 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_004.d
 Lims ID: MB 320-169193/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 19-Jun-2017 18:47:23 ALS Bottle#: 2 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-169193/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Jun-2017 11:05:10 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK005

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:37:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
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\$ 2 13C2 PFHxA

315.00 > 270.00 2.382 2.381 0.001 1.000 4152465 8.65 3049

* 6 13C2-PFOA

415.00 > 370.00 2.860 2.859 0.001 4627333 10.0 12354

* 7 13C4 PFOS

503.00 > 80.00 2.989 2.991 -0.002 9307960 28.7 18939

\$ 10 13C2 PFDA

515.00 > 470.00 3.118 3.123 -0.005 1.000 3930311 8.83 15686

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_004.d

Injection Date: 19-Jun-2017 18:47:23

Instrument ID: A8_N

Lims ID: MB 320-169193/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

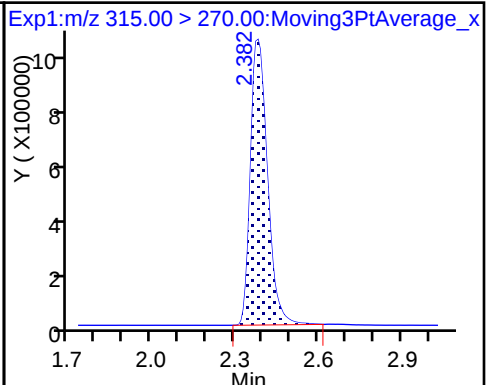
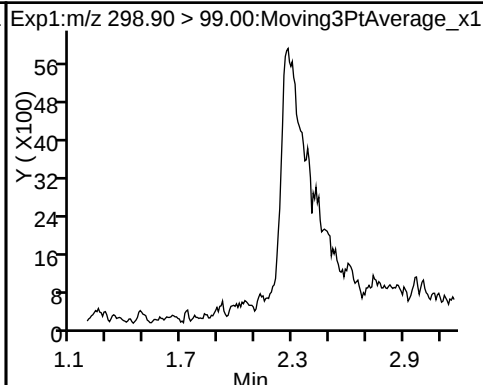
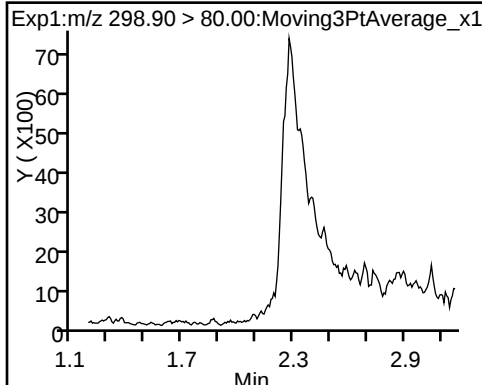
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

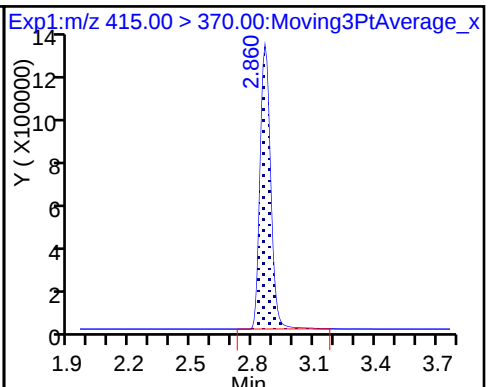
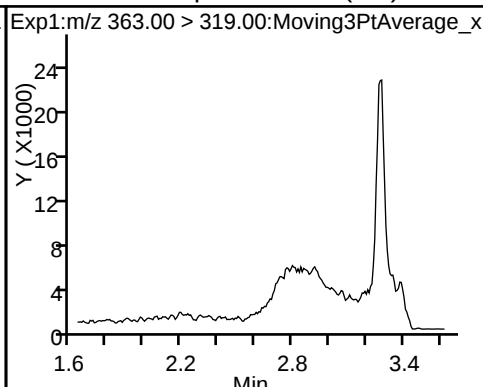
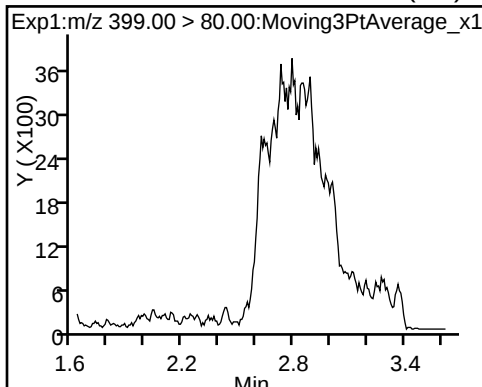
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

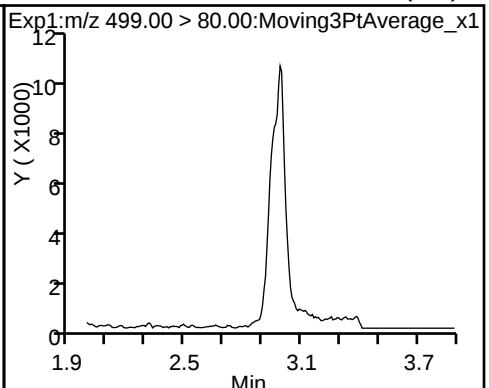
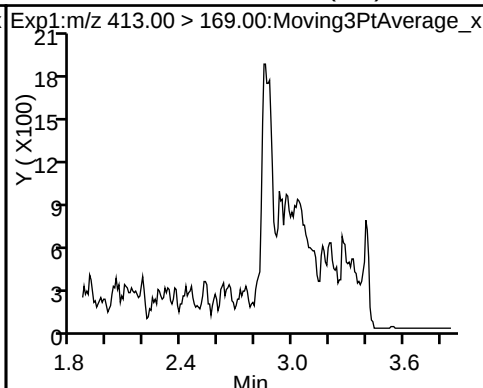
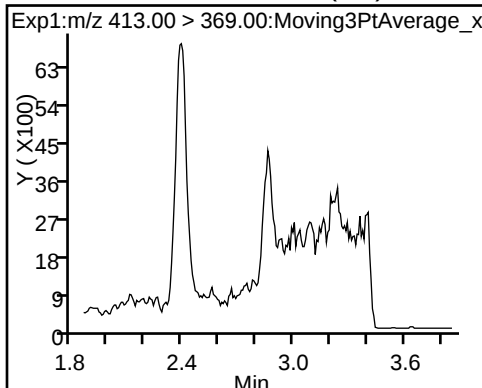
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

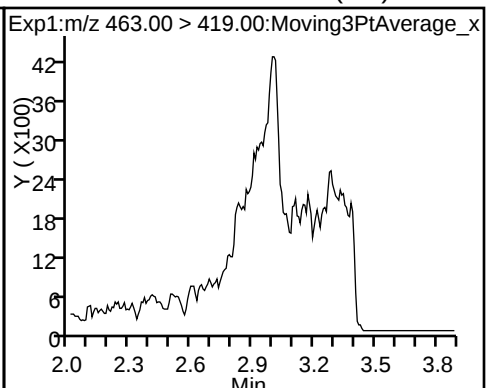
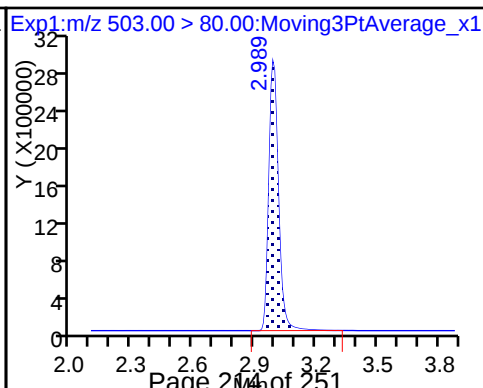
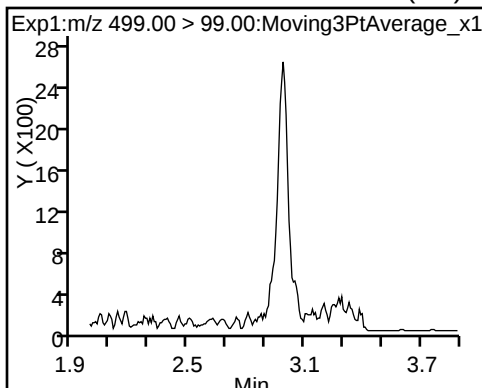
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

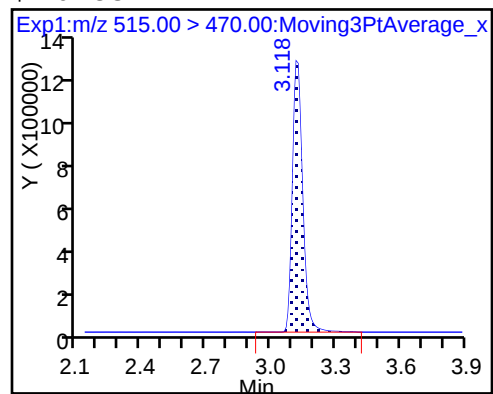


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_004.d
Lims ID: MB 320-169193/1-A
Client ID:
Sample Type: MB
Inject. Date: 19-Jun-2017 18:47:23 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-169193/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 11:05:10 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:37:03

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.65	86.48
\$ 10 13C2 PFDA	10.0	8.83	88.27

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-169193/2-A
 Matrix: Water Lab File ID: 2017.06.19_537B_005.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 06/14/2017 08:33
 Sample wt/vol: 250 (mL) Date Analyzed: 06/19/2017 18:52
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 169962 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	150		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	68.5		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	64.9		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	120		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	36.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	364		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	86		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_005.d
 Lims ID: LCS 320-169193/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 19-Jun-2017 18:52:07 ALS Bottle#: 3 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-169193/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Jun-2017 11:05:10 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK005

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:37:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	24676695	91.1		2031	
298.90 > 99.00	2.177	2.183	-0.006	1.000	19876382		1.24(0.00-0.00)	1849	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3706531	8.17		4027	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	10975293	30.0		3000	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	3319164	9.00		489	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4374463	10.0		8279	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	6563009	17.1		1508	
413.00 > 169.00	2.860	2.859	0.001	1.000	3780990		1.74(0.00-0.00)	4301	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	11945834	37.5		29133	
499.00 > 99.00	2.982	2.989	-0.007	0.997	2634926		4.53(0.00-0.00)	6025	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8985523	28.7		19950	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	6058586	16.2		2075	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3637718	8.64		13042	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_005.d

Injection Date: 19-Jun-2017 18:52:07

Instrument ID: A8_N

Lims ID: LCS 320-169193/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

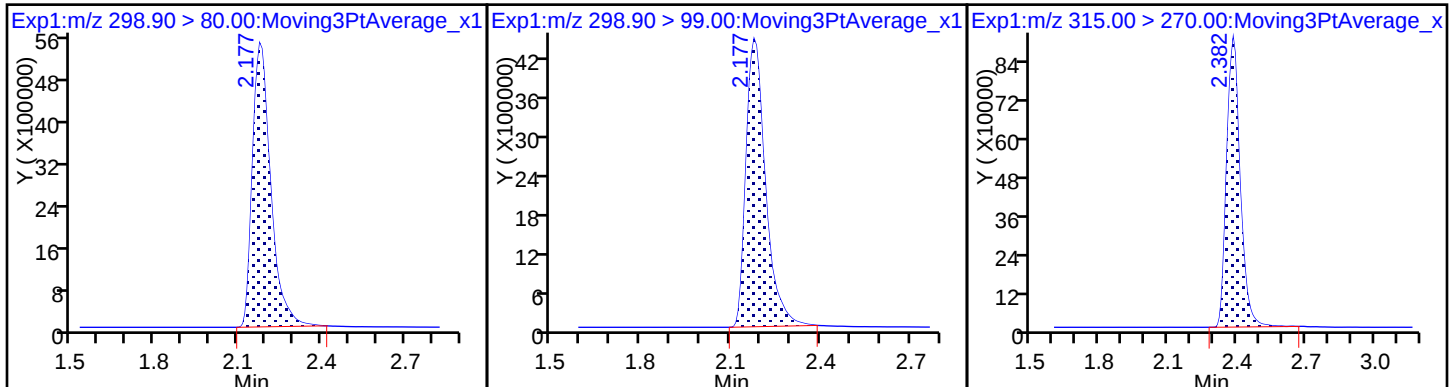
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

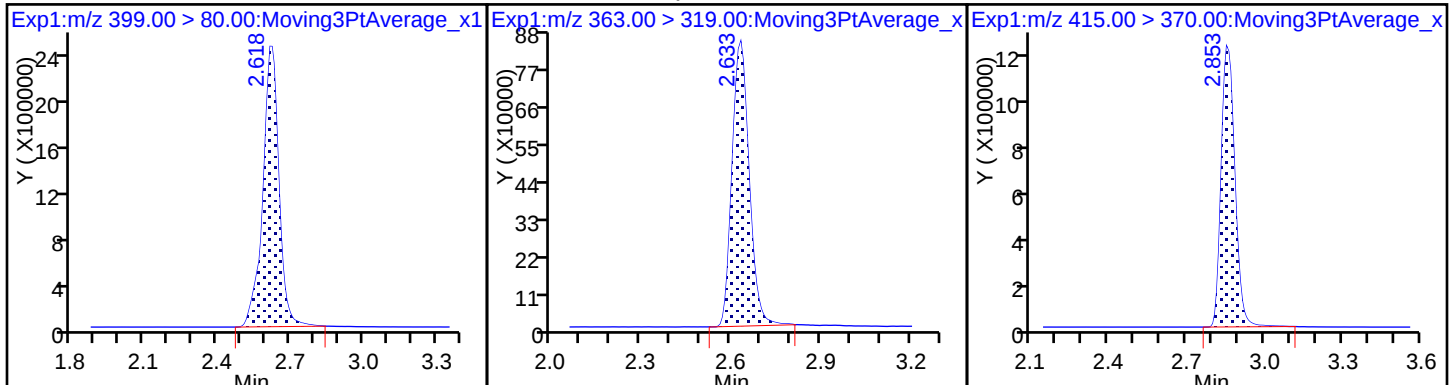
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

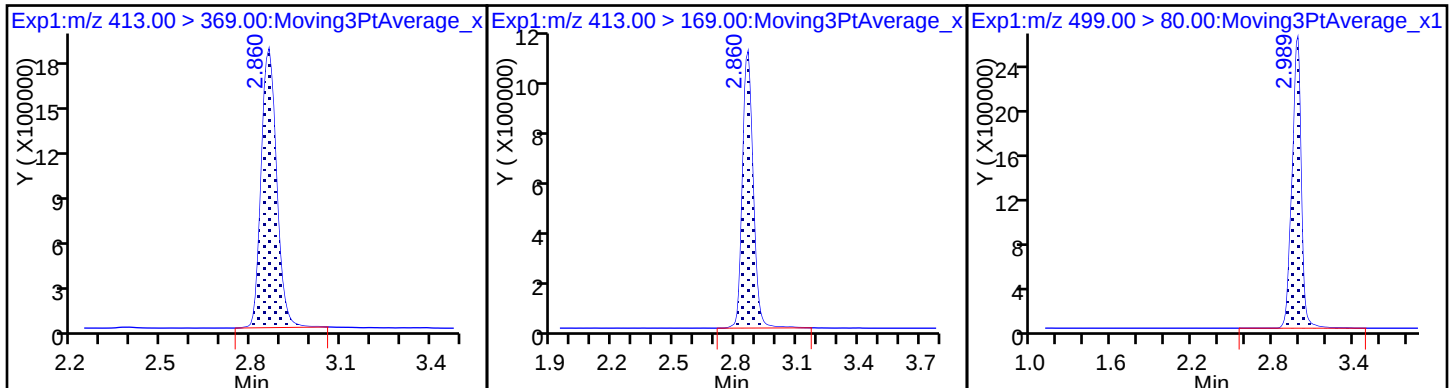
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

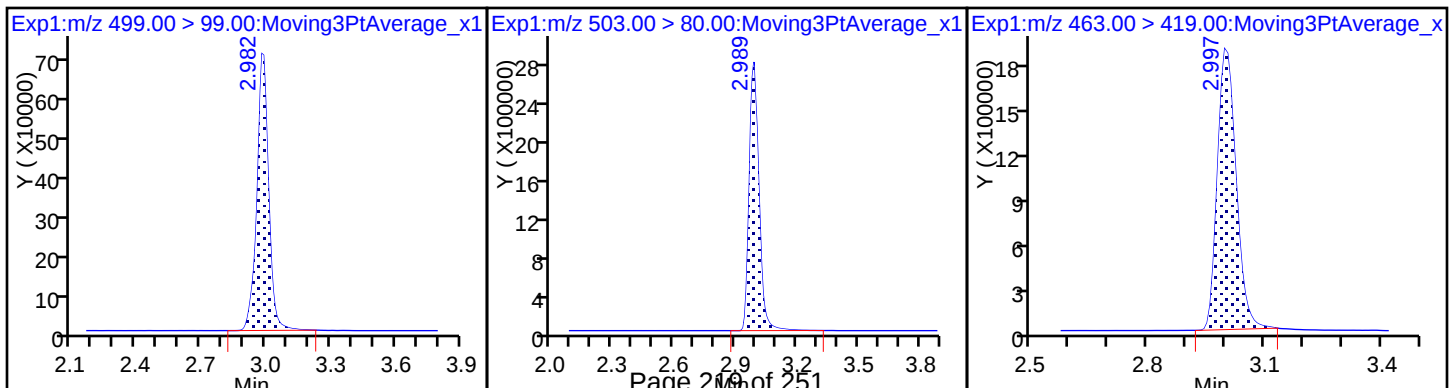
8 Perfluorooctane sulfonic acid



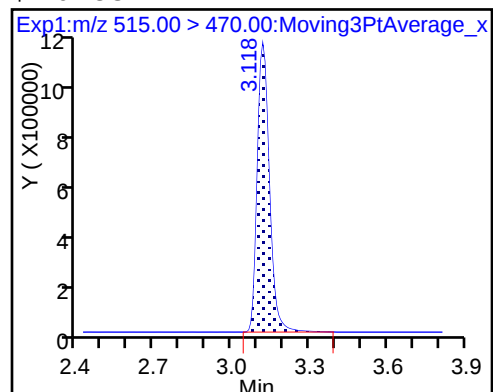
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_005.d
Lims ID: LCS 320-169193/2-A
Client ID:
Sample Type: LCS
Inject. Date: 19-Jun-2017 18:52:07 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-169193/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 11:05:10 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:37:18

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.17	81.66
\$ 10 13C2 PFDA	10.0	8.64	86.42

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-28708-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-053117-RW-10 MS</u>	Lab Sample ID: <u>320-28708-3 MS</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.06.19_537B_020.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>05/31/2017 09:45</u>
Extraction Method: <u>537</u>	Date Extracted: <u>06/14/2017 08:33</u>
Sample wt/vol: <u>267.1(mL)</u>	Date Analyzed: <u>06/19/2017 20:03</u>
Con. Extract Vol.: <u>1.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>169964</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	169		37	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	92.2		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	67.0		22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	128		28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	39.5		9.4	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	333		84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_020.d
 Lims ID: 320-28708-A-3-B MS
 Client ID: NAWC-053117-RW-10
 Sample Type: MS
 Inject. Date: 19-Jun-2017 20:03:12 ALS Bottle#: 16 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-3-b ms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:41:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	23238964	88.9		864	
298.90 > 99.00	2.177	2.183	-0.006	1.000	18643654		1.25(0.00-0.00)	1543	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	3590185	8.57		2789	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.610	2.625	-0.015	1.000	12075941	34.2		653	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	3594674	10.6		125	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4035947	10.0		7961	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.853	2.859	-0.006	1.000	8707117	24.6		471	
413.00 > 169.00	2.853	2.859	-0.006	1.000	5043066		1.73(0.00-0.00)	3425	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.989	-0.007	1.000	13848787	45.1		2930	
499.00 > 99.00	2.982	2.989	-0.007	1.000	2998623		4.62(0.00-0.00)	2487	
* 7 13C4 PFOS									
503.00 > 80.00	2.982	2.991	-0.009		8674283	28.7		2542	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	6161481	17.9		623	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.111	3.123	-0.012	1.000	3531031	9.09		12560	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_020.d

Injection Date: 19-Jun-2017 20:03:12

Instrument ID: A8_N

Lims ID: 320-28708-A-3-B MS

Client ID: NAWC-053117-RW-10

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

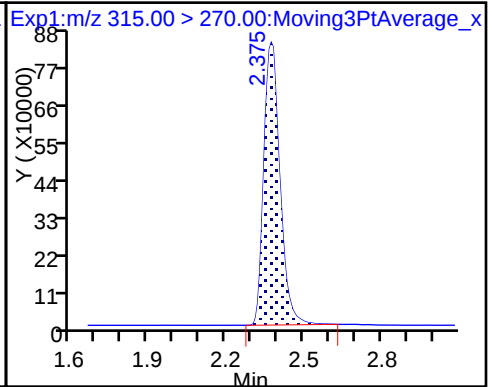
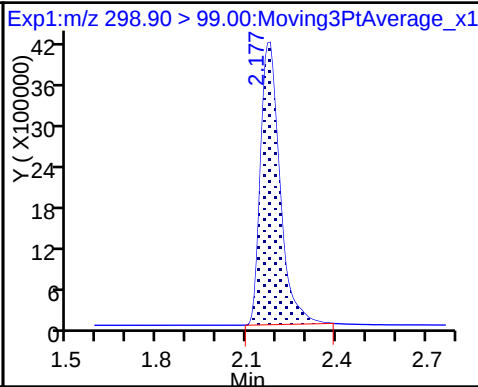
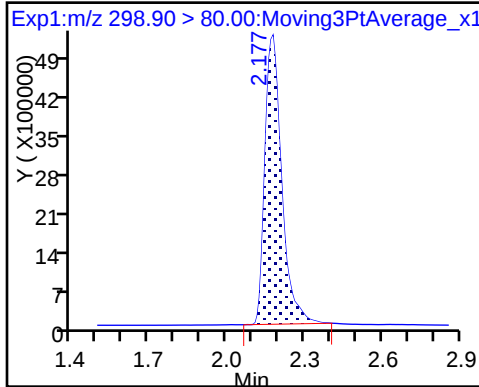
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

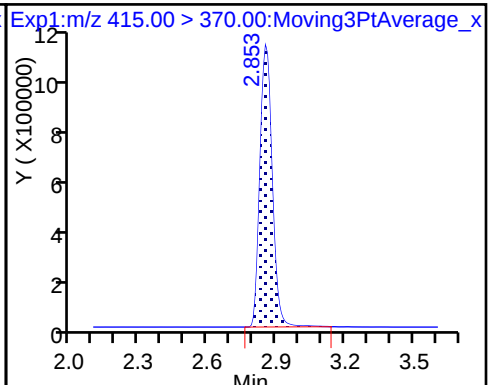
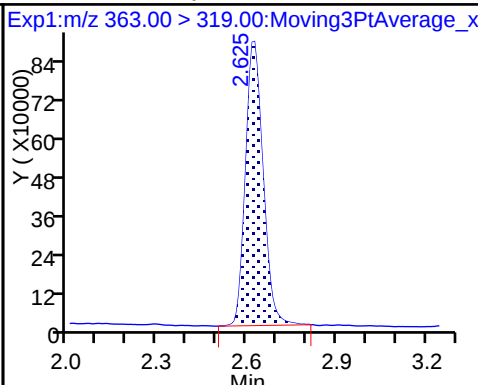
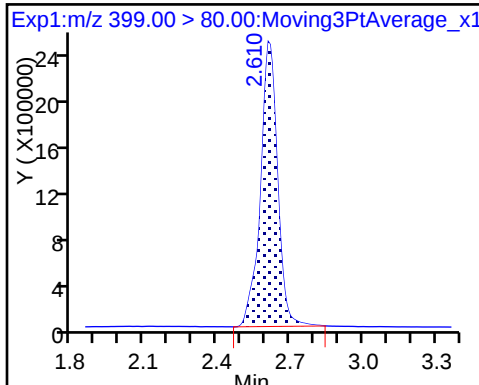
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

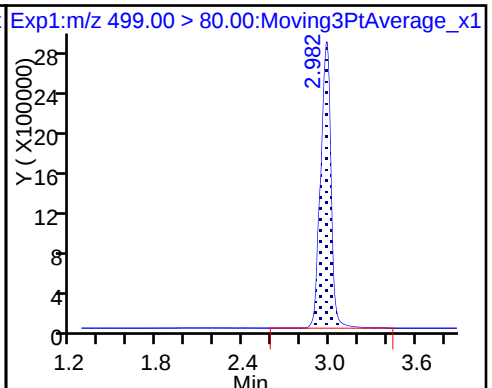
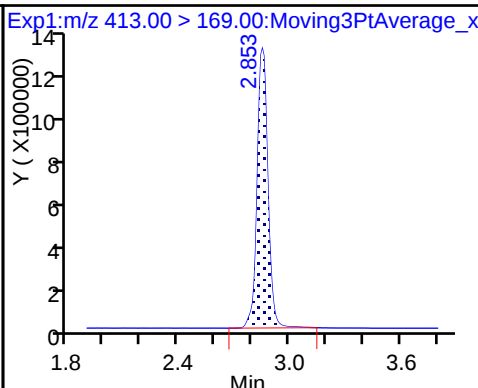
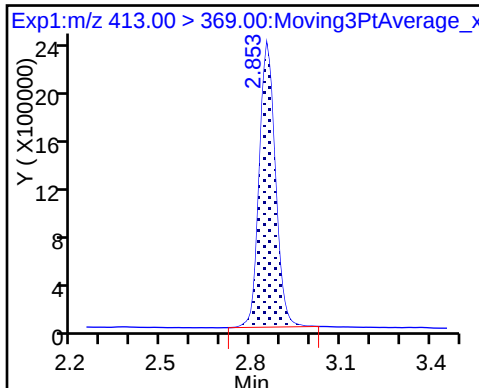
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

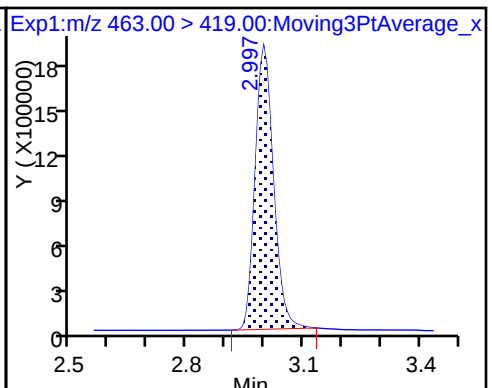
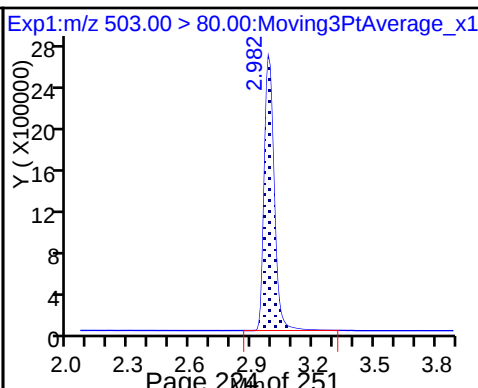
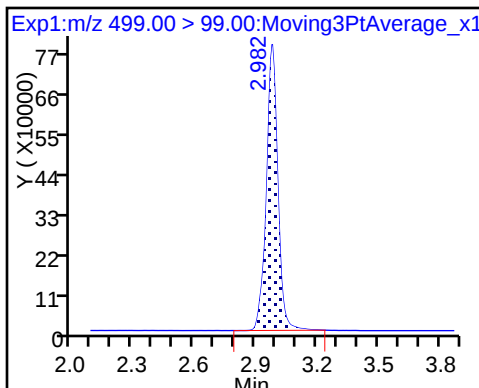
8 Perfluorooctane sulfonic acid



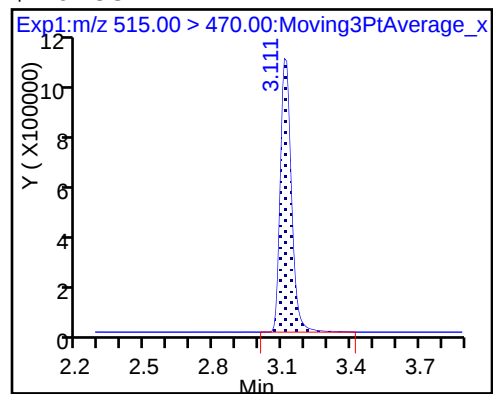
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_020.d
Lims ID: 320-28708-A-3-B MS
Client ID: NAWC-053117-RW-10
Sample Type: MS
Inject. Date: 19-Jun-2017 20:03:12 ALS Bottle#: 16 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-3-b ms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:41:40

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.57	85.73
\$ 10 13C2 PFDA	10.0	9.09	90.92

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-28708-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-053117-RW-10 MSD</u>	Lab Sample ID: <u>320-28708-3 MSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.06.19_537B_021.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>05/31/2017 09:45</u>
Extraction Method: <u>537</u>	Date Extracted: <u>06/14/2017 08:33</u>
Sample wt/vol: <u>264.5 (mL)</u>	Date Analyzed: <u>06/19/2017 20:07</u>
Con. Extract Vol.: <u>1.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>169964</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	170		38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	93.5		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	67.3		23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	129		28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	38.0		9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	339		85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_021.d
 Lims ID: 320-28708-A-3-C MSD
 Client ID: NAWC-053117-RW-10
 Sample Type: MSD
 Inject. Date: 19-Jun-2017 20:07:57 ALS Bottle#: 17 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-28708-a-3-c msd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 11:41:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.170	2.183	-0.013	1.000	23915318	89.6		808	
298.90 > 99.00	2.170	2.183	-0.013	1.000	18696863		1.28(0.00-0.00)	1450	
\$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	3595922	8.24		6622	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.610	2.625	-0.015	1.000	12345874	34.2		605	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.618	2.630	-0.012	1.000	3565523	10.1		123	
* 6 13C2-PFOA									
415.00 > 370.00	2.845	2.859	-0.014		4204686	10.0		6066	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.845	2.859	-0.014	1.000	9110810	24.7		499	
413.00 > 169.00	2.845	2.859	-0.014	1.000	5082212		1.79(0.00-0.00)	2915	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.974	2.989	-0.015	1.000	14138896	45.1		2471	
499.00 > 99.00	2.974	2.989	-0.015	1.000	3062877		4.62(0.00-0.00)	2278	
* 7 13C4 PFOS									
503.00 > 80.00	2.974	2.991	-0.017		8858238	28.7		2399	
9 Perfluorononanoic acid									
463.00 > 419.00	2.989	3.003	-0.014	1.000	6389344	17.8		700	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.103	3.123	-0.020	1.000	3510814	8.68		14303	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_021.d

Injection Date: 19-Jun-2017 20:07:57

Instrument ID: A8_N

Lims ID: 320-28708-A-3-C MSD

Client ID: NAWC-053117-RW-10

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

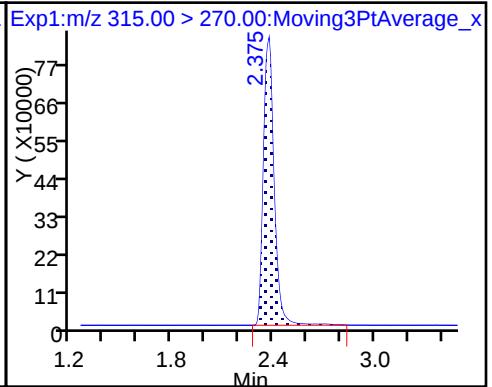
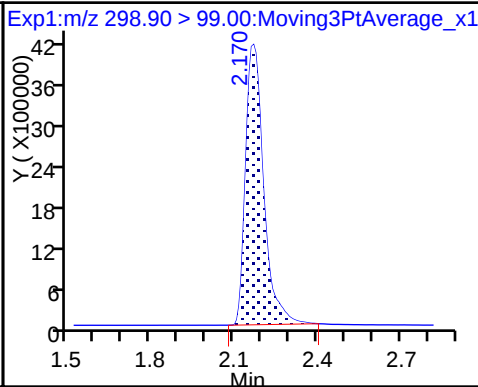
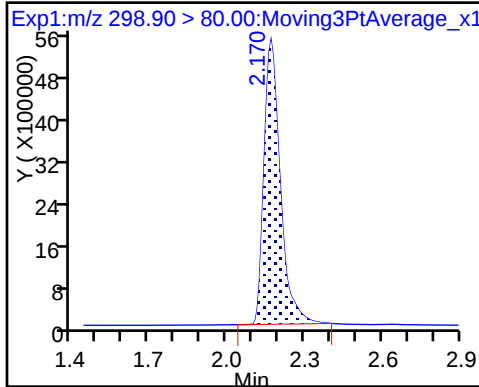
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

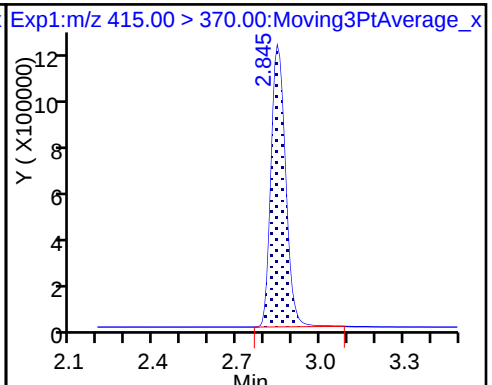
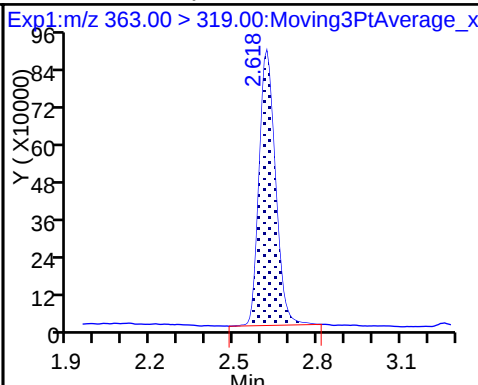
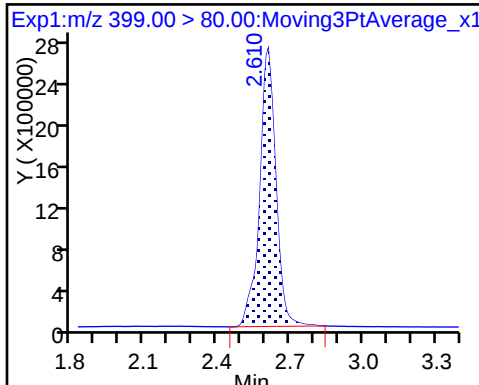
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

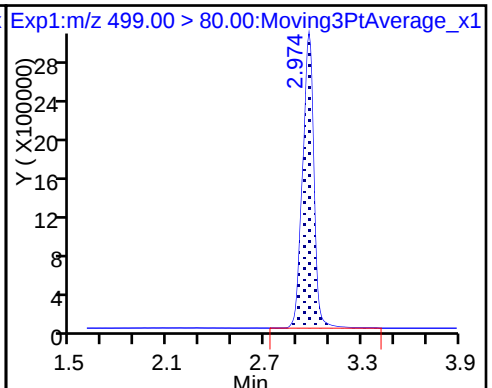
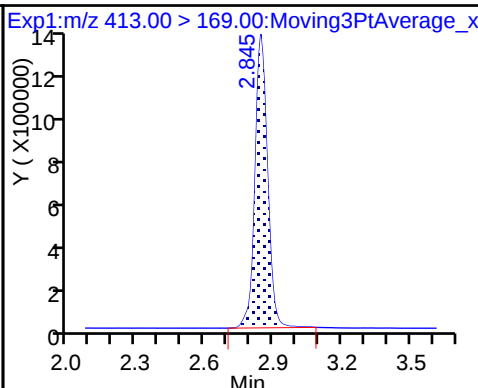
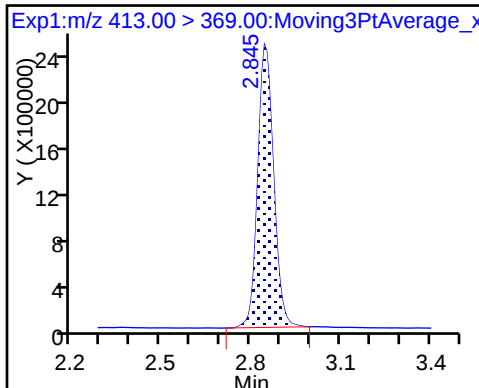
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

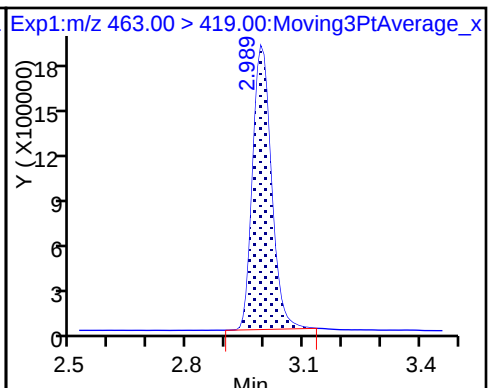
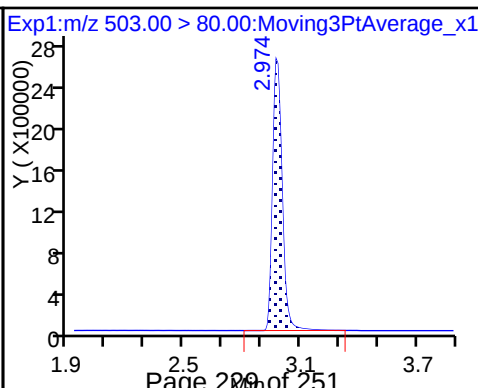
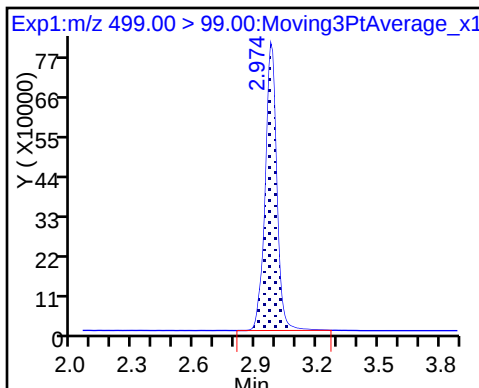
8 Perfluorooctane sulfonic acid



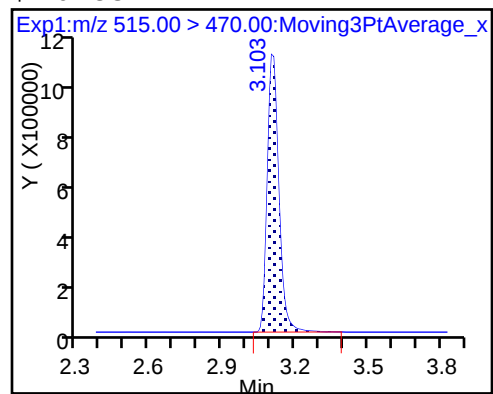
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_021.d
Lims ID: 320-28708-A-3-C MSD
Client ID: NAWC-053117-RW-10
Sample Type: MSD
Inject. Date: 19-Jun-2017 20:07:57 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28708-a-3-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:53:09 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj

Date: 20-Jun-2017 11:41:54

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.24	82.42
\$ 10 13C2 PFDA	10.0	8.68	86.77

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Instrument ID: A8_N Start Date: 06/19/2017 17:40

Analysis Batch Number: 169955 End Date: 06/19/2017 18:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-169955/4		06/19/2017 17:40	1	2017.06.19_537A ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-169955/5		06/19/2017 17:45	1	2017.06.19_537A ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-169955/6		06/19/2017 17:50	1	2017.06.19_537A ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-169955/7 ICISAV		06/19/2017 17:55	1	2017.06.19_537A ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-169955/8		06/19/2017 17:59	1	2017.06.19_537A ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-169955/9		06/19/2017 18:04	1	2017.06.19_537A ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 18:09	1		GeminiC18 3x100 3(mm)
CCVL 320-169955/11		06/19/2017 18:14	1	2017.06.19_537A ICAL 011.d	GeminiC18 3x100 3(mm)
ICV 320-169955/13		06/19/2017 18:23	1	2017.06.19_537A ICAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Instrument ID: A8_N Start Date: 06/19/2017 18:33

Analysis Batch Number: 169962 End Date: 06/19/2017 19:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-169962/1 CCVIS		06/19/2017 18:33	1	2017.06.19_537B 001.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 18:37	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 18:42	1		GeminiC18 3x100 3(mm)
MB 320-169193/1-A		06/19/2017 18:47	1	2017.06.19_537B 004.d	GeminiC18 3x100 3(mm)
LCS 320-169193/2-A		06/19/2017 18:52	1	2017.06.19_537B 005.d	GeminiC18 3x100 3(mm)
CCV 320-169962/13 CCVIS		06/19/2017 19:30	1	2017.06.19_537B 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-28708-1

SDG No.: _____

Instrument ID: A8_NStart Date: 06/19/2017 19:30Analysis Batch Number: 169964End Date: 06/19/2017 20:26

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-169964/13 CCVIS		06/19/2017 19:30	1	2017.06.19_537B 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 19:34	1		GeminiC18 3x100 3(mm)
320-28708-1		06/19/2017 19:49	1	2017.06.19_537B 017.d	GeminiC18 3x100 3(mm)
320-28708-2		06/19/2017 19:53	1	2017.06.19_537B 018.d	GeminiC18 3x100 3(mm)
320-28708-3		06/19/2017 19:58	1	2017.06.19_537B 019.d	GeminiC18 3x100 3(mm)
320-28708-3 MS		06/19/2017 20:03	1	2017.06.19_537B 020.d	GeminiC18 3x100 3(mm)
320-28708-3 MSD		06/19/2017 20:07	1	2017.06.19_537B 021.d	GeminiC18 3x100 3(mm)
320-28708-4		06/19/2017 20:12	1	2017.06.19_537B 022.d	GeminiC18 3x100 3(mm)
320-28708-5		06/19/2017 20:17	1	2017.06.19_537B 023.d	GeminiC18 3x100 3(mm)
320-28708-6		06/19/2017 20:22	1	2017.06.19_537B 024.d	GeminiC18 3x100 3(mm)
CCV 320-169964/25 CCVIS		06/19/2017 20:26	1	2017.06.19_537B 025.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-28708-1

SDG No.: _____

Instrument ID: A8_NStart Date: 06/19/2017 20:26Analysis Batch Number: 169966End Date: 06/19/2017 21:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-169966/25 CCVIS		06/19/2017 20:26	1	2017.06.19_537B 025.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 20:31	1		GeminiC18 3x100 3(mm)
320-28708-7		06/19/2017 20:36	1	2017.06.19_537B 027.d	GeminiC18 3x100 3(mm)
320-28708-8		06/19/2017 20:41	1	2017.06.19_537B 028.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 20:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 20:50	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 20:55	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 21:00	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 21:04	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 21:09	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 21:14	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 21:19	1		GeminiC18 3x100 3(mm)
CCV 320-169966/37 CCVIS		06/19/2017 21:23	1	2017.06.19_537B 037.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Batch Number: 169193 Batch Start Date: 06/14/17 08:33 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 06/14/17 22:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00041
MB 320-169193/1		537, 537				250 mL	1.0 mL	7 SU	100 uL
LCS 320-169193/2		537, 537				250 mL	1.0 mL	7 SU	100 uL
320-28708-A-1	NAWC-053117-RW-106	537, 537	T	280.05 g	26.97 g	253.1 mL	1.0 mL	7 SU	100 uL
320-28708-A-2	NAWC-053117-FRB-106	537, 537	T	281.66 g	27.00 g	254.7 mL	1.0 mL	7 SU	100 uL
320-28708-A-3	NAWC-053117-RW-10	537, 537	T	294.14 g	27.79 g	266.4 mL	1.0 mL	7 SU	100 uL
320-28708-A-3 MS	NAWC-053117-RW-10	537, 537	T	294.76 g	27.67 g	267.1 mL	1.0 mL	7 SU	100 uL
320-28708-A-3 MSD	NAWC-053117-RW-10	537, 537	T	292.80 g	28.26 g	264.5 mL	1.0 mL	7 SU	100 uL
320-28708-A-4	NAWC-053117-FRB-10	537, 537	T	301.41 g	27.07 g	274.3 mL	1.0 mL	7 SU	100 uL
320-28708-A-5	NAWC-053117-RW-11	537, 537	T	289.25 g	27.60 g	261.7 mL	1.0 mL	7 SU	100 uL
320-28708-A-6	NAWC-053117-FRB-111	537, 537	T	297.92 g	26.86 g	271.1 mL	1.0 mL	7 SU	100 uL
320-28708-A-7	NAWC-053117-RW-161	537, 537	T	293.89 g	27.33 g	266.6 mL	1.0 mL	7 SU	100 uL
320-28708-A-8	NAWC-053117-FRB-161	537, 537	T	293.57 g	27.19 g	266.4 mL	1.0 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00042	AnalysisComment			
MB 320-169193/1		537, 537			100 uL	CH ND			
LCS 320-169193/2		537, 537		100 uL	100 uL	CH ND			
320-28708-A-1	NAWC-053117-RW-106	537, 537	T		100 uL	CH ND			
320-28708-A-2	NAWC-053117-FRB-106	537, 537	T		100 uL	CH ND			
320-28708-A-3	NAWC-053117-RW-10	537, 537	T		100 uL	CH ND			
320-28708-A-3 MS	NAWC-053117-RW-10	537, 537	T	100 uL	100 uL	CH ND			
320-28708-A-3 MSD	NAWC-053117-RW-10	537, 537	T	100 uL	100 uL	CH ND			
320-28708-A-4	NAWC-053117-FRB-10	537, 537	T		100 uL	CH ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28708-1

SDG No.: _____

Batch Number: 169193 Batch Start Date: 06/14/17 08:33 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 06/14/17 22:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00042	AnalysisComment			
320-28708-A-5	NAWC-053117-RW-11	537, 537	T		100 uL	CH ND			
320-28708-A-6	NAWC-053117-FRB-111	537, 537	T		100 uL	CH ND			
320-28708-A-7	NAWC-053117-RW-161	537, 537	T		100 uL	CH ND			
320-28708-A-8	NAWC-053117-FRB-161	537, 537	T		100 uL	CH ND			

Batch Notes	
Batch Comment	IS:924420
Manifold ID	1,4
Methanol ID	944982
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	NSH
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge ID	6346595-04
Trizma ID	SLBR4303V
Reagent Water ID	6-9-17

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

A8

Job No: 28708 Instrument ID & Date: 6-19-17 ICAL Batch: 169955

Extraction Batch: 169193 Worklist #: 44449 TALS Batch: 169962, 169964, 169996, 169966

JRB
6-20-17
169966

Review Items	--- Level 1 ---			Level 2
	Yes	No	N/A	
Initial Calibration				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
Continuing Calibration				
1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range?	✓			✓
2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?			✓	
3. Native compounds and surrogates in control? Low-range within $\pm 50\%$ of true value Mid and High-range within $\pm 30\%$ of true value	✓			✓
4. Internal Standard areas in control? Areas $\geq 50\%$ of average area of the ICAL and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? _____ Dilutions due to non-targets? _____			✓	
5. All target compounds in MB < 1/3 RL ? (Requires NCM if "no.")	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? $\pm 50\%$ from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?			✓	
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 6-20-17

2nd Level Reviewer / Date: S20 6/21/17

NCM # and Comments:

A8

Instrument ID & Date: 6-19-17 Worklist#: 44448

ICAL Batch: 169955, 169956 Calibration ID number: 31800, 31801

Review Items	-- Level 1 --			Level 2
	Yes	No	N/A	
Initial Calibration				
1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass?	✓			✓
2. Responses increase with increasing concentration?	✓			✓
3. Fit used (circle): <u>Average</u> Linear (1/x ²) Linear Quadratic (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average R ² ≥ 0.990 for Linear R ² ≥ 0.990 for Quadratic NOTE: "Force through Zero" must be used and weighted if needed	✓			✓
5. If quadratic fit used the curve does not "bend over".			✓	
6. Feed calibration points into the calculated curve. Are points ≤MRL within ±50% of true value? Are points >MRL within ±30% of true value?	✓			✓
7. Any carryover from the high calibration point must be ≤ 1/3 RL	✓			✓
8. Asymmetry check meets criteria for the first two eluting peaks? (0.8 - 1.5).	✓			✓
9. Is the asymmetry check scanned and linked in TALS to the calibration point?	✓			✓
10. Is ICV (2 nd source) ± 30% of true value?	✓			✓
11. Is ICV (2 nd source) internal standards ±50% of average area of the ICAL?	✓			✓
12. ICAL locked in Chrom and uploaded to TALS?	✓			✓
13. ICAL locked in TALS and scanned?				✓

1st Level Reviewer / Date: JRB 6-20-17 2nd Level Reviewer / Date: Murphy 6/20/2017

NCM # and Comments: _____

Limit Group Batching: Enabled

QC Batch: 4	LC 537 ICAL Raw Batch: 169968
#37 CCV L3	#37 CCV L3
#38 RB	#38 RB

QC Batch: 4	LC 537 ICAL Raw Batch: 169968
#39 320-28765-A-6-A	#39 320-28765-A-6-A
#40 320-28765-A-7-A	#40 320-28765-A-7-A
#41 320-28765-A-8-A	#41 320-28765-A-8-A
#42 320-28765-A-9-A	#42 320-28765-A-9-A
#43 320-28765-A-10-A	#43 320-28765-A-10-A
#44 320-28765-A-11-A	#44 320-28765-A-11-A
#45 CCV L5	#45 CCV L5

QC Batch: 5	LC 537 ICAL Raw Batch: 169969
#45 CCV L5	#45 CCV L5
#46 RB	#46 RB
#47 MB 320-169578/1-A	#47 MB 320-169578/1-A
#48 LLCS 320-169578/2-A	#48 LLCS 320-169578/2-A
#49 LLCSD 320-169578/3-A	#49 LLCSD 320-169578/3-A
#50 320-28985-A-11-A	#50 320-28985-A-11-A
#51 320-28985-A-11-C LMS	#51 320-28985-A-11-C LMS
#52 320-28985-A-12-A	#52 320-28985-A-12-A
#53 320-28985-A-21-A	#53 320-28985-A-21-A
#54 320-28985-A-22-A	#54 320-28985-A-22-A
#55 320-28985-A-24-A	#55 320-28985-A-24-A
#56 320-28985-A-25-A	#56 320-28985-A-25-A
#57 CCV L3	#57 CCV L3
#58 RB	#58 RB

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Sharifi, Nooshin

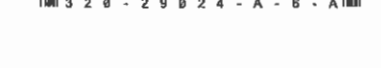
Batch Open: 6/14/2017 8:33:00AM

Batch Number: 320-169193

Method Code: 320-537_Prep-320

Batch End: 06/14/17 22:45

**Run DOD first*
Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Adj1 Adj2			Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
MB-320-169193/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	CH ND	
			1.0 mL								
LCS-320-169193/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	CH ND	
			1.0 mL								
320-29024-A-1 (537_DuPont)	N/A (320-29024-1)	290.28 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								
320-29024-A-2 (537_DuPont)	N/A (320-29024-1)	295.08 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								
320-29024-A-3 (537_DuPont)	N/A (320-29024-1)	301.13 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								
320-29024-A-4 (537_DuPont)	N/A (320-29024-1)	298.31 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								
320-29024-A-4-MS (537_DuPont)	N/A (320-29024-1)	290.59 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								
320-29024-A-4-MSD (537_DuPont)	N/A (320-29024-1)	302.63 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								
320-29024-A-5 (537_DuPont)	N/A (320-29024-1)	295.45 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								
320-29024-A-6 (537_DuPont)	N/A (320-29024-1)	286.37 g		7			6/16/17	3_Day_RUSH	4	CH ND	
			1.0 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169193

Analyst: Sharifi, Nooshin

Batch Open: 6/14/2017 8:33:00AM

Method Code: 320-537_Prep-320

Batch End: 6/14/2017 10:45:00PM

11	320-29024-A-7 (537_DuPont)	N/A (320-29024-1)	298.82 g	271.2 mL	7		6/16/17	3_Day_RUSH	4	CH ND	
			27.63 g	1.0 mL							
12	320-28708-A-1 (537_DOD5)	N/A (320-28708-1)	280.05 g	253.1 mL	7		6/7/17	16_Days	4	CH ND	
			26.97 g	1.0 mL							
13	320-28708-A-2 (537_DOD5)	N/A (320-28708-1)	281.66 g	254.7 mL	7		6/7/17	16_Days	4	CH ND	
			27.00 g	1.0 mL							
14	320-28708-A-3 (537_DOD5)	N/A (320-28708-1)	294.14 g	266.4 mL	7		6/7/17	16_Days	4	CH ND	
			27.79 g	1.0 mL							
15	320-28708-A-3-MS (537_DOD5)	N/A (320-28708-1)	294.76 g	267.1 mL	7		6/7/17	16_Days	4	CH ND	
			27.67 g	1.0 mL							
16	320-28708-A-3-MSD (537_DOD5)	N/A (320-28708-1)	292.80 g	264.5 mL	7		6/7/17	16_Days	4	CH ND	
			28.26 g	1.0 mL							
17	320-28708-A-4 (537_DOD5)	N/A (320-28708-1)	301.41 g	274.3 mL	7		6/7/17	16_Days	4	CH ND	
			27.07 g	1.0 mL							
18	320-28708-A-5 (537_DOD5)	N/A (320-28708-1)	289.25 g	261.7 mL	7		6/7/17	16_Days	4	CH ND	
			27.60 g	1.0 mL							
19	320-28708-A-6 (537_DOD5)	N/A (320-28708-1)	297.92 g	271.1 mL	7		6/7/17	16_Days	4	CH ND	
			26.86 g	1.0 mL							
20	320-28708-A-7 (537_DOD5)	N/A (320-28708-1)	293.89 g	266.6 mL	7		6/7/17	16_Days	4	CH ND	
			27.33 g	1.0 mL							
21	320-28708-A-8 (537_DOD5)	N/A (320-28708-1)	293.57 g	266.4 mL	7		6/7/17	16_Days	4	CH ND	
			27.19 g	1.0 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169193

Analyst: Sharifi, Nooshin

Batch Open: 6/14/2017 8:33:00AM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 1,4

Trizma ID SLBR4303V

SPE Cartridge ID 6346595-04

Methanol ID 944982

Reagent Water ID 6-9-17

Pipette ID M16387D

Analyst ID - TA Reagent Drop NSH

Analyst ID - TA Reagent Drop HJA

Witness

Analyst ID - SU Reagent Drop NSH

Analyst ID - SU Reagent Drop HJA

Witness

Analyst ID - IS Reagent Drop

JER

Analyst ID - IS Reagent Drop

TN

Witness

Batch Comment

IS: 924420

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169193

Analyst: Sharifi, Nooshin

Batch Open: 6/14/2017 8:33:00AM

Method Code: 320-537_Prep-320

Batch End:

Comments

320-29024-A-1

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-2

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-3

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-4

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-4~MS

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-4~MSD

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-5

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-6

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

320-29024-A-7

Method Comments: DuPont QAS_LCSD req if No MS/MSD per JOB

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169193

Analyst: Sharifi, Nooshin

Batch Open: 6/14/2017 8:33:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-169193/1	LC537-SU_00042	100 uL	1.0 mL	NSH 6/14/17	HSA 6-14-17
LCS 320-169193/2	LC537-MSP_00021	100 uL	1.0 mL		
LCS 320-169193/2	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-1	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-2	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-3	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-4	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-4 MS	LC537-MSP_00021	100 uL	1.0 mL		
320-29024-A-4 MS	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-4 MSD	LC537-MSP_00021	100 uL	1.0 mL		
320-29024-A-4 MSD	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-5	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-6	LC537-SU_00042	100 uL	1.0 mL		
320-29024-A-7	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-1	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-2	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-3	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-3 MS	LC537-MSP_00021	100 uL	1.0 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169193

Analyst: Sharifi, Nooshin

Batch Open: 6/14/2017 8:33:00AM

Method Code: 320-537_Prep-320

Batch End:

320-28708-A-3 MS	LC537-SU_00042	100 uL	1.0 mL	NSH 6/14/17	NSH 6-14-17
320-28708-A-3 MSD	LC537-MSP_00021	100 uL	1.0 mL		
320-28708-A-3 MSD	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-4	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-5	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-6	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-7	LC537-SU_00042	100 uL	1.0 mL		
320-28708-A-8	LC537-SU_00042	100 uL	1.0 mL		

Other Reagents:

Reagent

Amount/Units

Lot#:

Preparation Batch Number(s): 1109193

Test: 537

Earliest Holding Time: 6-14-17

Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: TN

Date: 06/14/17

2nd Level Reviewer: VRM

Date: 06/14/17

Comments: _____

Shipping and Receiving Documents

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: ☒ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

[illegible]

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-28708-1

Login Number: 28708

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","17","ng/L","J","6.7","DL","","TRG","","","40","LOQ","YES","-99","","253.1","1.0","16",""
"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","23","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.1","1.0","7.9",""
"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","9.9","ng/L","J","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.1","1.0","12",""
"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U M","16","DL","","TRG","","","89","LOQ","YES","-99","","253.1","1.0","36",""
"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","8.2","ng/L","J","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","253.1","1.0","4.0",""
"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.1","1.0","20",""
"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","STL00993","13C2 PFHxA","29","ng/L","","-99","DL","","SURRE","74","","-99","LOQ","YES","39.5","","253.1","1.0","0",""
"NAWC-053117-RW-106","537","RES","320-28708-1","TALSAC","STL00996","13C2 PFDA","36","ng/L","","-99","DL","","SURRE","91","","-99","LOQ","YES","39.5","","253.1","1.0","0",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","254.7","1.0","16",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.9","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","254.7","1.0","7.9",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","254.7","1.0","12",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","254.7","1.0","35",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","254.7","1.0","3.9",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","254.7","1.0","20",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","STL00993","13C2 PFHxA","35","ng/L","","-99","DL","","SURRE","89","","-99","LOQ","YES","39.3","","254.7","1.0","0",""
"NAWC-053117-FRB-106","537","RES","320-28708-2","TALSAC","STL00996","13C2 PFDA","35","ng/L","","-99","DL","","SURRE","89","","-99","LOQ","YES","39.3","","254.7","1.0","0",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","31","ng/L","J","6.4","DL","","TRG","","","38","LOQ","YES","-99","","266.4","1.0","15",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","23","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","266.4","1.0","7.5",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","20","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","266.4","1.0","11",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U M","15","DL","","TRG","","","84","LOQ","YES","-99","","266.4","1.0","34",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.6","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","266.4","1.0","3.8",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","266.4","1.0","19",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","STL00993","13C2 PFHxA","31","ng/L","","-99","DL","","SURRE","82","","-99","LOQ","YES","37.5","","266.4","1.0","0",""
"NAWC-053117-RW-10","537","RES","320-28708-3","TALSAC","STL00996","13C2 PFDA","32","ng/L","","-99","DL","","SURRE","86","","-99","LOQ","YES","37.5","","266.4","1.0","0",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","169","ng/L","","6.4","DL","","SPK","92","","37","LOQ","YES","150","NAWC-053117-RW-10","267.1","1.0","15",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","92.2","ng/L","","2.6","DL","","SPK","92","","19","LOQ","YES","74.8","NAWC-053117-RW-

10","267.1","1.0","7.5",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","128","ng/L","","5.1","DL","","SPK","96","","28","LOQ","YES","113","NAWC-053117-RW-10","267.1","1.0","11",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","333","ng/L","","15","DL","","SPK","101","","84","LOQ","YES","331","NAWC-053117-RW-10","267.1","1.0","34",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","39.5","ng/L","","1.8","DL","","SPK","89","","9.4","LOQ","YES","37.1","NAWC-053117-RW-10","267.1","1.0","3.7",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","67.0","ng/L","","7.5","DL","","SPK","93","","22","LOQ","YES","72.1","NAWC-053117-RW-10","267.1","1.0","19",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","STL00993","13C2 PFHxA","32.1","ng/L","","-99","DL","","SURRE","86","","-99","LOQ","YES","37.4","NAWC-053117-RW-10","267.1","1.0","0",""
"NAWC-053117-RW-10MS","537","RES","320-28708-3MS","TALSAC","STL00996","13C2 PFDA","34.0","ng/L","","-99","DL","","SURRE","91","","-99","LOQ","YES","37.4","NAWC-053117-RW-10","267.1","1.0","0",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","170","ng/L","","6.4","DL","","SPK","92","1","38","LOQ","YES","151","NAWC-053117-RW-10","264.5","1.0","15",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","93.5","ng/L","","2.6","DL","","SPK","93","1","19","LOQ","YES","75.5","NAWC-053117-RW-10","264.5","1.0","7.6",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","129","ng/L","","5.2","DL","","SPK","96","1","28","LOQ","YES","114","NAWC-053117-RW-10","264.5","1.0","11",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","339","ng/L","","15","DL","","SPK","101","2","85","LOQ","YES","334","NAWC-053117-RW-10","264.5","1.0","34",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","38.0","ng/L","","1.8","DL","","SPK","84","4","9.5","LOQ","YES","37.4","NAWC-053117-RW-10","264.5","1.0","3.8",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","67.3","ng/L","","7.6","DL","","SPK","92","1","23","LOQ","YES","72.8","NAWC-053117-RW-10","264.5","1.0","19",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","STL00993","13C2 PFHxA","31.2","ng/L","","-99","DL","","SURRE","82","","-99","LOQ","YES","37.8","NAWC-053117-RW-10","264.5","1.0","0",""
"NAWC-053117-RW-10MSD","537","RES","320-28708-3MSD","TALSAC","STL00996","13C2 PFDA","32.8","ng/L","","-99","DL","","SURRE","87","","-99","LOQ","YES","37.8","NAWC-053117-RW-10","264.5","1.0","0",""
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.2","DL","","TRG","","","36","LOQ","YES","-99","","274.3","1.0","15",""
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.3","ng/L","U","2.6","DL","","TRG","","","18","LOQ","YES","-99","","274.3","1.0","7.3",""
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","274.3","1.0","11",""
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","274.3","1.0","33",""
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.1","LOQ","YES","-99","","274.3","1.0","3.6",""
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"18","ng/L","U","7.3","DL","","TRG","","","22","LOQ","YES",-99","","274.3","1.0","18","","
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURRE","87","","-99","LOQ","YES","36.5","","274.3","1.0","0","","
"NAWC-053117-FRB-10","537","RES","320-28708-4","TALSAC","STL00996","13C2
PFDA","31","ng/L","","-99","DL","","SURRE","84","","-99","LOQ","YES","36.5","","274.3","1.0","0","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","27","ng/L","J","6.5","DL","","TRG","","","38","LOQ","YES",-99","","261.7","1.0","15","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES",-99","","261.7","1.0","7.6","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","16","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES",-99","","261.7","1.0","11","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U M","15","DL","","TRG","","","86","LOQ","YES",-99","","261.7","1.0","34","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.9","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES",-99","","261.7","1.0","3.8","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES",-99","","261.7","1.0","19","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURRE","83","","-99","LOQ","YES","38.2","","261.7","1.0","0","","
"NAWC-053117-RW-111","537","RES","320-28708-5","TALSAC","STL00996","13C2
PFDA","34","ng/L","","-99","DL","","SURRE","88","","-99","LOQ","YES","38.2","","261.7","1.0","0","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.3","DL","","TRG","","","37","LOQ","YES",-99","","271.1","1.0","15","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.4","ng/L","U","2.6","DL","","TRG","","","18","LOQ","YES",-99","","271.1","1.0","7.4","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.1","DL","","TRG","","","28","LOQ","YES",-99","","271.1","1.0","11","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","83","LOQ","YES",-99","","271.1","1.0","33","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.7","ng/L","U","1.8","DL","","TRG","","","9.2","LOQ","YES",-99","","271.1","1.0","3.7","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.4","DL","","TRG","","","22","LOQ","YES",-99","","271.1","1.0","18","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","STL00993","13C2
PFHxA","31","ng/L","","-99","DL","","SURRE","85","","-99","LOQ","YES","36.9","","271.1","1.0","0","","
"NAWC-053117-FRB-111","537","RES","320-28708-6","TALSAC","STL00996","13C2
PFDA","31","ng/L","","-99","DL","","SURRE","84","","-99","LOQ","YES","36.9","","271.1","1.0","0","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","41","ng/L","","6.4","DL","","TRG","","","38","LOQ","YES",-99","","266.6","1.0","15","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","21","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES",-99","","266.6","1.0","7.5","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","16","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES",-99","","266.6","1.0","11","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U M","15","DL","","TRG","","","84","LOQ","YES",-99","","266.6","1.0","34","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.1","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES",-99","","266.6","1.0","3.8","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES",-99","","266.6","1.0","19","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","STL00993","13C2
PFHxA","30","ng/L","","-99","DL","","SURRE","79","","-99","LOQ","YES","37.5","","266.6","1.0","0","","
"NAWC-053117-RW-161","537","RES","320-28708-7","TALSAC","STL00996","13C2
PFDA","33","ng/L","","-99","DL","","SURRE","89","","-99","LOQ","YES","37.5","","266.6","1.0","0","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","15","ng/L","U","6.4","DL","","","TRG","","","38","LOQ","YES",-99","","266.4","1.0","15","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.5","ng/L","U","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","266.4","1.0","7.5","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","","TRG","","","28","LOQ","YES",-99","","266.4","1.0","11","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","84","LOQ","YES",-99","","266.4","1.0","34","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","","TRG","","","9.4","LOQ","YES",-99","","266.4","1.0","3.8","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","","TRG","","","23","LOQ","YES",-99","","266.4","1.0","19","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","","-99","DL","","","SURRE","85","","","-99","LOQ","YES","37.5","","266.4","1.0","0","","
"NAWC-053117-FRB-161","537","RES","320-28708-8","TALSAC","STL00996","13C2
PFDA","32","ng/L","","","-99","DL","","","SURRE","87","","","-99","LOQ","YES","37.5","","266.4","1.0","0","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","150","ng/L","","","6.8","DL","","","SPK","94","","","40","LOQ","YES","160","","250","1.0","16","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","68.5","ng/L","","","2.8","DL","","","SPK","86","","","20","LOQ","YES","79.9","","250","1.0","8.0","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","120","ng/L","","","5.5","DL","","","SPK","100","","","30","LOQ","YES","120","","250","1.0","12","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","364","ng/L","","","16","DL","","","SPK","103","","","90","LOQ","YES","353","","250","1.0","36","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","36.0","ng/L","","","1.9","DL","","","SPK","91","","","10","LOQ","YES","39.6","","250","1.0","4.0","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","64.9","ng/L","","","8.0","DL","","","SPK","84","","","24","LOQ","YES","77.0","","250","1.0","20","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","STL00993","13C2
PFHxA","32.7","ng/L","","","-99","DL","","","SURRE","82","","","-99","LOQ","YES","40.0","","250","1.0","0","","
"LCS 320-169193/2-A","537","RES","LCS 320-169193/2-A","TALSAC","STL00996","13C2
PFDA","34.6","ng/L","","","-99","DL","","","SURRE","86","","","-99","LOQ","YES","40.0","","250","1.0","0","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","","TRG","","","40","LOQ","YES",-99","","250","1.0","16","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","","TRG","","","20","LOQ","YES",-99","","250","1.0","8.0","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","","TRG","","","30","LOQ","YES",-99","","250","1.0","12","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","","TRG","","","90","LOQ","YES",-99","","250","1.0","36","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","","TRG","","","10","LOQ","YES",-99","","250","1.0","4.0","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","","TRG","","","24","LOQ","YES",-99","","250","1.0","20","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","STL00993","13C2
PFHxA","34.6","ng/L","","","-99","DL","","","SURRE","86","","","-99","LOQ","YES","40.0","","250","1.0","0","","
"MB 320-169193/1-A","537","RES","MB 320-169193/1-A","TALSAC","STL00996","13C2
PFDA","35.3","ng/L","","","-99","DL","","","SURRE","88","","","-99","LOQ","YES","40.0","","250","1.0","0","","
"Unknown","Unknown","NAWC-053117-RW-106","05/31/2017 08:25","AQ","320-28708-
1","NM","","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
19:49","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-169193","320-169193","NA","320-
169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05","","
"Unknown","Unknown","NAWC-053117-FRB-106","05/31/2017 08:20","AQ","320-28708-
2","FB","","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
19:53","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-169193","320-169193","NA","320-

169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-RW-10","05/31/2017 09:45","AQ","320-28708-
3","NM","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
19:58","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-RW-10MS","05/31/2017 09:45","AQ","320-28708-
3MS","MS","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
20:03","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-RW-10MSD","05/31/2017 09:45","AQ","320-28708-
3MSD","MSD","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
20:07","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-FRB-10","05/31/2017 09:40","AQ","320-28708-
4","FB","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
20:12","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-RW-111","05/31/2017 10:25","AQ","320-28708-
5","NM","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
20:17","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-FRB-111","05/31/2017 10:20","AQ","320-28708-
6","FB","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
20:22","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169964","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-RW-161","05/31/2017 11:25","AQ","320-28708-
7","NM","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
20:36","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169966","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","NAWC-053117-FRB-161","05/31/2017 11:20","AQ","320-28708-
8","FB","","4.50","537","METHOD","RES","06/14/2017 08:33","06/19/2017
20:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169966","320-28708-1","06/01/2017 09:30","06/05/2017 12:05",""
"Unknown","Unknown","LCS 320-169193/2-A","","AQ","LCS 320-169193/2-
A","LCS","","-99","537","METHOD","RES","06/14/2017 08:33","06/19/2017
18:52","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169962","320-28708-1","06/14/2017 08:33","06/05/2017 12:05",""
"Unknown","Unknown","MB 320-169193/1-A","","AQ","MB 320-169193/1-
A","MB","","-99","537","METHOD","RES","06/14/2017 08:33","06/19/2017
18:47","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169193","320-169193","NA","320-
169962","320-28708-1","06/14/2017 08:33","06/05/2017 12:05",""

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