



**Off-Base Drinking Water Sample Results,  
Combined Level 2 and Level 4 Laboratory Report,  
Electronic Data Deliverable, Data Validation Report,  
and the Sample Location Figure, SDG 320-31889-1**

*Naval Air Warfare Center Warminster  
Warminster, Pennsylvania*

August 2019

N62269\_001139  
WARMINSTER\_NAWC  
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-31889-1,NAS WILLOW GROVE NAWC  
WARMINSTER PA**  
10/19/2017  
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

## ANALYTICAL REPORT

Job Number: 320-31889-1

Job Description: Warminster: 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  
10/19/2017 2:30 PM

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10/19/2017

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# Definitions/Glossary

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

TestAmerica Job ID: 320-31889-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.

## 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**  
**320-31889-1**

**Receipt**

The samples were received on 9/27/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

**LCMS**

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 537: Surrogate recovery for the following samples was outside control limits: NAWC-092617-RW-256 (320-31889-1) and NAWC-092617-RW-120 (320-31889-7). Re-analysis was performed with concurring results. The original analysis has been reported.

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

**Organic Prep**

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-188627.

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: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-31889-1

## Client Sample ID: NAWC-092617-RW-256

## Lab Sample ID: 320-31889-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	34	J M	39	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	26		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.8	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.6	J	9.8	1.9	ng/L	1		537	Total/NA

## Client Sample ID: NAWC-092617-FRB-256

## Lab Sample ID: 320-31889-2

No Detections.

## Client Sample ID: NAWC-092617-RW-354

## Lab Sample ID: 320-31889-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	9.6	J	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.8	J	9.7	1.8	ng/L	1		537	Total/NA

## Client Sample ID: NAWC-092617-FRB-354

## Lab Sample ID: 320-31889-4

No Detections.

## Client Sample ID: NAWC-092617-RW-4784

## Lab Sample ID: 320-31889-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	14	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.7	J	10	1.9	ng/L	1		537	Total/NA

## Client Sample ID: NAWC-092617-FRB-4784

## Lab Sample ID: 320-31889-6

No Detections.

## Client Sample ID: NAWC-092617-RW-120

## Lab Sample ID: 320-31889-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J M	41	6.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	12	J	20	2.9	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.1	J	10	1.9	ng/L	1		537	Total/NA

## Client Sample ID: NAWC-092617-FRB-120

## Lab Sample ID: 320-31889-8

No Detections.

## Client Sample ID: NAWC-092617-RW-315

## Lab Sample ID: 320-31889-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	13	J M	39	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	8.0	J	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3	J	9.9	1.9	ng/L	1		537	Total/NA

## Client Sample ID: NAWC-092617-FRB-315

## Lab Sample ID: 320-31889-10

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento



# Detection Summary

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

TestAmerica Job ID: 320-31889-1

## Client Sample ID: NAWC-092617-RW-091

## Lab Sample ID: 320-31889-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	21	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	19	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.1	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.0	J	10	1.9	ng/L	1		537	Total/NA

## Client Sample ID: NAWC-092617-FRB-091

## Lab Sample ID: 320-31889-12

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-31889-1

**Client Sample ID: NAWC-092617-RW-256**

**Lab Sample ID: 320-31889-1**

Date Collected: 09/26/17 09:10

Matrix: Water

Date Received: 09/27/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	34	J M	39	6.7	ng/L		10/10/17 09:45	10/16/17 12:21	1
Perfluorooctanoic acid (PFOA)	26		20	2.8	ng/L		10/10/17 09:45	10/16/17 12:21	1
Perfluorononanoic acid (PFNA)	20	U M	24	7.9	ng/L		10/10/17 09:45	10/16/17 12:21	1
Perfluorohexanesulfonic acid (PFHxS)	6.8	J	29	5.4	ng/L		10/10/17 09:45	10/16/17 12:21	1
Perfluoroheptanoic acid (PFHpA)	7.6	J	9.8	1.9	ng/L		10/10/17 09:45	10/16/17 12:21	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		10/10/17 09:45	10/16/17 12:21	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	62	Q	70 - 130				10/10/17 09:45	10/16/17 12:21	1
13C2 PFDA	90		70 - 130				10/10/17 09:45	10/16/17 12:21	1

**Client Sample ID: NAWC-092617-FRB-256**

**Lab Sample ID: 320-31889-2**

Date Collected: 09/26/17 09:05

Matrix: Water

Date Received: 09/27/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.9	ng/L		10/10/17 09:45	10/16/17 12:25	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		10/10/17 09:45	10/16/17 12:25	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		10/10/17 09:45	10/16/17 12:25	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.6	ng/L		10/10/17 09:45	10/16/17 12:25	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		10/10/17 09:45	10/16/17 12:25	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		10/10/17 09:45	10/16/17 12:25	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	81		70 - 130				10/10/17 09:45	10/16/17 12:25	1
13C2 PFDA	91		70 - 130				10/10/17 09:45	10/16/17 12:25	1

**Client Sample ID: NAWC-092617-RW-354**

**Lab Sample ID: 320-31889-3**

Date Collected: 09/26/17 09:40

Matrix: Water

Date Received: 09/27/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U M	39	6.6	ng/L		10/10/17 09:45	10/16/17 12:30	1
Perfluorooctanoic acid (PFOA)	9.6	J	19	2.7	ng/L		10/10/17 09:45	10/16/17 12:30	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		10/10/17 09:45	10/16/17 12:30	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	29	5.3	ng/L		10/10/17 09:45	10/16/17 12:30	1
Perfluoroheptanoic acid (PFHpA)	4.8	J	9.7	1.8	ng/L		10/10/17 09:45	10/16/17 12:30	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		10/10/17 09:45	10/16/17 12:30	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	74		70 - 130				10/10/17 09:45	10/16/17 12:30	1
13C2 PFDA	89		70 - 130				10/10/17 09:45	10/16/17 12:30	1

# Client Sample Results

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

TestAmerica Job ID: 320-31889-1

**Client Sample ID: NAWC-092617-FRB-354**

**Lab Sample ID: 320-31889-4**

**Date Collected: 09/26/17 09:35**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	39	6.6	ng/L		10/10/17 09:45	10/16/17 12:35	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		10/10/17 09:45	10/16/17 12:35	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		10/10/17 09:45	10/16/17 12:35	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		10/10/17 09:45	10/16/17 12:35	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	1.8	ng/L		10/10/17 09:45	10/16/17 12:35	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		10/10/17 09:45	10/16/17 12:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		70 - 130	10/10/17 09:45	10/16/17 12:35	1
13C2 PFDA	92		70 - 130	10/10/17 09:45	10/16/17 12:35	1

**Client Sample ID: NAWC-092617-RW-4784**

**Lab Sample ID: 320-31889-5**

**Date Collected: 09/26/17 11:10**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	J M	40	6.8	ng/L		10/10/17 09:45	10/16/17 12:40	1
Perfluorooctanoic acid (PFOA)	13	J	20	2.8	ng/L		10/10/17 09:45	10/16/17 12:40	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/10/17 09:45	10/16/17 12:40	1
Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	5.5	ng/L		10/10/17 09:45	10/16/17 12:40	1
Perfluoroheptanoic acid (PFHpA)	3.7	J	10	1.9	ng/L		10/10/17 09:45	10/16/17 12:40	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/10/17 09:45	10/16/17 12:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	70		70 - 130	10/10/17 09:45	10/16/17 12:40	1
13C2 PFDA	84		70 - 130	10/10/17 09:45	10/16/17 12:40	1

**Client Sample ID: NAWC-092617-FRB-4784**

**Lab Sample ID: 320-31889-6**

**Date Collected: 09/26/17 11:05**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		10/10/17 09:45	10/16/17 12:44	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		10/10/17 09:45	10/16/17 12:44	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/10/17 09:45	10/16/17 12:44	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		10/10/17 09:45	10/16/17 12:44	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		10/10/17 09:45	10/16/17 12:44	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/10/17 09:45	10/16/17 12:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	82		70 - 130	10/10/17 09:45	10/16/17 12:44	1
13C2 PFDA	92		70 - 130	10/10/17 09:45	10/16/17 12:44	1

# Client Sample Results

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

TestAmerica Job ID: 320-31889-1

**Client Sample ID: NAWC-092617-RW-120**

**Lab Sample ID: 320-31889-7**

**Date Collected: 09/26/17 10:10**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	20	J M	41	6.9	ng/L		10/10/17 09:45	10/16/17 12:49	1
Perfluorooctanoic acid (PFOA)	12	J	20	2.9	ng/L		10/10/17 09:45	10/16/17 12:49	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.2	ng/L		10/10/17 09:45	10/16/17 12:49	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	31	5.6	ng/L		10/10/17 09:45	10/16/17 12:49	1
Perfluoroheptanoic acid (PFHpA)	3.1	J	10	1.9	ng/L		10/10/17 09:45	10/16/17 12:49	1
Perfluorobutanesulfonic acid (PFBS)	37	U	92	16	ng/L		10/10/17 09:45	10/16/17 12:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	60	Q	70 - 130	10/10/17 09:45	10/16/17 12:49	1
13C2 PFDA	89		70 - 130	10/10/17 09:45	10/16/17 12:49	1

**Client Sample ID: NAWC-092617-FRB-120**

**Lab Sample ID: 320-31889-8**

**Date Collected: 09/26/17 10:05**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		10/10/17 09:45	10/16/17 13:03	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		10/10/17 09:45	10/16/17 13:03	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/10/17 09:45	10/16/17 13:03	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		10/10/17 09:45	10/16/17 13:03	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		10/10/17 09:45	10/16/17 13:03	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/10/17 09:45	10/16/17 13:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		70 - 130	10/10/17 09:45	10/16/17 13:03	1
13C2 PFDA	89		70 - 130	10/10/17 09:45	10/16/17 13:03	1

**Client Sample ID: NAWC-092617-RW-315**

**Lab Sample ID: 320-31889-9**

**Date Collected: 09/26/17 16:10**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	13	J M	39	6.7	ng/L		10/10/17 09:45	10/18/17 01:59	1
Perfluorooctanoic acid (PFOA)	8.0	J	20	2.8	ng/L		10/10/17 09:45	10/18/17 01:59	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		10/10/17 09:45	10/18/17 01:59	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.4	ng/L		10/10/17 09:45	10/18/17 01:59	1
Perfluoroheptanoic acid (PFHpA)	2.3	J	9.9	1.9	ng/L		10/10/17 09:45	10/18/17 01:59	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L		10/10/17 09:45	10/18/17 01:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	70		70 - 130	10/10/17 09:45	10/18/17 01:59	1
13C2 PFDA	117		70 - 130	10/10/17 09:45	10/18/17 01:59	1

# Client Sample Results

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

TestAmerica Job ID: 320-31889-1

**Client Sample ID: NAWC-092617-FRB-315**

**Lab Sample ID: 320-31889-10**

**Date Collected: 09/26/17 16:05**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		10/10/17 09:45	10/16/17 13:13	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		10/10/17 09:45	10/16/17 13:13	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/10/17 09:45	10/16/17 13:13	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		10/10/17 09:45	10/16/17 13:13	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		10/10/17 09:45	10/16/17 13:13	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/10/17 09:45	10/16/17 13:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		70 - 130	10/10/17 09:45	10/16/17 13:13	1
13C2 PFDA	94		70 - 130	10/10/17 09:45	10/16/17 13:13	1

**Client Sample ID: NAWC-092617-RW-091**

**Lab Sample ID: 320-31889-11**

**Date Collected: 09/26/17 10:40**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	21	J M	40	6.8	ng/L		10/10/17 09:45	10/16/17 13:18	1
Perfluorooctanoic acid (PFOA)	19	J	20	2.8	ng/L		10/10/17 09:45	10/16/17 13:18	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/10/17 09:45	10/16/17 13:18	1
Perfluorohexanesulfonic acid (PFHxS)	7.1	J	30	5.5	ng/L		10/10/17 09:45	10/16/17 13:18	1
Perfluoroheptanoic acid (PFHpA)	6.0	J	10	1.9	ng/L		10/10/17 09:45	10/16/17 13:18	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/10/17 09:45	10/16/17 13:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		70 - 130	10/10/17 09:45	10/16/17 13:18	1
13C2 PFDA	91		70 - 130	10/10/17 09:45	10/16/17 13:18	1

**Client Sample ID: NAWC-092617-FRB-091**

**Lab Sample ID: 320-31889-12**

**Date Collected: 09/26/17 10:35**

**Matrix: Water**

**Date Received: 09/27/17 10:00**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	39	6.5	ng/L		10/10/17 09:45	10/16/17 13:22	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		10/10/17 09:45	10/16/17 13:22	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		10/10/17 09:45	10/16/17 13:22	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		10/10/17 09:45	10/16/17 13:22	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	1.8	ng/L		10/10/17 09:45	10/16/17 13:22	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		10/10/17 09:45	10/16/17 13:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		70 - 130	10/10/17 09:45	10/16/17 13:22	1
13C2 PFDA	89		70 - 130	10/10/17 09:45	10/16/17 13:22	1

# Default Detection Limits

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

TestAmerica Job ID: 320-31889-1

## 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: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-31889-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx (70-130)	3C2 PFDA (70-130)
320-31889-1	NAWC-092617-RW-256	62 Q	90
320-31889-2	NAWC-092617-FRB-256	81	91
320-31889-3	NAWC-092617-RW-354	74	89
320-31889-4	NAWC-092617-FRB-354	84	92
320-31889-5	NAWC-092617-RW-4784	70	84
320-31889-6	NAWC-092617-FRB-4784	82	92
320-31889-7	NAWC-092617-RW-120	60 Q	89
320-31889-8	NAWC-092617-FRB-120	80	89
320-31889-9	NAWC-092617-RW-315	70	117
320-31889-10	NAWC-092617-FRB-315	83	94
320-31889-11	NAWC-092617-RW-091	73	91
320-31889-12	NAWC-092617-FRB-091	80	89
LCS 320-188627/2-A	Lab Control Sample	83	90
LCSD 320-188627/3-A	Lab Control Sample Dup	87	95
MB 320-188627/1-A	Method Blank	83	86

### Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

# QC Sample Results

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

TestAmerica Job ID: 320-31889-1

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

**Lab Sample ID: MB 320-188627/1-A**  
**Matrix: Water**  
**Analysis Batch: 189551**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 188627**

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		10/10/17 09:45	10/16/17 12:06	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		10/10/17 09:45	10/16/17 12:06	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/10/17 09:45	10/16/17 12:06	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		10/10/17 09:45	10/16/17 12:06	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		10/10/17 09:45	10/16/17 12:06	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/10/17 09:45	10/16/17 12:06	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	83		70 - 130	10/10/17 09:45	10/16/17 12:06	1
13C2 PFDA	86		70 - 130	10/10/17 09:45	10/16/17 12:06	1

**Lab Sample ID: LCS 320-188627/2-A**  
**Matrix: Water**  
**Analysis Batch: 189551**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 188627**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	111	97.4		ng/L		88	70 - 130
Perfluorononanoic acid (PFNA)	111	95.8		ng/L		86	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	167	161		ng/L		96	70 - 130
Perfluoroheptanoic acid (PFHpA)	55.6	51.1		ng/L		92	70 - 130
Perfluorobutanesulfonic acid (PFBS)	500	509		ng/L		102	70 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	83		70 - 130
13C2 PFDA	90		70 - 130

**Lab Sample ID: LCSD 320-188627/3-A**  
**Matrix: Water**  
**Analysis Batch: 189551**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 188627**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	111	107		ng/L		96	70 - 130	9	30
Perfluorononanoic acid (PFNA)	111	105		ng/L		95	70 - 130	10	30
Perfluorohexanesulfonic acid (PFHxS)	167	162		ng/L		97	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	55.6	54.6		ng/L		98	70 - 130	7	30
Perfluorobutanesulfonic acid (PFBS)	500	521		ng/L		104	70 - 130	2	30

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	87		70 - 130
13C2 PFDA	95		70 - 130



# QC Association Summary

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

TestAmerica Job ID: 320-31889-1

## LCMS

### Prep Batch: 188627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31889-1	NAWC-092617-RW-256	Total/NA	Water	537	
320-31889-2	NAWC-092617-FRB-256	Total/NA	Water	537	
320-31889-3	NAWC-092617-RW-354	Total/NA	Water	537	
320-31889-4	NAWC-092617-FRB-354	Total/NA	Water	537	
320-31889-5	NAWC-092617-RW-4784	Total/NA	Water	537	
320-31889-6	NAWC-092617-FRB-4784	Total/NA	Water	537	
320-31889-7	NAWC-092617-RW-120	Total/NA	Water	537	
320-31889-8	NAWC-092617-FRB-120	Total/NA	Water	537	
320-31889-9	NAWC-092617-RW-315	Total/NA	Water	537	
320-31889-10	NAWC-092617-FRB-315	Total/NA	Water	537	
320-31889-11	NAWC-092617-RW-091	Total/NA	Water	537	
320-31889-12	NAWC-092617-FRB-091	Total/NA	Water	537	
MB 320-188627/1-A	Method Blank	Total/NA	Water	537	
LCS 320-188627/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-188627/3-A	Lab Control Sample Dup	Total/NA	Water	537	

### Analysis Batch: 189551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31889-1	NAWC-092617-RW-256	Total/NA	Water	537	188627
320-31889-2	NAWC-092617-FRB-256	Total/NA	Water	537	188627
320-31889-3	NAWC-092617-RW-354	Total/NA	Water	537	188627
320-31889-4	NAWC-092617-FRB-354	Total/NA	Water	537	188627
320-31889-5	NAWC-092617-RW-4784	Total/NA	Water	537	188627
320-31889-6	NAWC-092617-FRB-4784	Total/NA	Water	537	188627
320-31889-7	NAWC-092617-RW-120	Total/NA	Water	537	188627
MB 320-188627/1-A	Method Blank	Total/NA	Water	537	188627
LCS 320-188627/2-A	Lab Control Sample	Total/NA	Water	537	188627
LCSD 320-188627/3-A	Lab Control Sample Dup	Total/NA	Water	537	188627

### Analysis Batch: 189553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31889-8	NAWC-092617-FRB-120	Total/NA	Water	537	188627
320-31889-10	NAWC-092617-FRB-315	Total/NA	Water	537	188627
320-31889-11	NAWC-092617-RW-091	Total/NA	Water	537	188627
320-31889-12	NAWC-092617-FRB-091	Total/NA	Water	537	188627

### Analysis Batch: 189890

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31889-9	NAWC-092617-RW-315	Total/NA	Water	537	188627

# Lab Chronicle

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

TestAmerica Job ID: 320-31889-1

## Client Sample ID: NAWC-092617-RW-256

Date Collected: 09/26/17 09:10

Date Received: 09/27/17 10:00

## Lab Sample ID: 320-31889-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189551	10/16/17 12:21	JRB	TAL SAC

## Client Sample ID: NAWC-092617-FRB-256

Date Collected: 09/26/17 09:05

Date Received: 09/27/17 10:00

## Lab Sample ID: 320-31889-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189551	10/16/17 12:25	JRB	TAL SAC

## Client Sample ID: NAWC-092617-RW-354

Date Collected: 09/26/17 09:40

Date Received: 09/27/17 10:00

## Lab Sample ID: 320-31889-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189551	10/16/17 12:30	JRB	TAL SAC

## Client Sample ID: NAWC-092617-FRB-354

Date Collected: 09/26/17 09:35

Date Received: 09/27/17 10:00

## Lab Sample ID: 320-31889-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189551	10/16/17 12:35	JRB	TAL SAC

## Client Sample ID: NAWC-092617-RW-4784

Date Collected: 09/26/17 11:10

Date Received: 09/27/17 10:00

## Lab Sample ID: 320-31889-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189551	10/16/17 12:40	JRB	TAL SAC

## Client Sample ID: NAWC-092617-FRB-4784

Date Collected: 09/26/17 11:05

Date Received: 09/27/17 10:00

## Lab Sample ID: 320-31889-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189551	10/16/17 12:44	JRB	TAL SAC

TestAmerica Sacramento

# Lab Chronicle

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

TestAmerica Job ID: 320-31889-1

**Client Sample ID: NAWC-092617-RW-120**

**Lab Sample ID: 320-31889-7**

Date Collected: 09/26/17 10:10

Matrix: Water

Date Received: 09/27/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189551	10/16/17 12:49	JRB	TAL SAC

**Client Sample ID: NAWC-092617-FRB-120**

**Lab Sample ID: 320-31889-8**

Date Collected: 09/26/17 10:05

Matrix: Water

Date Received: 09/27/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189553	10/16/17 13:03	JRB	TAL SAC

**Client Sample ID: NAWC-092617-RW-315**

**Lab Sample ID: 320-31889-9**

Date Collected: 09/26/17 16:10

Matrix: Water

Date Received: 09/27/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189890	10/18/17 01:59	JRB	TAL SAC

**Client Sample ID: NAWC-092617-FRB-315**

**Lab Sample ID: 320-31889-10**

Date Collected: 09/26/17 16:05

Matrix: Water

Date Received: 09/27/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189553	10/16/17 13:13	JRB	TAL SAC

**Client Sample ID: NAWC-092617-RW-091**

**Lab Sample ID: 320-31889-11**

Date Collected: 09/26/17 10:40

Matrix: Water

Date Received: 09/27/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189553	10/16/17 13:18	JRB	TAL SAC

**Client Sample ID: NAWC-092617-FRB-091**

**Lab Sample ID: 320-31889-12**

Date Collected: 09/26/17 10:35

Matrix: Water

Date Received: 09/27/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			188627	10/10/17 09:45	CCB	TAL SAC
Total/NA	Analysis	537		1	189553	10/16/17 13:22	JRB	TAL SAC

TestAmerica Sacramento

# Lab Chronicle

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-31889-1

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

**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: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-31889-1

## 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: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-31889-1

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<b>Method</b>	<b>Method Description</b>	<b>Protocol</b>	<b>Laboratory</b>
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: 320-31889-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31889-1	NAWC-092617-RW-256	Water	09/26/17 09:10	09/27/17 10:00
320-31889-2	NAWC-092617-FRB-256	Water	09/26/17 09:05	09/27/17 10:00
320-31889-3	NAWC-092617-RW-354	Water	09/26/17 09:40	09/27/17 10:00
320-31889-4	NAWC-092617-FRB-354	Water	09/26/17 09:35	09/27/17 10:00
320-31889-5	NAWC-092617-RW-4784	Water	09/26/17 11:10	09/27/17 10:00
320-31889-6	NAWC-092617-FRB-4784	Water	09/26/17 11:05	09/27/17 10:00
320-31889-7	NAWC-092617-RW-120	Water	09/26/17 10:10	09/27/17 10:00
320-31889-8	NAWC-092617-FRB-120	Water	09/26/17 10:05	09/27/17 10:00
320-31889-9	NAWC-092617-RW-315	Water	09/26/17 16:10	09/27/17 10:00
320-31889-10	NAWC-092617-FRB-315	Water	09/26/17 16:05	09/27/17 10:00
320-31889-11	NAWC-092617-RW-091	Water	09/26/17 10:40	09/27/17 10:00
320-31889-12	NAWC-092617-FRB-091	Water	09/26/17 10:35	09/27/17 10:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Analysis Batch Number: 185329

Lab Sample ID: IC 320-185329/4 Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 02:56 Lab File ID: 2017.09.19\_537ICAL\_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:03

Lab Sample ID: IC 320-185329/5 Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 03:00 Lab File ID: 2017.09.19\_537ICAL\_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:04

Lab Sample ID: IC 320-185329/6 Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 03:05 Lab File ID: 2017.09.19\_537ICAL\_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	09/20/17 10:05

Lab Sample ID: IC 320-185329/7 ICISAV Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 03:10 Lab File ID: 2017.09.19\_537ICAL\_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:05



LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Analysis Batch Number: 185329

Lab Sample ID: IC 320-185329/8 Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 03:15 Lab File ID: 2017.09.19\_537ICAL\_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:06

Lab Sample ID: IC 320-185329/9 Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 03:19 Lab File ID: 2017.09.19\_537ICAL\_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:07

Lab Sample ID: CCVL 320-185329/11 Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 03:29 Lab File ID: 2017.09.19\_537ICAL\_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	09/20/17 10:10

Lab Sample ID: ICV 320-185329/13 Client Sample ID: \_\_\_\_\_

Date Analyzed: 09/20/17 03:38 Lab File ID: 2017.09.19\_537ICAL\_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:11

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Analysis Batch Number: 189551

Lab Sample ID: CCV 320-189551/1 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/16/17 11:57 Lab File ID: 2017.10.16A\_537AA.010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:11

Lab Sample ID: LCS 320-188627/2-A Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/16/17 12:11 Lab File ID: 2017.10.16A\_537AA.012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:11

Lab Sample ID: LCSD 320-188627/3-A Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/16/17 12:16 Lab File ID: 2017.10.16A\_537AA.013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:12

Lab Sample ID: 320-31889-1 Client Sample ID: NAWC-092617-RW-256

Date Analyzed: 10/16/17 12:21 Lab File ID: 2017.10.16A\_537AA.014.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.16	Split Peak	barnettj	10/17/17 10:14
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:13

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Analysis Batch Number: 189551

Lab Sample ID: 320-31889-3 Client Sample ID: NAWC-092617-RW-354

Date Analyzed: 10/16/17 12:30 Lab File ID: 2017.10.16A\_537AA.016.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	1.72	Missed Peak	barnettj	10/17/17 10:14
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:15

Lab Sample ID: 320-31889-5 Client Sample ID: NAWC-092617-RW-4784

Date Analyzed: 10/16/17 12:40 Lab File ID: 2017.10.16A\_537AA.018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:16

Lab Sample ID: 320-31889-7 Client Sample ID: NAWC-092617-RW-120

Date Analyzed: 10/16/17 12:49 Lab File ID: 2017.10.16A\_537AA.020.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.16	Split Peak	barnettj	10/17/17 10:17
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:16

Lab Sample ID: CCV 320-189551/13 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/16/17 12:54 Lab File ID: 2017.10.16A\_537AA.021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:17

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Analysis Batch Number: 189553

Lab Sample ID: CCV 320-189553/13 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/16/17 12:54 Lab File ID: 2017.10.16A\_537AA.021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:17

Lab Sample ID: 320-31889-11 Client Sample ID: NAWC-092617-RW-091

Date Analyzed: 10/16/17 13:18 Lab File ID: 2017.10.16A\_537AA.025.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	10/17/17 10:20

Lab Sample ID: CCV 320-189553/23 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/16/17 13:41 Lab File ID: 2017.10.16A\_537AA.030.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.15	Missed Peak	barnettj	10/17/17 10:21

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Analysis Batch Number: 189890

Lab Sample ID: CCV 320-189890/5 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/18/17 01:40 Lab File ID: 2017.10.17\_537A\_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.14	Baseline	barnettj	10/18/17 14:18

Lab Sample ID: 320-31889-9 Client Sample ID: NAWC-092617-RW-315

Date Analyzed: 10/18/17 01:59 Lab File ID: 2017.10.17\_537A\_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Isomers	barnettj	10/18/17 14:20

Lab Sample ID: CCV 320-189890/15 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 10/18/17 02:28 Lab File ID: 2017.10.17\_537A\_015.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	10/18/17 14:21

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration				
					Reagent ID	Volume Added						
<b>LC537-HSP_00022</b>	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutane Sulfonate	1250.1 ng/mL				
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL				
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL				
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL				
							Perfluorononanoic acid (PFNA)	277.827 ng/mL				
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL				
.LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutane Sulfonate	90 ug/mL				
							Perfluorobutanesulfonic acid (PFBS)	90 ug/mL				
							LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL		
									LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
											LC537-PFNA_00013	200 uL
									LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL									
..LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutane Sulfonate	2 mg/mL				
							Perfluorobutanesulfonic acid (PFBS)	2 mg/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_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL				
							...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)
..LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL				
							...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)
..LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL				
							...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)
..LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL				
							...LC537 PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)
..LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL				
							...LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)
<b>LC537-ICV_00028</b>	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00045	1000 uL	13C2-PFOA	10 ng/mL				
							13C4 PFOS	28.68 ng/mL				
.LC537-IS_00045	01/05/18	07/05/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL				
							LCMPFOS_00019	180 uL	13C4 PFOS	0.2868 ug/mL		
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL				

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
<b>LC537-ICV_00028</b>	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00046	1000 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM_00019	20 uL	Perfluorobutanesulfonic acid (PFBS)	100.119 ng/mL
							Perfluoroheptanoic acid (PFHpA)	9.99613 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.0761 ng/mL
							Perfluorononanoic acid (PFNA)	20.1272 ng/mL
							Perfluorooctanoic acid (PFOA)	20.4843 ng/mL
				Perfluorooctanesulfonic acid (PFOS)	19.698 ng/mL			
.LC537-SU_00046	01/05/18	07/05/17	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
<b>.LC537ICIM_00019</b>	01/25/18	08/01/17	Methanol, Lot 090285	25 mL	LC537-PFBS2_00008	0.6 mL	Perfluorobutanesulfonic acid (PFBS)	50.0597 ug/mL
					LC537-PFHpA2_00011	0.061 mL	Perfluoroheptanoic acid (PFHpA)	4.99806 ug/mL
					LC537-PFHxS2_00008	0.122 mL	Perfluorohexanesulfonic acid (PFHxS)	10.038 ug/mL
					LC537-PFNA2_00009	0.126 mL	Perfluorononanoic acid (PFNA)	10.0636 ug/mL
					LC537-PFOA2_00010	0.122 mL	Perfluorooctanoic acid (PFOA)	10.2421 ug/mL
					LC537-PFOS2_00010	0.124 mL	Perfluorooctanesulfonic acid (PFOS)	9.849 ug/mL
..LC537-PFBS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	20 mL	LC537_PFBS2_00002	0.0418 g	Perfluorobutanesulfonic acid (PFBS)	2085.82 ug/mL
...LC537_PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFHpA2_00011	01/25/18	07/25/17	Methanol, Lot 09092	31 mL	LC537_PFHpA2_00002	0.0635 g	Perfluoroheptanoic acid (PFHpA)	2048.39 ug/mL
...LC537_PFHpA2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
..LC537-PFHxS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537_PFHxS2_00002	0.0475 g	Perfluorohexanesulfonic acid (PFHxS)	2056.98 ug/mL
...LC537_PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA2_00009	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537_PFNA2_00002	0.0421 g	Perfluorononanoic acid (PFNA)	1996.74 ug/mL
...LC537_PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
..LC537-PFOA2_00010	01/25/18	08/01/17	Methanol, Lot 090285	20 mL	LC537_PFOA2_00002	0.0424 g	Perfluorooctanoic acid (PFOA)	2098.8 ug/mL
...LC537_PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
..LC537-PFOS2_00010	01/25/18	08/01/17	Methanol, Lot 090285	22 mL	LC537_PFOS2_00002	0.0561 g	Perfluorooctanesulfonic acid (PFOS)	1985.68 ug/mL
...LC537_PFOS2_00002	06/14/22	Sigma, Lot BCBQ0108V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
<b>LC537-IS_00049</b>	03/20/18	09/20/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
.LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)	13C2-PFOA	50 ug/mL		
.LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL		
LC537-L1_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL		
							13C4 PFOS	28.68 ng/mL		
							Perfluorobutanesulfonic acid (PFBS)	9.0018 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	1.00036 ng/mL		
					LC537-MSP_00029	60 uL	Perfluorohexanesulfonic acid (PFHxS)	3.00103 ng/mL		
							Perfluorononanoic acid (PFNA)	2.0006 ng/mL		
							Perfluorooctanoic acid (PFOA)	2.00191 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	4.00146 ng/mL		
LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL							
		13C2 PFHxA	10 ng/mL							
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL		
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL		
..LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)	13C2-PFOA	50 ug/mL		
..LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL		
.LC537-MSP_00029	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	166.7 uL	Perfluorobutanesulfonic acid (PFBS)	750.15 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	83.3637 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	250.086 ng/mL		
							Perfluorononanoic acid (PFNA)	166.716 ng/mL		
							Perfluorooctanoic acid (PFOA)	166.826 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	333.455 ng/mL		
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL		
							LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
							LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
							LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
							LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
							LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL		
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V			(Purchased Reagent)	Perfluorobutanesulfonic acid (PFBS)	1 g/g		
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL		
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V			(Purchased Reagent)	Perfluoroheptanoic acid (PFHpA)	0.99 g/g		



REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA 00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
...LC537 PFNA 00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA 00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
...LC537 PFOA 00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00049	02/04/18	08/04/17	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
<b>LC537-L2_00020</b>	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	80 uL	Perfluorobutanesulfonic acid (PFBS)	20.0016 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.22277 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.66817 ng/mL
							Perfluorononanoic acid (PFNA)	4.44524 ng/mL
							Perfluorooctanoic acid (PFOA)	4.44816 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.89106 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	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
<b>LC537-L3_00023</b>	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	180 uL	Perfluorobutanesulfonic acid (PFBS)	45.0036 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5.00122 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.0034 ng/mL
							Perfluorononanoic acid (PFNA)	10.0018 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0084 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.0049 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	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
<b>LC537-L4_00020</b>	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0072 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10.0024 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
							Perfluorohexanesulfonic acid (PFHxS)	30.0067 ng/mL		
							Perfluorononanoic acid (PFNA)	20.0036 ng/mL		
							Perfluorooctanoic acid (PFOA)	20.0167 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	40.0098 ng/mL		
							LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
									13C4 PFOS	28.68 ng/mL
..LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	13C2 PFDA	10 ng/mL		
							13C2 PFHxA	10 ng/mL		
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL		
							Perfluorononanoic acid (PFNA)	277.827 ng/mL		
		Perfluorooctanoic acid (PFOA)	278.01 ng/mL							
		Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL							
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL		
							LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
							LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
							LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
							LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
							LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL		
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g		
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL		
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g		
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL		
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g		
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL		
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g		
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL		
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g		
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL		
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	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
<b>LC537-L5_00024</b>	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	540 uL	Perfluorobutanesulfonic acid (PFBS)	135.011 ng/mL
							Perfluoroheptanoic acid (PFHpA)	15.0037 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0101 ng/mL
							Perfluorononanoic acid (PFNA)	30.0053 ng/mL
							Perfluorooctanoic acid (PFOA)	30.0251 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.0146 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216		LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFDA	50 ug/mL
<b>LC537-L6_00020</b>	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	720 uL	Perfluorobutanesulfonic acid (PFBS)	180.014 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20.0049 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	60.0135 ng/mL
							Perfluorononanoic acid (PFNA)	40.0071 ng/mL
							Perfluorooctanoic acid (PFOA)	40.0334 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	80.0195 ng/mL
LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL					
LC537-SU_00049	500 uL	13C4 PFOS	28.68 ng/mL					
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
Perfluorooctanoic acid (PFOA)	278.01 ng/mL							
Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL							
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	47.8 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFDA	50 ug/mL
<b>LC537-SU_00051</b>	03/20/18	09/20/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
.LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFDA	50 ug/mL
					(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

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**LC537\_PFB\_00002**



7: 4/1/15 SPV

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: [www.sigmaaldrich.com](http://www.sigmaaldrich.com)

Email USA: [techserv@sial.com](mailto:techserv@sial.com)

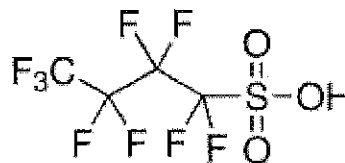
Outside USA: [eurtechserv@sial.com](mailto:eurtechserv@sial.com)

## 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: C<sub>4</sub>HF<sub>9</sub>O<sub>3</sub>S  
 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, Manager  
 Quality Control  
 Milwaukee, Wisconsin US

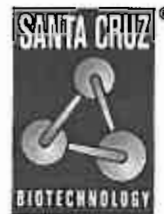
Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at [Sigma-Aldrich.com](http://Sigma-Aldrich.com). For further inquiries, please contact Technical 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

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**LC537\_PFB2\_00002**

F: 6.8.17 SW



# CERTIFICATE OF ANALYSIS

The Power to Question

Catalog Number: sc-236187  
Lot Number: F0917  
Product Name: Nonafluorobutane-1-sulfonic acid  
CAS Number: 375-73-5  
Molecular Formula:  $C_4HF_9O_3S$   
Molecular Weight: 300.10

Test	Specification	Result
Appearance	Colorless liquid	Complies
Identification (19F-NMR)	Conforms to structure	Complies
Purity (Sodium Hydroxide Titration)	$\geq 97\%$	101.3%
Infrared Spectrum	Conforms to structure	Complies

Reagent

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**LC537\_PFHpA\_00002**

R: 4/1/15 4V

### Certificate of Analysis

**Product Name:** PERFLUOROHEPTANOIC ACID  
 99 %  
**Product Number:** 342041  
**Batch Number:** BCBM2579V  
**Brand:** Aldrich  
**CAS Number:** 375-85-9  
**Formula:**  $CF_3(CF_2)_5CO_2H$   
**Formula Weight:** 364.06  
**Quality Release Date:** 06 DEC 2013  
**Recommended Retest Date:** OCT 2018

PFHpA

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 Geitner  
 Manager Quality Control  
 Buchs, Switzerland

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

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**LC537\_PFHpA2\_00002**

# Certificate of analysis

r:6.13.17 SW

Product No.: A12092  
Product: Perfluoroheptanoic acid, 98+%  
Lot No.: 10200390

PFHe A

Appearance: White fused solid  
Water Content (Karl-Fischer): 0.30%  
Melting Point: 32.0-34.3°C  
Assay (Aqueous acid-base titration): 99.7%  
Identification (FTIR): Conforms

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**LC537\_PFHxS\_00002**



r: 4/1/15 stw

### Certificate of Analysis

**Product Name:** TRIDECAFLUOROHEXANE-1-SULFONIC ACID POTASSIUM SALT  
 >= 98.0 % T

**Product Number:** 50929

**Batch Number:** BCBL3545V

**Brand:** Aldrich

**CAS Number:** 3871-99-6

**Formula:** C<sub>6</sub>F<sub>13</sub>KO<sub>3</sub>S

**Formula Weight:** 438.20

**Quality Release Date:** 20 JUN 2013

PFH<sub>13</sub>S-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 4/1/15

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Reagent

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**LC537\_PFHxS2\_00002**

n: 6-8-17 SKJ

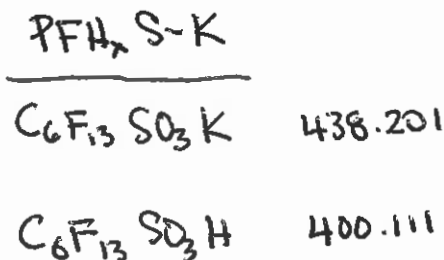


The Future of Science

# CERTIFICATE OF ANALYSIS

Catalog Number: sc-237289  
 Lot Number: G2516  
 Product Name: Tridecafluorohexane-1-sulfonic acid potassium salt  
 CAS Number: 3871-99-6  
 Molecular Formula:  $C_6F_{13}KO_3S$   
 Molecular Weight: 438.20

Test	Specification	Result
Appearance	White to faint beige powder or crystals	White powder
Identification (Infrared Spectrum)	Consistent with structure	Complies
Purity (Titration, Ion Exchange)	≥ 98.0%	100.4%



MW correction =  $\frac{400.11}{438.201} = 0.91307$  PFH<sub>13</sub>S  
 CAS# 355-46-4

Purity  $\frac{1}{9}$  MW correction = 90.9%

This document was produced electronically and is valid without a signature.

Reagent

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**LC537\_PENA\_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 CAS: 375-95-1	Lot: QN44F	

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

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**LC537\_PFN2\_00002**

P: 6.14.17 SKW

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: [www.sigmaaldrich.com](http://www.sigmaaldrich.com)

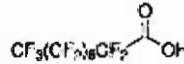
Email USA: [techserv@sial.com](mailto:techserv@sial.com)

Outside USA: [eurtechserv@sial.com](mailto:eurtechserv@sial.com)

# Certificate of Analysis

Product Name:  
Perfluorononanoic acid - 97%

Product Number: 394459  
Batch Number: MKCC0699  
Brand: ALDRICH  
CAS Number: 375-95-1  
MDL Number: MFCD00039605  
Formula: C<sub>9</sub>H<sub>F</sub>17O<sub>2</sub>  
Formula Weight: 464.08 g/mol  
Quality Release Date: 07 DEC 2016



Test	Specification	Result
Appearance (Color)	White to Off-White	White
Appearance (Form)	Powder or Crystals or Crystalline Chunk(s) or Granule or Flakes or Solid	Powder
Infrared Spectrum	Conforms to Structure	Conforms
GC (area %)	≥ 96.5 %	98.2 %

Michael Grady, Manager  
Quality Control  
Milwaukee, WI US

PFNA

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Reagent

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**LC537\_PFOA\_00003**



P: 11/30/16 SKV  
PFA

**SIGMA-ALDRICH**

3050 Spruce Street, Saint Louis, MO 63103 USA  
Email USA: techserv@sial.com Outside USA: eurtechserv@sial.com

## Certificate of Analysis

**Product Name:** PENTADECAFLUOROOCCTANOIC ACID  
analytical standard  
**Product Number:** 33824  
**Batch Number:** BCBS1198V  
**Brand:** Sigma-Aldrich  
**CAS Number:** 335-67-1  
**Formula:**  $\text{CF}_3(\text{CF}_2)_6\text{COOH}$   
**Formula Weight:** 414.07  
**Expiration Date:** OCT 2023  
**Quality Release Date:** 12 MAY 2016

TEST	SPECIFICATION	RESULT
PURITY (HPLC AREA %)	≥ 98.0%	100.0%
IDENTIFICATION (LC-MS)	IDENTITY CONFORMS	CONFORMS



Dr. Claudia Geitner  
Manager Quality Control  
Buchs, Switzerland

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

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**LC537\_PFOA2\_00002**

# Certificate of analysis

P: 6/21/17 SW ✓

Product No.: L08862  
Product: Perfluorooctanoic acid, 95%  
Lot No.: 10199078

PFOA

Appearance: White powder  
Water Content (Karl-Fischer): 1.30%  
Melting Point: 47.6-54.0°C  
Assay (Aqueous acid-base titration): 98.4%  
Assay (GC Silyl Deriv): 97.2%

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**LC537\_PFOs\_00003**

n: 11/30/16 SV  
PFOS

**SIGMA-ALDRICH**

**CERTIFICATE OF ANALYSIS**

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

Seelze, 22.04.2014/524107/14/08646
Order-No.:
Customer-No.:
Order-Code:
Quantity:
Production Date: 17.Apr.2014
Expiry Date: 17.Apr.2019

Article/Product: 33829	Batch : SZBE107XV
Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®	

**Reference Material (RM)**

**1. General Information**

Formula: C8F17KO3S	Molar mass: 538.22 g/Mole
CAS-No.: [2795-39-3]	Recomm. storage temp.: roomtemp.
Usage : PFOS	

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	22.Apr.2014

**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**

Reagent

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**LC537\_PFOs2\_00002**

R: 6.14.17 SKV

**Certificate of Analysis**

**Product Name:** HEPTADECAFLUOROOCATANESULFONIC ACID TETRAETHYLAMMONIUM SALT  
 98 %  
**Product Number:** 365289  
**Batch Number:** BCBQ0108V  
**Brand:** Aldrich  
**CAS Number:** 56773-42-3  
**Formula:**  $CF_3(CF_2)_6CF_2SO_3N(C_2H_5)_4$   
**Formula Weight:** 629.37  
**Quality Release Date:** 11 JUN 2015

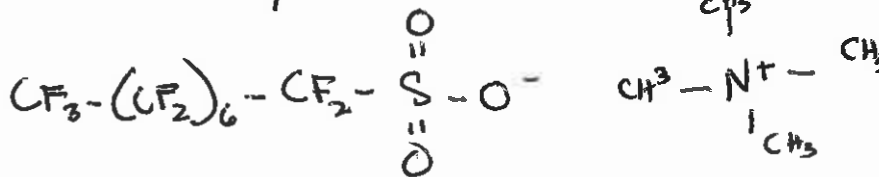
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

*Claudia Geitner*

Dr. Claudia Geitner  
 Manager Quality Control  
 Buchs, Switzerland

MW correction:  $\frac{500.125}{629.37} = 0.7946$

Purity & MW correction = 77.37%



	$C_8 F_{17} SO_3^+ H$	$C_8 H_{20} N$
C = 12.011	96.088	96.088
F = 18.998	322.966	—
S = 32.066	32.066	—
O = 16.999	47.997	20.60
H = 1.008	1.008	14.007
N = 14.007	—	—
	<hr/>	<hr/>
	500.125	130.255

Reagent

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**LCM2PFOA\_00007**



P: 5/11/17 SKV



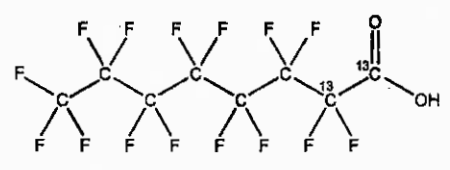
# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2PFOA  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]octanoic acid

**LOT NUMBER:** M2PFOA0216

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>HF<sub>16</sub>O<sub>2</sub>  
**CONCENTRATION:** 50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:** 416.05  
**SOLVENT(S):** Methanol  
Water (<1%)

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 02/12/2016  
**EXPIRY DATE:** (mm/dd/yyyy) 02/12/2021

**ISOTOPIC PURITY:** ≥99%<sup>13</sup>C  
(1,2-<sup>13</sup>C<sub>2</sub>)

**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:** 02/24/2016  
(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:**

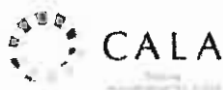
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

### **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.

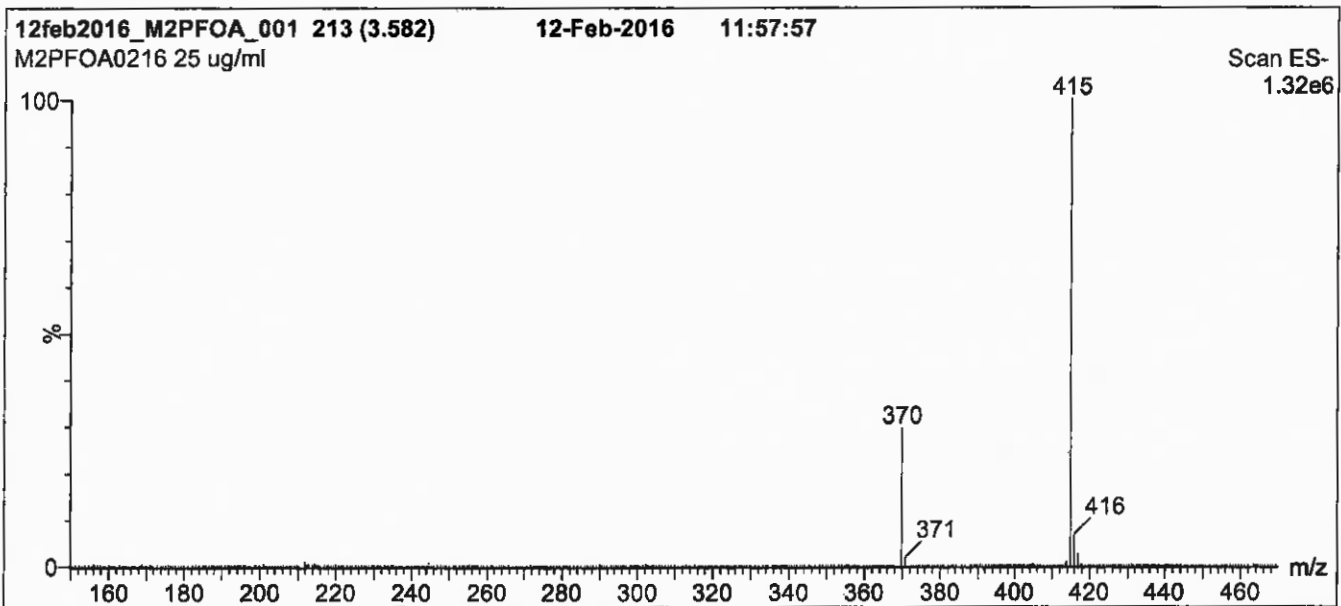
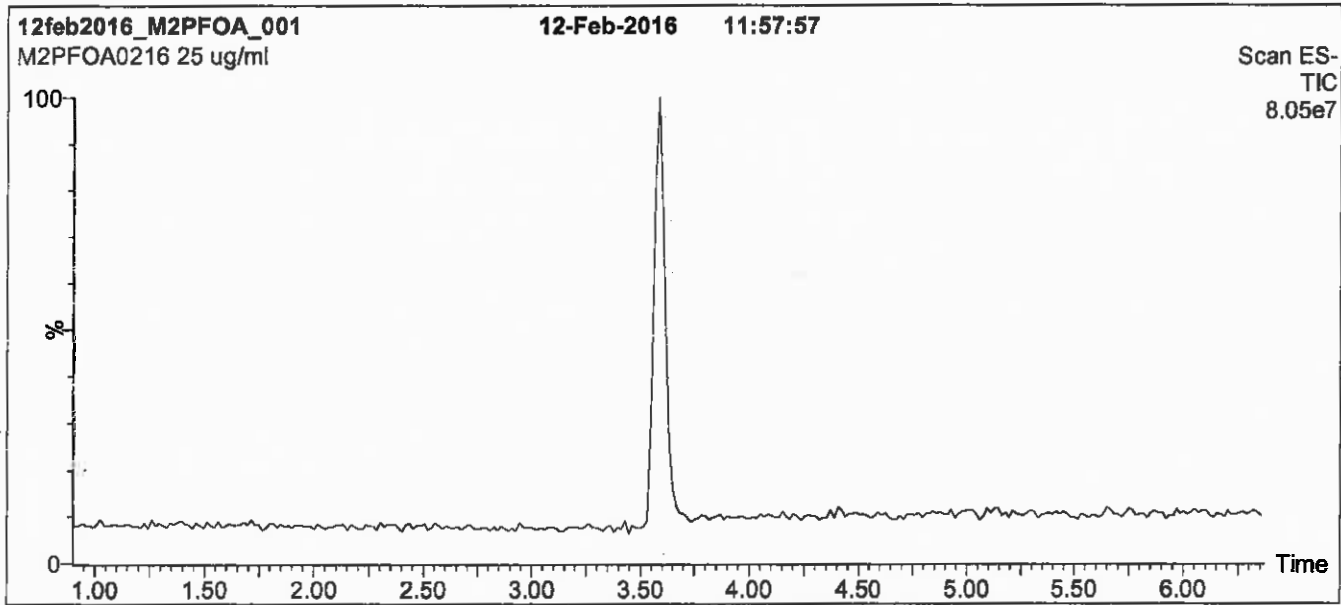
### **QUALITY MANAGEMENT:**

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).



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto: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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7.5 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

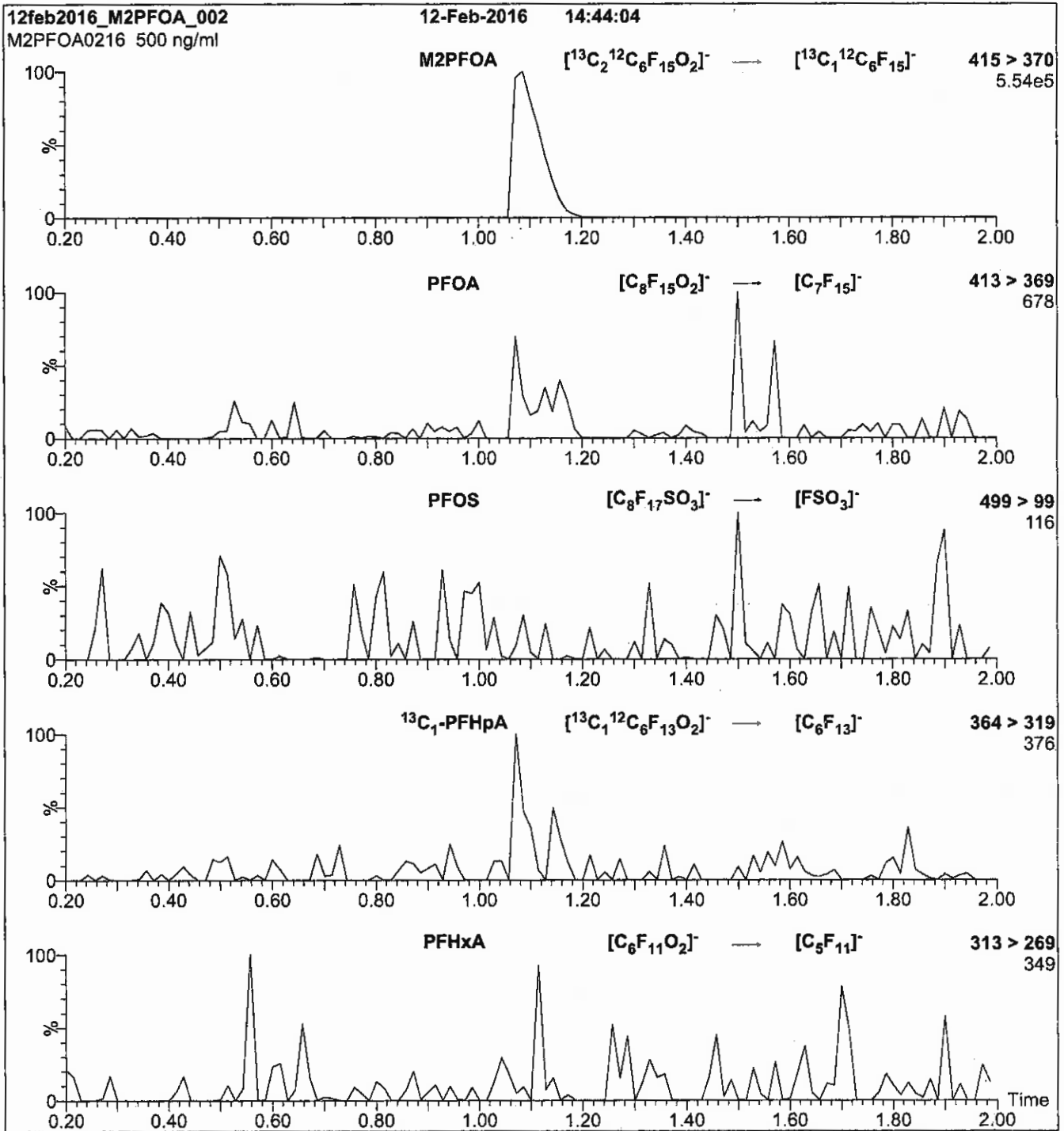
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 3.00  
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  $\mu\text{l}$  (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H<sub>2</sub>O

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

**MS Parameters**

Collision Gas (mbar) = 3.39e-3  
 Collision Energy (eV) = 10

Reagent

---

**LCMPFDA\_00012**

R: SBC 12/21/16



814255

ID: LCMPPFDA\_00012

Exp: 09/30/21 Prpd: SBC

13C2-Perfluorodecanoic acid

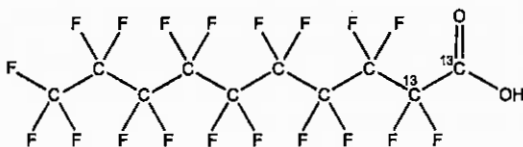


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFDA      **LOT NUMBER:** MPFDA0916  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]decanoic acid

**STRUCTURE:**      **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>HF<sub>19</sub>O<sub>2</sub>  
**CONCENTRATION:** 50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:** 516.07  
**SOLVENT(S):** Methanol  
Water (<1%)

**CHEMICAL PURITY:** >98%

**ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
(1,2-<sup>13</sup>C<sub>2</sub>)

**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

### 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 <sup>13</sup>C<sub>1</sub>-PFNA.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:   
B.G. Chríttim

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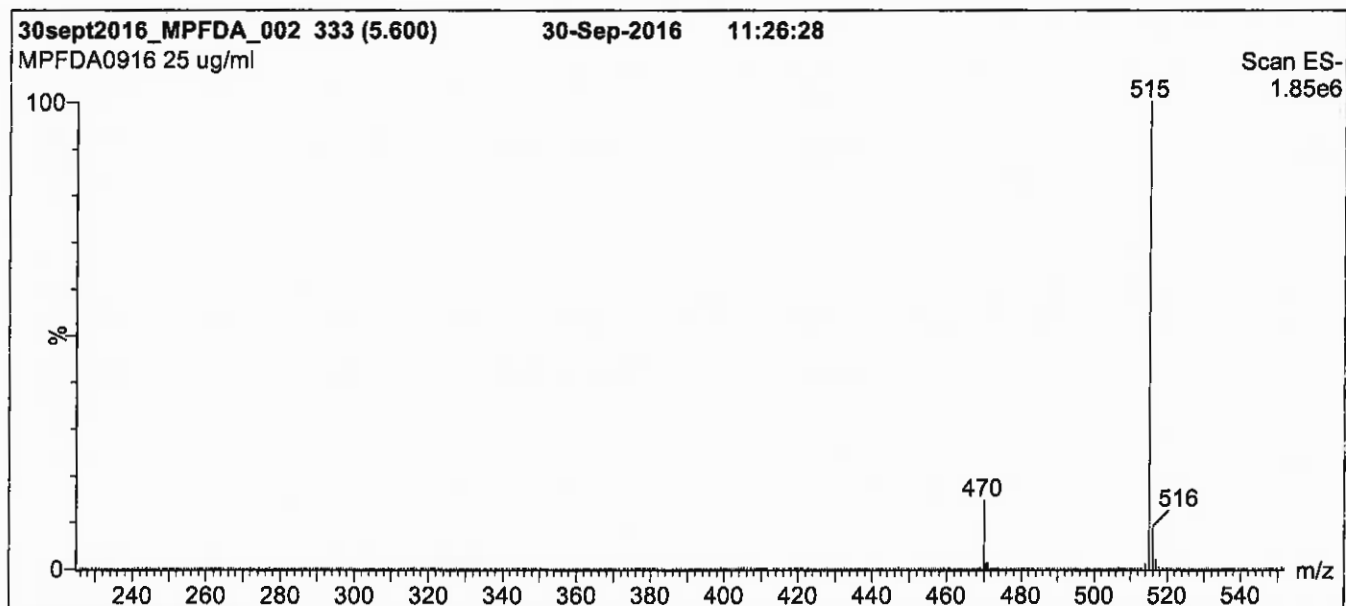
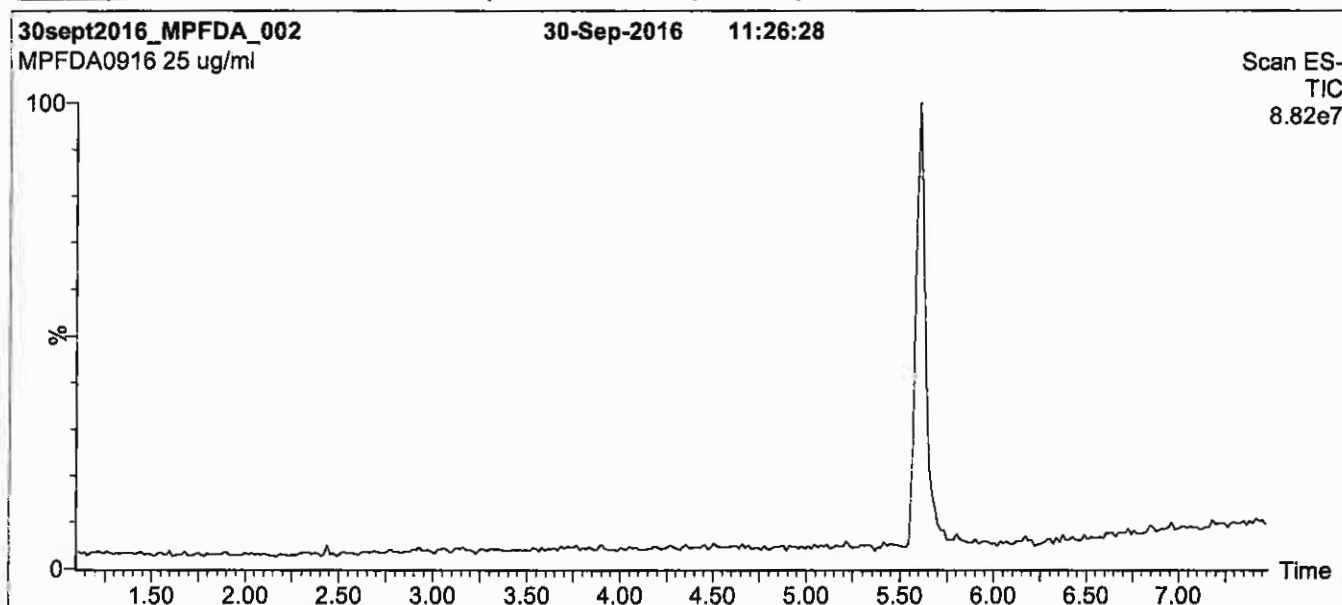
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**Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ l/min

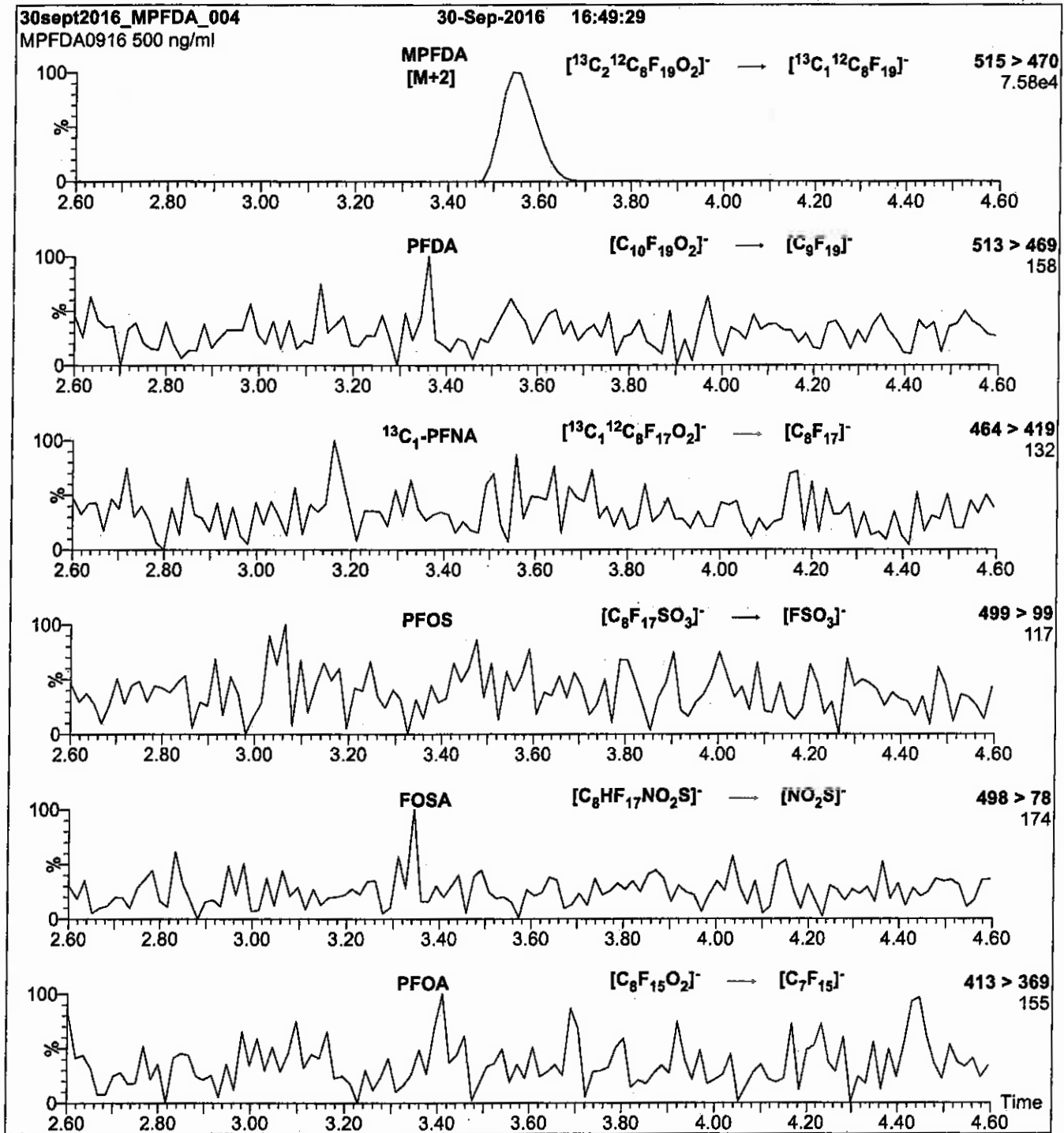
**MS Parameters**

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  $\mu$ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCMPFHxA\_00013**

R: SBC 12/21/16



814258  
ID: LCMPFHxA\_00013  
Exp: 04/08/21 Ppdt. SBC  
13C2-Perfluorohexanoic ac



# WELLINGTON LABORATORIES

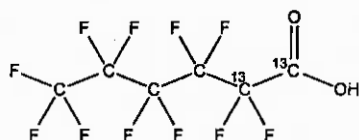
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFHxA  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]hexanoic acid

**LOT NUMBER:** MPFHxA0416

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>4</sub>HF<sub>11</sub>O<sub>2</sub>  
**CONCENTRATION:** 50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:** 316.04  
**SOLVENT(S):** Methanol  
Water (<1%)

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 04/08/2016

**ISOTOPIC PURITY:** ≥99%<sup>13</sup>C  
(1,2-<sup>13</sup>C<sub>2</sub>)

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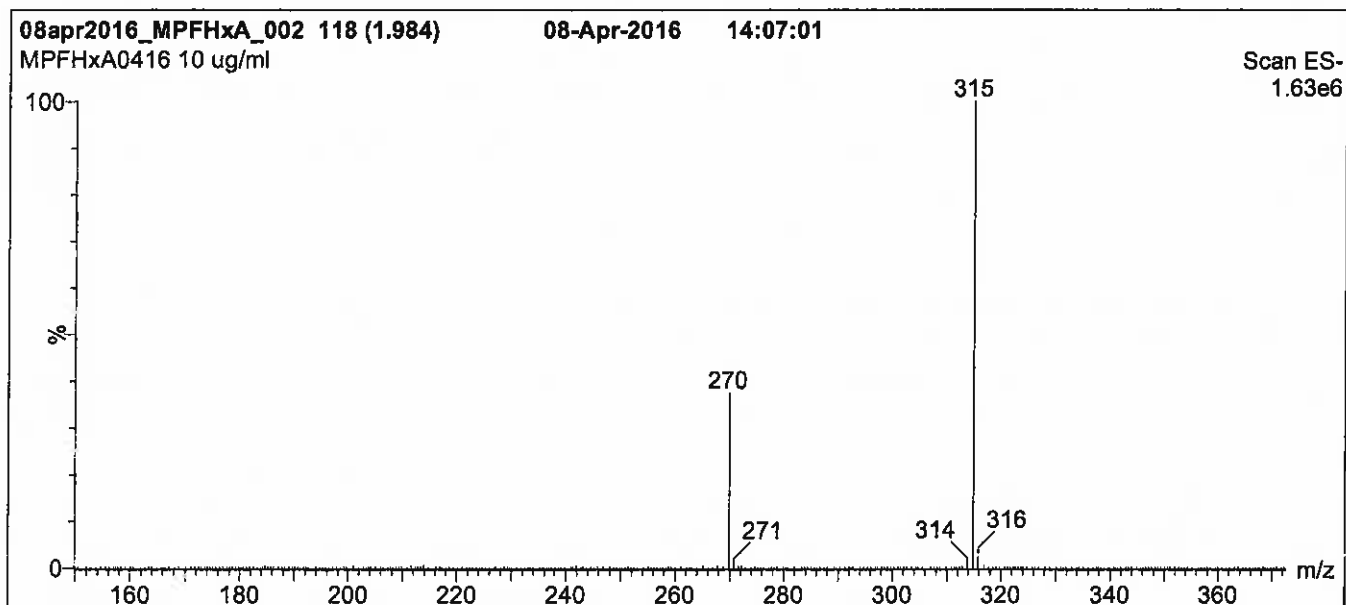
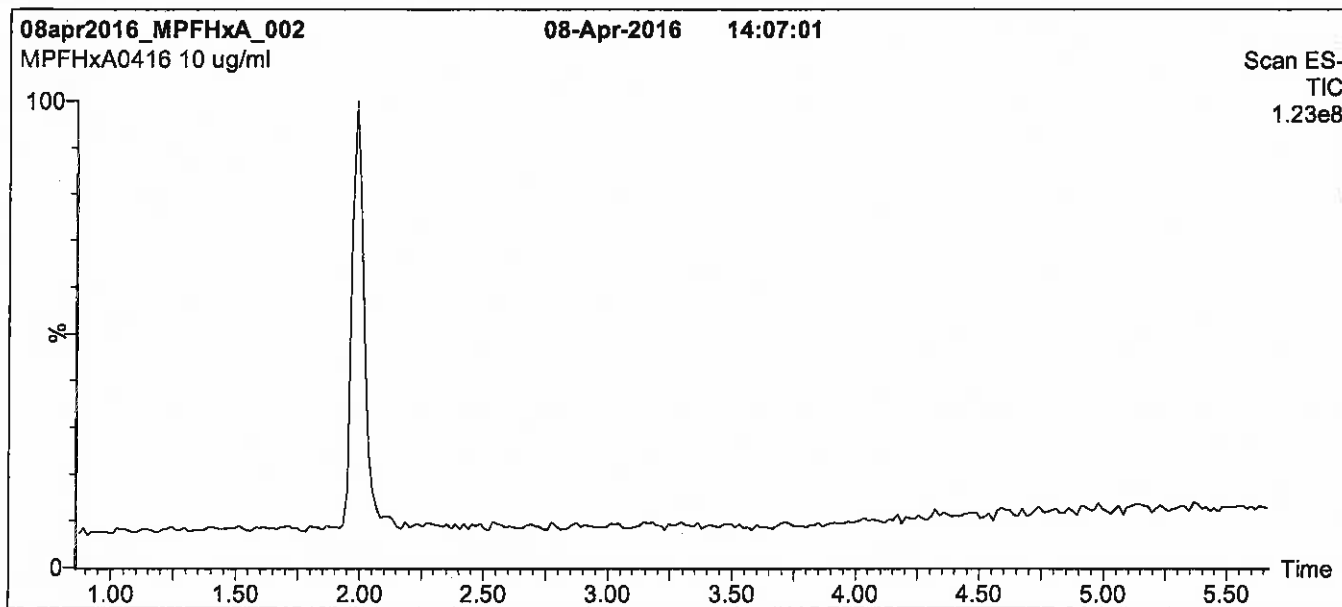
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**Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

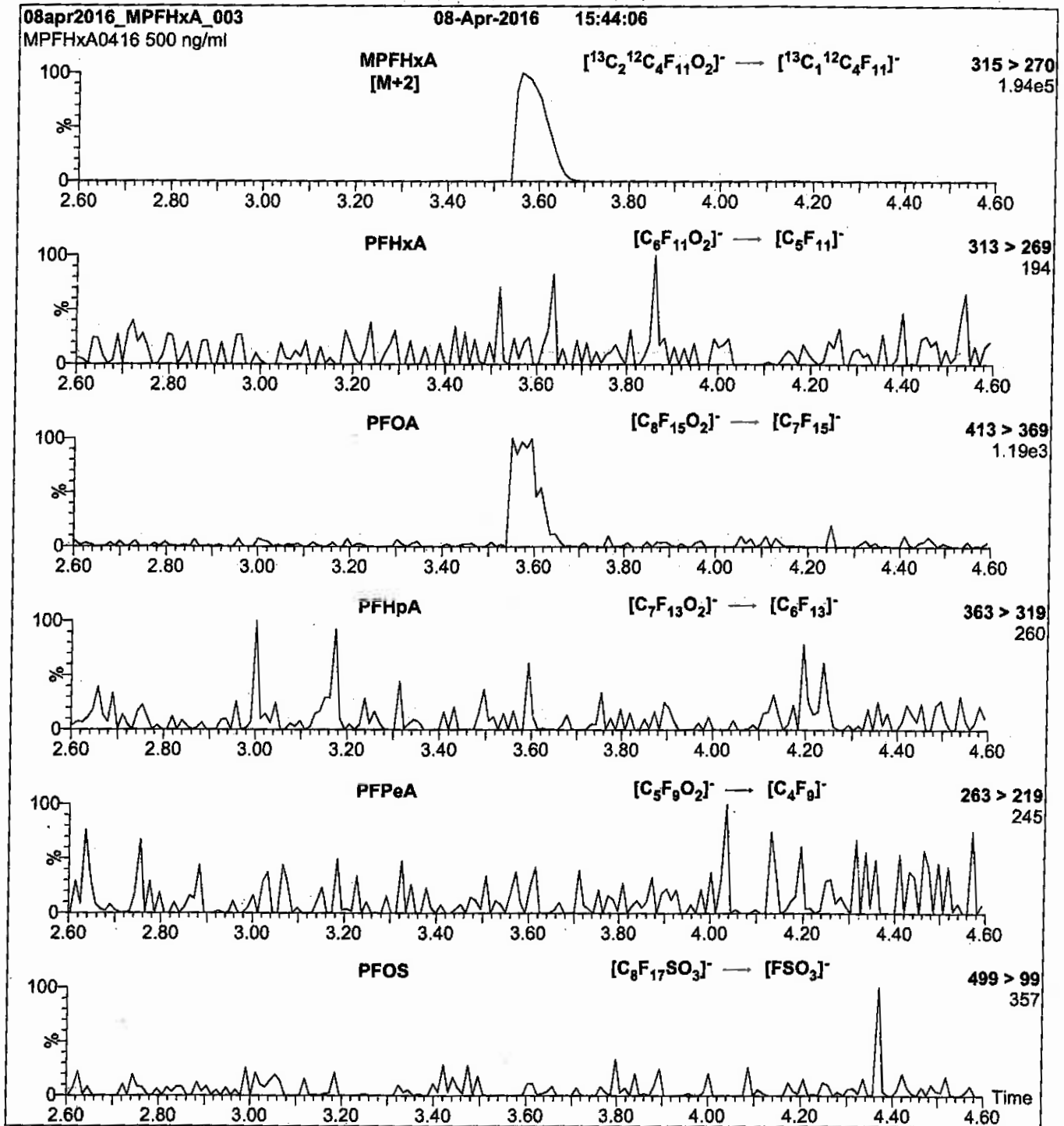
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.39e-3  
Collision Energy (eV) = 10

Reagent

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**LCMPFHxA\_00015**

r: 5/10/17 skd



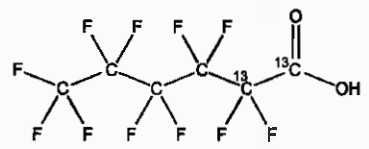
# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFHxA  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]hexanoic acid

**LOT NUMBER:** MPFHxA1116

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>4</sub>HF<sub>11</sub>O<sub>2</sub>  
**CONCENTRATION:** 50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:** 316.04  
**SOLVENT(S):** Methanol  
Water (<1%)

**CHEMICAL PURITY:** >98%

**ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
(1,2-<sup>13</sup>C<sub>2</sub>)

**LAST TESTED:** (mm/dd/yyyy) 11/22/2016

**EXPIRY DATE:** (mm/dd/yyyy) 11/22/2021

**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)

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- 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.

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**Certified By:**   
B.G. Chittim

**Date:** 12/13/2016  
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
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**EXPIRY DATE / PERIOD OF VALIDITY:**

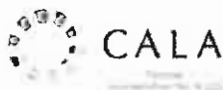
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**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.

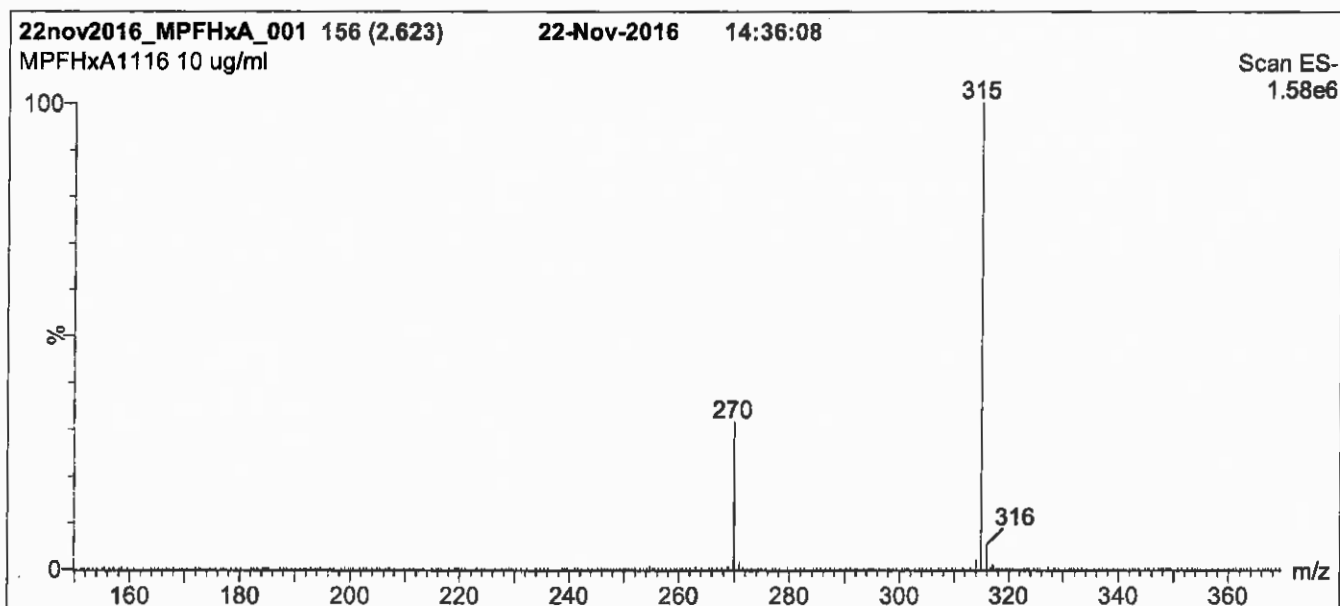
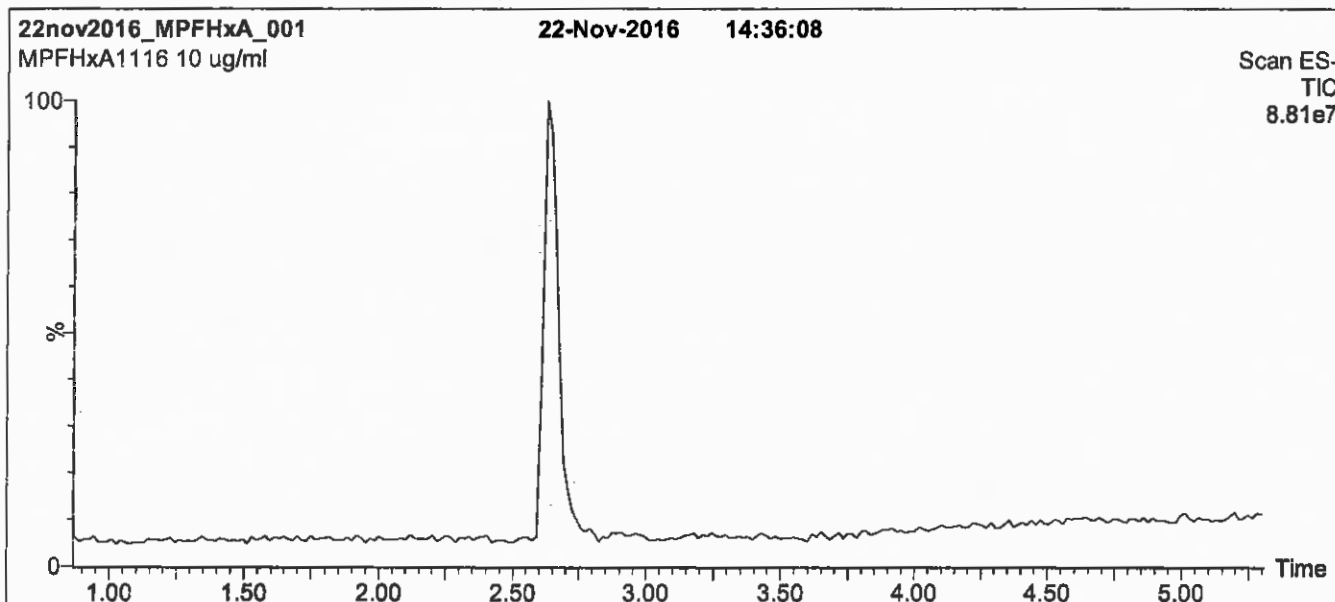
**QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto: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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

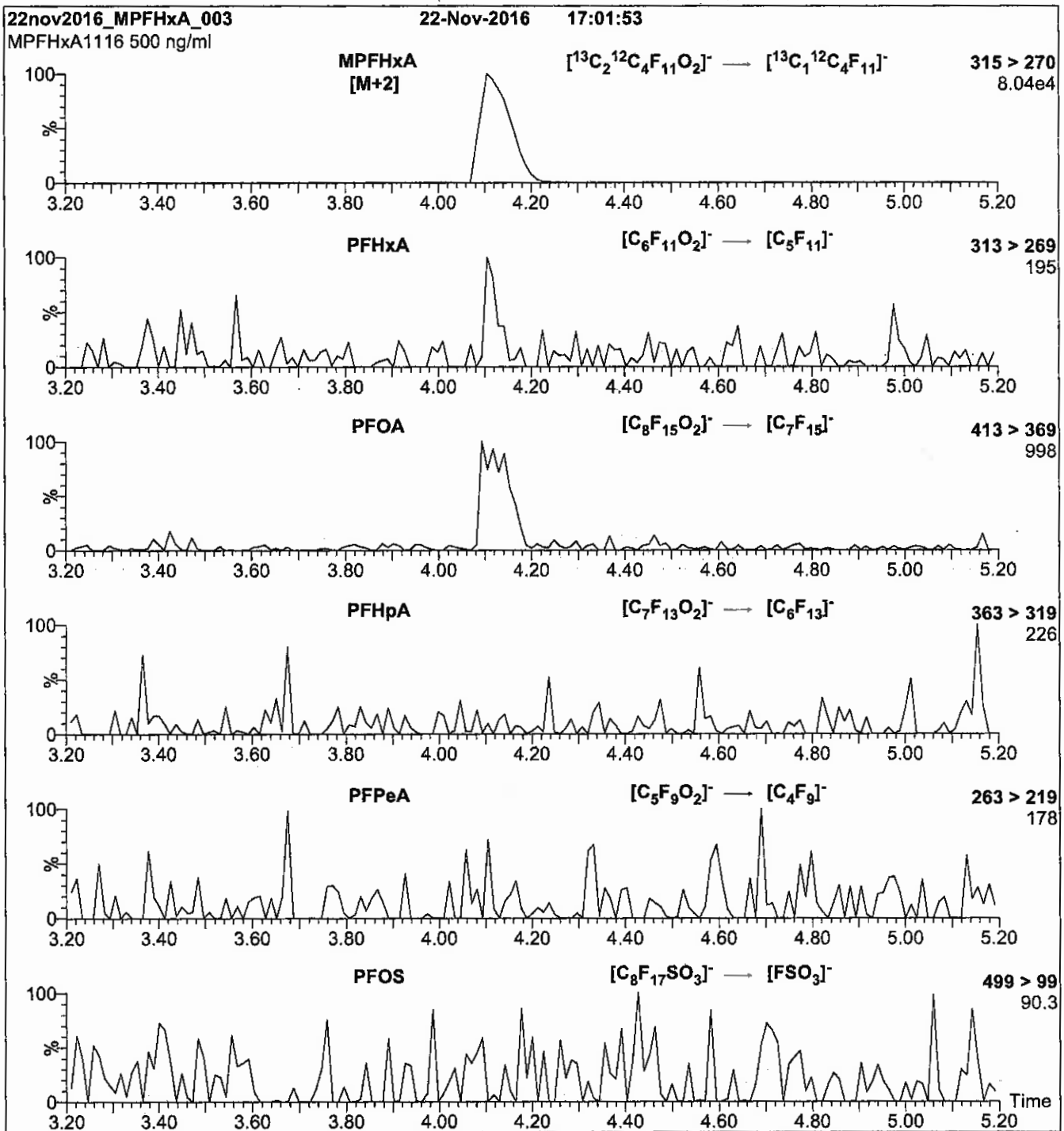
Mobile phase: Gradient  
Start: 40% (80:20 MeOH:ACN) / 60% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions over 0.5 min.  
Time: 10 min

Flow: 300  $\mu$ 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  $\mu\text{l}$  (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**MS Parameters**

Collision Gas (mbar) =  $3.46\text{e-}3$   
Collision Energy (eV) = 10

Reagent

---

**LCMPFOS\_00019**

R: SBC 12/21/16



814253  
ID: LCMPFOS\_00019  
Exp: 08/03/21 Ppfd: SBC  
13C4-Perfluorooctanesulfo

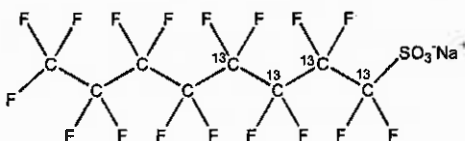


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFOS **LOT NUMBER:** MPFOS0816  
**COMPOUND:** Sodium perfluoro-1-[1,2,3,4-<sup>13</sup>C<sub>4</sub>]octanesulfonate

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>4</sub><sup>12</sup>C<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 526.08  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
47.8 ± 2.4 µg/ml (MPFOS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 08/03/2016 (1,2,3,4-<sup>13</sup>C<sub>4</sub>)  
**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-<sup>13</sup>C<sub>3</sub>]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:**

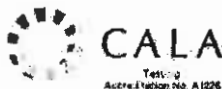
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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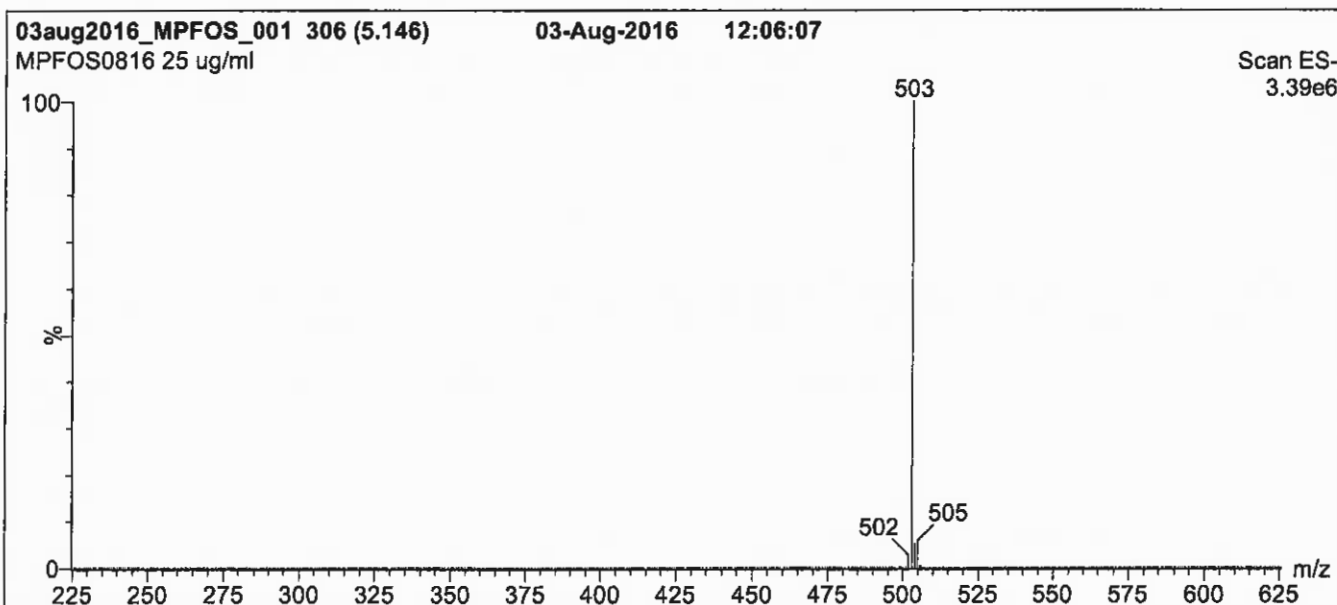
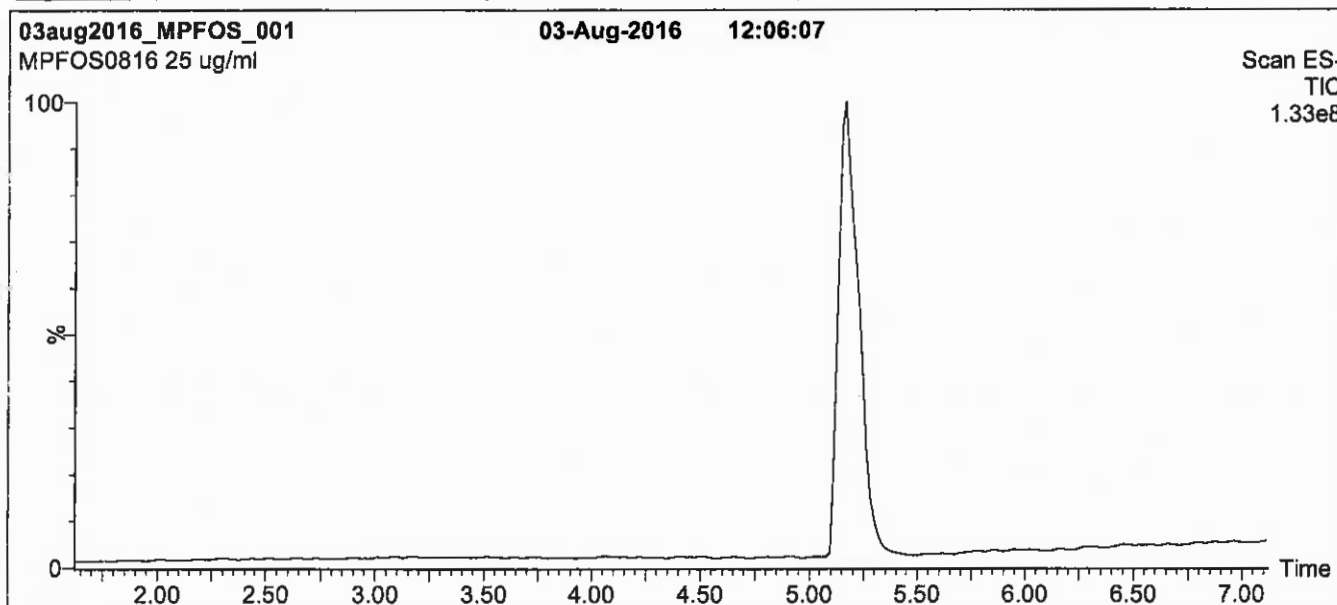
### **QUALITY MANAGEMENT:**

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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 RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 45% (80:20 MeOH:ACN) / 55% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

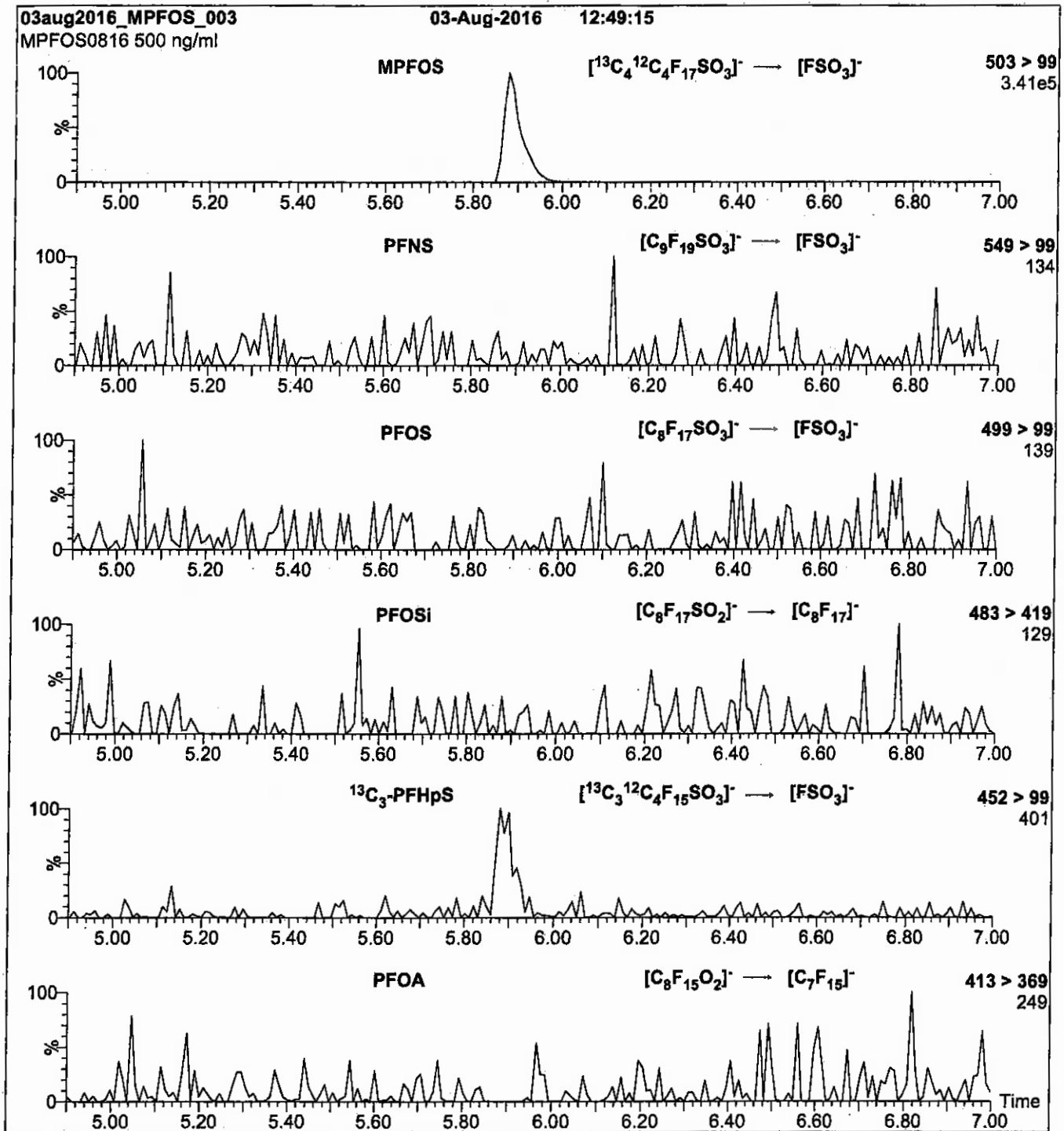
**Flow:** 300  $\mu$ l/min

**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  $\mu\text{l}$  (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**MS Parameters**

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



Reagent

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**LCMPFOS\_00021**

r: 5/10/17 SKV

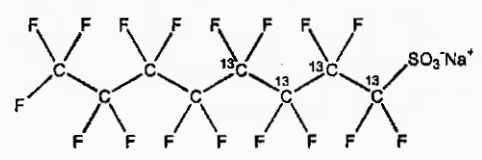


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFOS **LOT NUMBER:** MPFOS1216  
**COMPOUND:** Sodium perfluoro-1-[1,2,3,4-<sup>13</sup>C<sub>4</sub>]octanesulfonate

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>4</sub><sup>12</sup>C<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 526.08  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
 47.8 ± 2.4 µg/ml (MPFOS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 12/12/2016 (1,2,3,4-<sup>13</sup>C<sub>4</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 12/12/2021  
**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-<sup>13</sup>C<sub>3</sub>]heptanesulfonate.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**  **Date:** 12/14/2016  
 B.G. Chittim (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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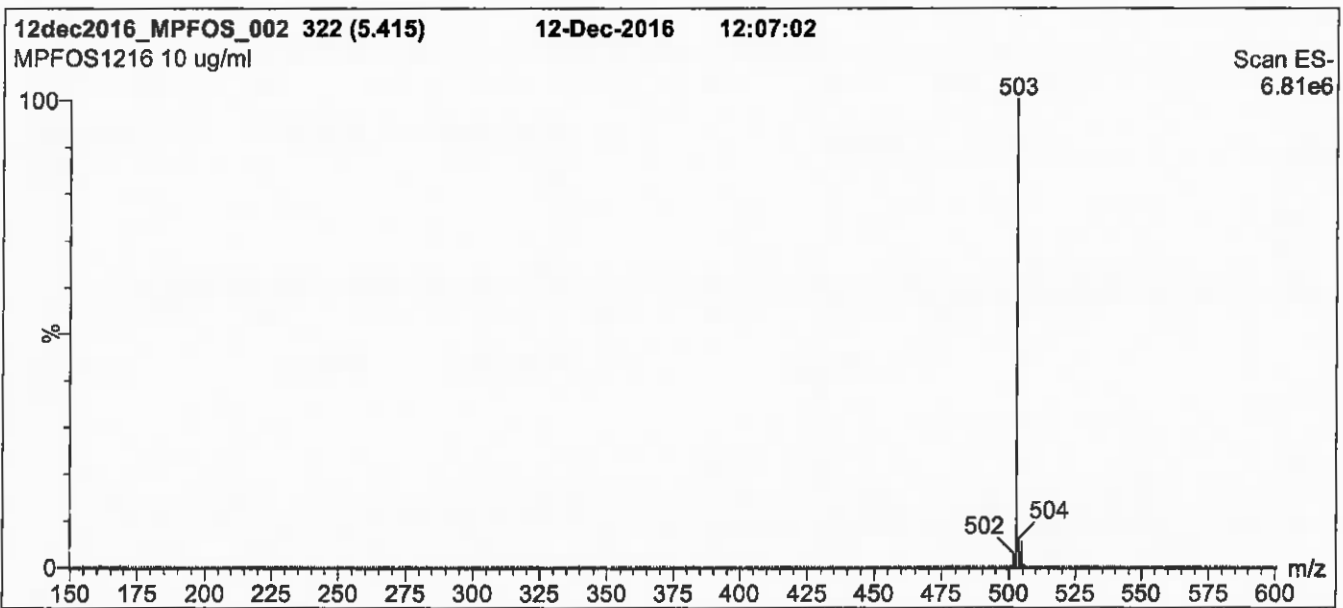
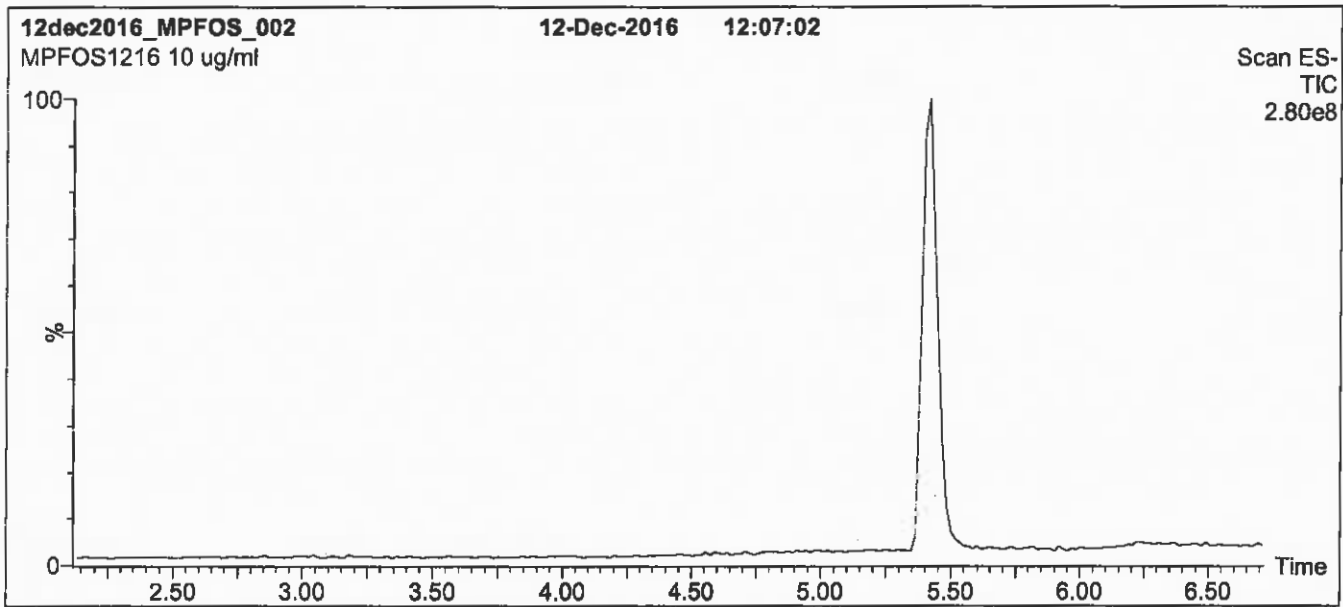
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**Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)  
 Ramp to 85% organic over 7.5 min and hold for 1.5 min  
 before returning to initial conditions in 0.5 min.  
 Time: 10 min

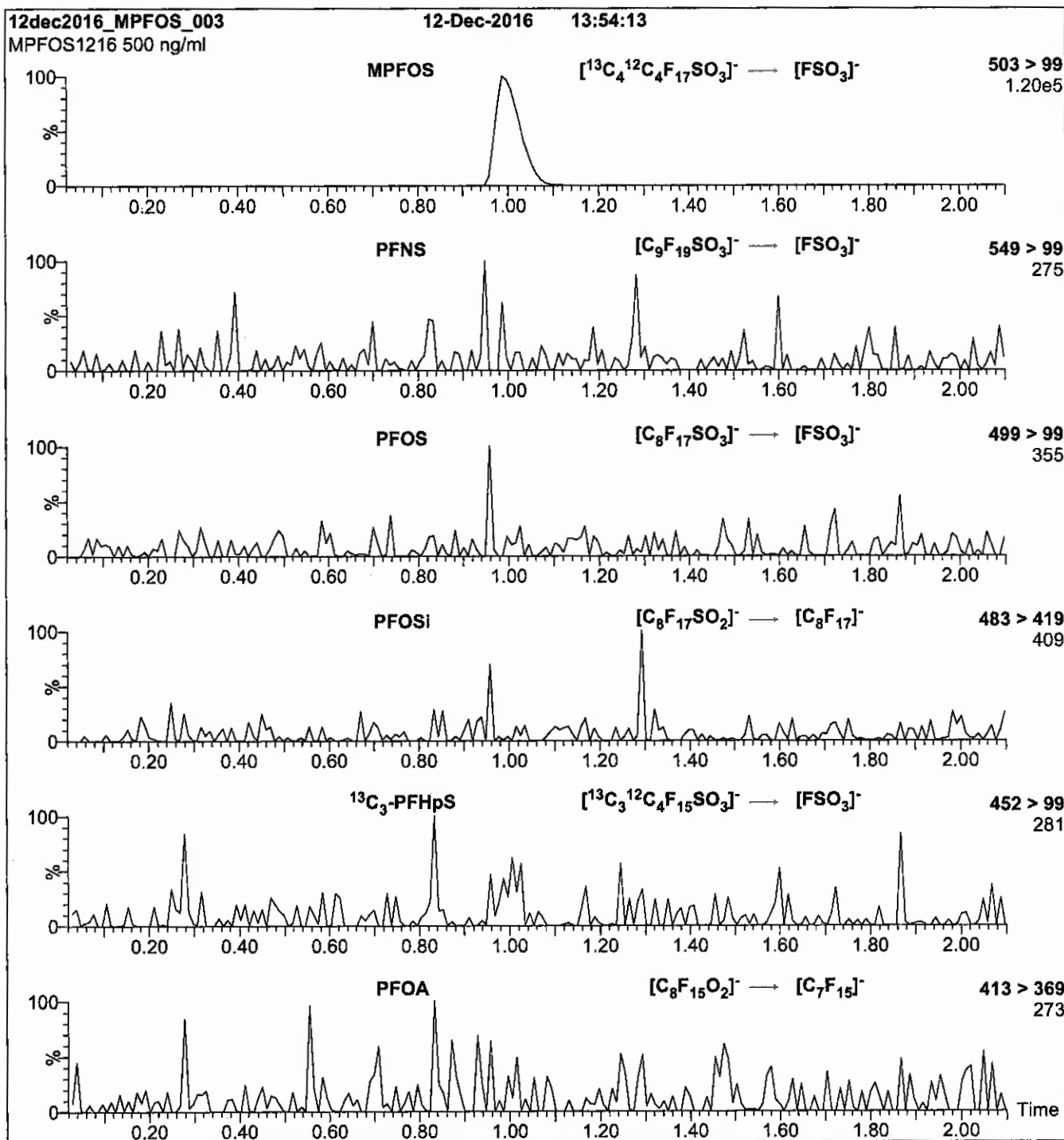
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (150 - 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  $\mu\text{l}$  (500 ng/ml MPFOS)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**MS Parameters**

Collision Gas (mbar) = 3.35e-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.: 320-31889-1

SDG No.: \_\_\_\_\_

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-092617-RW-256	320-31889-1	62 Q	90
NAWC-092617-FRB-256	320-31889-2	81	91
NAWC-092617-RW-354	320-31889-3	74	89
NAWC-092617-FRB-354	320-31889-4	84	92
NAWC-092617-RW-478	320-31889-5	70	84
NAWC-092617-FRB-478	320-31889-6	82	92
NAWC-092617-RW-120	320-31889-7	60 Q	89
NAWC-092617-FRB-120	320-31889-8	80	89
NAWC-092617-RW-315	320-31889-9	70	117
NAWC-092617-FRB-315	320-31889-10	83	94
NAWC-092617-RW-091	320-31889-11	73	91
NAWC-092617-FRB-091	320-31889-12	80	89
	MB 320-188627/1-A	83	86
	LCS 320-188627/2-A	83	90
	LCSD 320-188627/3-A	87	95

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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2017.10.16A\_537AA.012.d  
 Lab ID: LCS 320-188627/2-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	222	208	94	70-130	M
Perfluorooctanoic acid (PFOA)	111	97.4	88	70-130	
Perfluorononanoic acid (PFNA)	111	95.8	86	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	161	96	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	51.1	92	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	509	102	70-130	

# Column to be used to flag recovery and RPD values



FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low Lab File ID: 2017.10.16A\_537AA.013.d

Lab ID: LCSD 320-188627/3-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	222	220	99	5	30	70-130	M
Perfluorooctanoic acid (PFOA)	111	107	96	9	30	70-130	
Perfluorononanoic acid (PFNA)	111	105	95	10	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	162	97	1	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	54.6	98	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	521	104	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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 2017.10.16A\_537AA.011.d Lab Sample ID: MB 320-188627/1-A  
 Matrix: Water Date Extracted: 10/10/2017 09:45  
 Instrument ID: A8\_N Date Analyzed: 10/16/2017 12:06  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-188627/2-A	2017.10.16A_537AA.012. d	10/16/2017 12:11
	LCSD 320-188627/3-A	2017.10.16A_537AA.013. d	10/16/2017 12:16
NAWC-092617-RW-256	320-31889-1	2017.10.16A_537AA.014. d	10/16/2017 12:21
NAWC-092617-FRB-256	320-31889-2	2017.10.16A_537AA.015. d	10/16/2017 12:25
NAWC-092617-RW-354	320-31889-3	2017.10.16A_537AA.016. d	10/16/2017 12:30
NAWC-092617-FRB-354	320-31889-4	2017.10.16A_537AA.017. d	10/16/2017 12:35
NAWC-092617-RW-4784	320-31889-5	2017.10.16A_537AA.018. d	10/16/2017 12:40
NAWC-092617-FRB-4784	320-31889-6	2017.10.16A_537AA.019. d	10/16/2017 12:44
NAWC-092617-RW-120	320-31889-7	2017.10.16A_537AA.020. d	10/16/2017 12:49
NAWC-092617-FRB-120	320-31889-8	2017.10.16A_537AA.022. d	10/16/2017 13:03
NAWC-092617-FRB-315	320-31889-10	2017.10.16A_537AA.024. d	10/16/2017 13:13
NAWC-092617-RW-091	320-31889-11	2017.10.16A_537AA.025. d	10/16/2017 13:18
NAWC-092617-FRB-091	320-31889-12	2017.10.16A_537AA.026. d	10/16/2017 13:22
NAWC-092617-RW-315	320-31889-9	2017.10.17_537A_009.d	10/18/2017 01:59

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	2116635	1.86	5570738	2.11		
UPPER LIMIT	3174953	2.36	8356107	2.61		
LOWER LIMIT	1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-185329/11	2252465	1.85	5723538	2.10		
ICV 320-185329/13	2616480	1.85	7294448	2.10		
CCV 320-189551/1 CCVIS	2355084	1.92	5989032	2.16		
MB 320-188627/1-A	2261062	1.91	5678373	2.16		
LCS 320-188627/2-A	2163124	1.92	5538277	2.16		
LCSD 320-188627/3-A	2088892	1.91	5644879	2.16		
320-31889-1	NAWC-092617-RW-256	2160583	1.91	5905121	2.16	
320-31889-2	NAWC-092617-FRB-256	2375364	1.91	6047439	2.16	
320-31889-3	NAWC-092617-RW-354	2272516	1.91	5692781	2.16	
320-31889-4	NAWC-092617-FRB-354	2147572	1.90	5500677	2.16	
320-31889-5	NAWC-092617-RW-4784	2610475	1.91	6311970	2.16	
320-31889-6	NAWC-092617-FRB-4784	2531858	1.91	6317956	2.16	
320-31889-7	NAWC-092617-RW-120	2427262	1.90	6274247	2.16	
CCV 320-189551/13 CCVIS	2277718	1.90	5989702	2.16		
CCV 320-189553/13 CCVIS	2277718	1.90	5989702	2.16		
320-31889-8	NAWC-092617-FRB-120	2599941	1.90	6502165	2.16	
320-31889-10	NAWC-092617-FRB-315	2412206	1.90	6221671	2.15	
320-31889-11	NAWC-092617-RW-091	2500993	1.90	6499886	2.16	
320-31889-12	NAWC-092617-FRB-091	2462434	1.90	6308492	2.16	
CCV 320-189553/23 CCVIS	2359791	1.90	6426616	2.15		
CCVL 320-189890/4	2071180	1.90	5593709	2.14		
CCV 320-189890/5 CCVIS	1699689	1.90	4691632	2.14		
320-31889-9	NAWC-092617-RW-315	2316666	1.89	5687876	2.13	
CCV 320-189890/15 CCVIS	1823062	1.89	5026319	2.13		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189551/1 Date Analyzed: 10/16/2017 11:57  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2355084	1.92	5989032	2.16		
UPPER LIMIT	3297118	2.42	8384645	2.66		
LOWER LIMIT	1648559	1.42	4192322	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-188627/1-A		2261062	1.91	5678373	2.16	
LCS 320-188627/2-A		2163124	1.92	5538277	2.16	
LCSD 320-188627/3-A		2088892	1.91	5644879	2.16	
320-31889-1	NAWC-092617-RW-256	2160583	1.91	5905121	2.16	
320-31889-2	NAWC-092617-FRB-256	2375364	1.91	6047439	2.16	
320-31889-3	NAWC-092617-RW-354	2272516	1.91	5692781	2.16	
320-31889-4	NAWC-092617-FRB-354	2147572	1.90	5500677	2.16	
320-31889-5	NAWC-092617-RW-4784	2610475	1.91	6311970	2.16	
320-31889-6	NAWC-092617-FRB-4784	2531858	1.91	6317956	2.16	
320-31889-7	NAWC-092617-RW-120	2427262	1.90	6274247	2.16	

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189551/13 Date Analyzed: 10/16/2017 12:54  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2277718	1.90	5989702	2.16		
UPPER LIMIT	3188805	2.40	8385583	2.66		
LOWER LIMIT	1594403	1.40	4192791	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-188627/1-A		2261062	1.91	5678373	2.16	
LCS 320-188627/2-A		2163124	1.92	5538277	2.16	
LCSD 320-188627/3-A		2088892	1.91	5644879	2.16	
320-31889-1	NAWC-092617-RW-256	2160583	1.91	5905121	2.16	
320-31889-2	NAWC-092617-FRB-256	2375364	1.91	6047439	2.16	
320-31889-3	NAWC-092617-RW-354	2272516	1.91	5692781	2.16	
320-31889-4	NAWC-092617-FRB-354	2147572	1.90	5500677	2.16	
320-31889-5	NAWC-092617-RW-4784	2610475	1.91	6311970	2.16	
320-31889-6	NAWC-092617-FRB-4784	2531858	1.91	6317956	2.16	
320-31889-7	NAWC-092617-RW-120	2427262	1.90	6274247	2.16	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189553/13 Date Analyzed: 10/16/2017 12:54  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2277718	1.90	5989702	2.16		
UPPER LIMIT	3188805	2.40	8385583	2.66		
LOWER LIMIT	1594403	1.40	4192791	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-8	NAWC-092617-FRB-120	2599941	1.90	6502165	2.16	
320-31889-10	NAWC-092617-FRB-315	2412206	1.90	6221671	2.15	
320-31889-11	NAWC-092617-RW-091	2500993	1.90	6499886	2.16	
320-31889-12	NAWC-092617-FRB-091	2462434	1.90	6308492	2.16	

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189553/23 Date Analyzed: 10/16/2017 13:41  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2359791	1.90	6426616	2.15		
UPPER LIMIT	3303707	2.40	8997262	2.65		
LOWER LIMIT	1651854	1.40	4498631	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-8	NAWC-092617-FRB-120	2599941	1.90	6502165	2.16	
320-31889-10	NAWC-092617-FRB-315	2412206	1.90	6221671	2.15	
320-31889-11	NAWC-092617-RW-091	2500993	1.90	6499886	2.16	
320-31889-12	NAWC-092617-FRB-091	2462434	1.90	6308492	2.16	

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189890/5 Date Analyzed: 10/18/2017 01:40  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.17\_537A\_005 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1699689	1.90	4691632	2.14		
UPPER LIMIT	2379565	2.40	6568285	2.64		
LOWER LIMIT	1189782	1.40	3284142	1.64		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-9	NAWC-092617-RW-315		2316666	1.89	5687876	2.13

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189890/15 Date Analyzed: 10/18/2017 02:28  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.17\_537A\_015 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1823062	1.89	5026319	2.13		
UPPER LIMIT	2552287	2.39	7036847	2.63		
LOWER LIMIT	1276143	1.39	3518423	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-9	NAWC-092617-RW-315		2316666	1.89	5687876	2.13

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-256 Lab Sample ID: 320-31889-1  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.014.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 254.3(mL) Date Analyzed: 10/16/2017 12:21  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	26		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.8	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	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	62	Q	70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.014.d  
 Lims ID: 320-31889-A-1-A  
 Client ID: NAWC-092617-RW-256  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:21:13 ALS Bottle#: 40 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:13:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	450205	1.81		41.3	
298.90 > 99.00	1.426	1.402	0.024	1.000	312739		1.44(0.00-0.00)	227	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.555	1.524	0.031	1.000	1581931	6.25		4117	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.707	1.668	0.039	1.000	579004	1.72		55.2	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.707	1.668	0.039	1.000	391034	1.92		21.3	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.855	0.057		2160583	10.0		4582	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.856	0.056	1.000	1333515	6.71		33.6	
413.00 > 169.00	1.912	1.856	0.056	1.000	808977		1.65(0.00-0.00)	1137	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.108	0.047		5905121	28.7		1384	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.116	0.046	1.000	103825	0.7728		3.3	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.155	0.0	1.000	1658558	8.65		108	M
499.00 > 99.00	2.155	2.155	0.0	1.000	284466		5.83(0.00-0.00)	81.8	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.282	0.024	1.000	1086563	9.02		4979	

## QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.014.d

Injection Date: 16-Oct-2017 12:21:13

Instrument ID: A8\_N

Lims ID: 320-31889-A-1-A

Lab Sample ID: 320-31889-1

Client ID: NAWC-092617-RW-256

Operator ID: SACINSTLCMS01

ALS Bottle#: 40

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

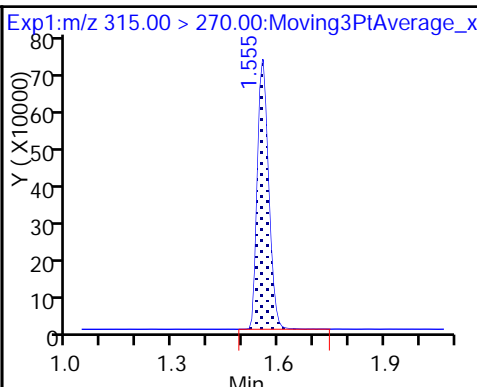
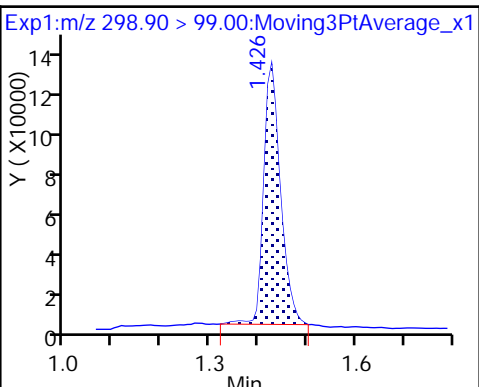
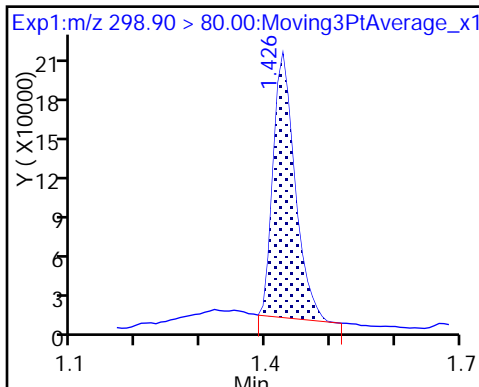
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

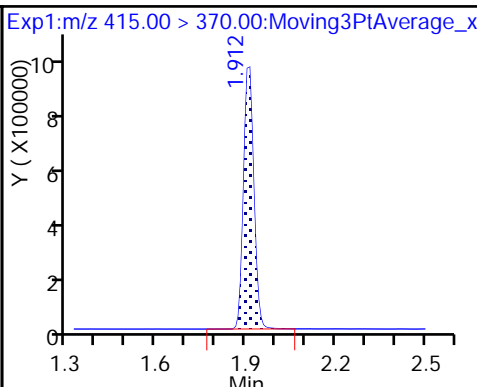
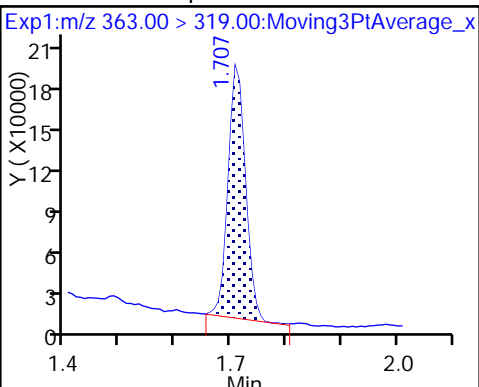
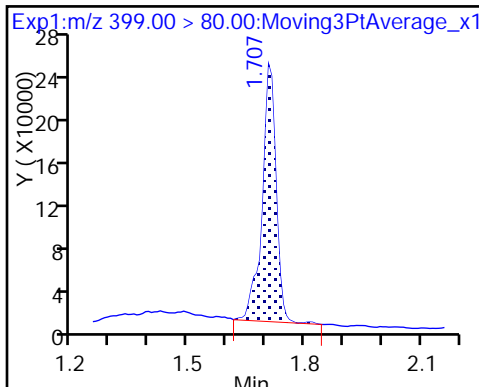
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

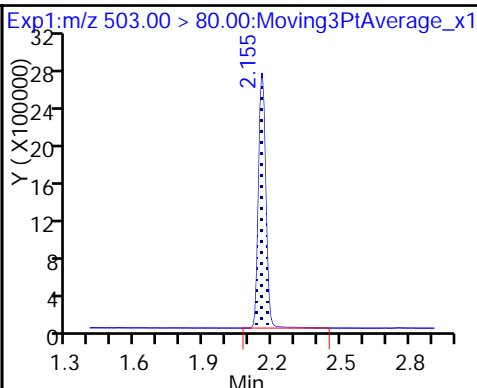
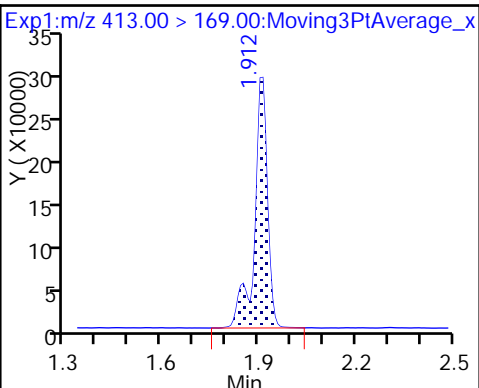
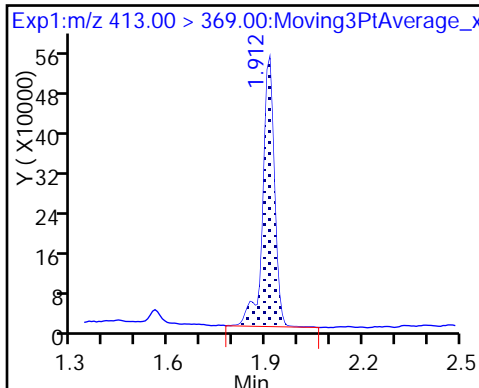
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

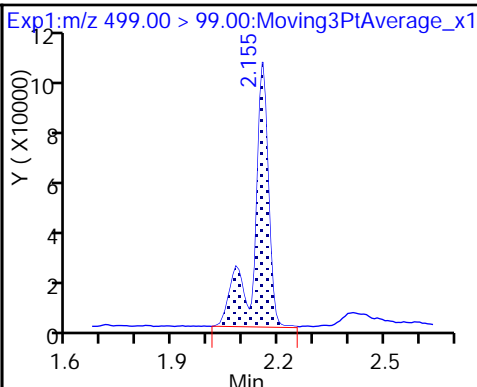
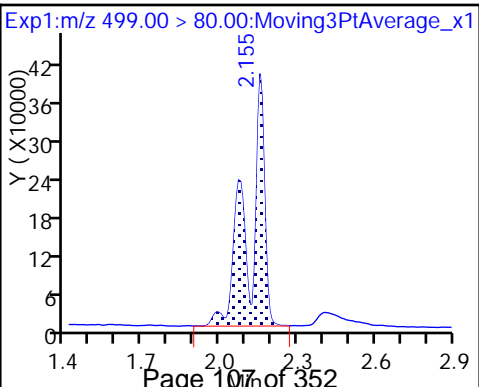
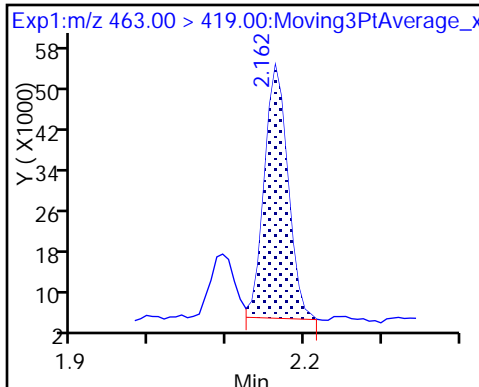
\* 7 13C4 PFOS



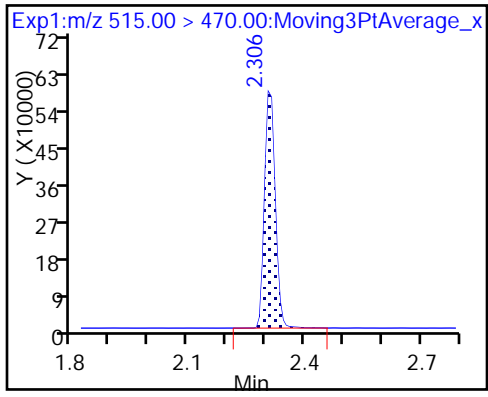
9 Perfluorononanoic acid (M)

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.014.d  
 Lims ID: 320-31889-A-1-A  
 Client ID: NAWC-092617-RW-256  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:21:13 ALS Bottle#: 40 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:13:38

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	6.25	62.49
\$ 10 13C2 PFDA	10.0	9.02	90.16

TestAmerica Sacramento

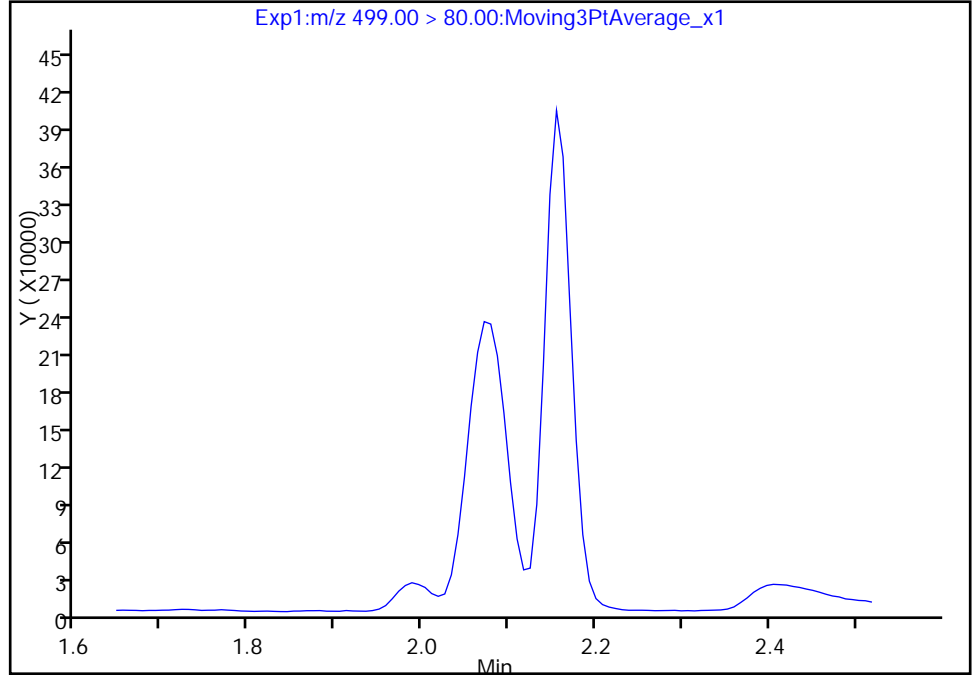
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Injection Date: 16-Oct-2017 12:21:13 Instrument ID: A8\_N  
Lims ID: 320-31889-A-1-A Lab Sample ID: 320-31889-1  
Client ID: NAWC-092617-RW-256  
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 6  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

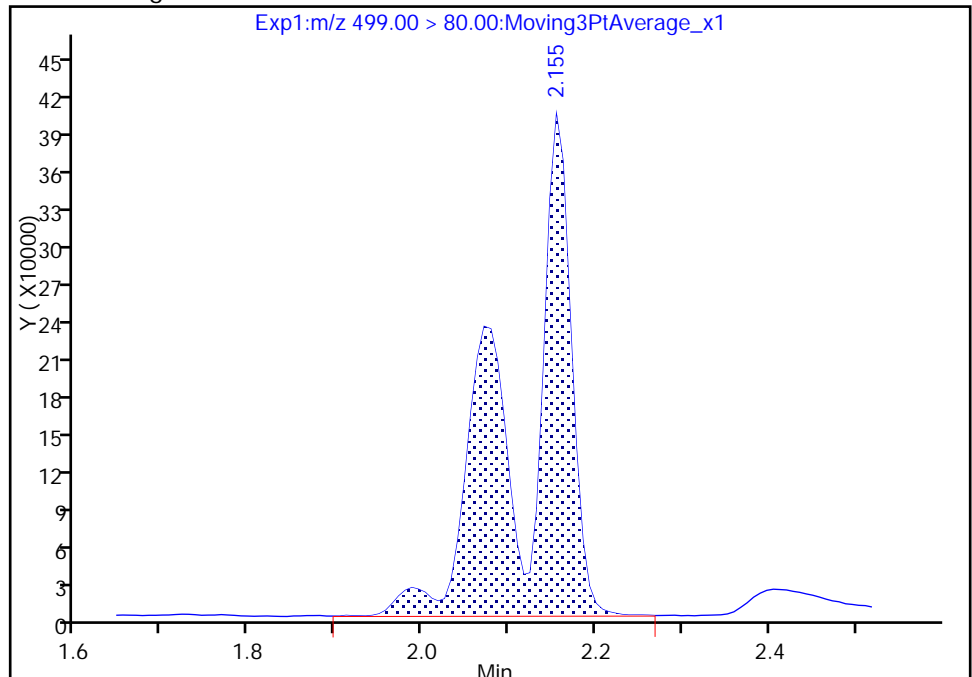
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 1658558  
Amount: 8.645793  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:13:05  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak



TestAmerica Sacramento

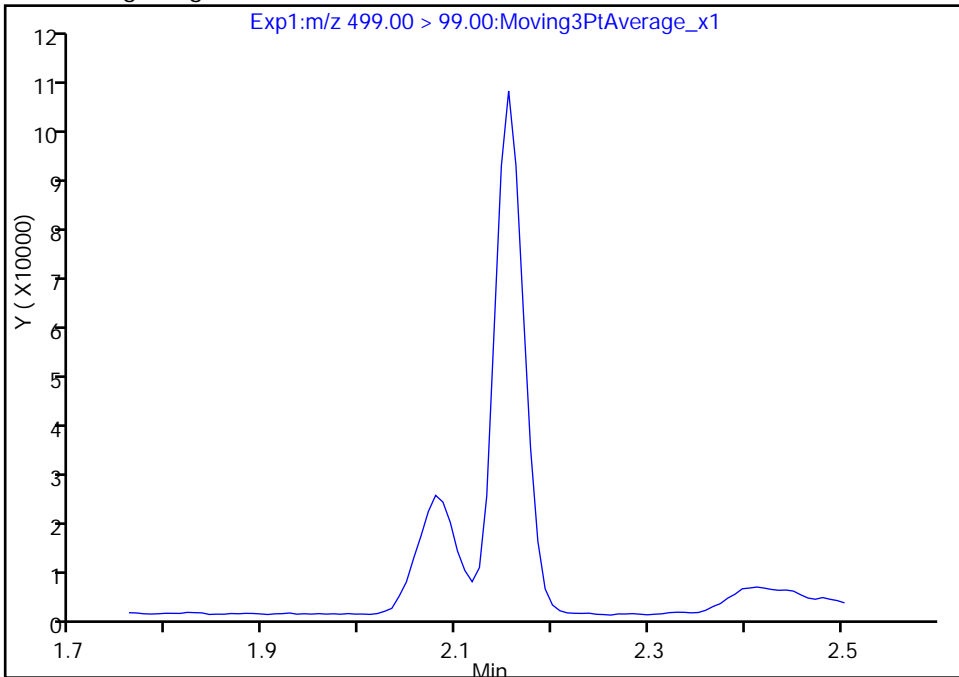
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.014.d  
Injection Date: 16-Oct-2017 12:21:13 Instrument ID: A8\_N  
Lims ID: 320-31889-A-1-A Lab Sample ID: 320-31889-1  
Client ID: NAWC-092617-RW-256  
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 6  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

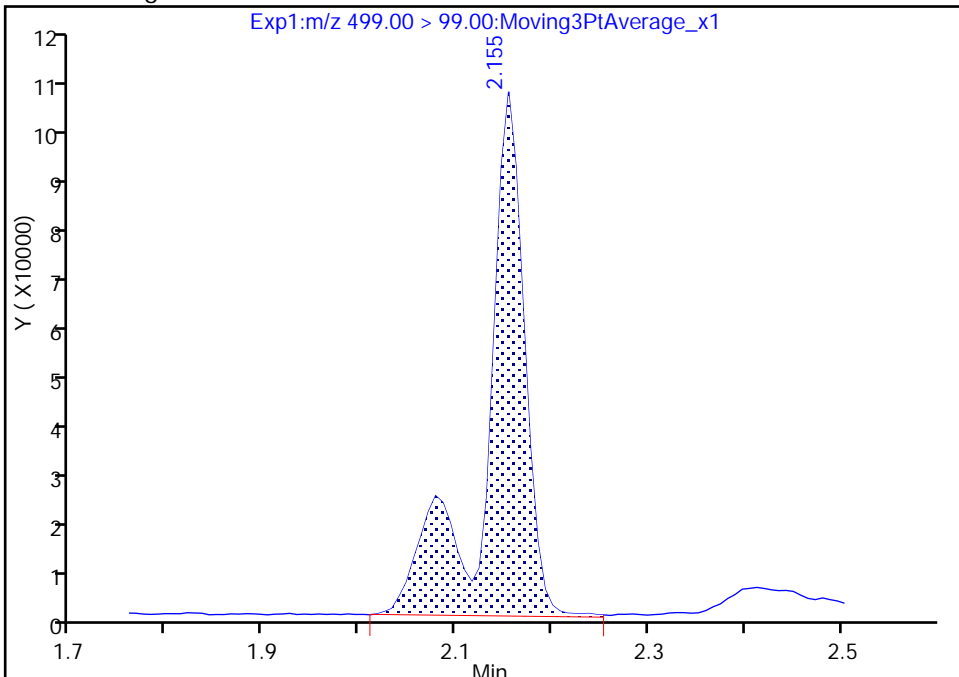
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 284466  
Amount: 8.645793  
Amount Units: ng/ml



TestAmerica Sacramento

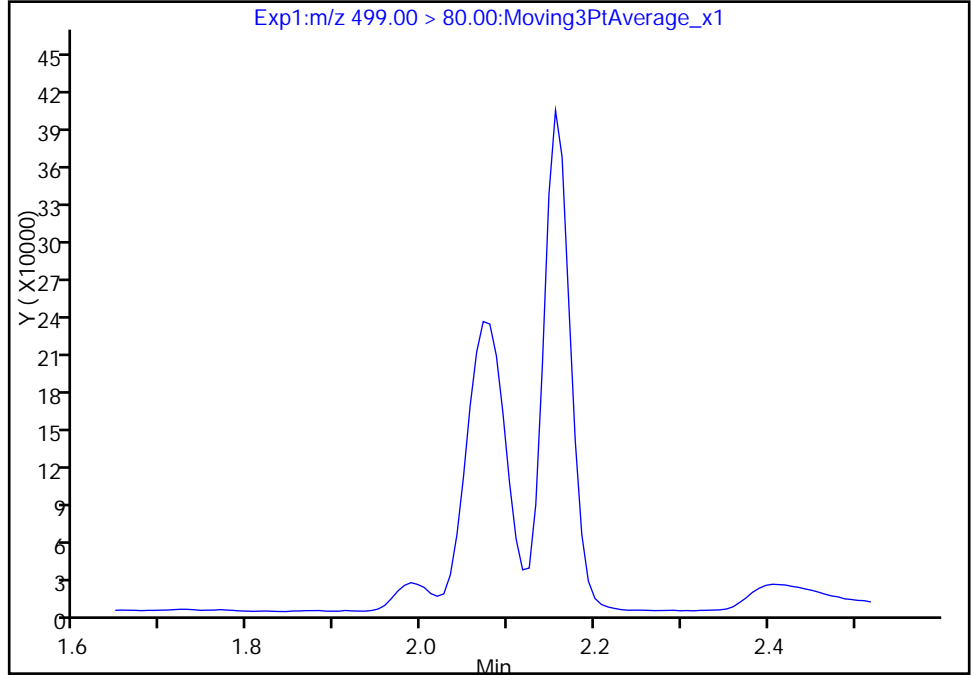
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.014.d  
Injection Date: 16-Oct-2017 12:21:13 Instrument ID: A8\_N  
Lims ID: 320-31889-A-1-A Lab Sample ID: 320-31889-1  
Client ID: NAWC-092617-RW-256  
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 6  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

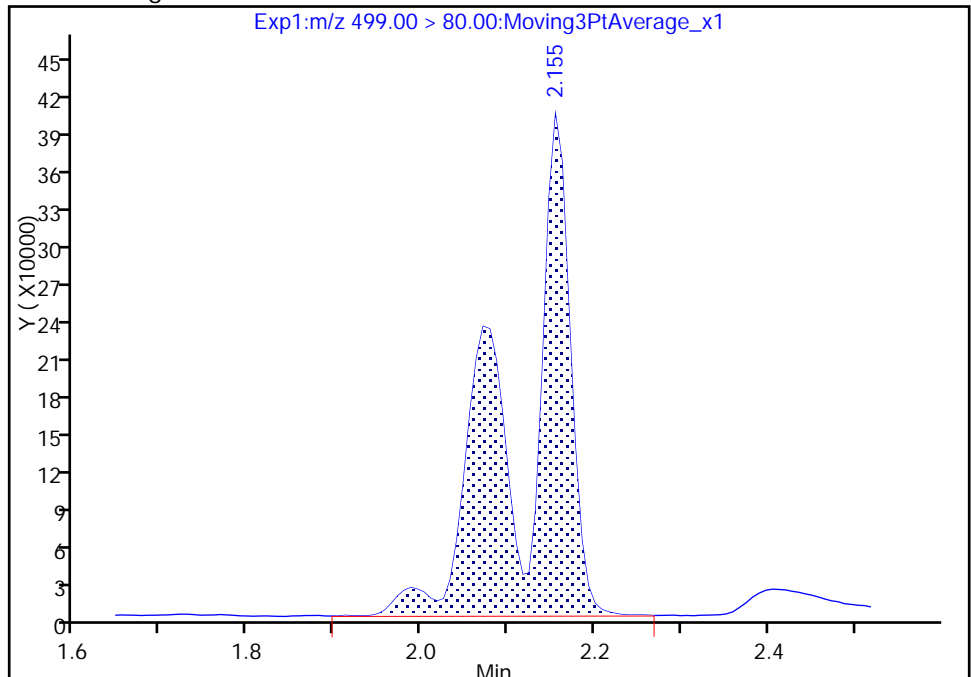
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 1658558  
Amount: 8.645793  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:13:28

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

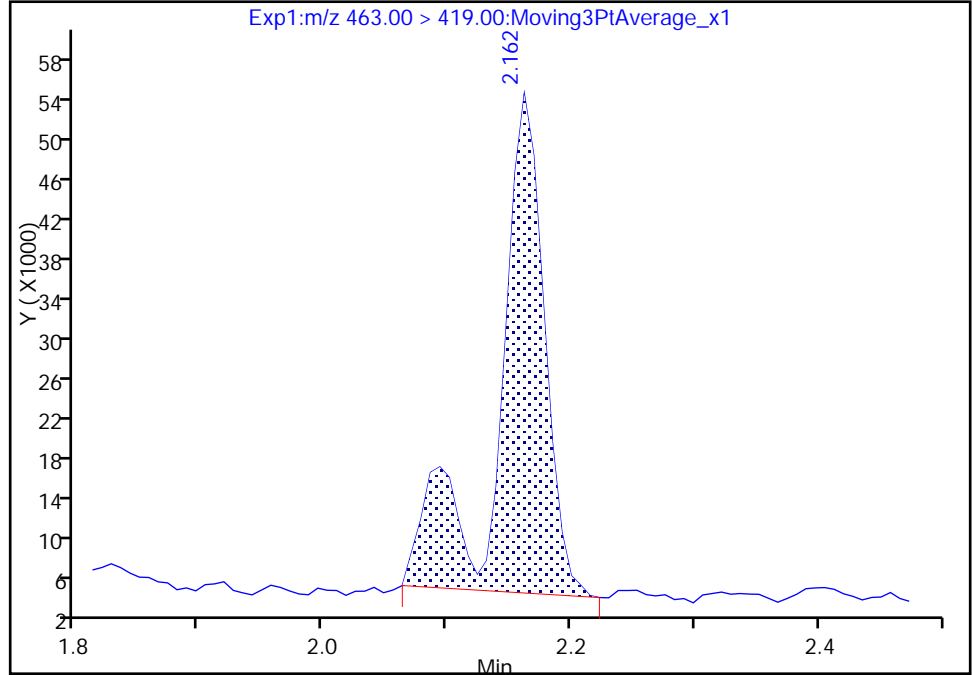
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.014.d  
Injection Date: 16-Oct-2017 12:21:13 Instrument ID: A8\_N  
Lims ID: 320-31889-A-1-A Lab Sample ID: 320-31889-1  
Client ID: NAWC-092617-RW-256  
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 6  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

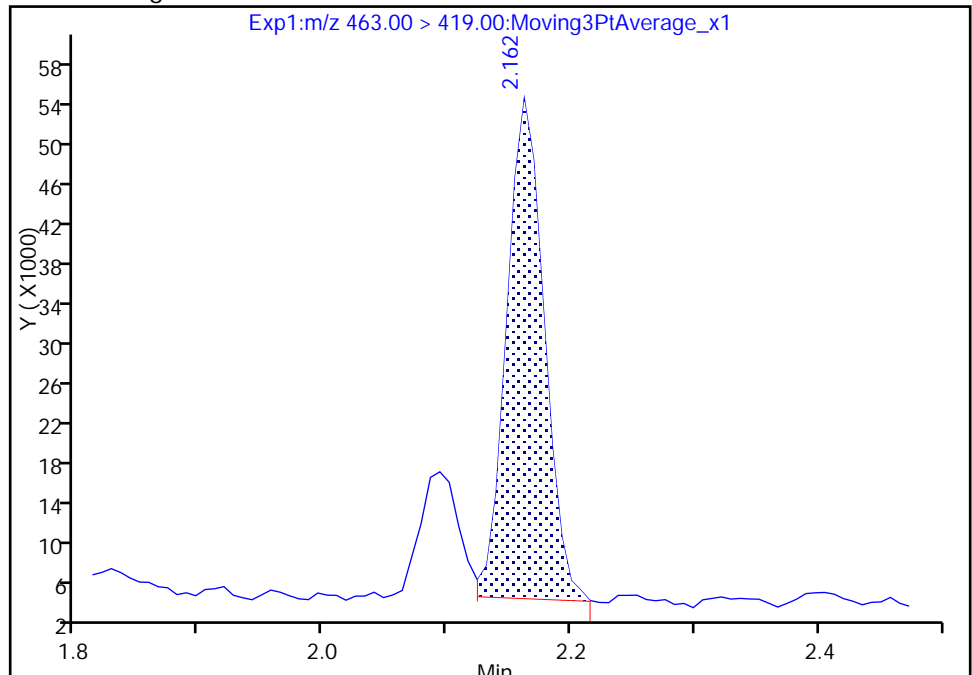
RT: 2.16  
Area: 128676  
Amount: 0.957741  
Amount Units: ng/ml

Processing Integration Results



RT: 2.16  
Area: 103825  
Amount: 0.772774  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:14:29  
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-256 Lab Sample ID: 320-31889-2  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.015.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 247.5 (mL) Date Analyzed: 10/16/2017 12:25  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.015.d  
 Lims ID: 320-31889-A-2-A  
 Client ID: NAWC-092617-FRB-256  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:25:56 ALS Bottle#: 41 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-2-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.555	1.524	0.031	1.000	2255167	8.10	7838	
* 6 13C2-PFOA	415.00 > 370.00	1.912	1.855	0.057		2375364	10.0	6631	
* 7 13C4 PFOS	503.00 > 80.00	2.155	2.108	0.047		6047439	28.7	5339	
\$ 10 13C2 PFDA	515.00 > 470.00	2.314	2.282	0.032	1.000	1204382	9.09	5535	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.015.d

Injection Date: 16-Oct-2017 12:25:56

Instrument ID: A8\_N

Lims ID: 320-31889-A-2-A

Lab Sample ID: 320-31889-2

Client ID: NAWC-092617-FRB-256

Operator ID: SACINSTLCMS01

ALS Bottle#: 41

Worklist Smp#: 7

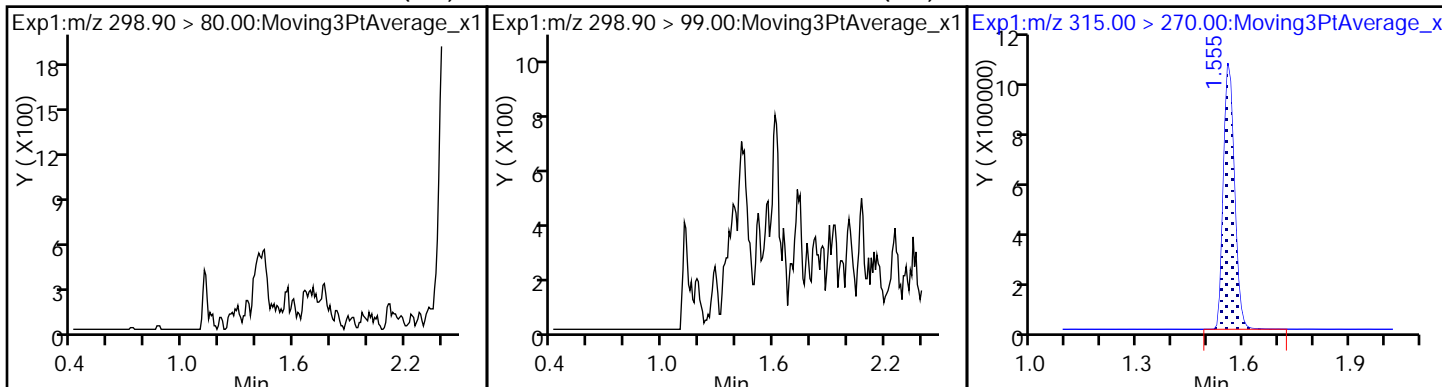
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

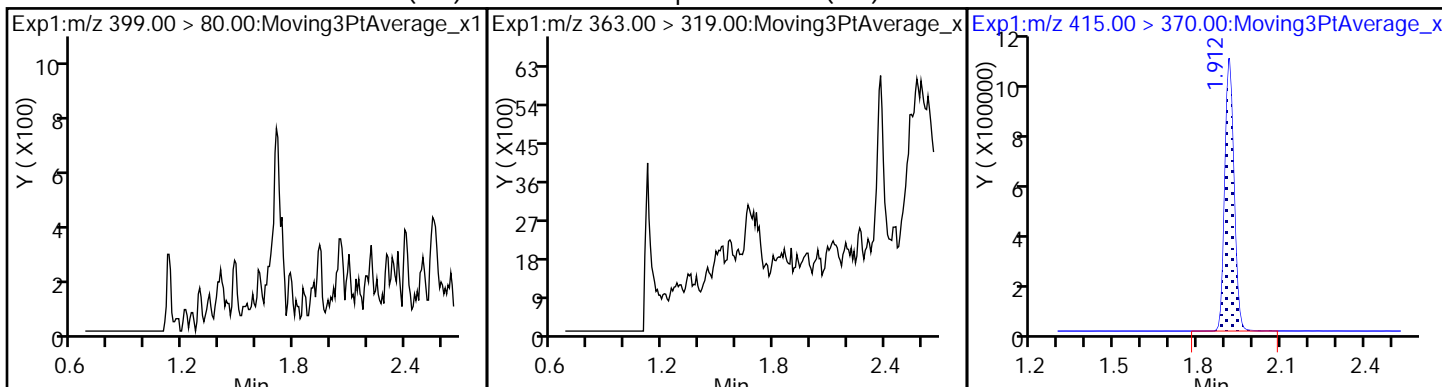
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

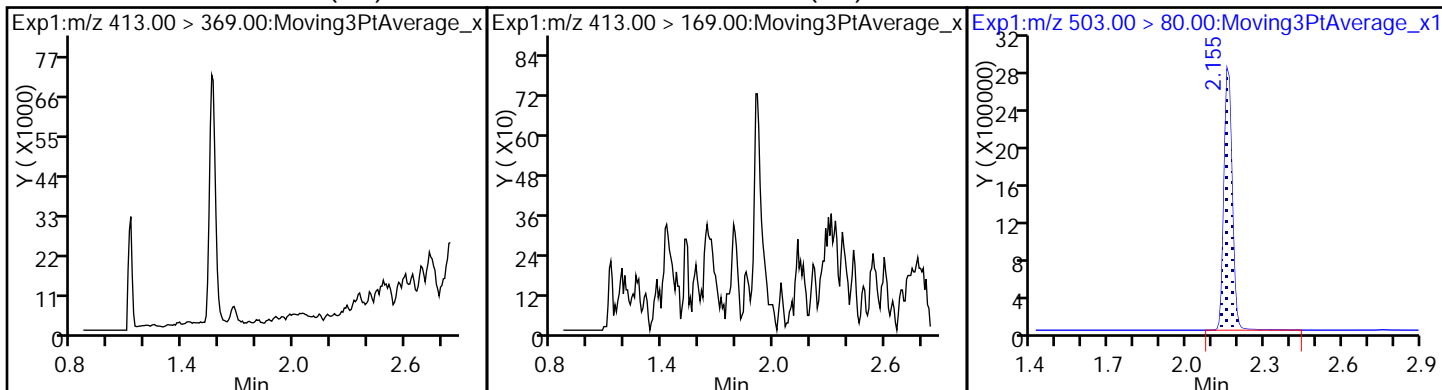
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



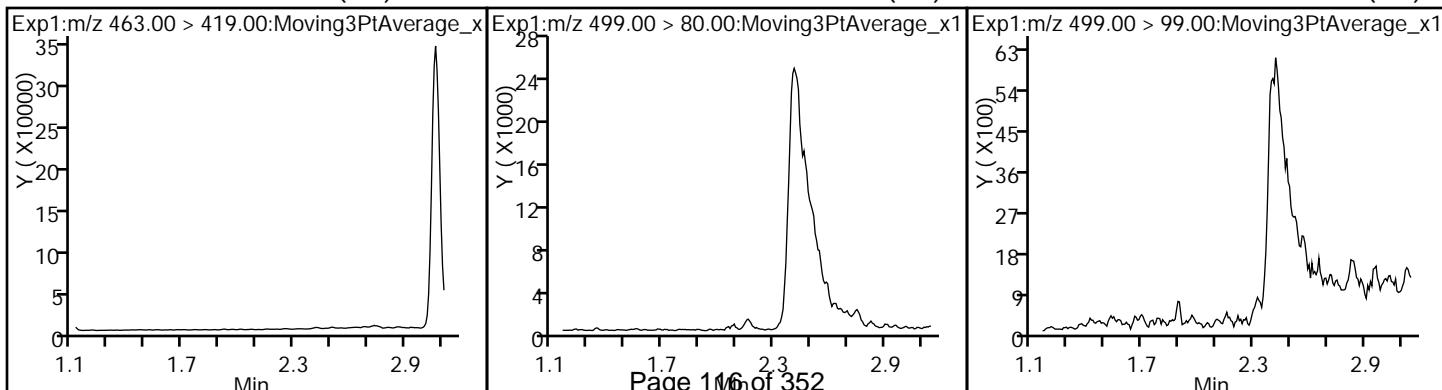
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) \* 6 13C2-PFOA



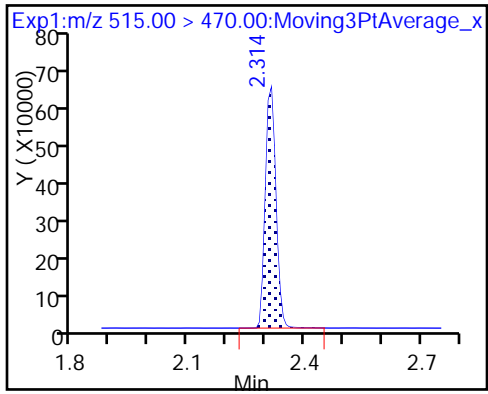
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) \* 7 13C4 PFOS



9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.015.d  
 Lims ID: 320-31889-A-2-A  
 Client ID: NAWC-092617-FRB-256  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:25:56 ALS Bottle#: 41 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-2-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.10	81.02
\$ 10 13C2 PFDA	10.0	9.09	90.90



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-354 Lab Sample ID: 320-31889-3  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.016.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:40  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 257.4 (mL) Date Analyzed: 10/16/2017 12:30  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	9.6	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.016.d  
 Lims ID: 320-31889-A-3-A  
 Client ID: NAWC-092617-RW-354  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:30:40 ALS Bottle#: 42 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-3-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:13:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.402	0.032	1.000	377038	1.57		94.7	
298.90 > 99.00	1.426	1.402	0.024	0.995	235882		1.60(0.00-0.00)	292	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.524	0.039	1.000	1963433	7.37		5775	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.715	1.668	0.047	1.000	68301	0.2100		11.4	M
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.715	1.668	0.047	1.000	263779	1.23		27.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.855	0.057		2272516	10.0		5661	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.856	0.056	1.000	518493	2.48		15.5	
413.00 > 169.00	1.912	1.856	0.056	1.000	313205		1.66(0.00-0.00)	673	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.108	0.054		5692781	28.7		1773	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.116	0.054	1.000	86908	0.6150		3.4	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.155	0.007	1.000	245481	1.33		21.8	M
499.00 > 99.00	2.162	2.155	0.007	1.000	40499		6.06(0.00-0.00)	13.5	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.282	0.032	1.000	1134365	8.95		5977	

## QC Flag Legend

### Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.016.d

Injection Date: 16-Oct-2017 12:30:40

Instrument ID: A8\_N

Lims ID: 320-31889-A-3-A

Lab Sample ID: 320-31889-3

Client ID: NAWC-092617-RW-354

Operator ID: SACINSTLCMS01

ALS Bottle#: 42

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

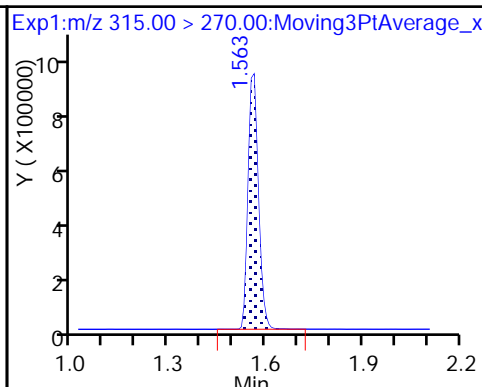
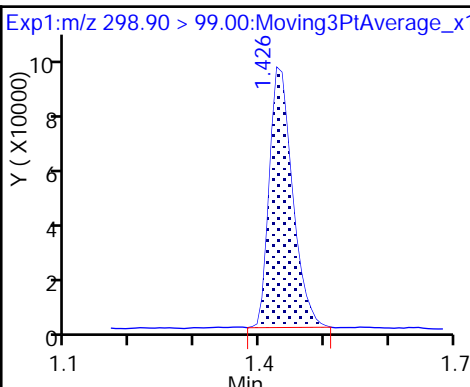
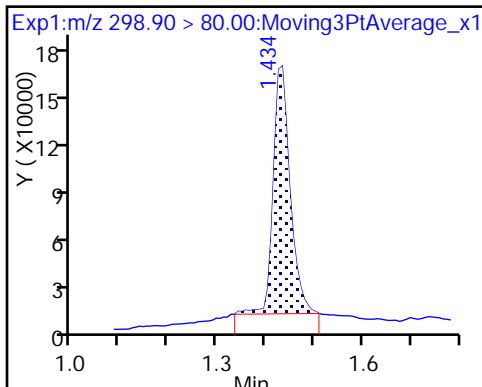
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

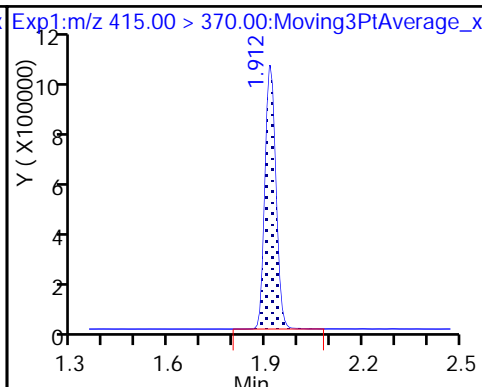
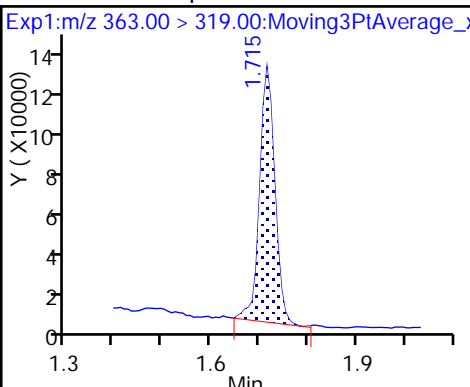
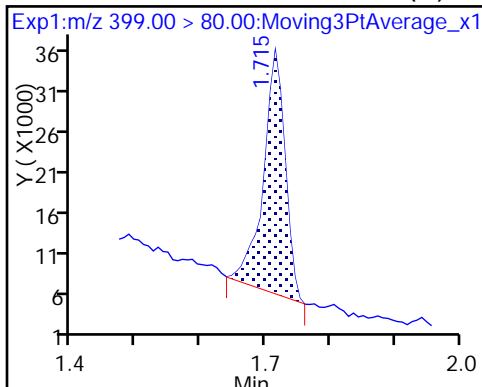
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (M)

4 Perfluoroheptanoic acid

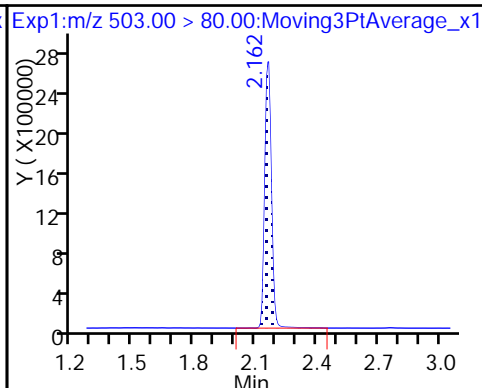
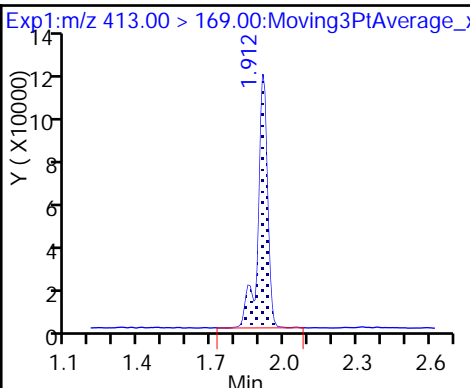
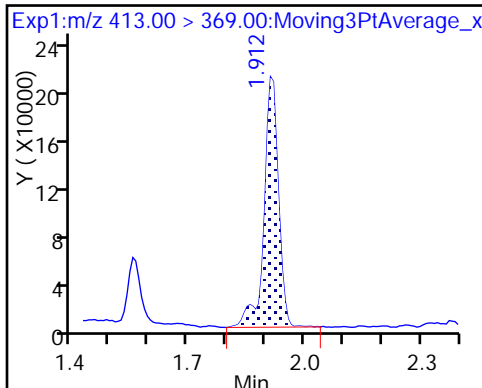
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

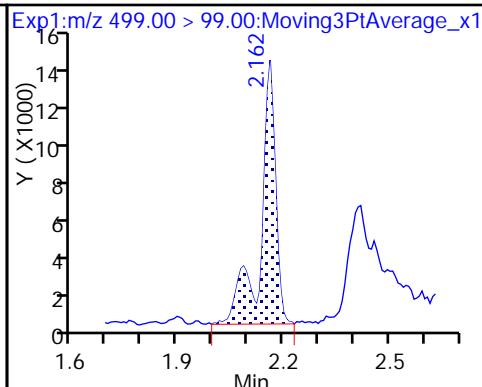
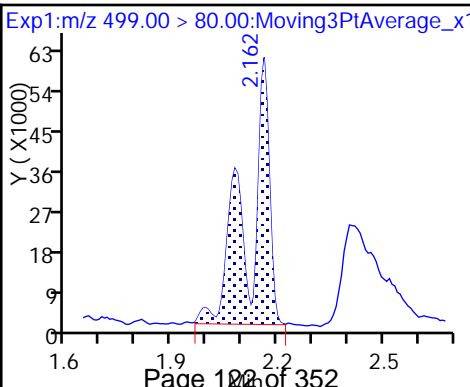
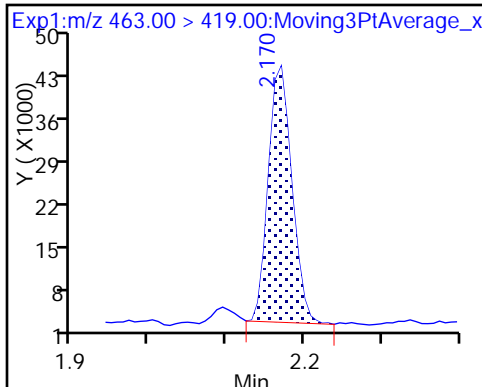
\* 7 13C4 PFOS



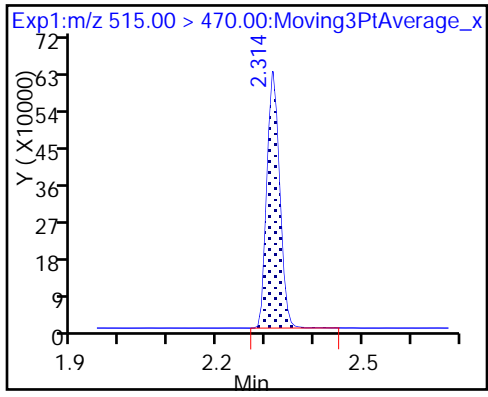
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.016.d  
 Lims ID: 320-31889-A-3-A  
 Client ID: NAWC-092617-RW-354  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:30:40 ALS Bottle#: 42 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-3-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:13:58

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.37	73.73
\$ 10 13C2 PFDA	10.0	8.95	89.49

TestAmerica Sacramento

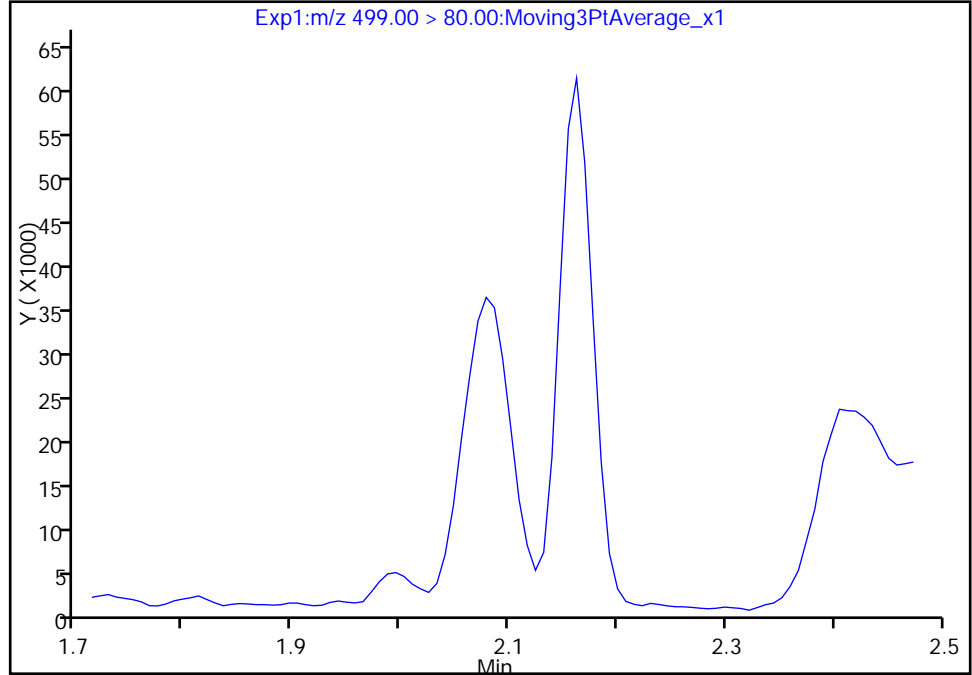
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Injection Date: 16-Oct-2017 12:30:40 Instrument ID: A8\_N  
Lims ID: 320-31889-A-3-A Lab Sample ID: 320-31889-3  
Client ID: NAWC-092617-RW-354  
Operator ID: SACINSTLCMS01 ALS Bottle#: 42 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

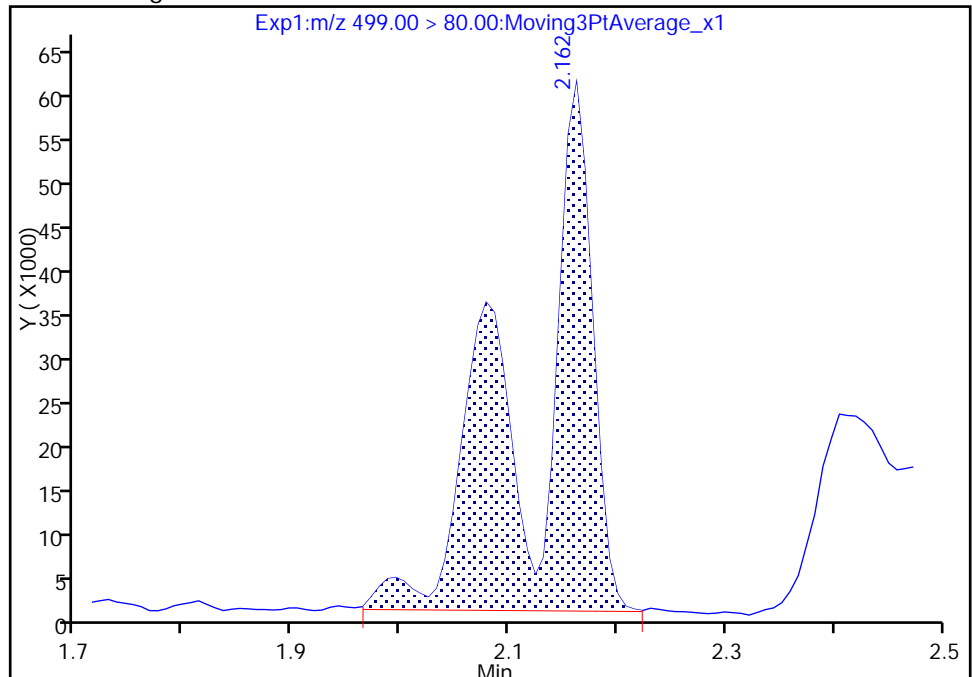
Not Detected  
Expected RT: 2.15

Processing Integration Results



RT: 2.16  
Area: 245481  
Amount: 1.327383  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:15:07  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

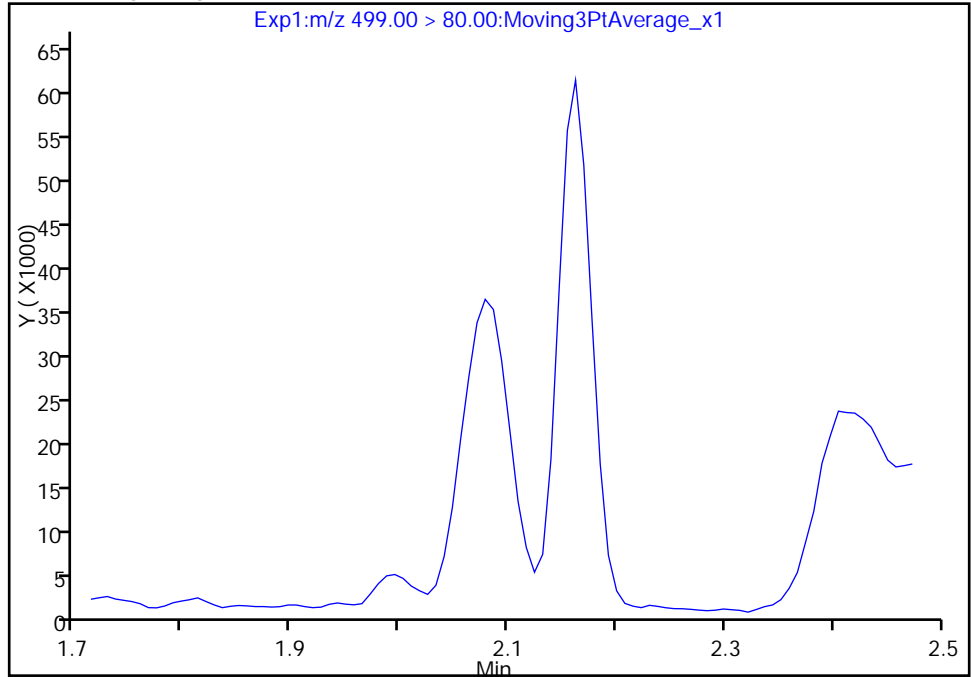
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.016.d  
Injection Date: 16-Oct-2017 12:30:40 Instrument ID: A8\_N  
Lims ID: 320-31889-A-3-A Lab Sample ID: 320-31889-3  
Client ID: NAWC-092617-RW-354  
Operator ID: SACINSTLCMS01 ALS Bottle#: 42 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

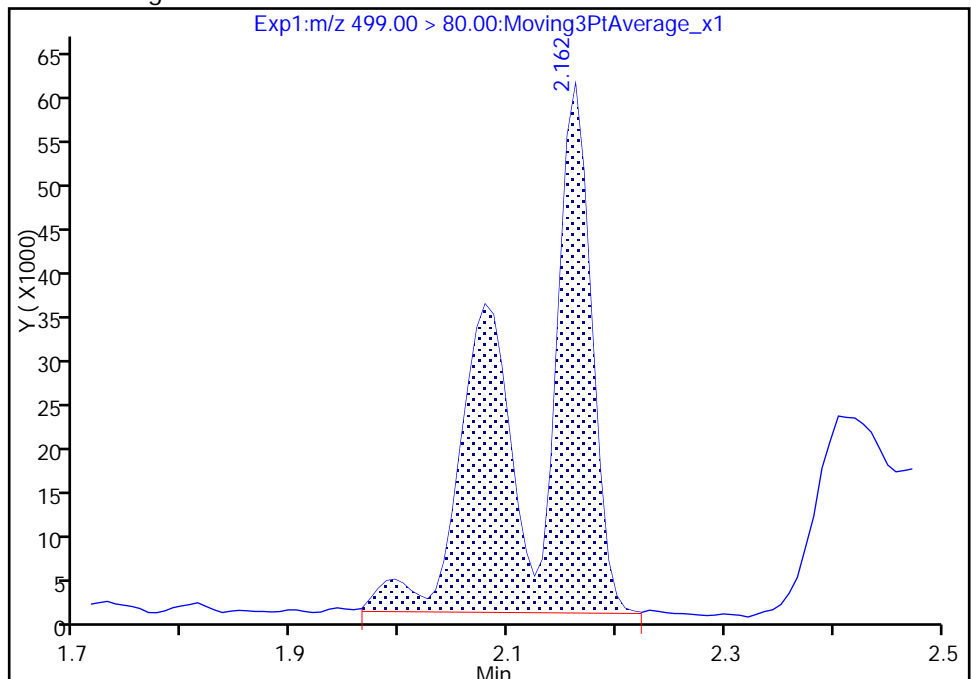
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 245481  
Amount: 1.327383  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:15:17

Audit Action: Manually Integrated

Audit Reason: Missed Peak



TestAmerica Sacramento

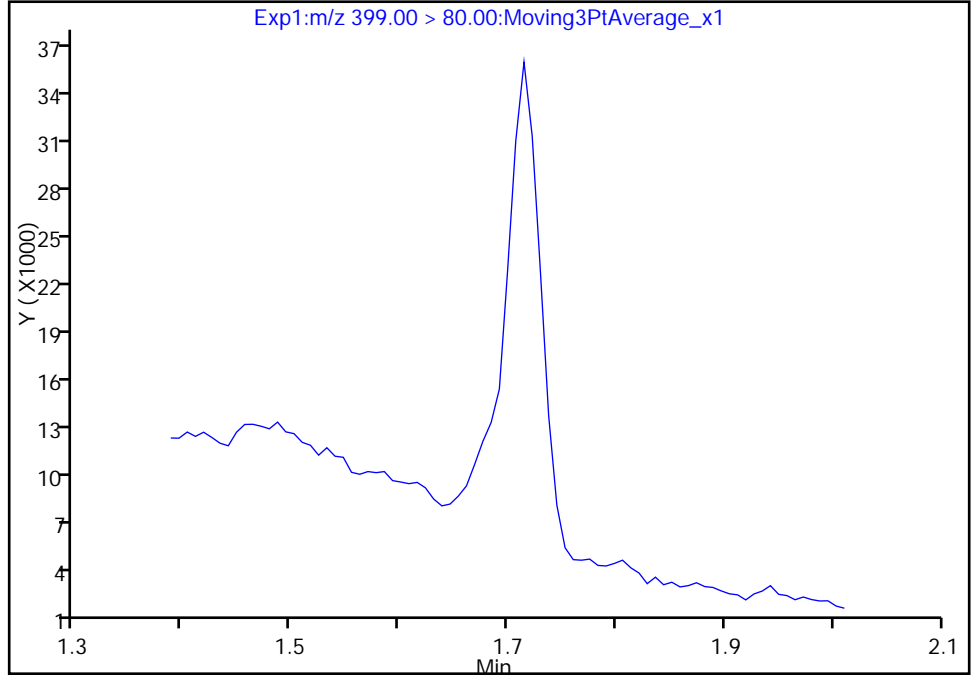
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.016.d  
Injection Date: 16-Oct-2017 12:30:40 Instrument ID: A8\_N  
Lims ID: 320-31889-A-3-A Lab Sample ID: 320-31889-3  
Client ID: NAWC-092617-RW-354  
Operator ID: SACINSTLCMS01 ALS Bottle#: 42 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

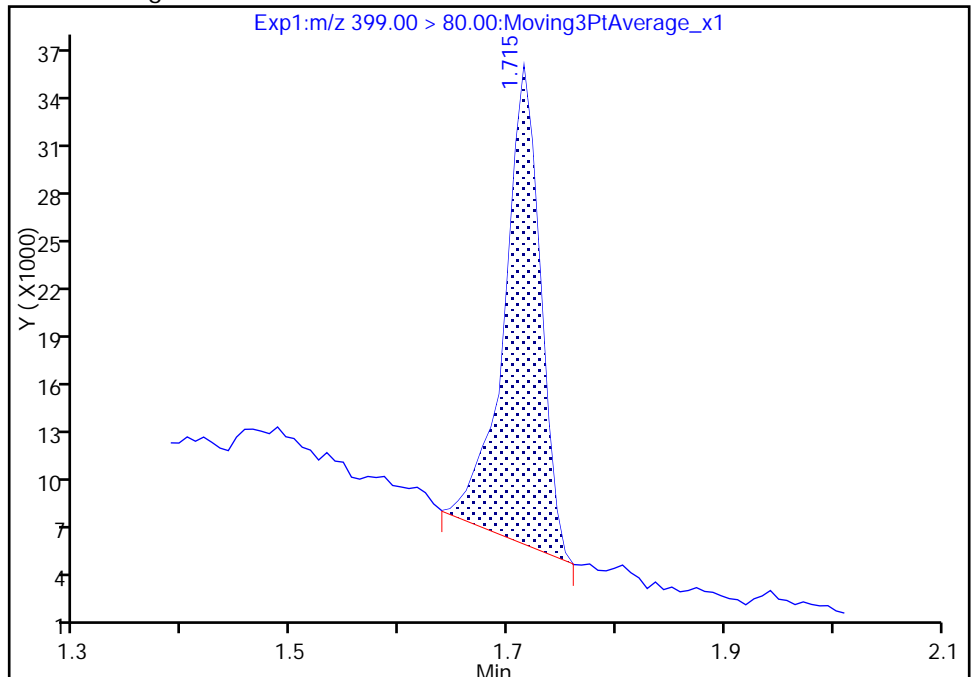
Not Detected  
Expected RT: 1.67

Processing Integration Results



Manual Integration Results

RT: 1.71  
Area: 68301  
Amount: 0.210045  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:14:54  
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-354 Lab Sample ID: 320-31889-4  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.017.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:35  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 259.5 (mL) Date Analyzed: 10/16/2017 12:35  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.017.d  
 Lims ID: 320-31889-A-4-A  
 Client ID: NAWC-092617-FRB-354  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:35:24 ALS Bottle#: 43 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-4-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

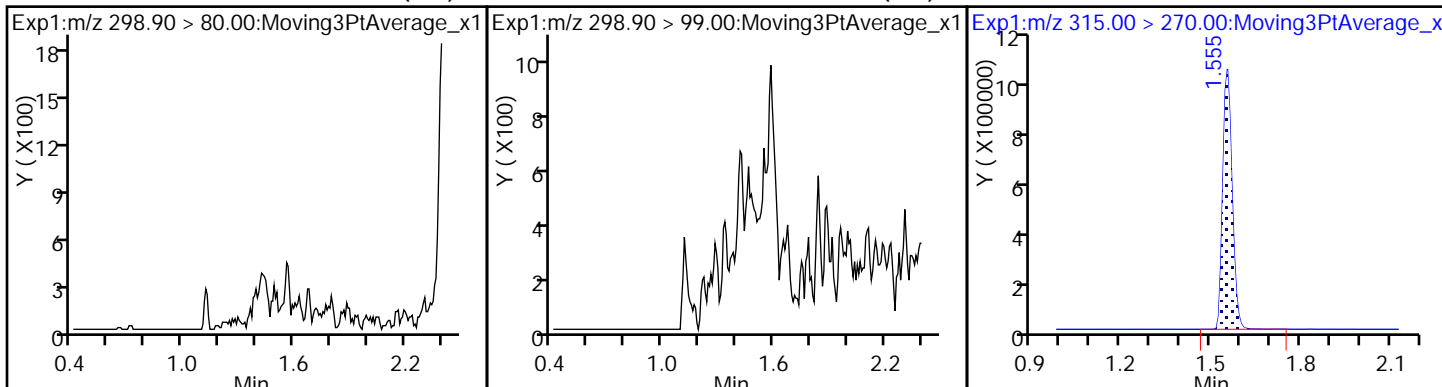
Column 1 : Det: EXP1  
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.555	1.524	0.031	1.000	2123617	8.44	7980	
* 6 13C2-PFOA	415.00 > 370.00	1.904	1.855	0.049		2147572	10.0	6690	
* 7 13C4 PFOS	503.00 > 80.00	2.155	2.108	0.047		5500677	28.7	5152	
\$ 10 13C2 PFDA	515.00 > 470.00	2.306	2.282	0.024	1.000	1105204	9.23	5691	

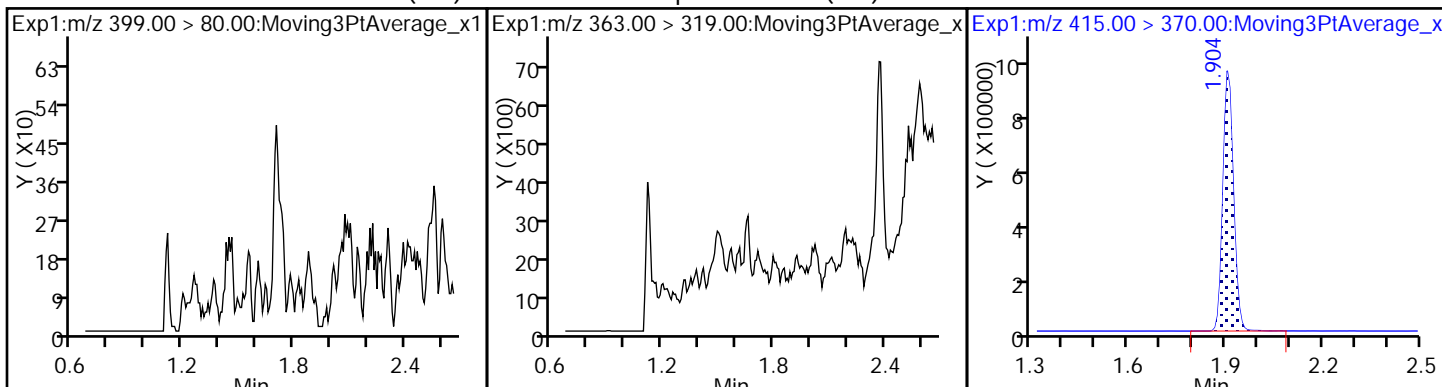
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.017.d  
Injection Date: 16-Oct-2017 12:35:24 Instrument ID: A8\_N  
Lims ID: 320-31889-A-4-A Lab Sample ID: 320-31889-4  
Client ID: NAWC-092617-FRB-354  
Operator ID: SACINSTLCMS01 ALS Bottle#: 43 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL

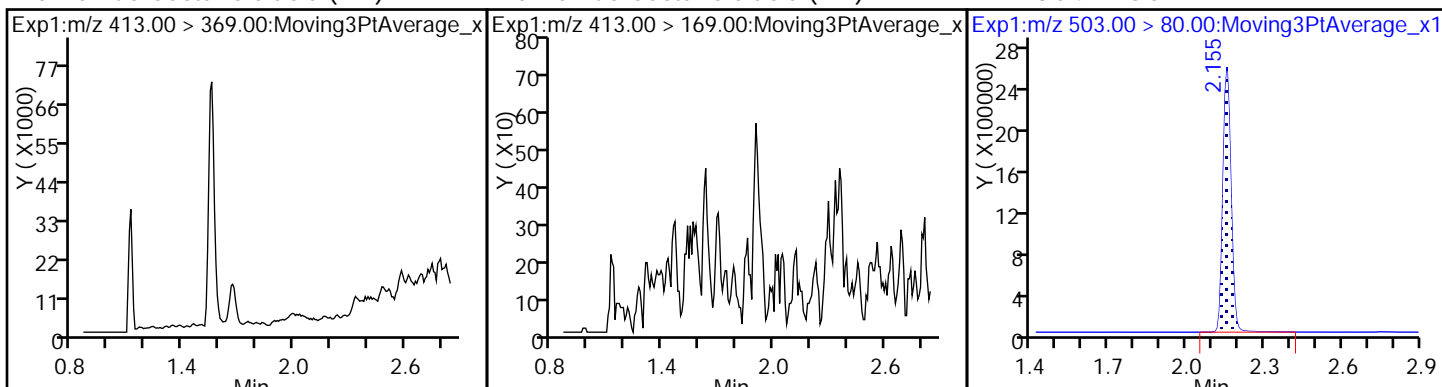
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



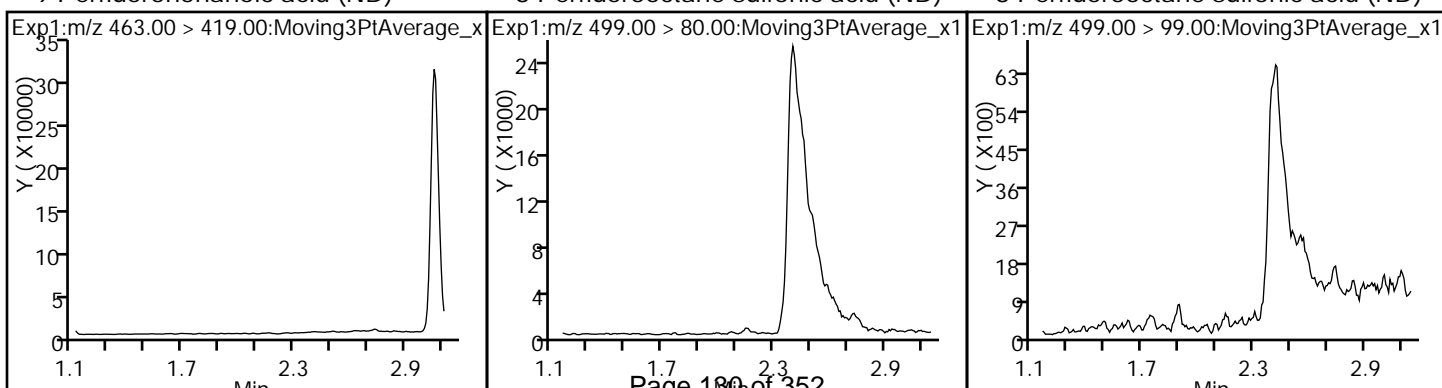
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) \* 6 13C2-PFOA



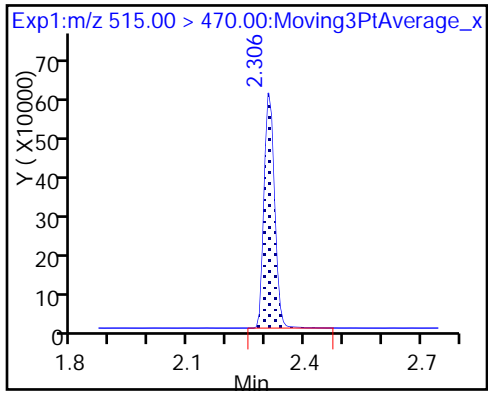
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) \* 7 13C4 PFOS



9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.017.d  
 Lims ID: 320-31889-A-4-A  
 Client ID: NAWC-092617-FRB-354  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:35:24 ALS Bottle#: 43 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-4-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.44	84.39
\$ 10 13C2 PFDA	10.0	9.23	92.27

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-4784 Lab Sample ID: 320-31889-5  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.018.d  
 Analysis Method: 537 Date Collected: 09/26/2017 11:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 251.2 (mL) Date Analyzed: 10/16/2017 12:40  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	J	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	70		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.018.d  
 Lims ID: 320-31889-A-5-A  
 Client ID: NAWC-092617-RW-4784  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:40:08 ALS Bottle#: 44 Worklist Smp#: 10  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-5-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:16:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	135144	0.5069		84.5	
298.90 > 99.00	1.426	1.402	0.024	1.000	89618		1.51(0.00-0.00)	134	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.555	1.524	0.031	1.000	2132057	6.97		6992	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.715	1.668	0.047	1.000	524466	1.45		152	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.715	1.668	0.047	1.000	229885	0.9351		25.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.855	0.057		2610475	10.0		6341	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.856	0.056	1.000	809638	3.37		26.0	
413.00 > 169.00	1.912	1.856	0.056	1.000	500382		1.62(0.00-0.00)	956	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.108	0.047		6311970	28.7		2955	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.155	0.0	1.000	712619	3.48		73.5	M
499.00 > 99.00	2.155	2.155	0.0	1.000	134373		5.30(0.00-0.00)	46.0	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.282	0.032	1.000	1215913	8.35		5983	



## QC Flag Legend

### Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.018.d

Injection Date: 16-Oct-2017 12:40:08

Instrument ID: A8\_N

Lims ID: 320-31889-A-5-A

Lab Sample ID: 320-31889-5

Client ID: NAWC-092617-RW-4784

Operator ID: SACINSTLCMS01

ALS Bottle#: 44

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

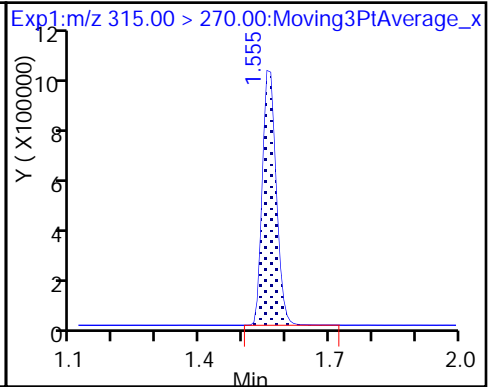
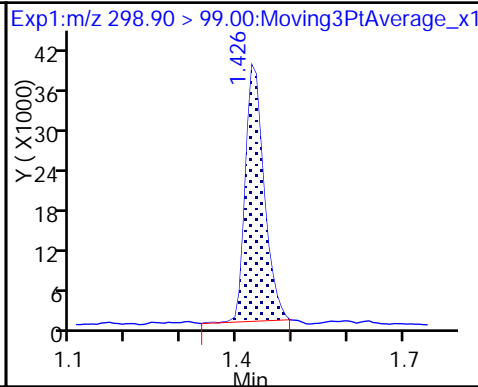
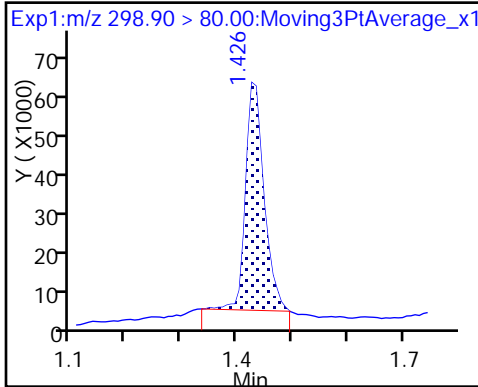
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

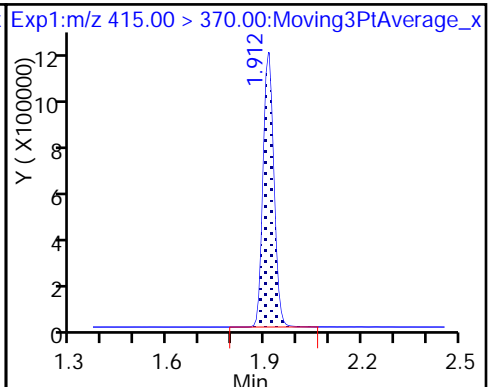
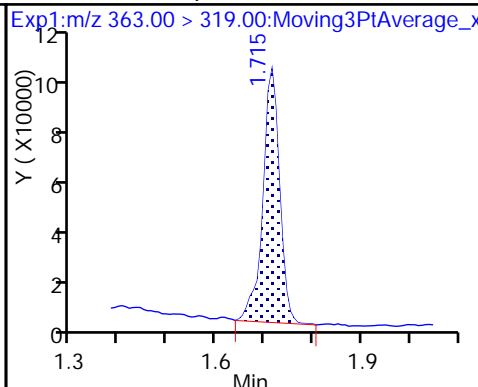
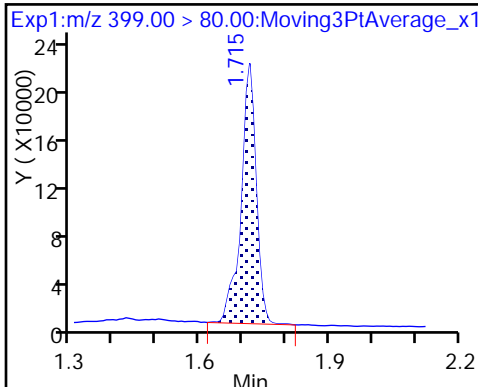
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

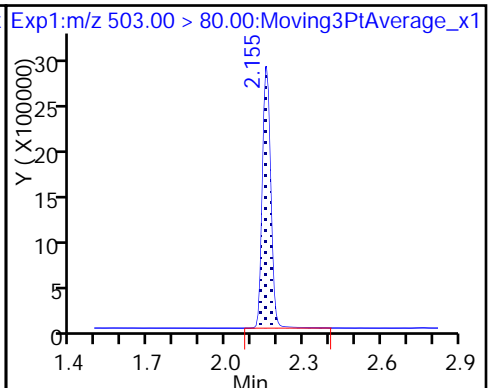
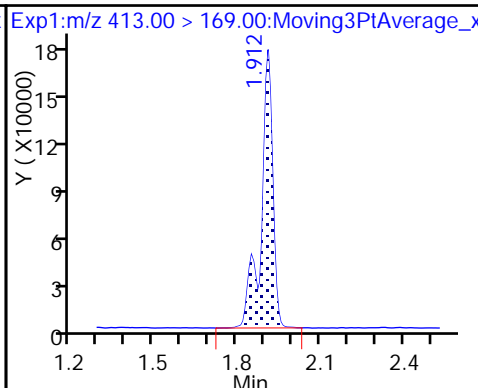
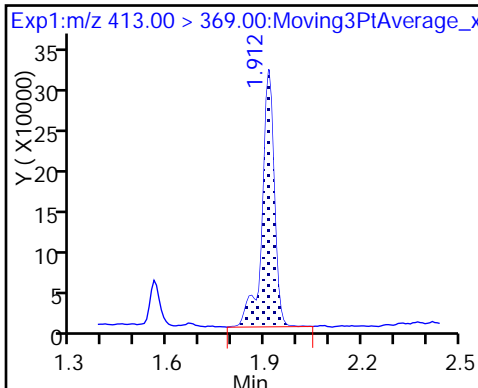
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

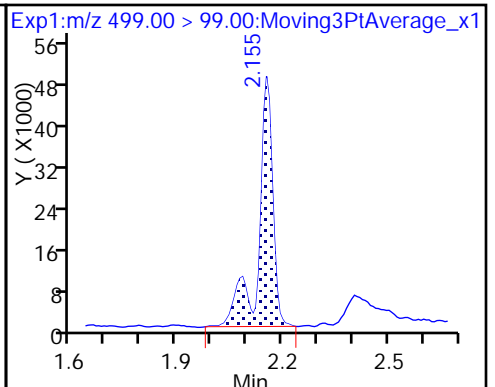
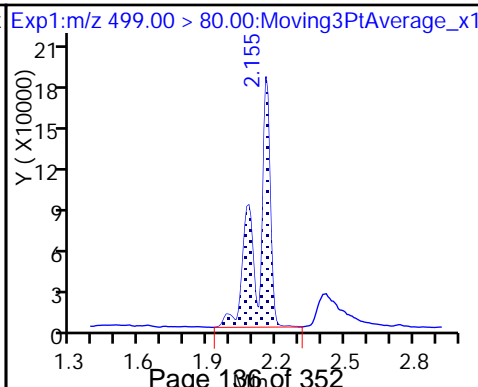
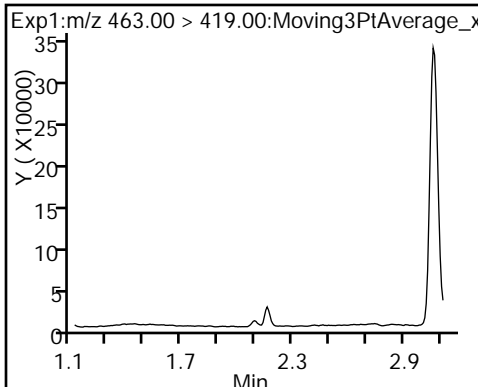
\* 7 13C4 PFOS



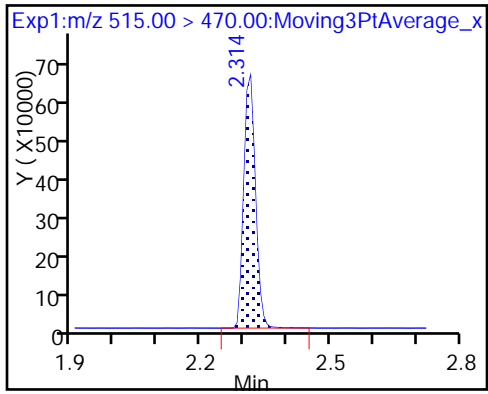
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.018.d  
 Lims ID: 320-31889-A-5-A  
 Client ID: NAWC-092617-RW-4784  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:40:08 ALS Bottle#: 44 Worklist Smp#: 10  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-5-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:16:16

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	6.97	69.70
\$ 10 13C2 PFDA	10.0	8.35	83.51

TestAmerica Sacramento

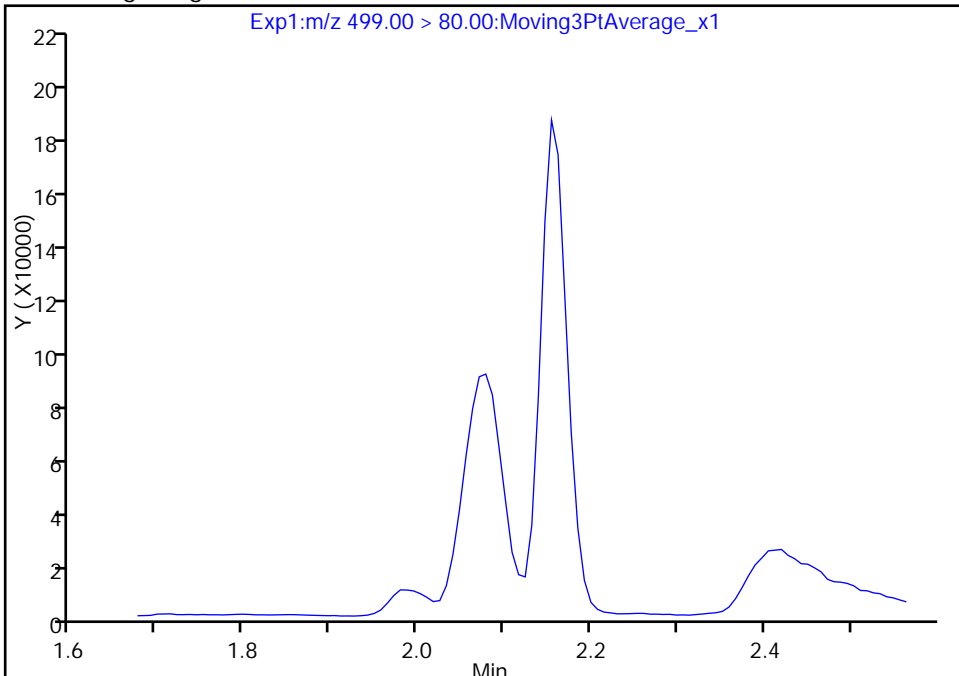
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Injection Date: 16-Oct-2017 12:40:08 Instrument ID: A8\_N  
Lims ID: 320-31889-A-5-A Lab Sample ID: 320-31889-5  
Client ID: NAWC-092617-RW-4784  
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 10  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

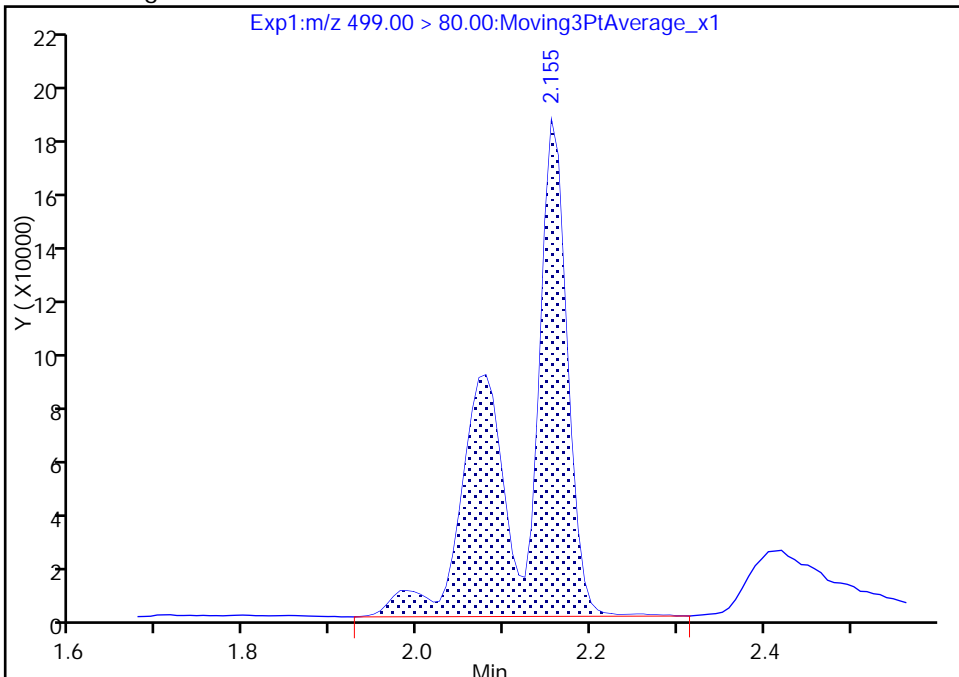
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 712619  
Amount: 3.475325  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:15:50  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

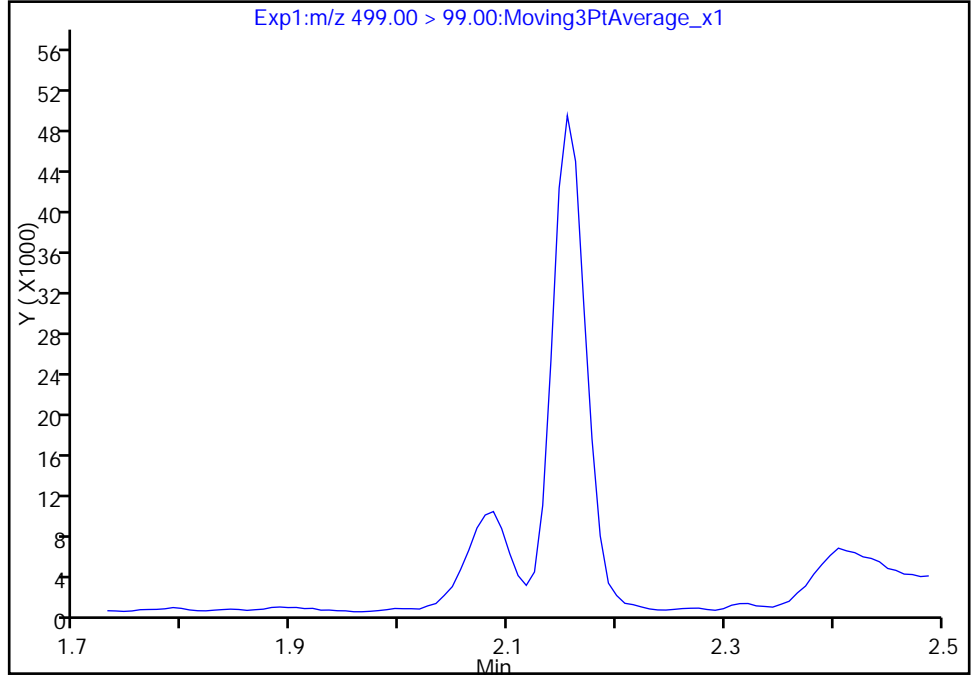
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.018.d  
Injection Date: 16-Oct-2017 12:40:08 Instrument ID: A8\_N  
Lims ID: 320-31889-A-5-A Lab Sample ID: 320-31889-5  
Client ID: NAWC-092617-RW-4784  
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 10  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

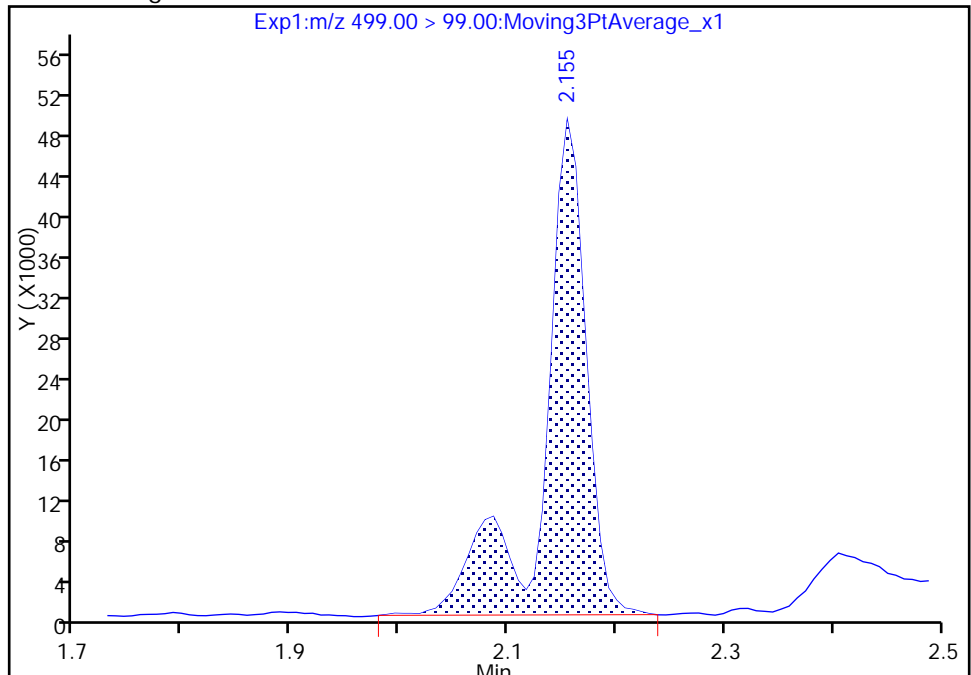
Not Detected  
Expected RT: 2.15

Processing Integration Results



RT: 2.15  
Area: 134373  
Amount: 3.475325  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:16:06

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.018.d

Injection Date: 16-Oct-2017 12:40:08

Instrument ID: A8\_N

Lims ID: 320-31889-A-5-A

Lab Sample ID: 320-31889-5

Client ID: NAWC-092617-RW-4784

Operator ID: SACINSTLCMS01

ALS Bottle#: 44 Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537\_A8\_N

Limit Group: LC 537 ICAL

Column:

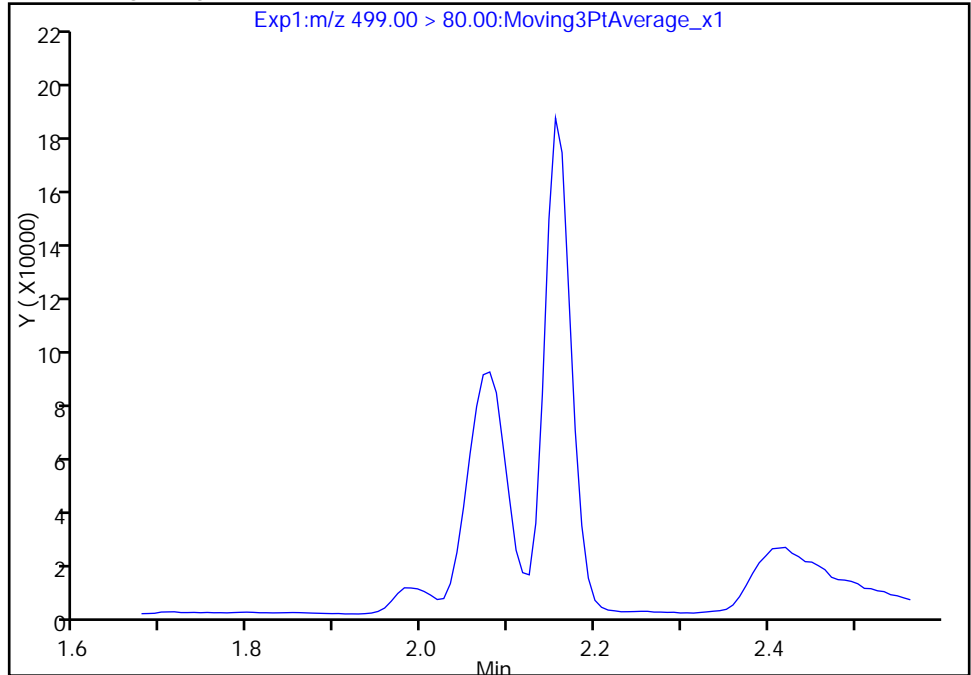
Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

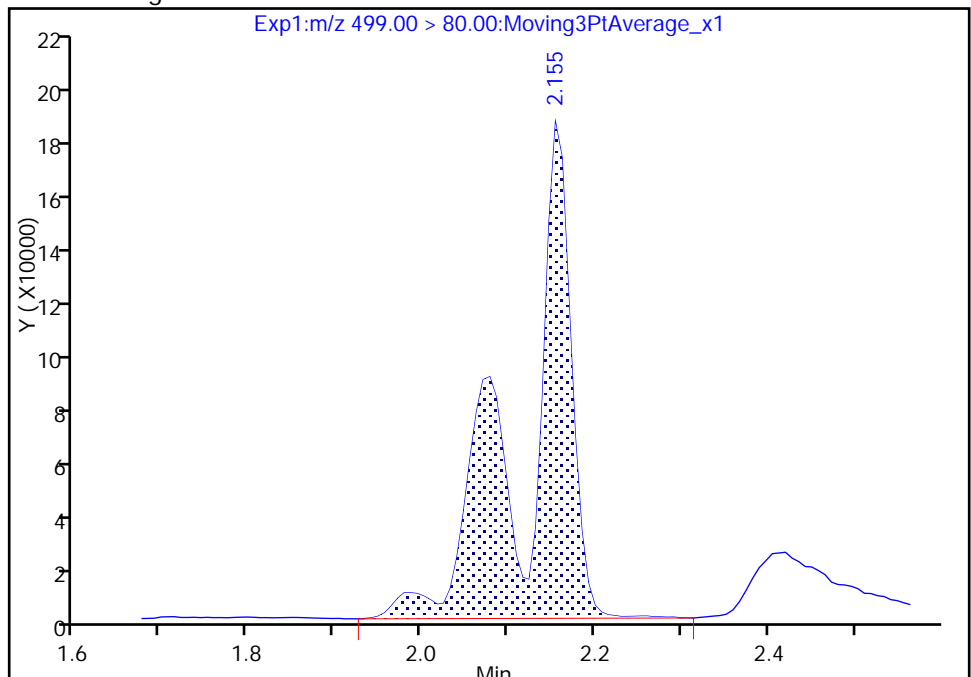
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 712619  
Amount: 3.475325  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:16:06

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-4784 Lab Sample ID: 320-31889-6  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.019.d  
 Analysis Method: 537 Date Collected: 09/26/2017 11:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 249.9(mL) Date Analyzed: 10/16/2017 12:44  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 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	82		70-130
STL00996	13C2 PFDA	92		70-130



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.019.d  
 Lims ID: 320-31889-A-6-A  
 Client ID: NAWC-092617-FRB-4784  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:44:52 ALS Bottle#: 45 Worklist Smp#: 11  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-6-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.555	1.524	0.031	1.000	2425461	8.18	6069	
* 6 13C2-PFOA	415.00 > 370.00	1.912	1.855	0.057		2531858	10.0	5540	
* 7 13C4 PFOS	503.00 > 80.00	2.155	2.108	0.047		6317956	28.7	5387	
\$ 10 13C2 PFDA	515.00 > 470.00	2.314	2.282	0.032	1.000	1299861	9.20	5741	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.019.d

Injection Date: 16-Oct-2017 12:44:52

Instrument ID: A8\_N

Lims ID: 320-31889-A-6-A

Lab Sample ID: 320-31889-6

Client ID: NAWC-092617-FRB-4784

Operator ID: SACINSTLCMS01

ALS Bottle#: 45

Worklist Smp#: 11

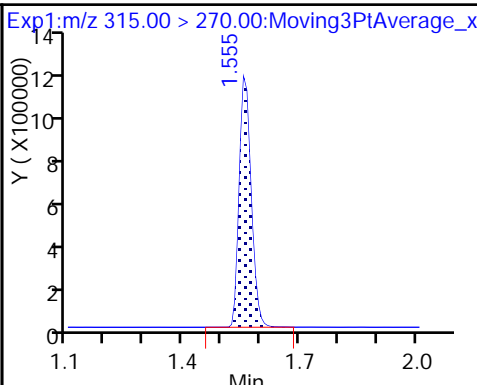
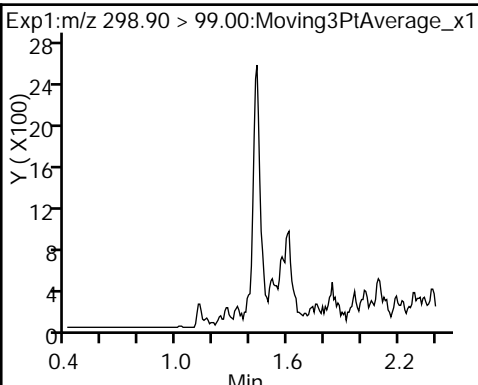
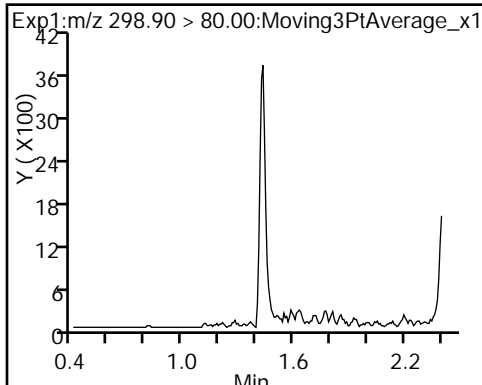
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

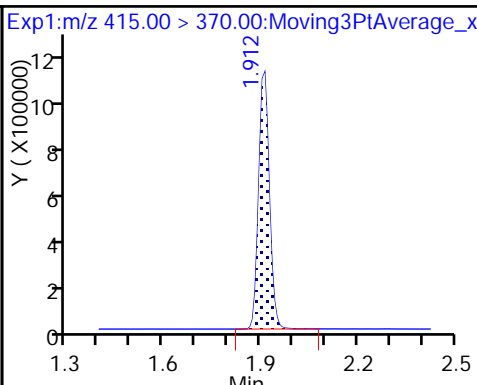
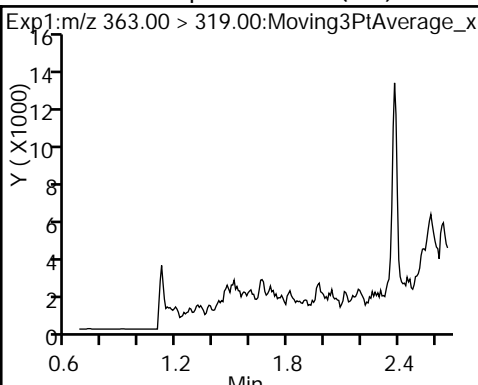
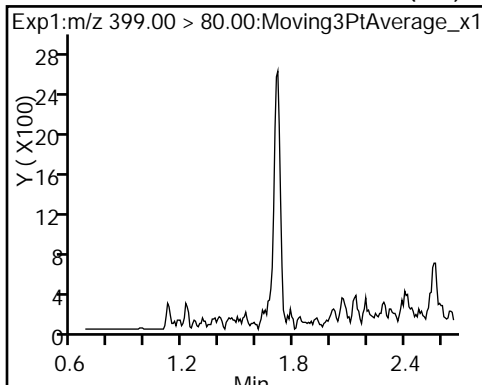
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

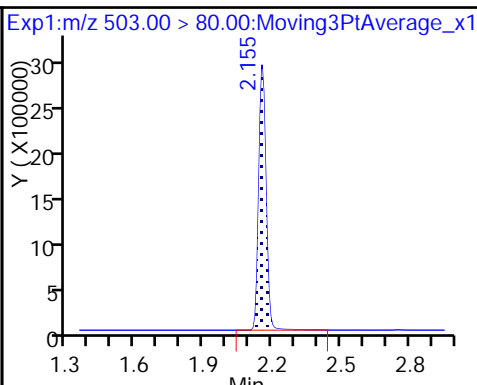
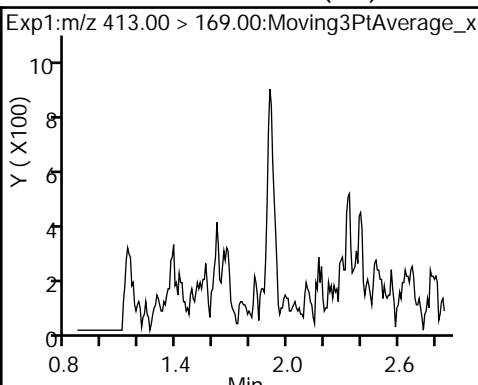
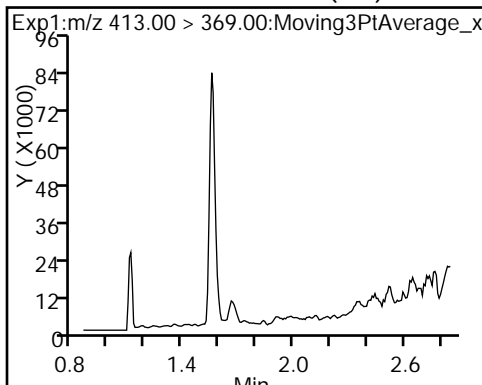
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



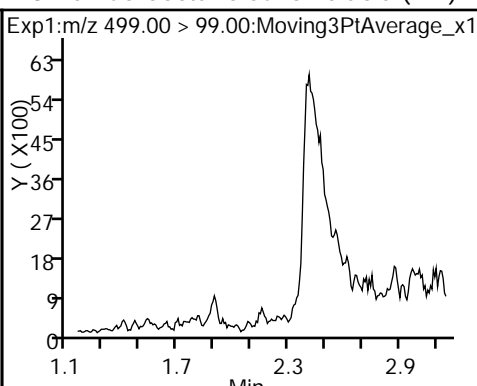
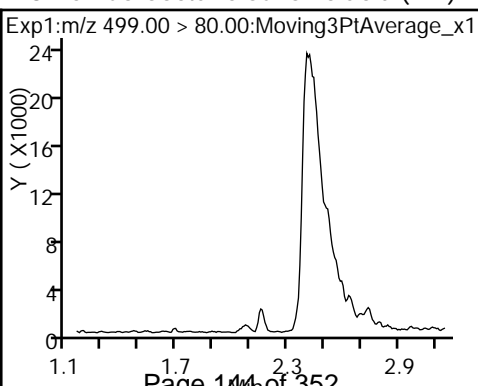
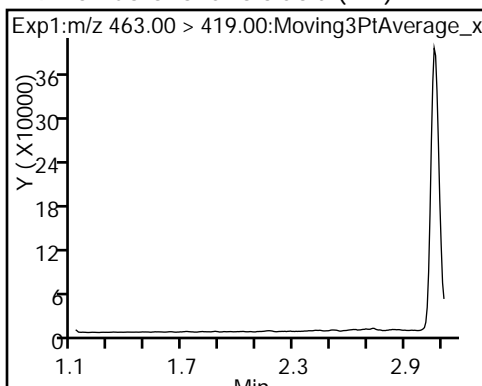
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) \* 6 13C2-PFOA



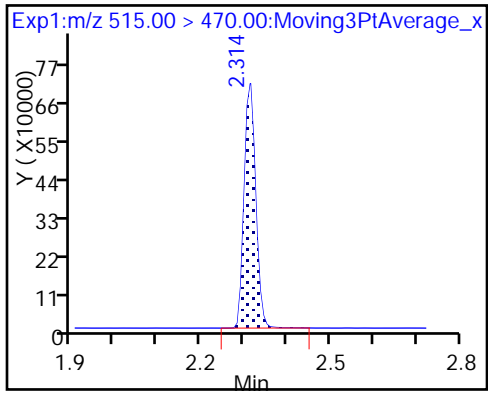
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) \* 7 13C4 PFOS



9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.019.d  
 Lims ID: 320-31889-A-6-A  
 Client ID: NAWC-092617-FRB-4784  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:44:52 ALS Bottle#: 45 Worklist Smp#: 11  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-6-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.18	81.76
\$ 10 13C2 PFDA	10.0	9.20	92.05

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-120 Lab Sample ID: 320-31889-7  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.020.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 244.9(mL) Date Analyzed: 10/16/2017 12:49  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	12	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.1	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	60	Q	70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.020.d  
 Lims ID: 320-31889-A-7-A  
 Client ID: NAWC-092617-RW-120  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:49:36 ALS Bottle#: 46 Worklist Smp#: 12  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-7-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:17:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	182914	0.6904		99.3	
298.90 > 99.00	1.426	1.402	0.024	1.000	123874		1.48(0.00-0.00)	188	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.555	1.524	0.031	1.000	1696510	5.96		4370	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.707	1.668	0.039	1.000	317792	0.8867		87.9	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.707	1.668	0.039	1.000	172617	0.7551		21.5	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.855	0.049		2427262	10.0		5804	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.904	1.856	0.048	1.000	663915	2.97		21.7	
413.00 > 169.00	1.904	1.856	0.048	1.000	401607		1.65(0.00-0.00)	740	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.108	0.047		6274247	28.7		2478	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.116	0.046	1.000	63364	0.4198		2.2	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.155	0.0	1.000	999745	4.90		94.2	M
499.00 > 99.00	2.155	2.155	0.0	1.000	176331		5.67(0.00-0.00)	54.4	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.282	0.024	1.000	1210095	8.94		5430	

## QC Flag Legend

### Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.020.d

Injection Date: 16-Oct-2017 12:49:36

Instrument ID: A8\_N

Lims ID: 320-31889-A-7-A

Lab Sample ID: 320-31889-7

Client ID: NAWC-092617-RW-120

Operator ID: SACINSTLCMS01

ALS Bottle#: 46

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

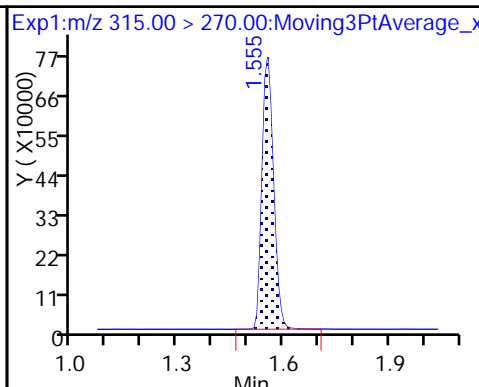
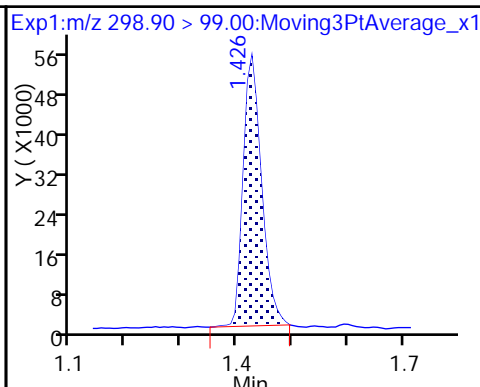
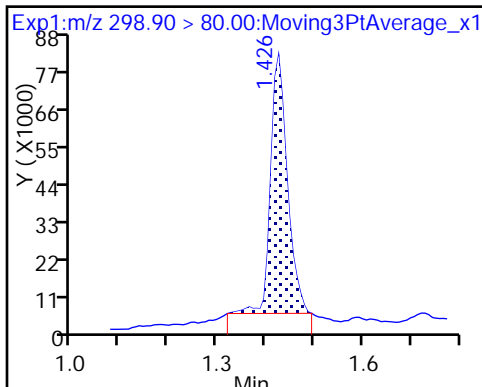
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

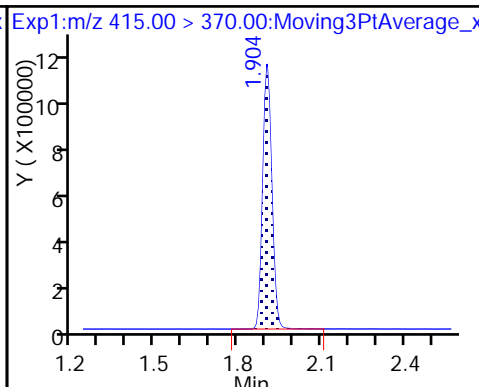
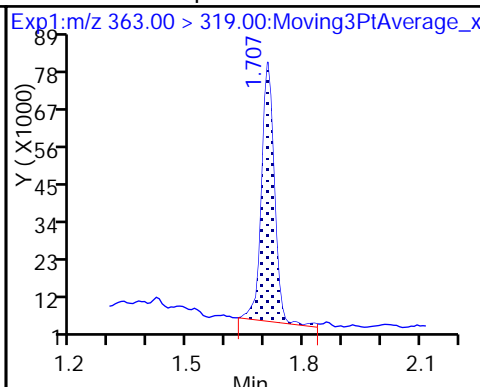
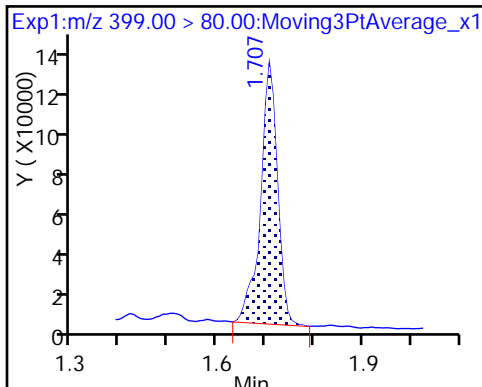
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

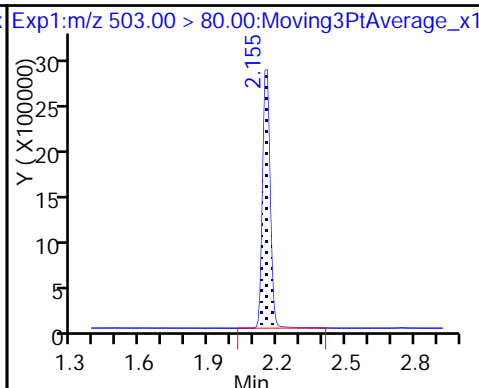
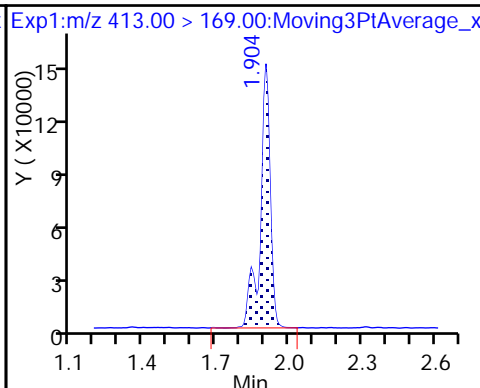
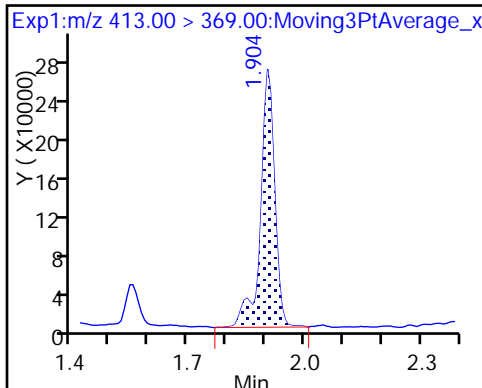
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

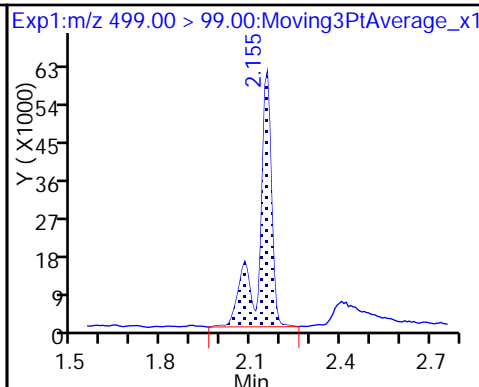
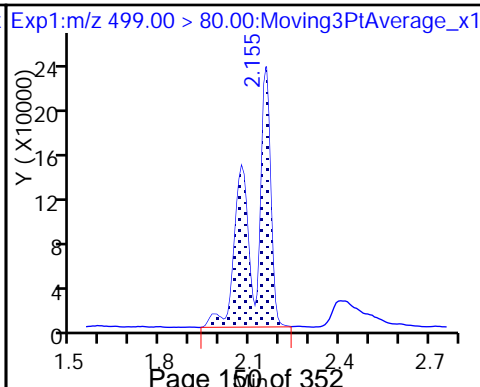
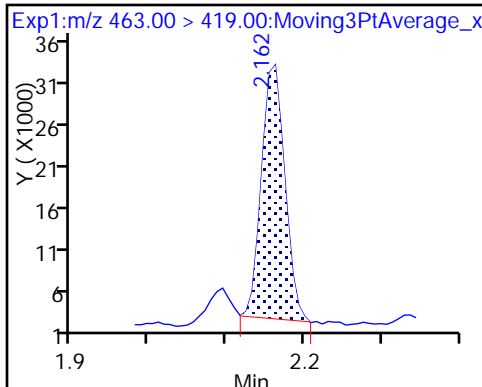
\* 7 13C4 PFOS



9 Perfluorononanoic acid (M)

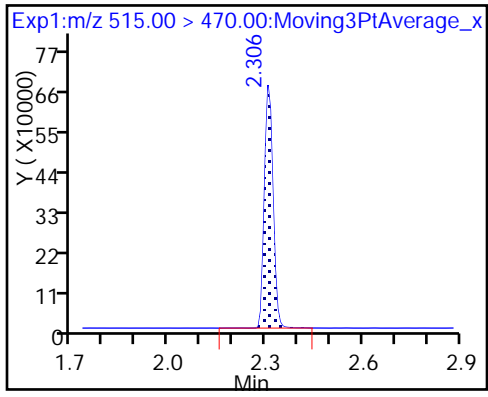
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid





\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.020.d  
 Lims ID: 320-31889-A-7-A  
 Client ID: NAWC-092617-RW-120  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 12:49:36 ALS Bottle#: 46 Worklist Smp#: 12  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-7-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:17:22

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	5.96	59.65
\$ 10 13C2 PFDA	10.0	8.94	89.38

TestAmerica Sacramento

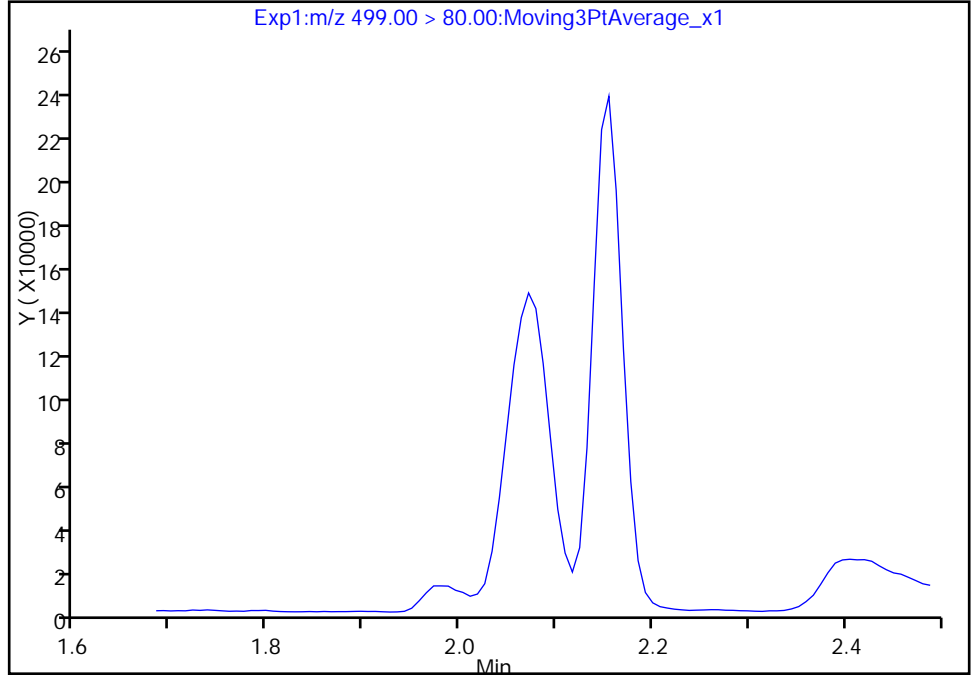
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Injection Date: 16-Oct-2017 12:49:36 Instrument ID: A8\_N  
Lims ID: 320-31889-A-7-A Lab Sample ID: 320-31889-7  
Client ID: NAWC-092617-RW-120  
Operator ID: SACINSTLCMS01 ALS Bottle#: 46 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

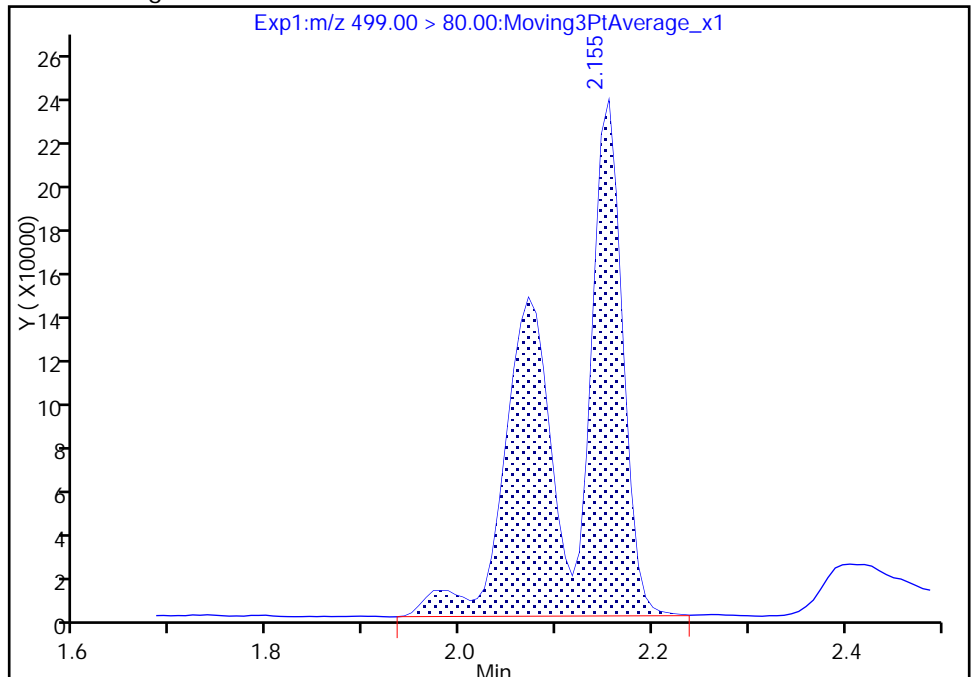
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 999745  
Amount: 4.904905  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:16:32  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

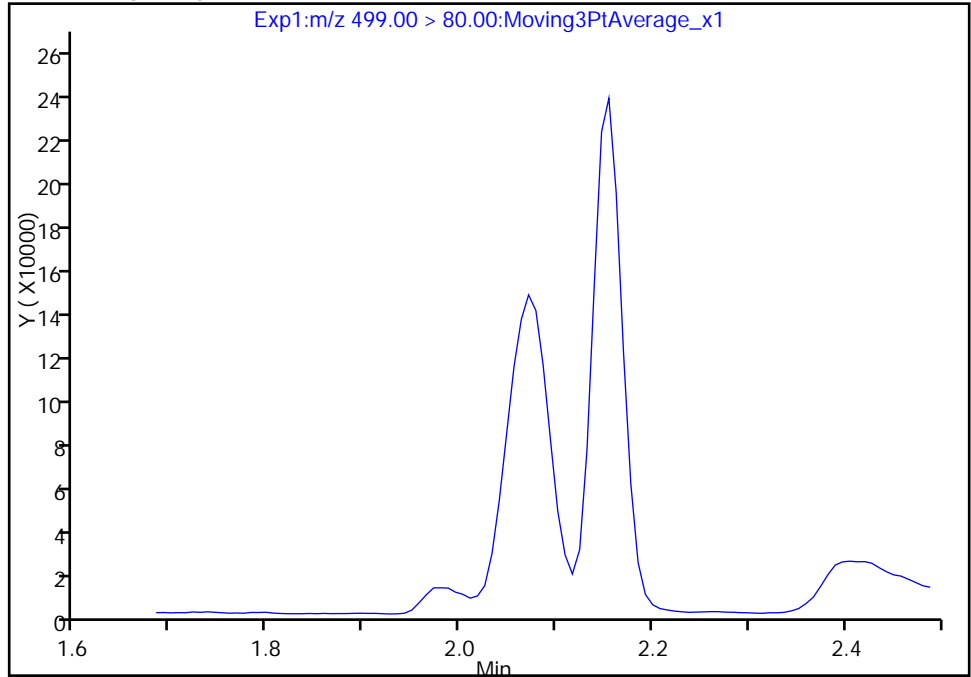
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.020.d  
Injection Date: 16-Oct-2017 12:49:36 Instrument ID: A8\_N  
Lims ID: 320-31889-A-7-A Lab Sample ID: 320-31889-7  
Client ID: NAWC-092617-RW-120  
Operator ID: SACINSTLCMS01 ALS Bottle#: 46 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

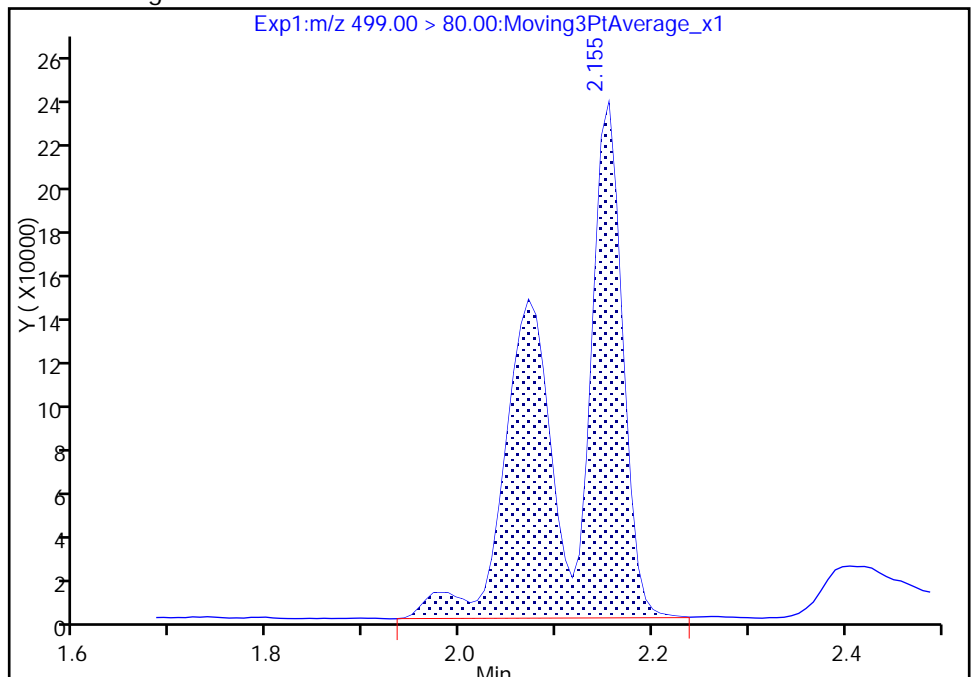
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 999745  
Amount: 4.904905  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:16:44

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

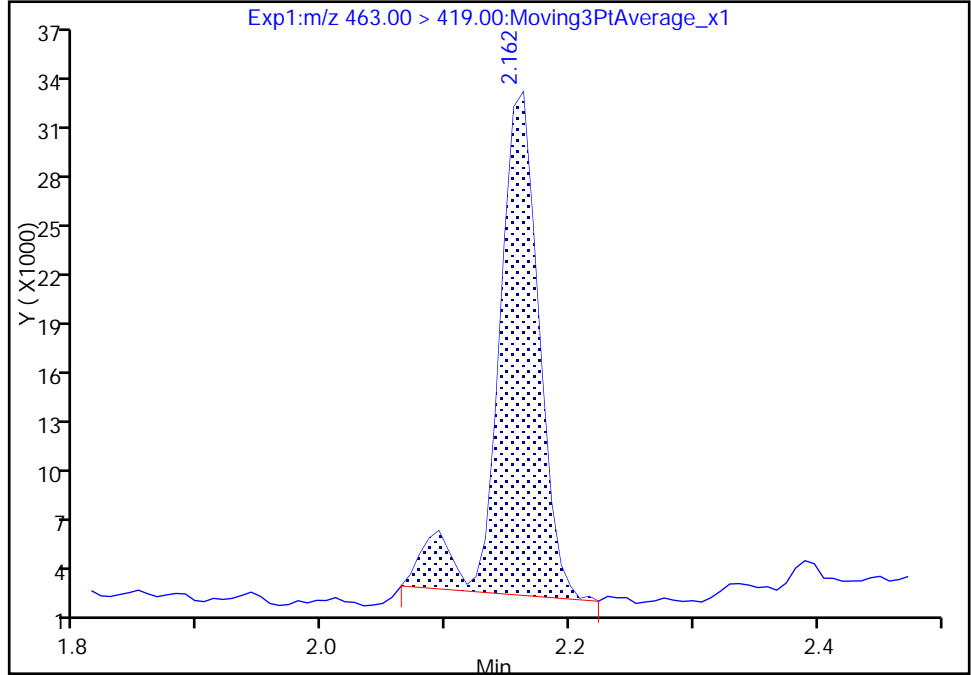
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.020.d  
Injection Date: 16-Oct-2017 12:49:36 Instrument ID: A8\_N  
Lims ID: 320-31889-A-7-A Lab Sample ID: 320-31889-7  
Client ID: NAWC-092617-RW-120  
Operator ID: SACINSTLCMS01 ALS Bottle#: 46 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

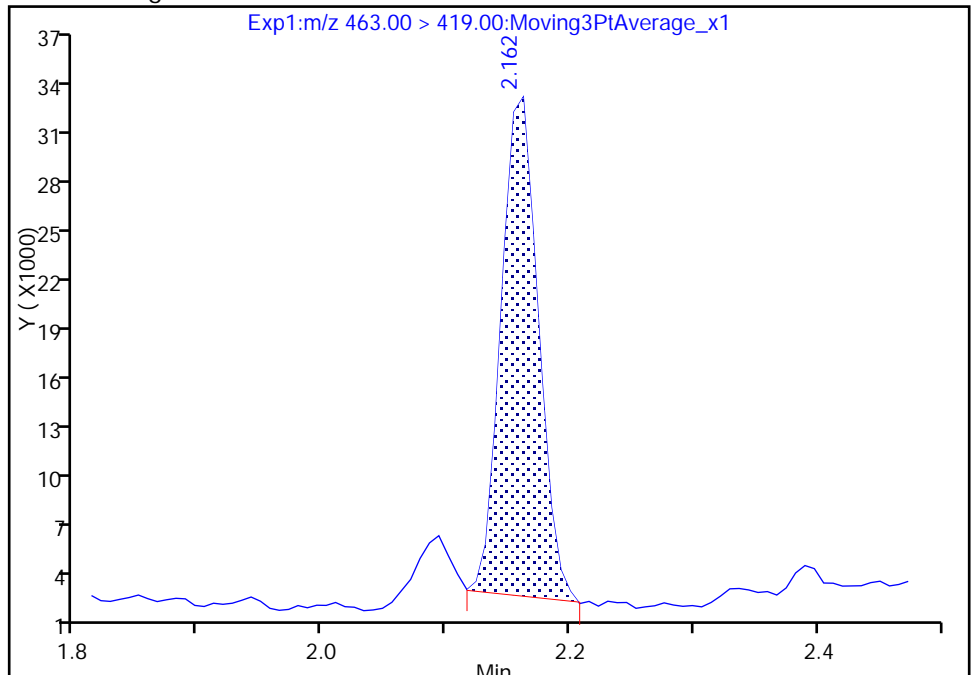
RT: 2.16  
Area: 70877  
Amount: 0.469580  
Amount Units: ng/ml

Processing Integration Results



RT: 2.16  
Area: 63364  
Amount: 0.419805  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:17:15  
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-120 Lab Sample ID: 320-31889-8  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.022.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 250.4(mL) Date Analyzed: 10/16/2017 13:03  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 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	80		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.022.d  
 Lims ID: 320-31889-A-8-A  
 Client ID: NAWC-092617-FRB-120  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:03:51 ALS Bottle#: 47 Worklist Smp#: 15  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-8-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.555	1.524	0.031	1.000	2444456	8.02	6861	
* 6 13C2-PFOA	415.00 > 370.00	1.904	1.855	0.049		2599941	10.0	6028	
* 7 13C4 PFOS	503.00 > 80.00	2.155	2.108	0.047		6502165	28.7	5170	
\$ 10 13C2 PFDA	515.00 > 470.00	2.306	2.282	0.024	1.000	1290318	8.90	5815	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.022.d

Injection Date: 16-Oct-2017 13:03:51

Instrument ID: A8\_N

Lims ID: 320-31889-A-8-A

Lab Sample ID: 320-31889-8

Client ID: NAWC-092617-FRB-120

Operator ID: SACINSTLCMS01

ALS Bottle#: 47

Worklist Smp#: 15

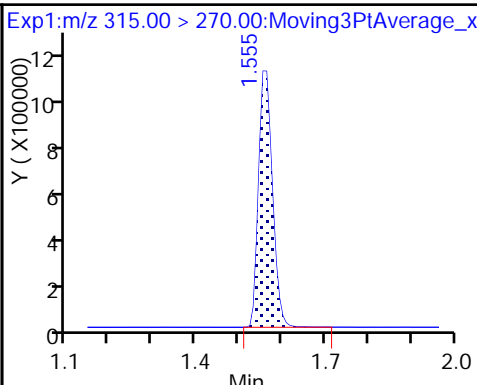
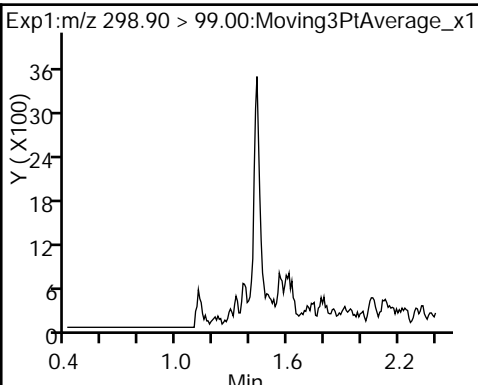
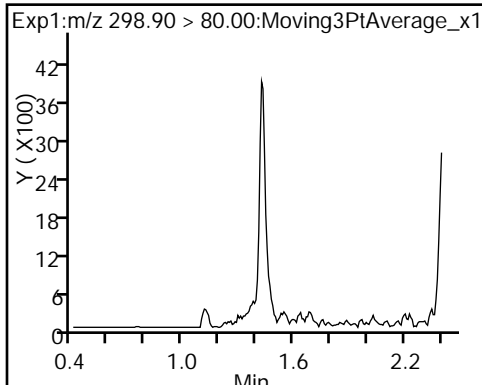
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

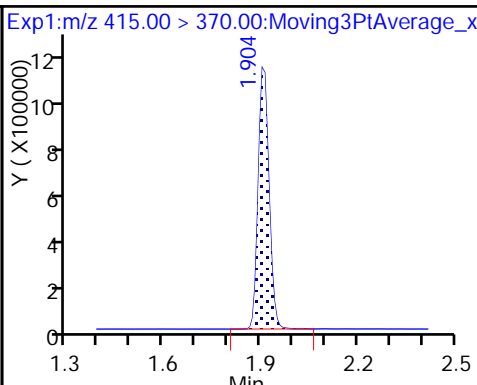
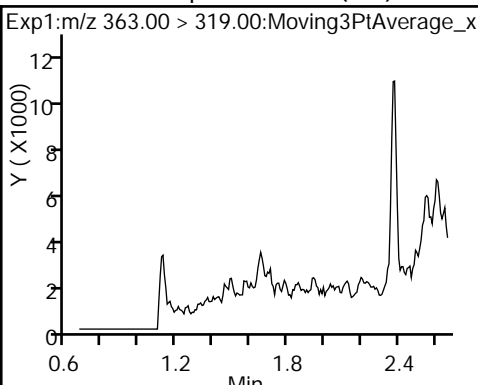
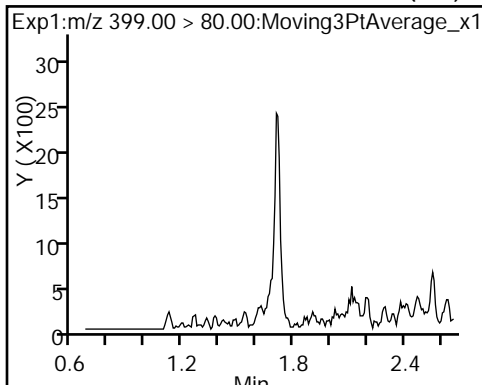
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

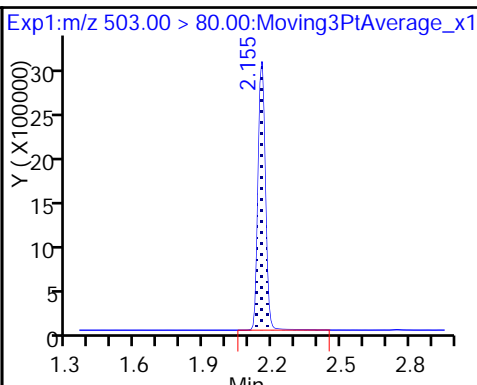
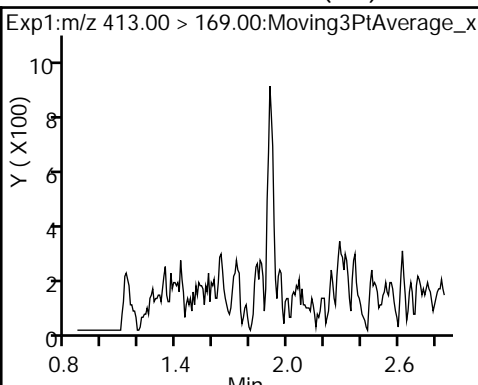
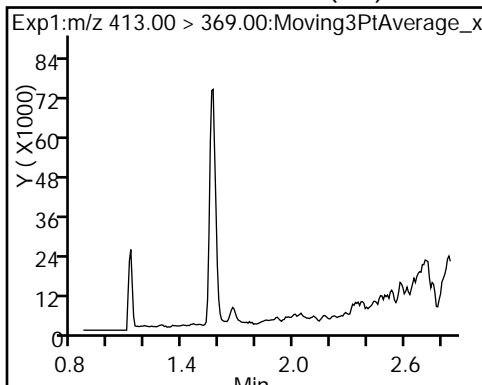
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



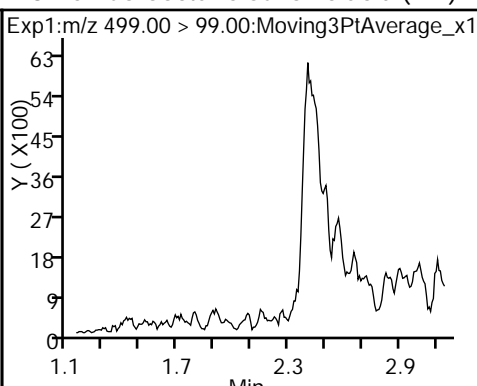
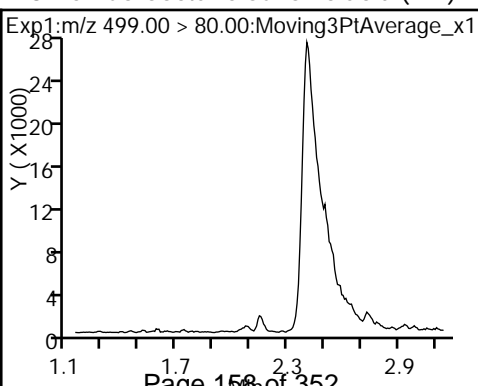
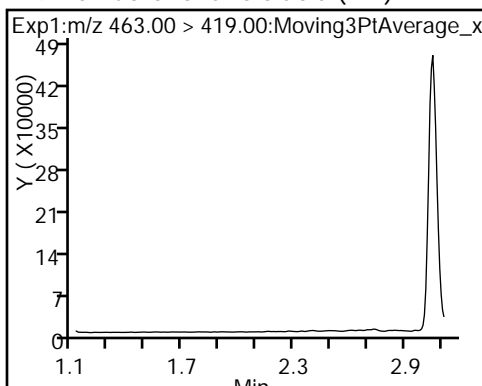
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) \* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) \* 7 13C4 PFOS

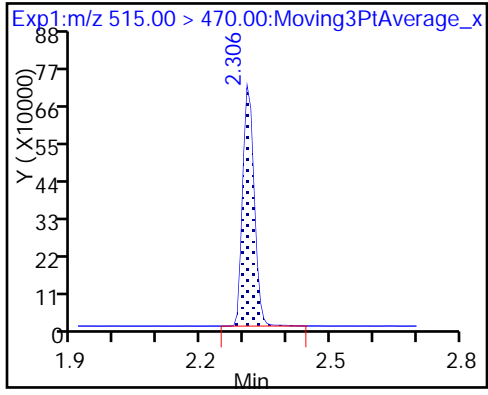


9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)





\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.022.d  
 Lims ID: 320-31889-A-8-A  
 Client ID: NAWC-092617-FRB-120  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:03:51 ALS Bottle#: 47 Worklist Smp#: 15  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-8-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.02	80.24
\$ 10 13C2 PFDA	10.0	8.90	88.98

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-315 Lab Sample ID: 320-31889-9  
 Matrix: Water Lab File ID: 2017.10.17\_537A\_009.d  
 Analysis Method: 537 Date Collected: 09/26/2017 16:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 253.3(mL) Date Analyzed: 10/18/2017 01:59  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189890 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	13	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	70		70-130
STL00996	13C2 PFDA	117		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_009.d  
 Lims ID: 320-31889-A-9-A  
 Client ID: NAWC-092617-RW-315  
 Sample Type: Client  
 Inject. Date: 18-Oct-2017 01:59:57 ALS Bottle#: 3 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-9-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 18-Oct-2017 14:22:30 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 18-Oct-2017 14:20:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	300776	1.25		69.5	
298.90 > 99.00	1.419	1.402	0.017	1.000	194296		1.55(0.00-0.00)	242	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	1911273	7.04		5296	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.668	0.031	1.000	415175	1.28		127	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.668	0.031	1.000	129098	0.5917		14.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.889	1.855	0.034		2316666	10.0		5451	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.889	1.856	0.033	1.000	430888	2.02		9.8	
413.00 > 169.00	1.889	1.856	0.033	1.000	262860		1.64(0.00-0.00)	337	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.108	0.024		5687876	28.7		1720	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.116	0.024	1.000	43471	0.3018		1.4	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.132	0.0	1.000	587589	3.18		21.9	M
499.00 > 99.00	2.132	2.132	0.0	1.000	100972		5.82(0.00-0.00)	23.3	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1517464	11.7		7107	

## QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_009.d

Injection Date: 18-Oct-2017 01:59:57

Instrument ID: A8\_N

Lims ID: 320-31889-A-9-A

Lab Sample ID: 320-31889-9

Client ID: NAWC-092617-RW-315

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

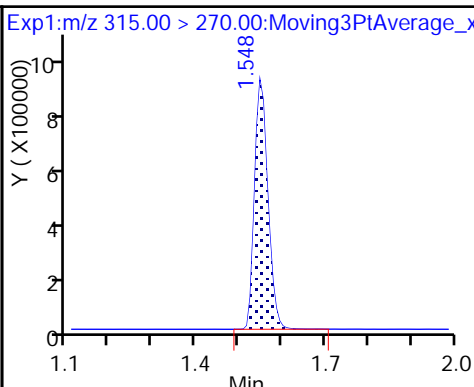
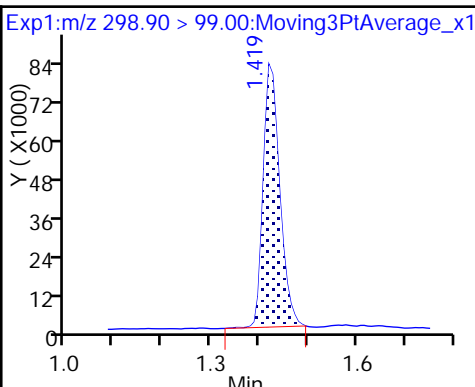
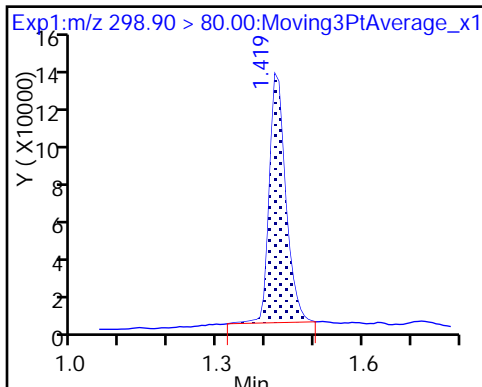
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

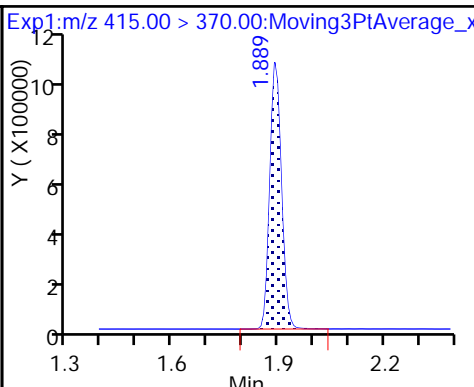
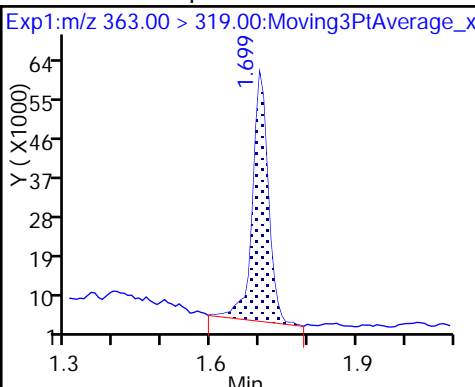
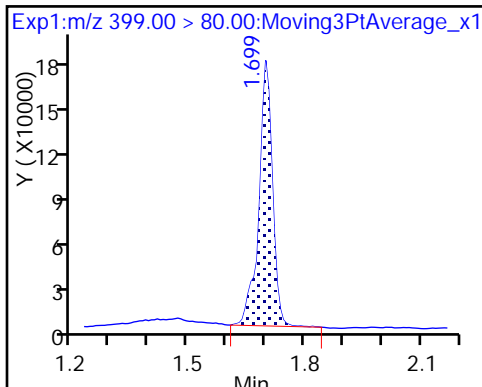
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

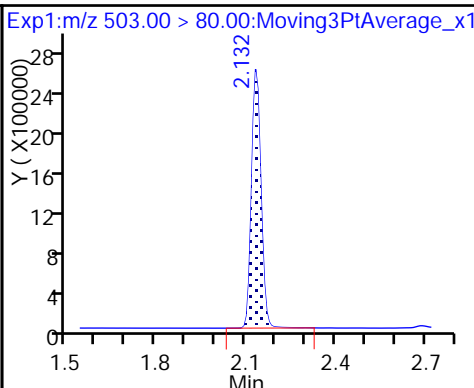
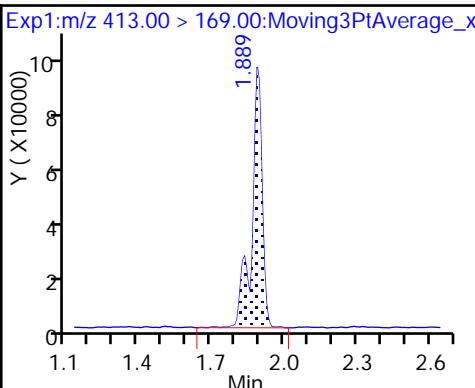
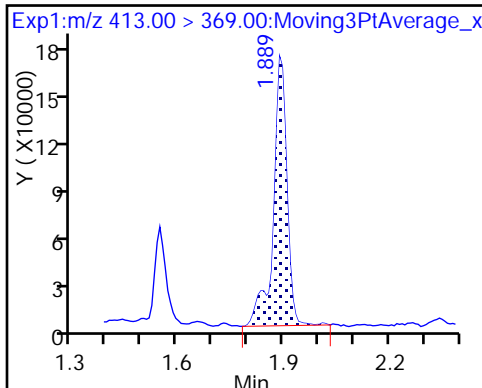
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

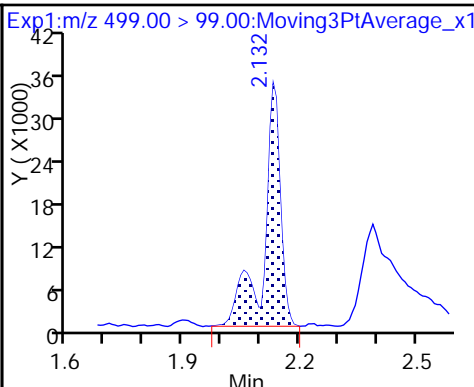
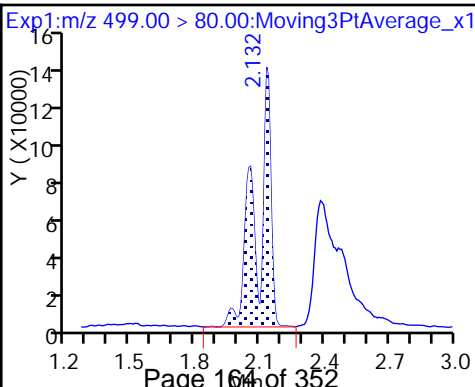
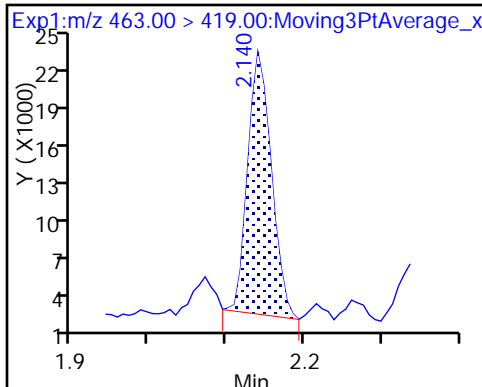
\* 7 13C4 PFOS



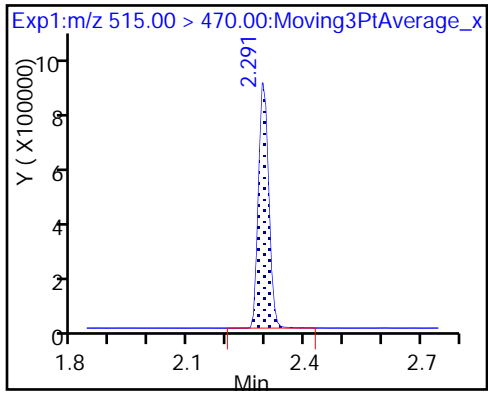
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_009.d  
 Lims ID: 320-31889-A-9-A  
 Client ID: NAWC-092617-RW-315  
 Sample Type: Client  
 Inject. Date: 18-Oct-2017 01:59:57 ALS Bottle#: 3 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-9-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 18-Oct-2017 14:22:30 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 18-Oct-2017 14:20:42

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.04	70.41
\$ 10 13C2 PFDA	10.0	11.7	117.44



TestAmerica Sacramento

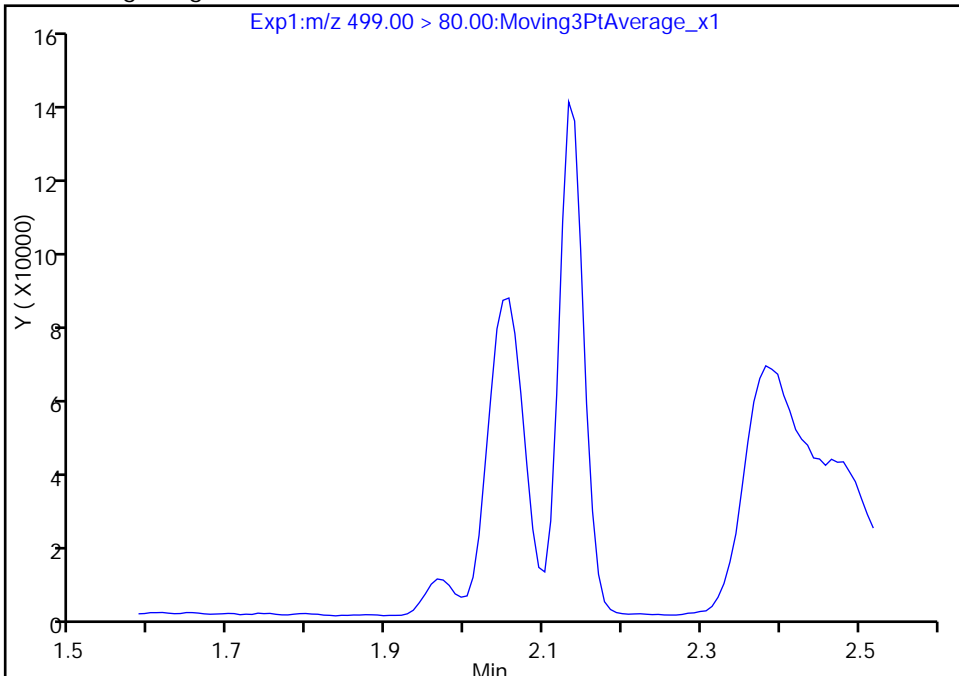
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Injection Date: 18-Oct-2017 01:59:57 Instrument ID: A8\_N  
Lims ID: 320-31889-A-9-A Lab Sample ID: 320-31889-9  
Client ID: NAWC-092617-RW-315  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

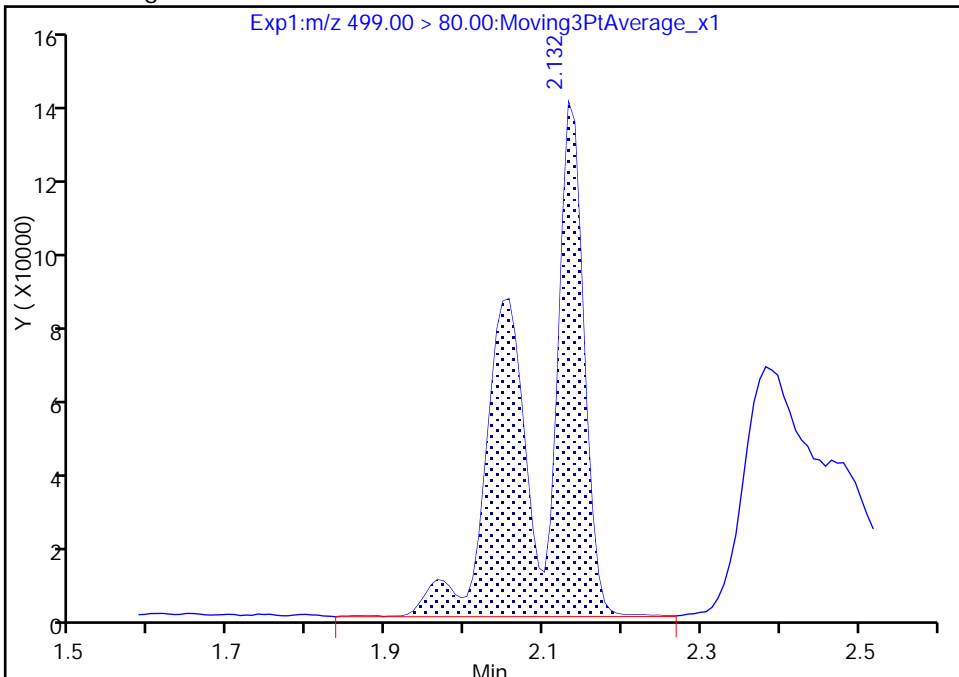
Not Detected  
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13  
Area: 587589  
Amount: 3.179995  
Amount Units: ng/ml



Reviewer: barnettj, 18-Oct-2017 14:20:08  
Audit Action: Assigned Compound ID

Audit Reason: Isomers

TestAmerica Sacramento

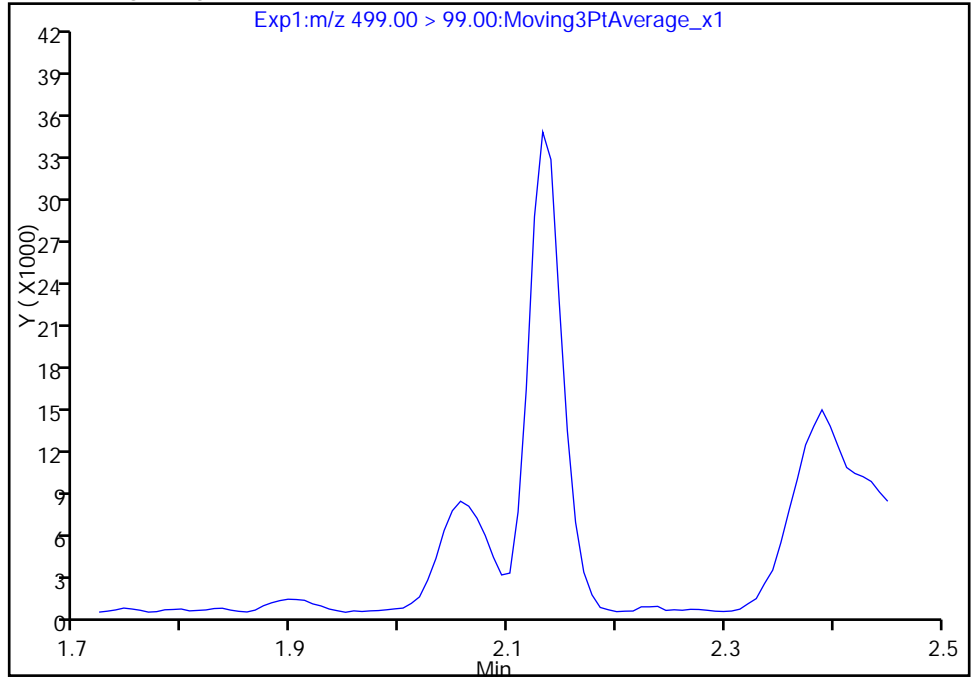
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_009.d  
Injection Date: 18-Oct-2017 01:59:57 Instrument ID: A8\_N  
Lims ID: 320-31889-A-9-A Lab Sample ID: 320-31889-9  
Client ID: NAWC-092617-RW-315  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

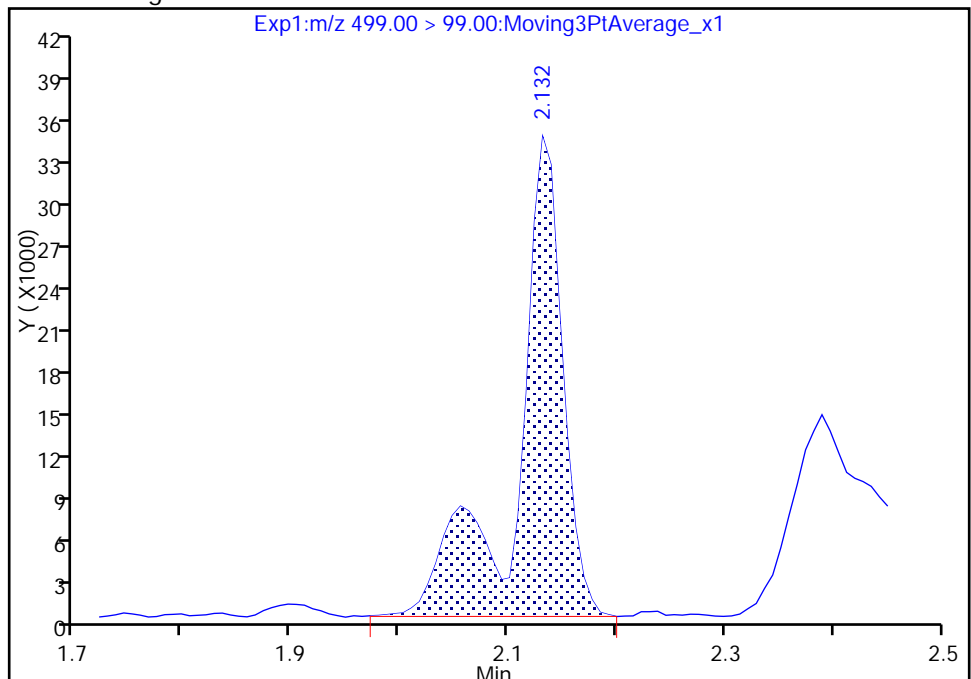
Not Detected  
Expected RT: 2.13

Processing Integration Results



RT: 2.13  
Area: 100972  
Amount: 3.179995  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

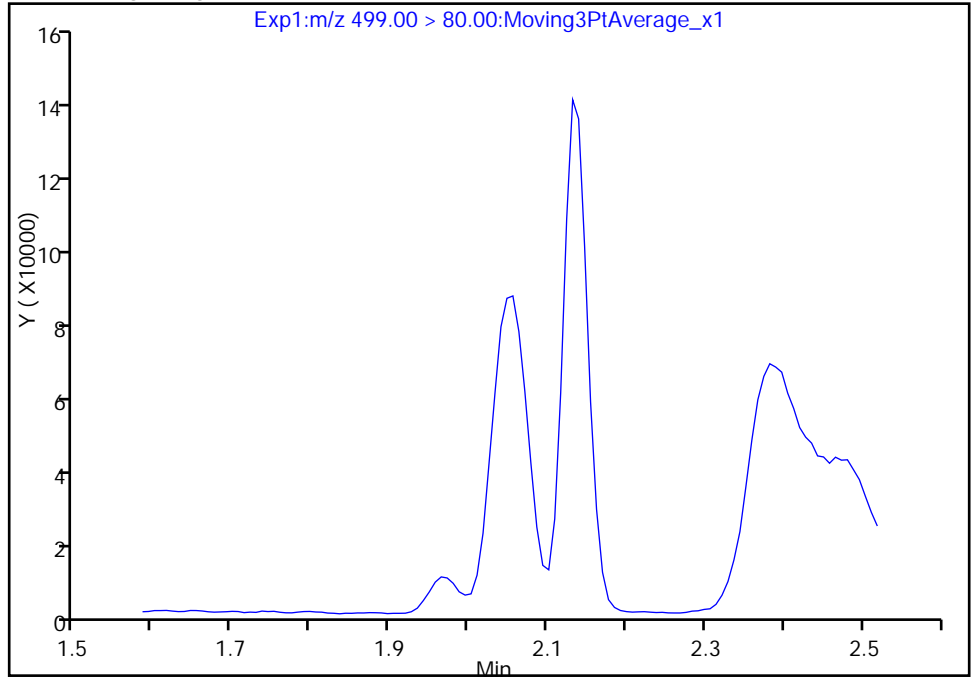
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Injection Date: 18-Oct-2017 01:59:57 Instrument ID: A8\_N  
Lims ID: 320-31889-A-9-A Lab Sample ID: 320-31889-9  
Client ID: NAWC-092617-RW-315  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

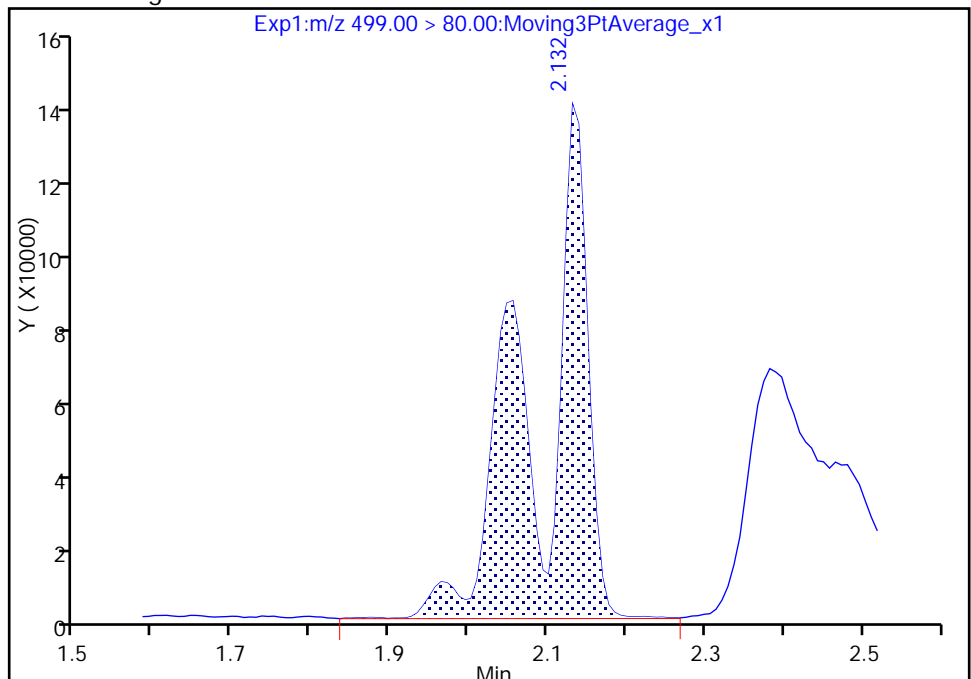
Not Detected  
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13  
Area: 587589  
Amount: 3.179995  
Amount Units: ng/ml



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-315 Lab Sample ID: 320-31889-10  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.024.d  
 Analysis Method: 537 Date Collected: 09/26/2017 16:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 249.1(mL) Date Analyzed: 10/16/2017 13:13  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 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	83		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.024.d  
 Lims ID: 320-31889-A-10-A  
 Client ID: NAWC-092617-FRB-315  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:13:21 ALS Bottle#: 49 Worklist Smp#: 17  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-10-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.548	1.524	0.024	1.000	2355302	8.33	6806	
* 6 13C2-PFOA	415.00 > 370.00	1.897	1.855	0.042		2412206	10.0	5741	
* 7 13C4 PFOS	503.00 > 80.00	2.147	2.108	0.039		6221671	28.7	5206	
\$ 10 13C2 PFDA	515.00 > 470.00	2.306	2.282	0.024	1.000	1264154	9.40	5628	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.024.d

Injection Date: 16-Oct-2017 13:13:21

Instrument ID: A8\_N

Lims ID: 320-31889-A-10-A

Lab Sample ID: 320-31889-10

Client ID: NAWC-092617-FRB-315

Operator ID: SACINSTLCMS01

ALS Bottle#: 49

Worklist Smp#: 17

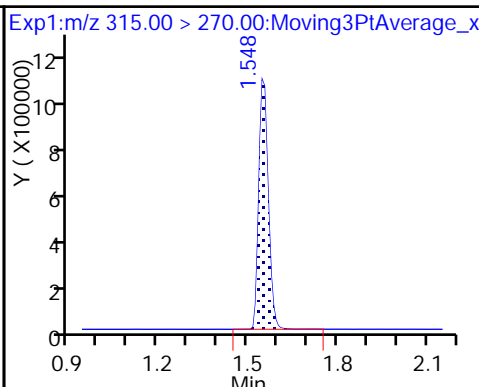
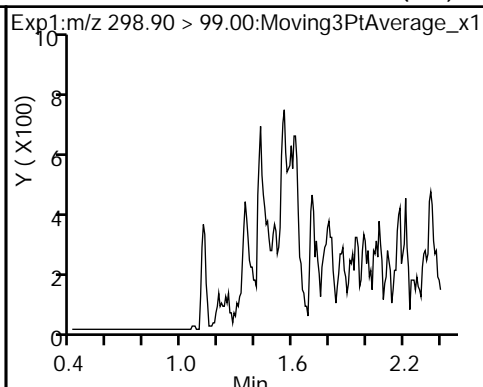
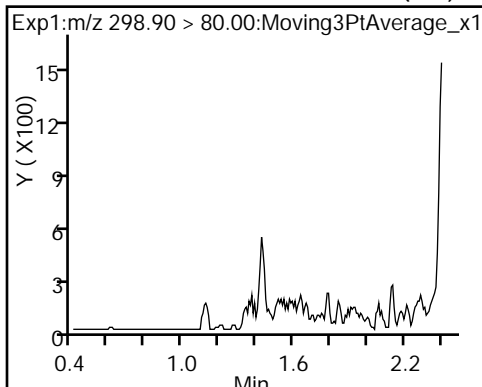
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

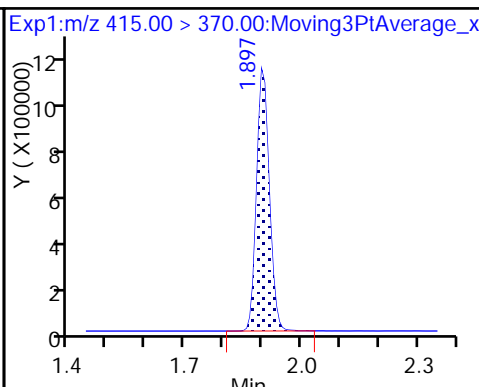
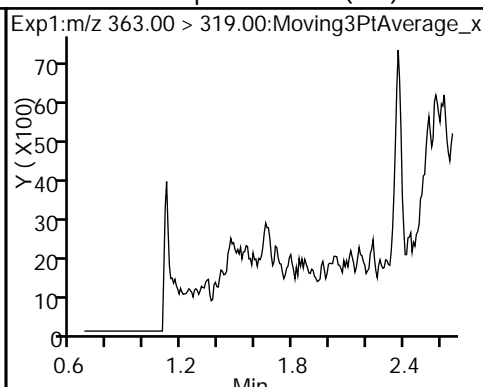
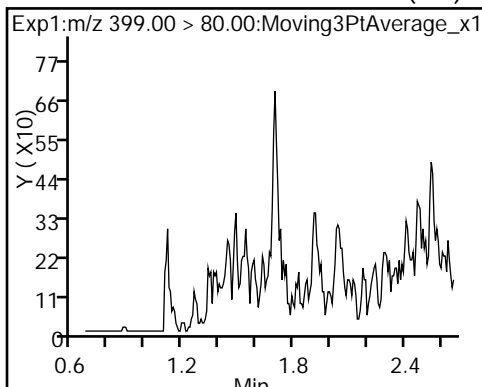
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

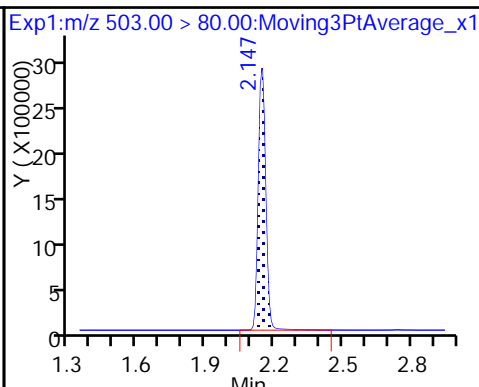
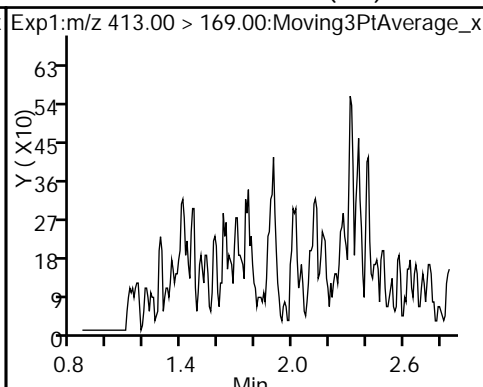
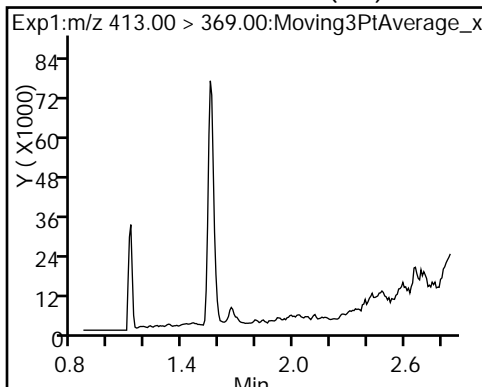
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



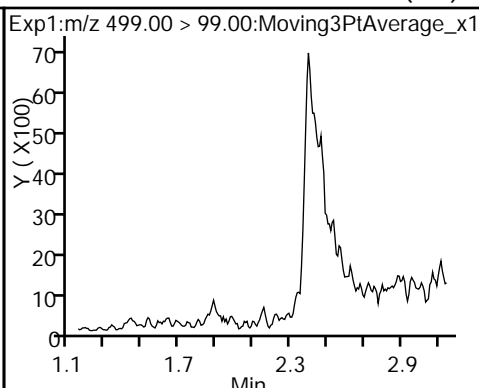
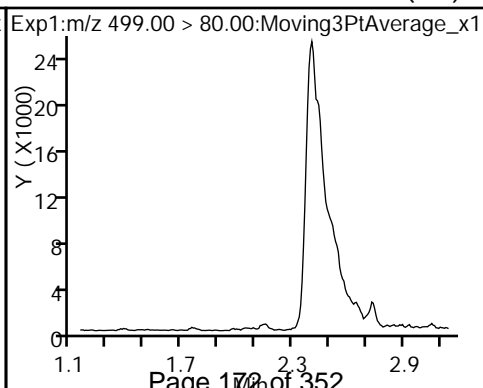
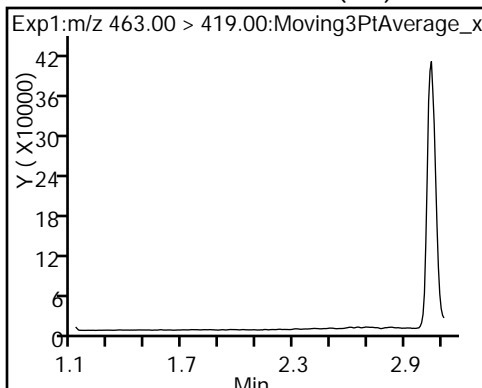
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) \* 6 13C2-PFOA



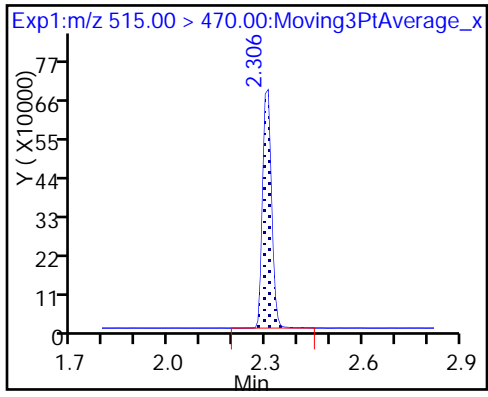
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) \* 7 13C4 PFOS



9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.024.d  
 Lims ID: 320-31889-A-10-A  
 Client ID: NAWC-092617-FRB-315  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:13:21 ALS Bottle#: 49 Worklist Smp#: 17  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-10-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.33	83.33
\$ 10 13C2 PFDA	10.0	9.40	93.96



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-091 Lab Sample ID: 320-31889-11  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.025.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:40  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 248.7(mL) Date Analyzed: 10/16/2017 13:18  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.1	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.0	J	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	73		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.025.d  
 Lims ID: 320-31889-A-11-A  
 Client ID: NAWC-092617-RW-091  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:18:04 ALS Bottle#: 50 Worklist Smp#: 18  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-11-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:20:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	362299	1.32		263	
298.90 > 99.00	1.426	1.402	0.024	1.000	248982		1.46(0.00-0.00)	377	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.555	1.524	0.031	1.000	2149017	7.33		5441	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.707	1.668	0.039	1.000	652620	1.76		242	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.707	1.668	0.039	1.000	353939	1.50		43.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.855	0.049		2500993	10.0		5138	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.904	1.856	0.048	1.000	1103680	4.80		36.1	
413.00 > 169.00	1.904	1.856	0.048	1.000	693652		1.59(0.00-0.00)	1219	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.108	0.047		6499886	28.7		3137	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.116	0.046	1.000	64828	0.4168		3.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.147	0.008	1.000	1077980	5.11		95.9	M
499.00 > 99.00	2.155	2.147	0.008	1.000	171995		6.27(0.00-0.00)	50.7	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.282	0.024	1.000	1269433	9.10		5818	

## QC Flag Legend

### Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.025.d

Injection Date: 16-Oct-2017 13:18:04

Instrument ID: A8\_N

Lims ID: 320-31889-A-11-A

Lab Sample ID: 320-31889-11

Client ID: NAWC-092617-RW-091

Operator ID: SACINSTLCMS01

ALS Bottle#: 50

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

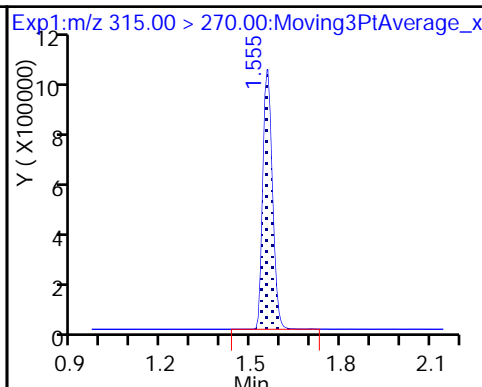
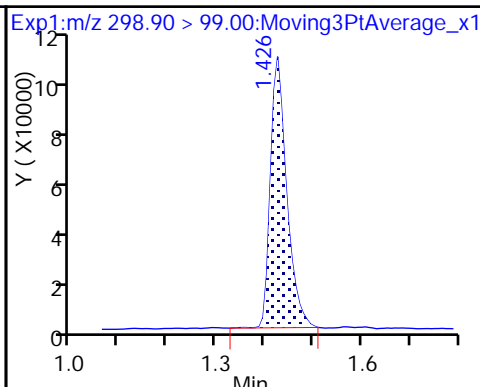
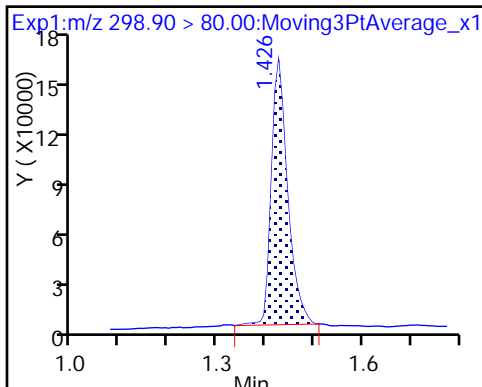
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

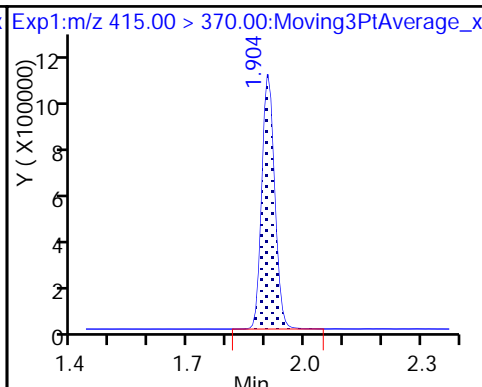
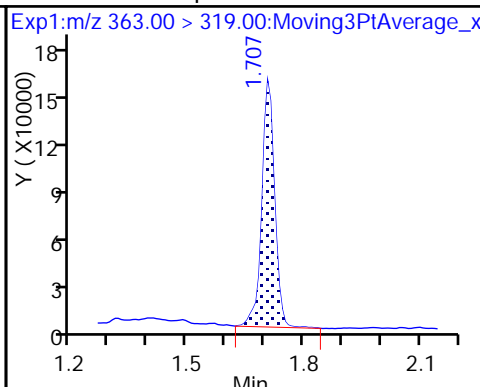
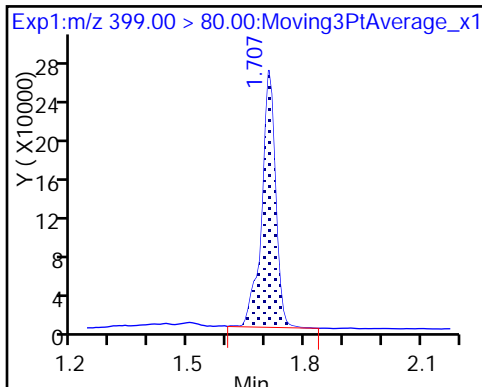
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

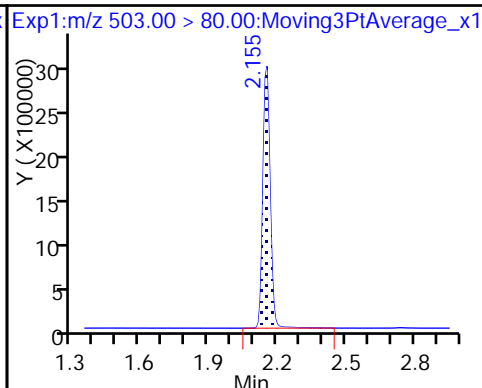
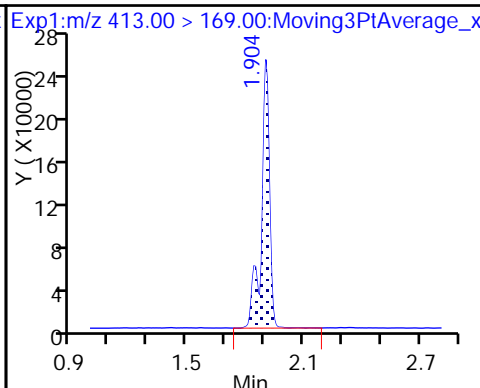
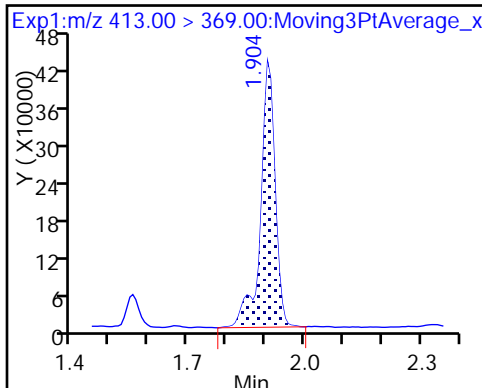
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

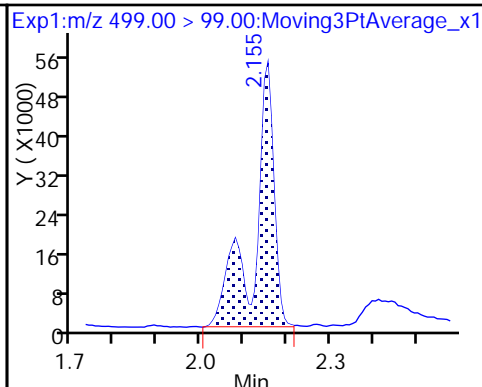
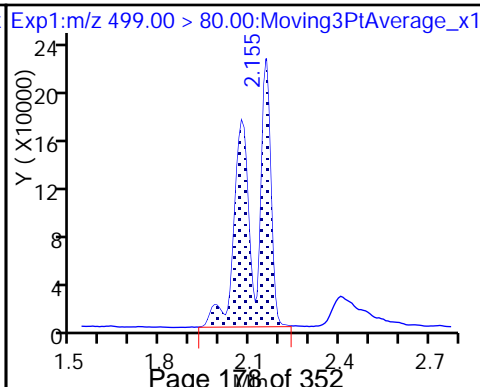
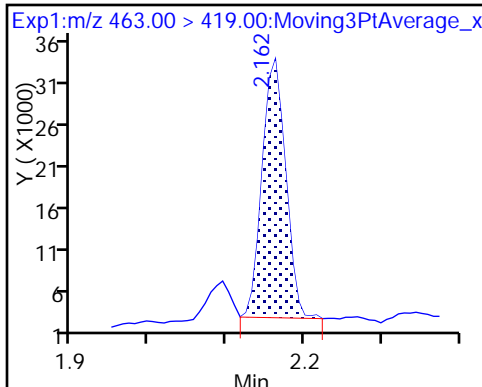
\* 7 13C4 PFOS



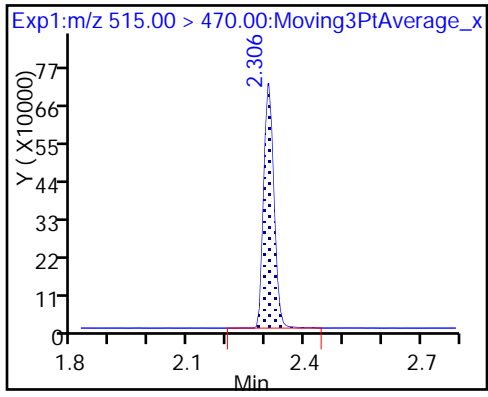
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.025.d  
 Lims ID: 320-31889-A-11-A  
 Client ID: NAWC-092617-RW-091  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:18:04 ALS Bottle#: 50 Worklist Smp#: 18  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-11-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:20:57

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.33	73.33
\$ 10 13C2 PFDA	10.0	9.10	91.00

TestAmerica Sacramento

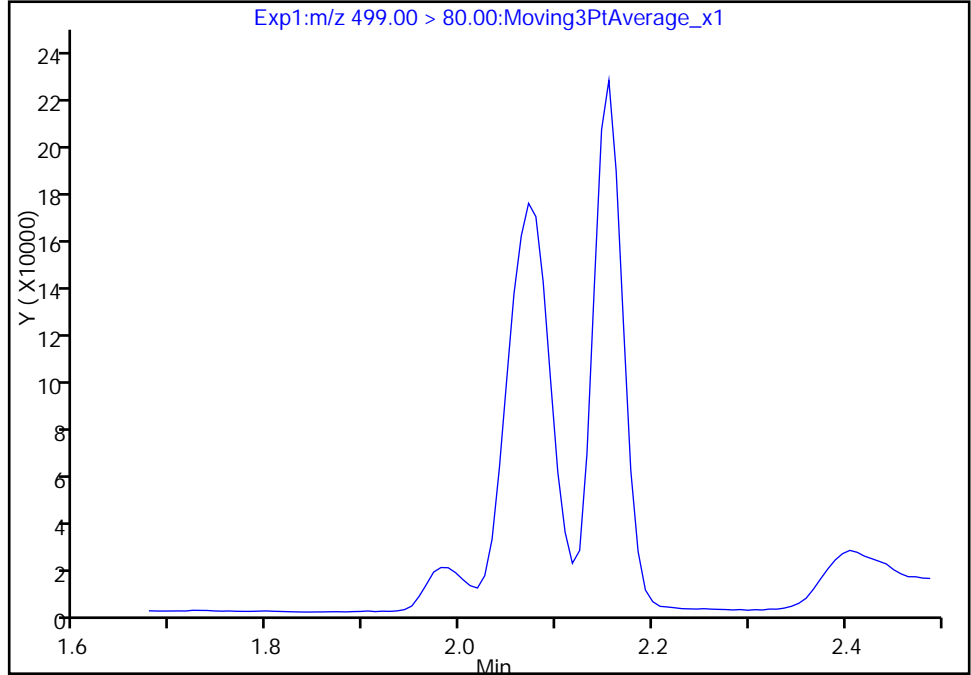
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.025.d  
Injection Date: 16-Oct-2017 13:18:04 Instrument ID: A8\_N  
Lims ID: 320-31889-A-11-A Lab Sample ID: 320-31889-11  
Client ID: NAWC-092617-RW-091  
Operator ID: SACINSTLCMS01 ALS Bottle#: 50 Worklist Smp#: 18  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

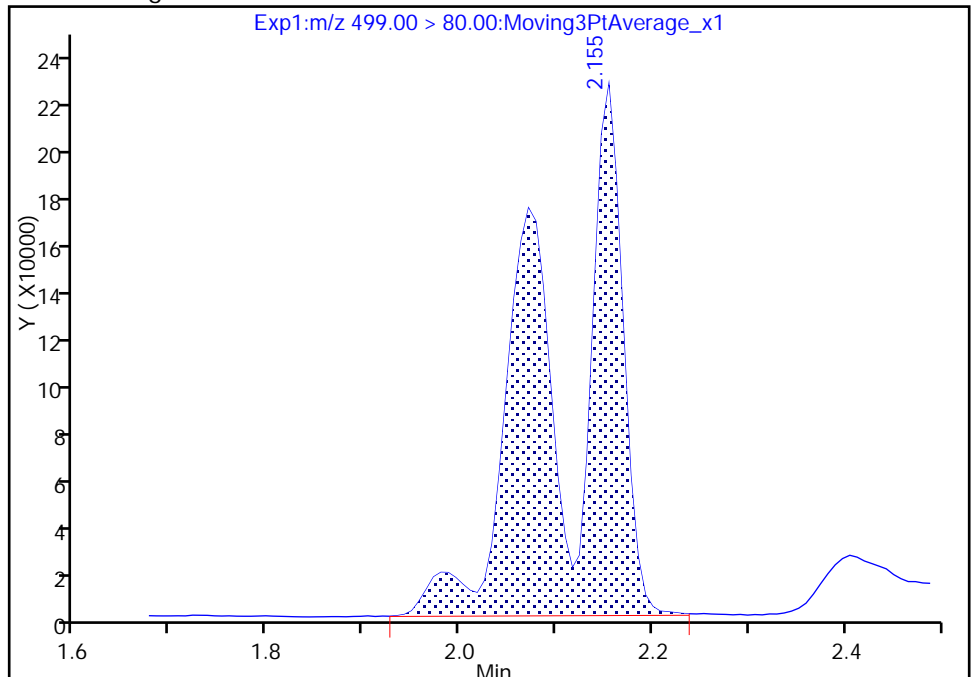
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 1077980  
Amount: 5.105143  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:20:09  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.025.d

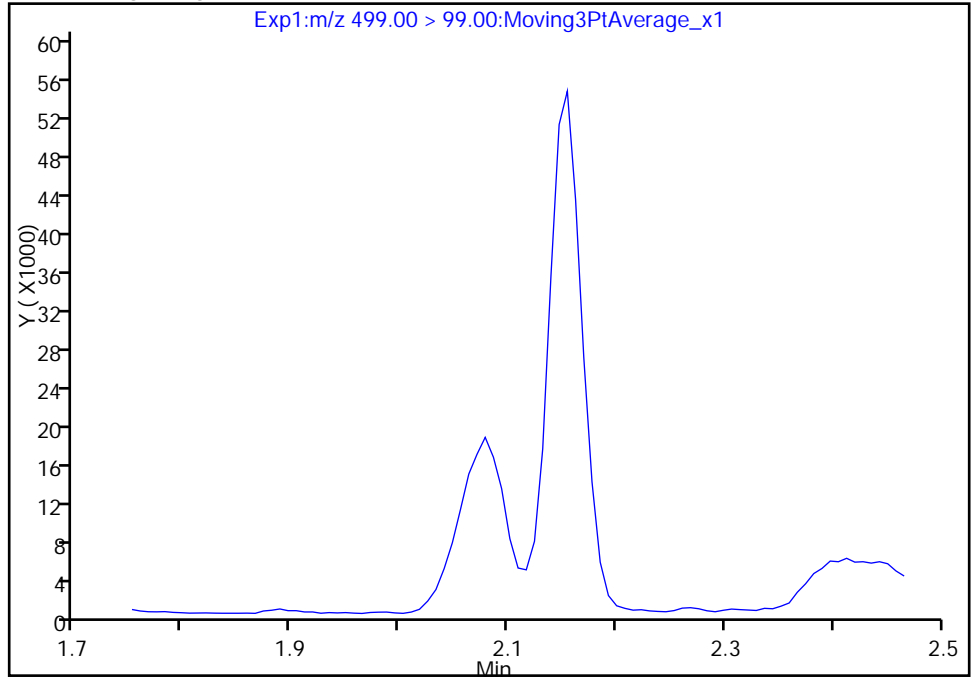
Injection Date: 16-Oct-2017 13:18:04 Instrument ID: A8\_N  
Lims ID: 320-31889-A-11-A Lab Sample ID: 320-31889-11  
Client ID: NAWC-092617-RW-091  
Operator ID: SACINSTLCMS01 ALS Bottle#: 50 Worklist Smp#: 18  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

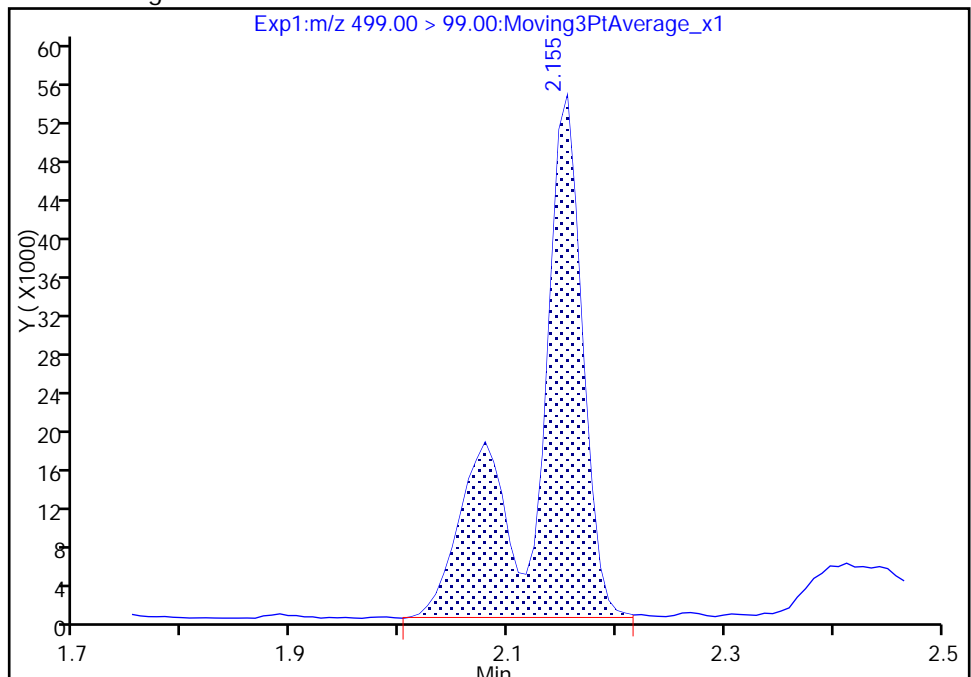
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 171995  
Amount: 5.105143  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:20:38

Audit Action: Manually Integrated

Audit Reason: Missed Peak



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.025.d

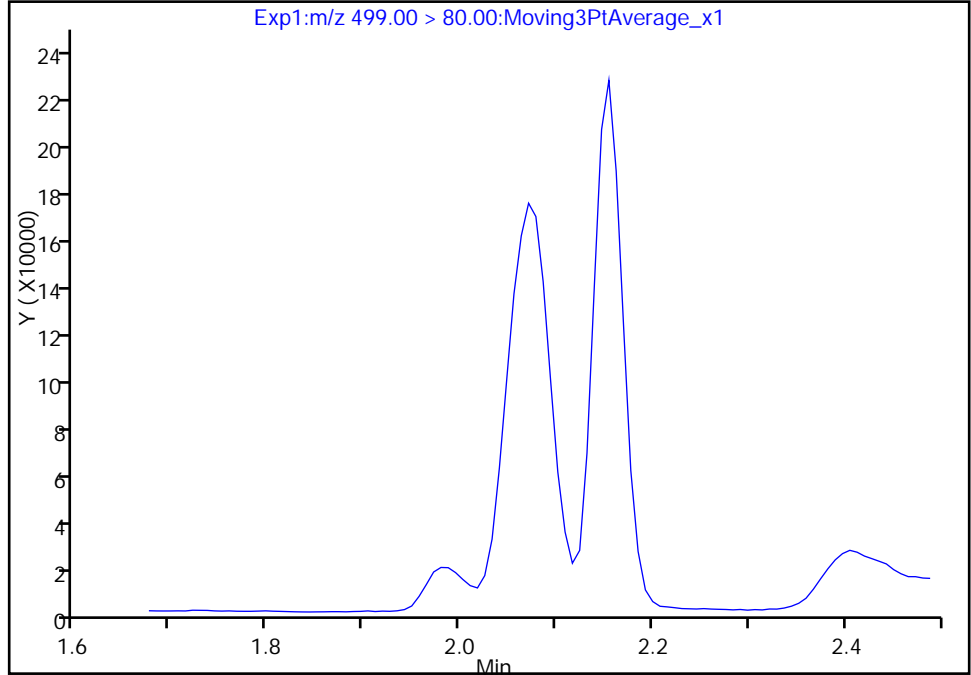
Injection Date:	16-Oct-2017 13:18:04	Instrument ID:	A8_N		
Lims ID:	320-31889-A-11-A	Lab Sample ID:	320-31889-11		
Client ID:	NAWC-092617-RW-091				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	50	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector:	EXP1		

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

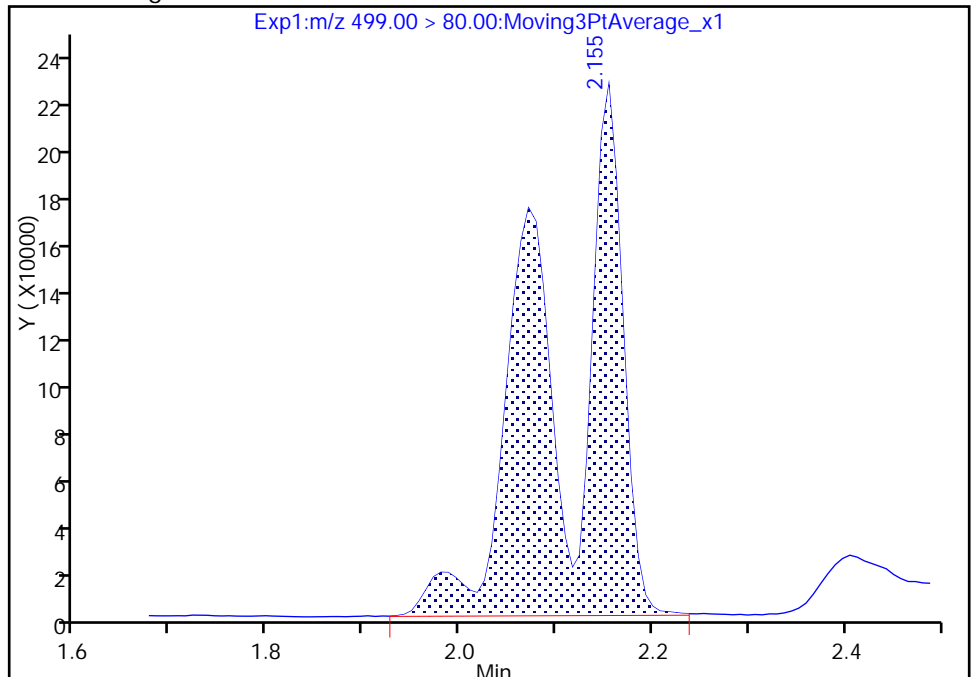
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 1077980  
Amount: 5.105143  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:20:38

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-091 Lab Sample ID: 320-31889-12  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.026.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:35  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 259.6(mL) Date Analyzed: 10/16/2017 13:22  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.026.d  
 Lims ID: 320-31889-A-12-A  
 Client ID: NAWC-092617-FRB-091  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:22:48 ALS Bottle#: 51 Worklist Smp#: 19  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-12-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.555	1.524	0.031	1.000	2301868	7.98	5200	
* 6 13C2-PFOA	415.00 > 370.00	1.904	1.855	0.049		2462434	10.0	4525	
* 7 13C4 PFOS	503.00 > 80.00	2.155	2.108	0.047		6308492	28.7	4264	
\$ 10 13C2 PFDA	515.00 > 470.00	2.306	2.282	0.024	1.000	1220071	8.88	4843	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.026.d

Injection Date: 16-Oct-2017 13:22:48

Instrument ID: A8\_N

Lims ID: 320-31889-A-12-A

Lab Sample ID: 320-31889-12

Client ID: NAWC-092617-FRB-091

Operator ID: SACINSTLCMS01

ALS Bottle#: 51

Worklist Smp#: 19

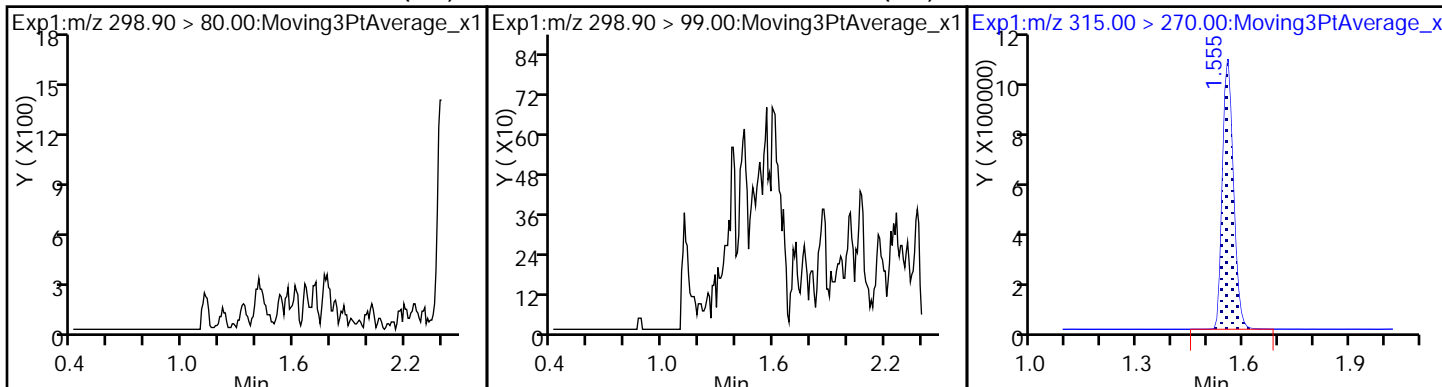
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

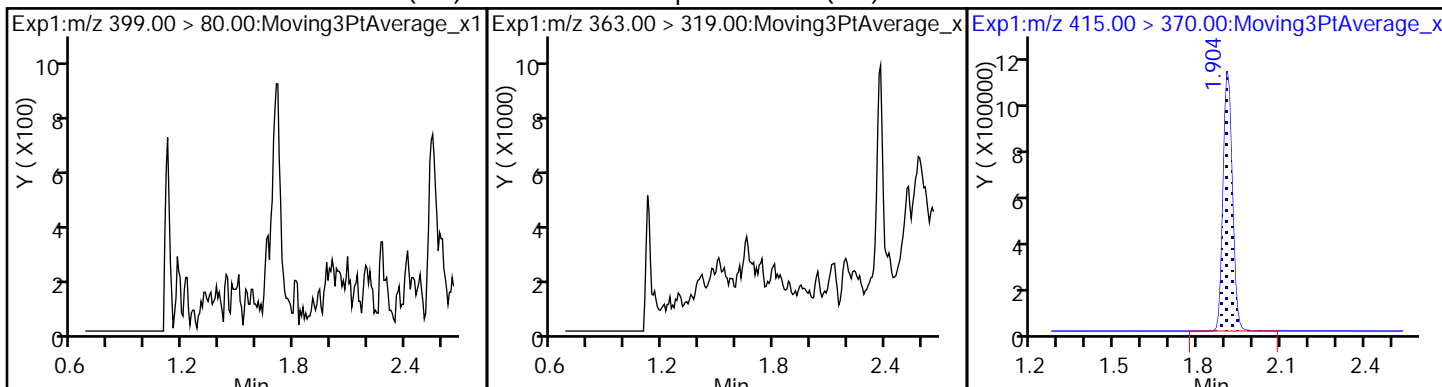
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

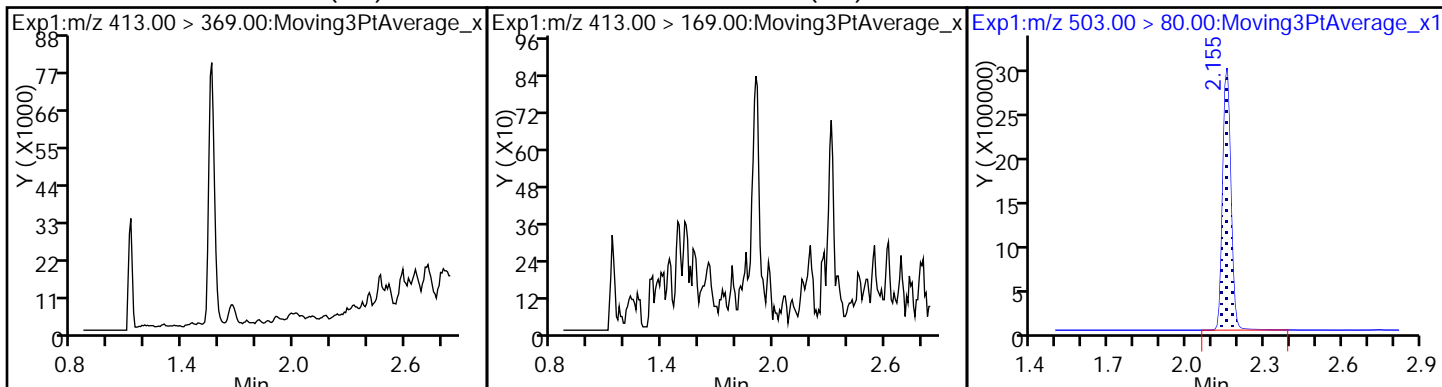
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



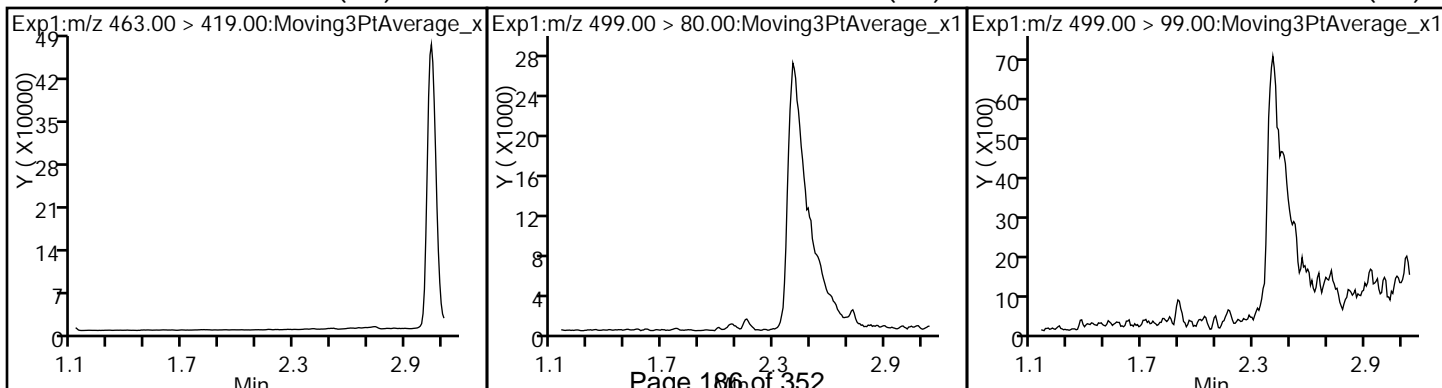
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) \* 6 13C2-PFOA



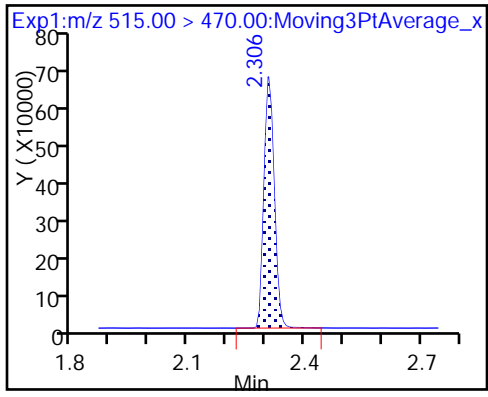
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) \* 7 13C4 PFOS



9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.026.d  
 Lims ID: 320-31889-A-12-A  
 Client ID: NAWC-092617-FRB-091  
 Sample Type: Client  
 Inject. Date: 16-Oct-2017 13:22:48 ALS Bottle#: 51 Worklist Smp#: 19  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-31889-a-12-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:51 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.98	79.78
\$ 10 13C2 PFDA	10.0	8.88	88.83

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

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1 Analy Batch No.: 185329

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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)	1.1549 0.7675	1.2218	1.1299	0.9825	0.8671	QuaF		1.2127	-0.002495					1.0000			0.9600
Perfluoroheptanoic acid (PFHpA)	0.9156 0.9157	1.0104	0.9599	0.9323	0.9167	Ave		0.9418			4.0		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.6240 1.5024	1.7562	1.6778	1.6725	1.5962	Ave		1.6382			5.3		30.0				
Perfluorooctanoic acid (PFOA)	0.8827 0.9310	0.9355	0.9297	0.9101	0.9278	Ave		0.9195			2.2		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8786 0.9472	0.9205	0.9514	0.9450	0.9475	Ave		0.9317			3.0		30.0				
Perfluorononanoic acid (PFNA)	0.6171 0.6192	0.6458	0.6231	0.6183	0.6076	Ave		0.6218			2.1		30.0				
13C2 PFHxA	1.1170 1.2085	1.1856	1.1778	1.1659	1.1757	Ave		1.1718			2.6		30.0				
13C2 PFDA	0.5262 0.5719	0.5663	0.5603	0.5520	0.5699	Ave		0.5578			3.1		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.: 320-31889-1 Analy Batch No.: 185329

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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	QuaF	2072419 26277877	5031340	9714039	16708415	22246597	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	202553 3731330	492336	996370	1954380	2871658	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	971572 17148552	2411042	4809005	9481986	13653533	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	390753 7591950	912252	1931186	3817782	5816384	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	700862 14414630	1684976	3635963	7143258	10806665	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	273016 5046017	629304	1293375	2592159	3806555	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	2470192 2461679	2599092	2444565	2443470	2454801	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1163662 1164862	1241510	1162968	1156914	1189895	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero



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

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1 Analy Batch No.: 185329

SDG No.: \_\_\_\_\_

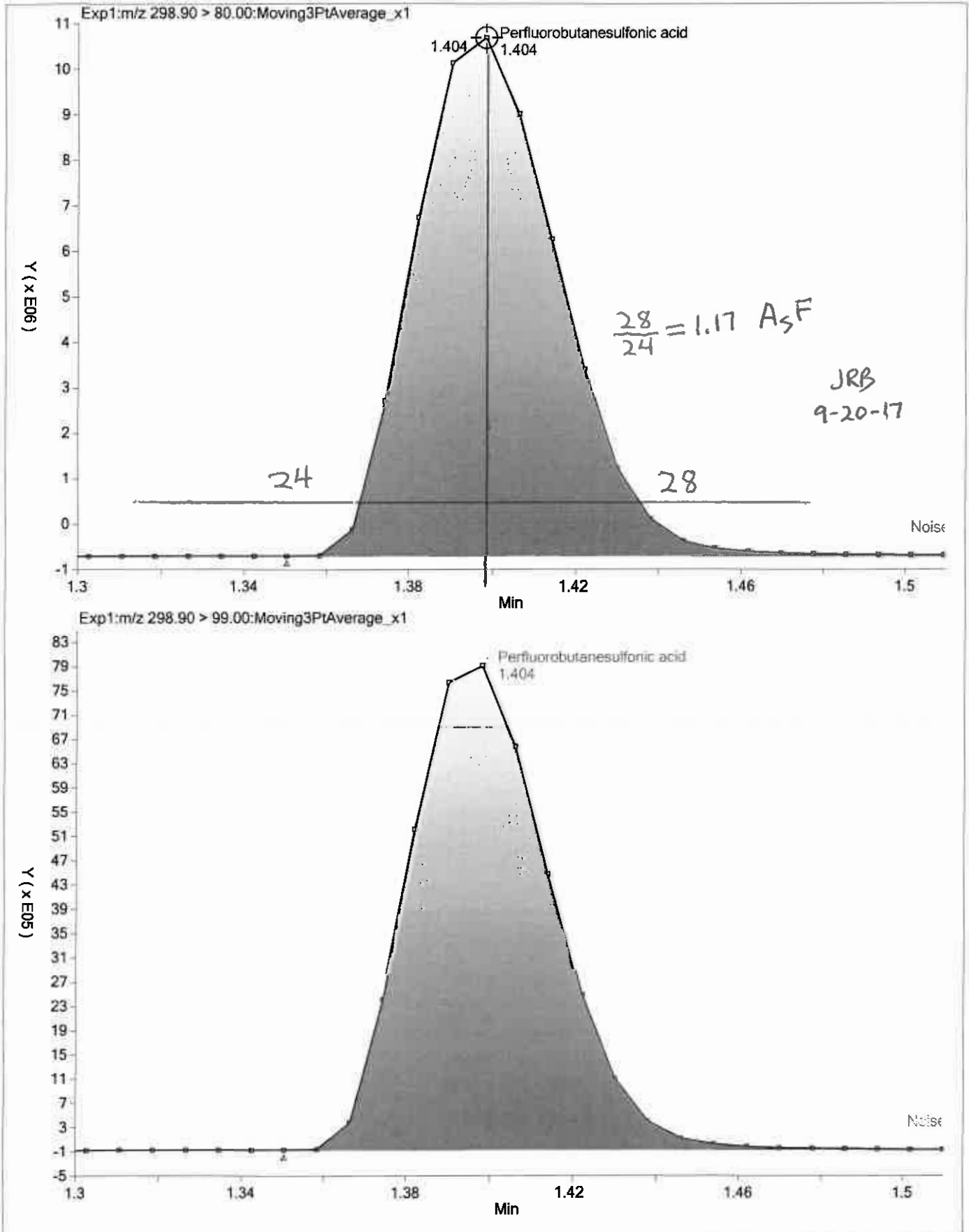
Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

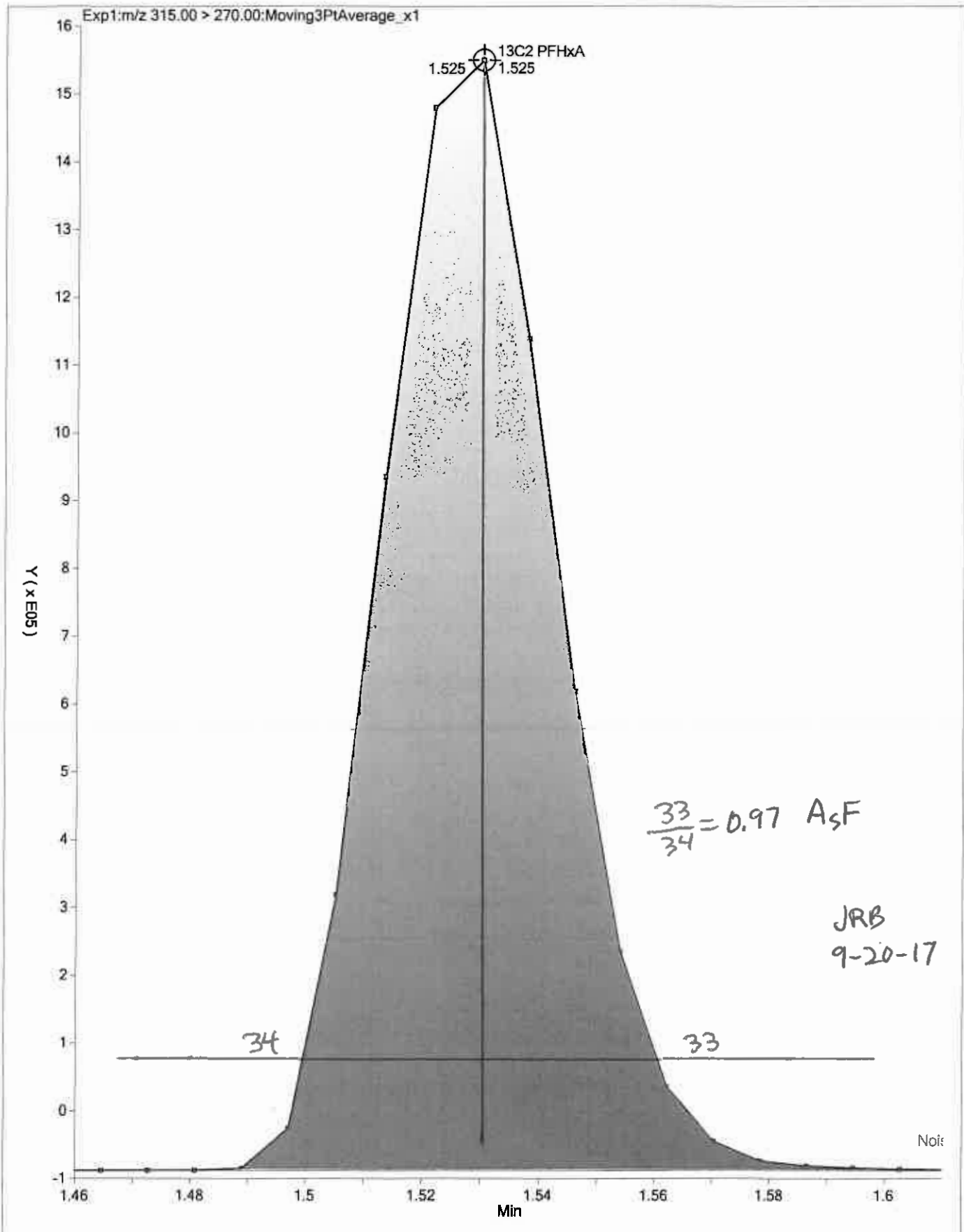
Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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)	-3.0	5.3	3.0	-0.7	-1.6	1.3	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-2.8	7.3	1.9	-1.0	-2.7	-2.8	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.9	7.2	2.4	2.1	-2.6	-8.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-4.0	1.7	1.1	-1.0	0.9	1.3	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.7	-1.2	2.1	1.4	1.7	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.8	3.8	0.2	-0.6	-2.3	-0.4	50	30	30	30	30	30
13C2 PFHxA	-4.7	1.2	0.5	-0.5	0.3	3.1	30	30	30	30	30	30
13C2 PFDA	-5.7	1.5	0.5	-1.0	2.2	2.5	30	30	30	30	30	30





TestAmerica Laboratories  
Istd/Surrogate Recovery Report

Worklist Name: 19SEP2017\_537\_ICAL      Worklist Num: 48154  
 Instrument: A8\_N      Method: 537\_A8\_N  
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b  
 Limit Group: LC 537 ICAL  
 Analysis Type: SemiVOA  
 Inj Volume: 2.00      Inj Vol Units: ul

Lims Batch: 185329  
 CCV IS Mode: Select Ical Level, Cal Level: 3  
 Non-Cal IS Mode: Last Ccal Sample

\$ 2 13C2 PFHxA  
 \$ 10 13C2 PFDA

Lab ID	Inj Date	\$ 2	\$ 10	* 6 13C2-PFOA	* 7 13C4 PFOS
	IS Std			1939425 1.94	5718230 2.17
# 1 RB	20-Sep-2017 02:41:50			2065918 106.5 1.86	5411709 94.6 2.11
# 2 RB	20-Sep-2017 02:46:34			2077017 107.1 1.85	5614007 98.2 2.11
	IS Std			2075431 1.85	5478893 2.10
# 3 RB	20-Sep-2017 02:51:19			1999632 96.3 1.85	5340682 97.5 2.11
	IS Std				
# 4 IC L1	20-Sep-2017 02:56:02	1.53 95.33	2.28 94.34	2211369> 100.0* 1.85	5717338> 100.0* 2.11
# 5 IC L2	20-Sep-2017 03:00:47	1.53 101.20	2.28 101.50	2192240> 99.1* 1.86	5904759> 103.3* 2.11
# 6 IC L3	20-Sep-2017 03:05:32	1.52 100.50	2.28 100.50	2075481> 93.9* 1.85	5478893> 95.8* 2.10
# 7 IC L4	20-Sep-2017 03:10:16	1.53 99.50	2.28 98.97	2095801> 94.8* 1.86	5418565> 94.8* 2.11
# 8 IC L5	20-Sep-2017 03:15:01	1.53 100.30	2.28 102.20	2087979> 94.4* 1.86	5450221> 95.3* 2.11
# 9 IC L6	20-Sep-2017 03:19:48	1.53 103.10	2.28 102.50	2036942> 92.1* 1.85	5454650> 95.4* 2.11
	IS Std			2075481 1.85	5478893 2.10
#10 RB	20-Sep-2017 03:24:33			2085152 100.5 1.85	5726961 104.5 2.10
	IS Std			2095801 1.86	5418565 2.11
#11 CCVL	20-Sep-2017 03:29:17	1.52 97.20	2.28 102.10	2252465 107.5 1.85	5723538 105.6 2.10
	IS Std			2252465 1.85	5723538 2.10
#12 RB	20-Sep-2017 03:34:02			2077507 92.2 1.85	5580721 97.5 2.10
	IS Std			2095801 1.86	5418565 2.11
#13 ICV	20-Sep-2017 03:38:46	1.53 99.40	2.28 103.60	2616480 124.8 1.85	7294448 134.6 2.10
	IS Std			1963439 1.85	5207540 2.11
#14 RB	20-Sep-2017 03:43:31			1963439 100.0 1.85	5207540 100.0 2.11

13C2-PFOA

$$RPD = \frac{2211369 - 2036942}{2211369 + 2036942} = 8.2$$

13C4-PFOS

$$RPD = \frac{5904759 - 5418565}{5904759 + 5418565} = 8.6$$

JRB

9-20-17

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_004.d  
 Lims ID: IC L1  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 20-Sep-2017 02:56:02 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:29 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:03:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	2072419	8.73		6405	
298.90 > 99.00	1.404	1.402	0.002	1.000	1455019		1.42(0.00-0.00)	3941	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2470192	9.53		11139	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	971572	2.98		3003	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	202553	0.9726		61.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2211369	10.0		9755	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	390753	1.92		17.1	
413.00 > 169.00	1.859	1.856	0.003	1.000	208681		1.87(0.00-0.00)	858	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5717338	28.7		8554	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	700862	3.77		668	M
499.00 > 99.00	2.109	2.109	0.0	1.000	152073		4.61(0.00-0.00)	192	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	273016	1.99		41.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1163662	9.43		9791	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L1\_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_004.d

Injection Date: 20-Sep-2017 02:56:02

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

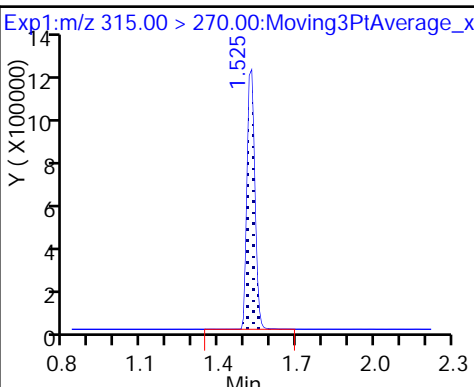
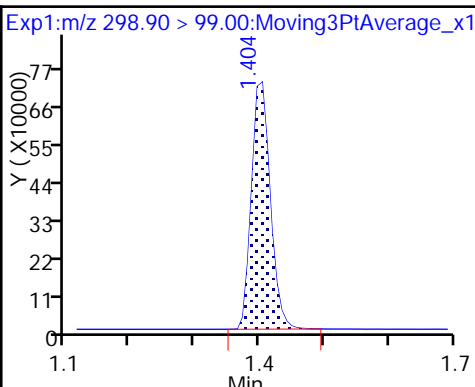
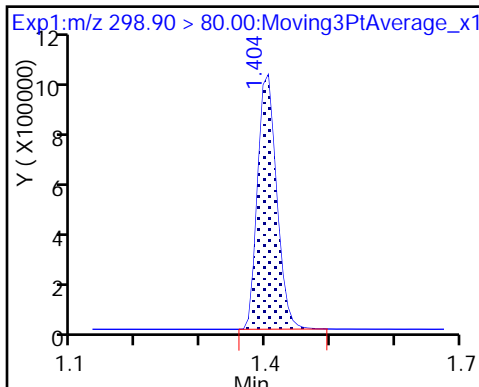
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

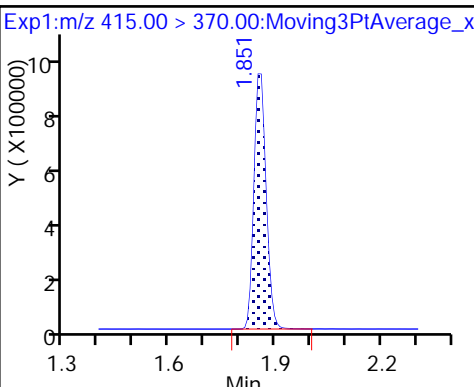
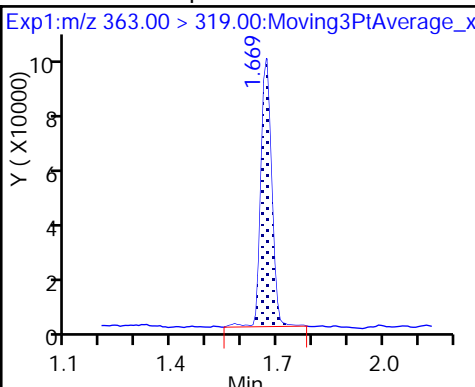
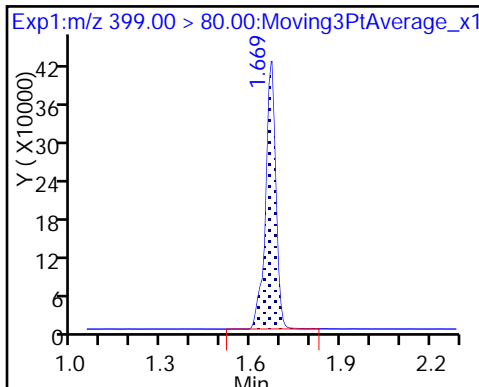
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

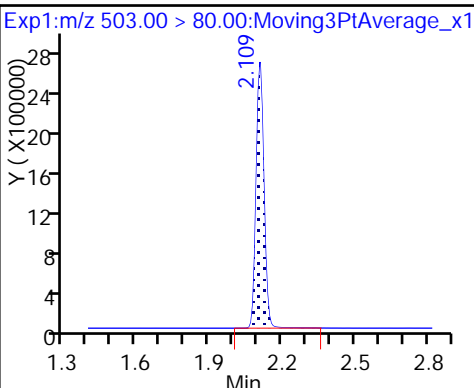
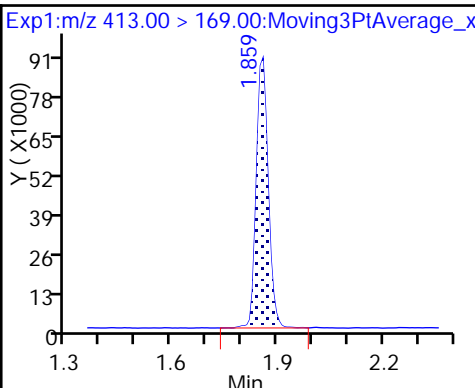
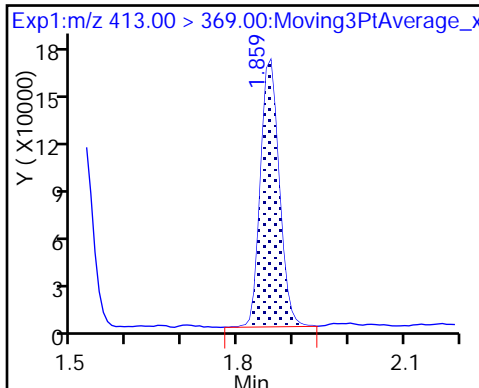
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

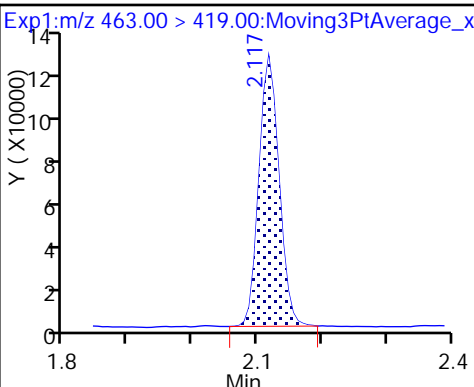
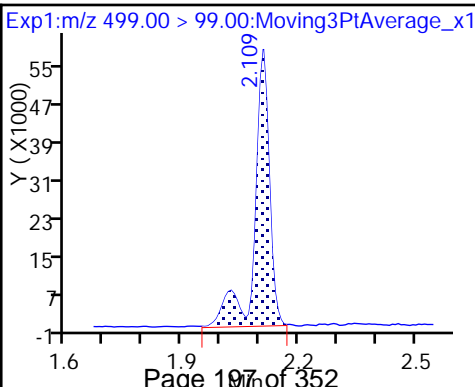
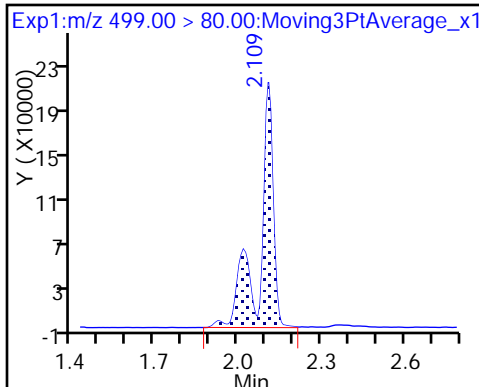
\* 7 13C4 PFOS



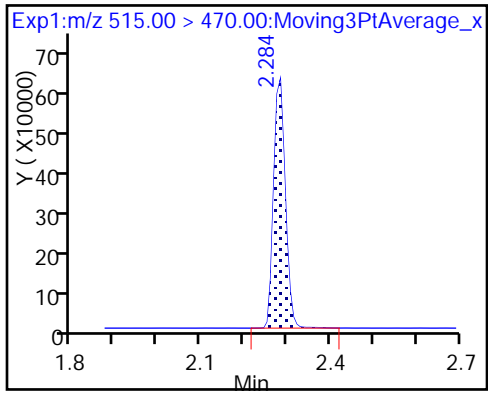
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA





TestAmerica Sacramento

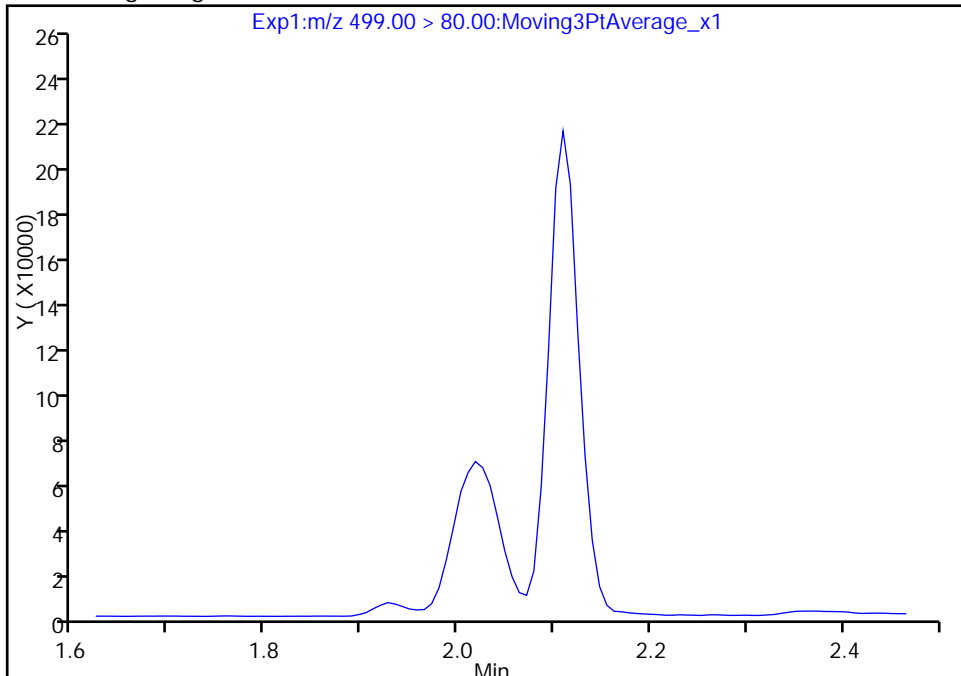
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_004.d  
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8\_N  
Lims ID: IC L1  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

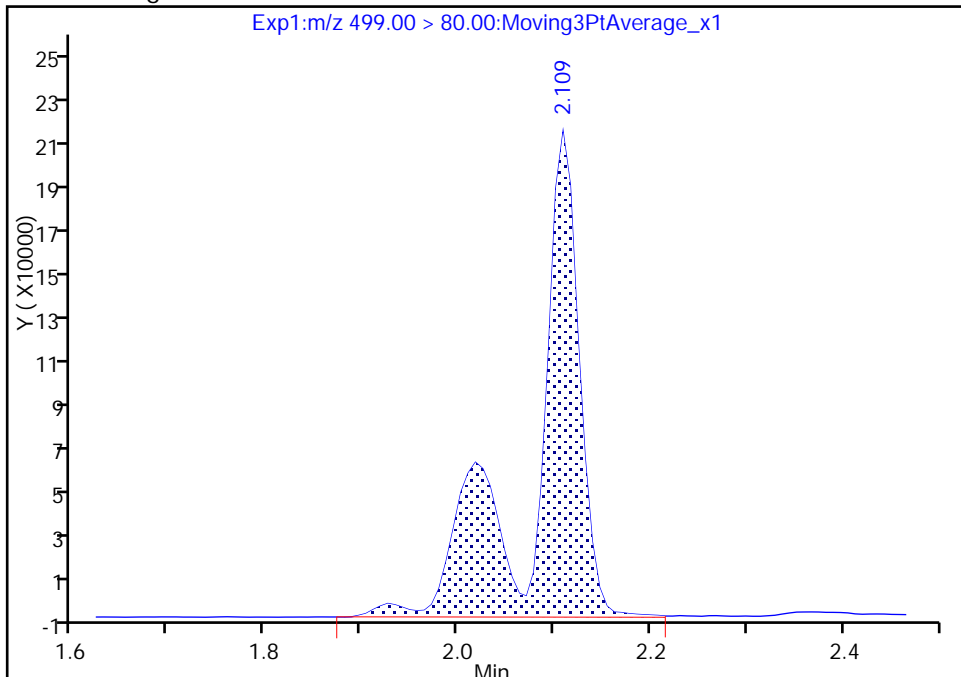
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 700862  
Amount: 3.773476  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:02:54  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

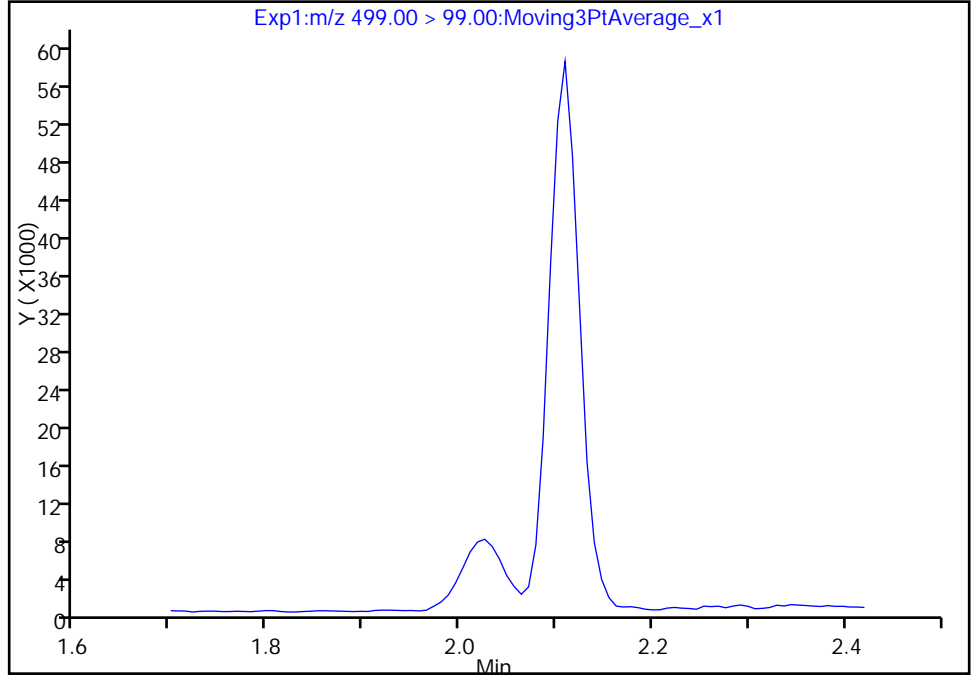
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Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8\_N  
Lims ID: IC L1  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

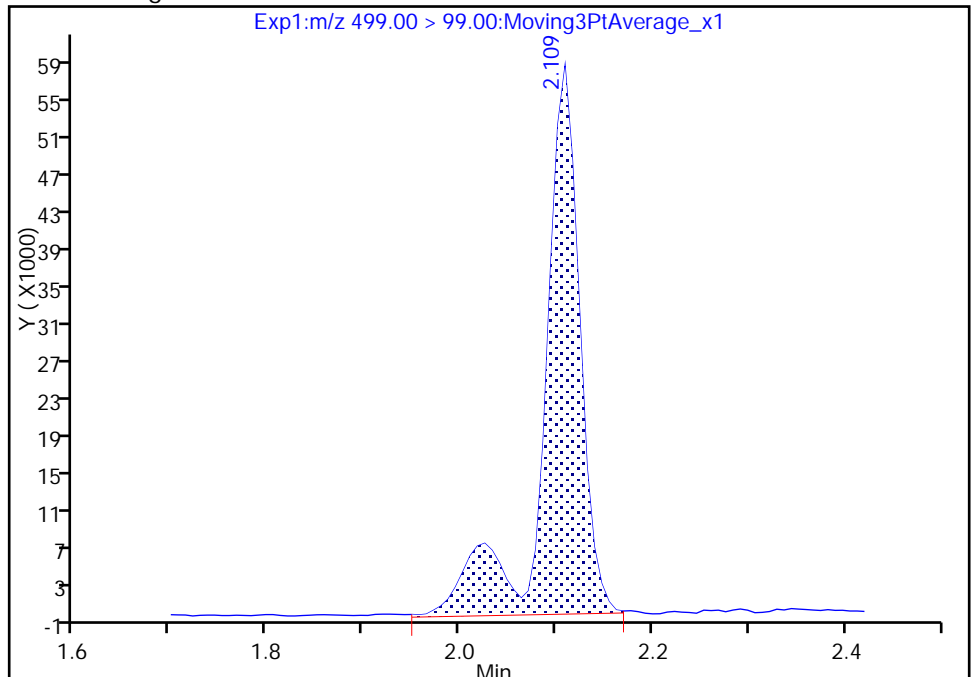
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 152073  
Amount: 3.773476  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:03:37

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

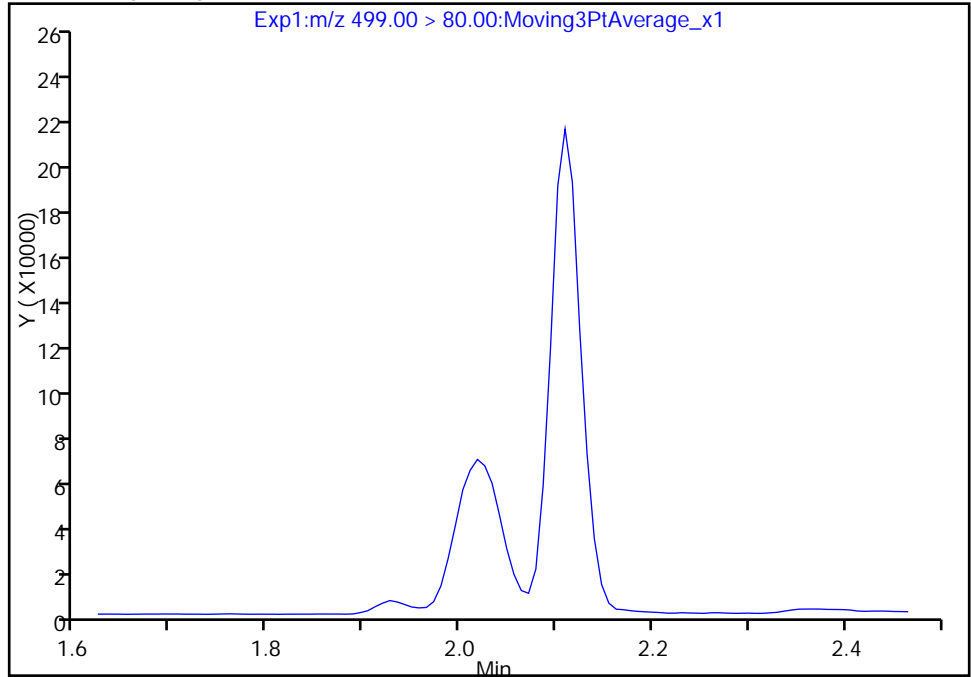
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_004.d  
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8\_N  
Lims ID: IC L1  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

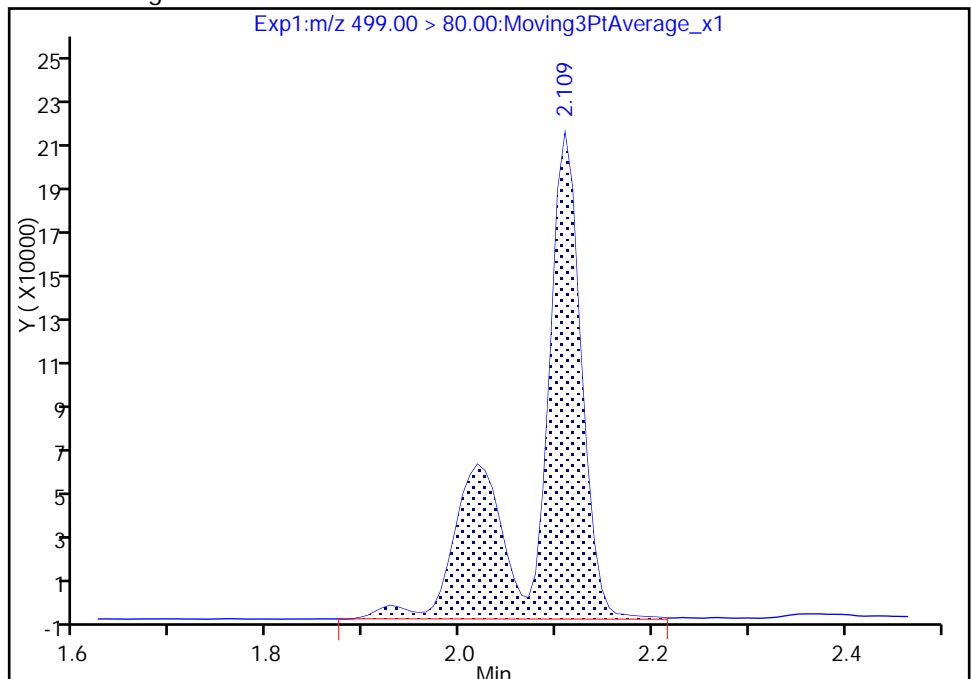
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 700862  
Amount: 3.773476  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:03:36

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_005.d  
 Lims ID: IC L2  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 20-Sep-2017 03:00:47 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:30 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:04:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	5031340	21.1		7563	
298.90 > 99.00	1.404	1.402	0.002	1.000	3464667		1.45(0.00-0.00)	5263	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2599092	10.1		7997	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	492336	2.38		155	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	2411042	7.15		4372	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.855	0.004		2192240	10.0		6795	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	912252	4.53		39.5	
413.00 > 169.00	1.859	1.856	0.003	1.000	481504		1.89(0.00-0.00)	1816	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5904759	28.7		8529	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1684976	8.78		1115	M
499.00 > 99.00	2.109	2.109	0.0	1.000	369952		4.55(0.00-0.00)	447	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	629304	4.62		87.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1241510	10.2		10447	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L2\_00020

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_005.d

Injection Date: 20-Sep-2017 03:00:47

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

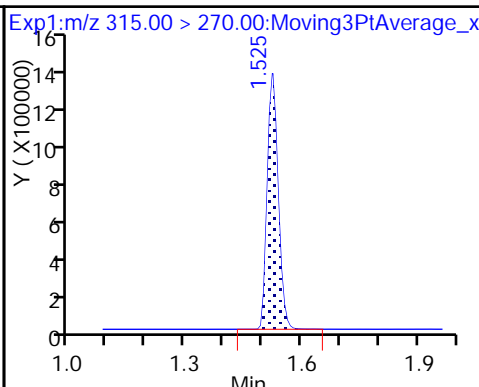
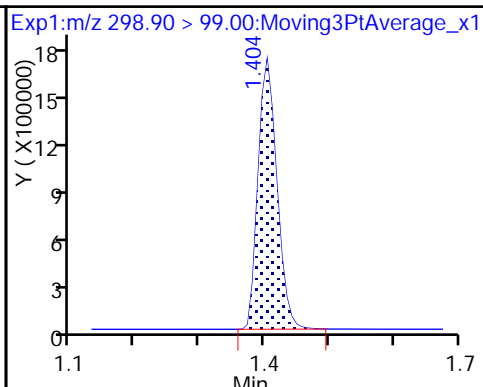
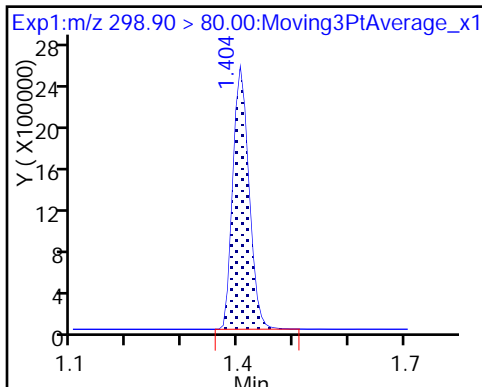
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

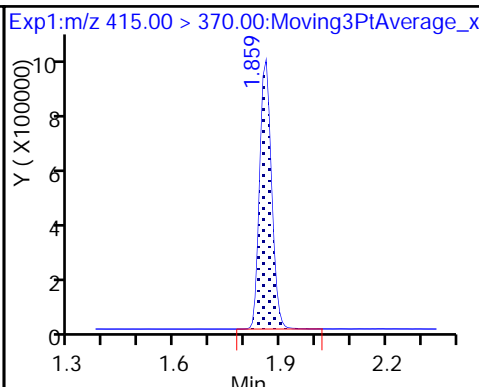
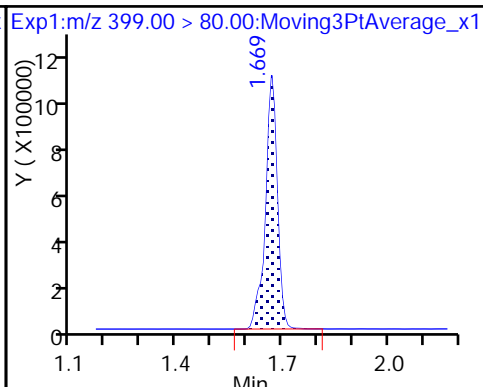
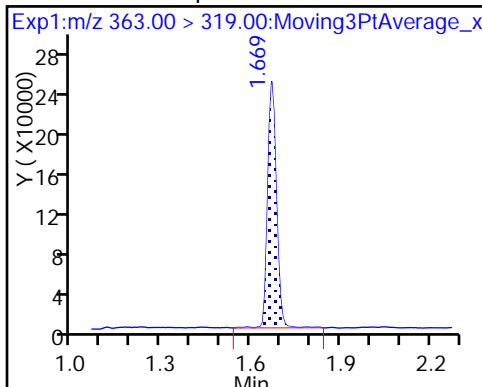
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

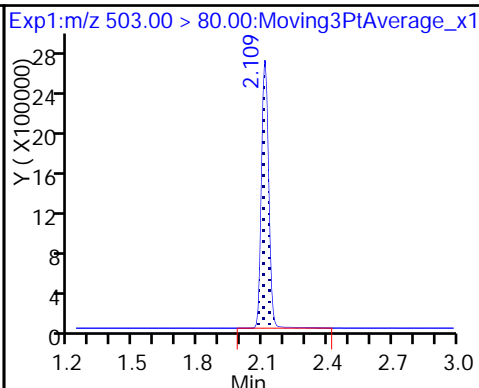
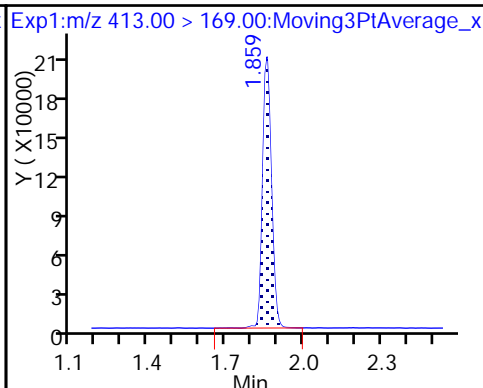
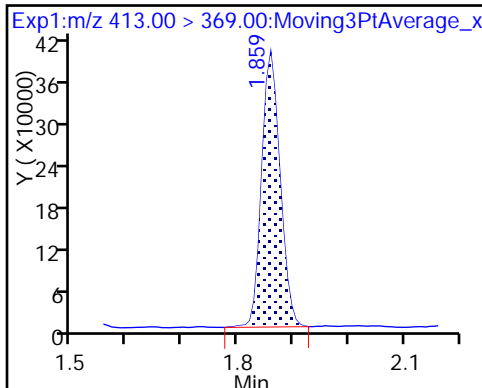
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

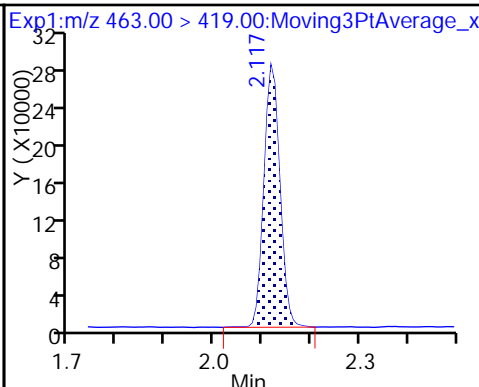
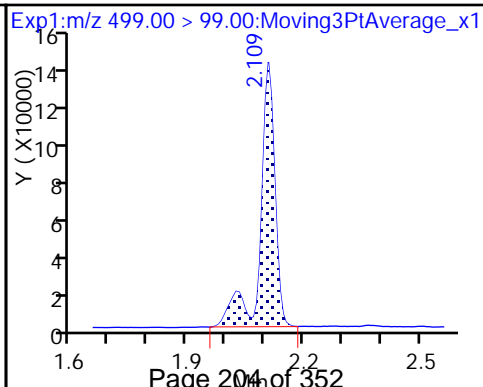
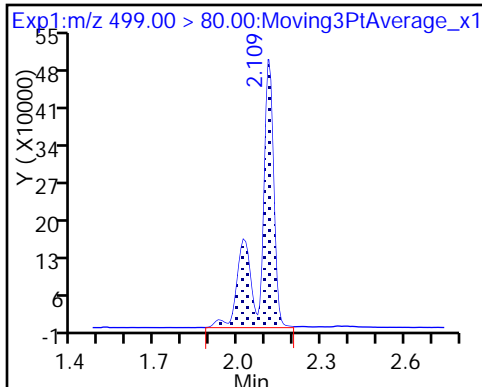
\* 7 13C4 PFOS



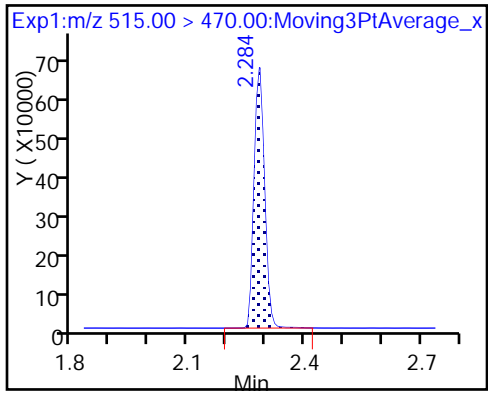
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

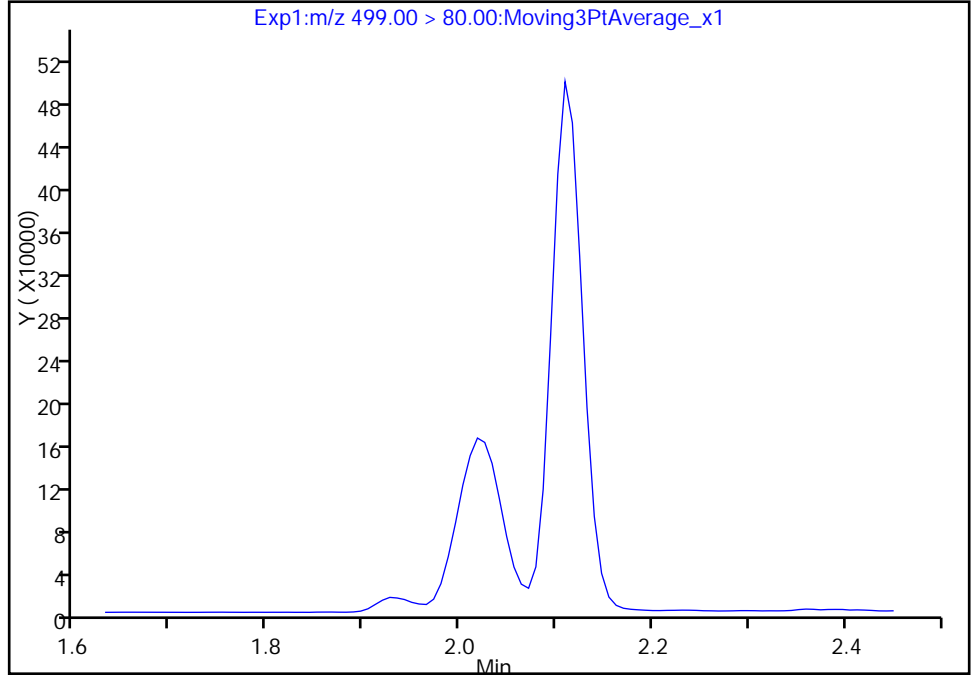
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_005.d  
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8\_N  
Lims ID: IC L2  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

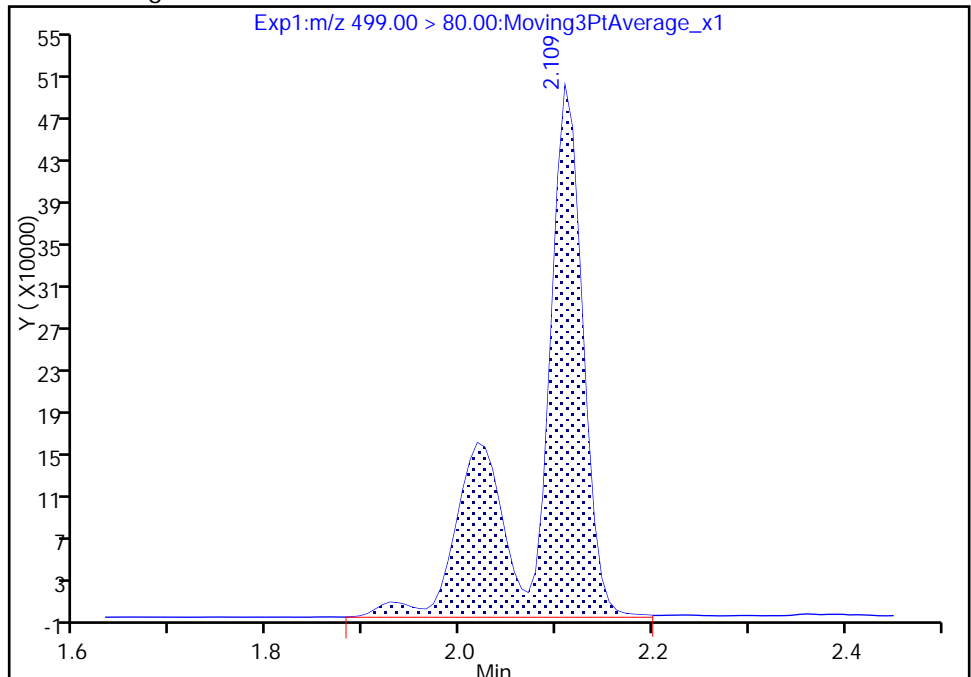
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 1684976  
Amount: 8.784044  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:04:03  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak



TestAmerica Sacramento

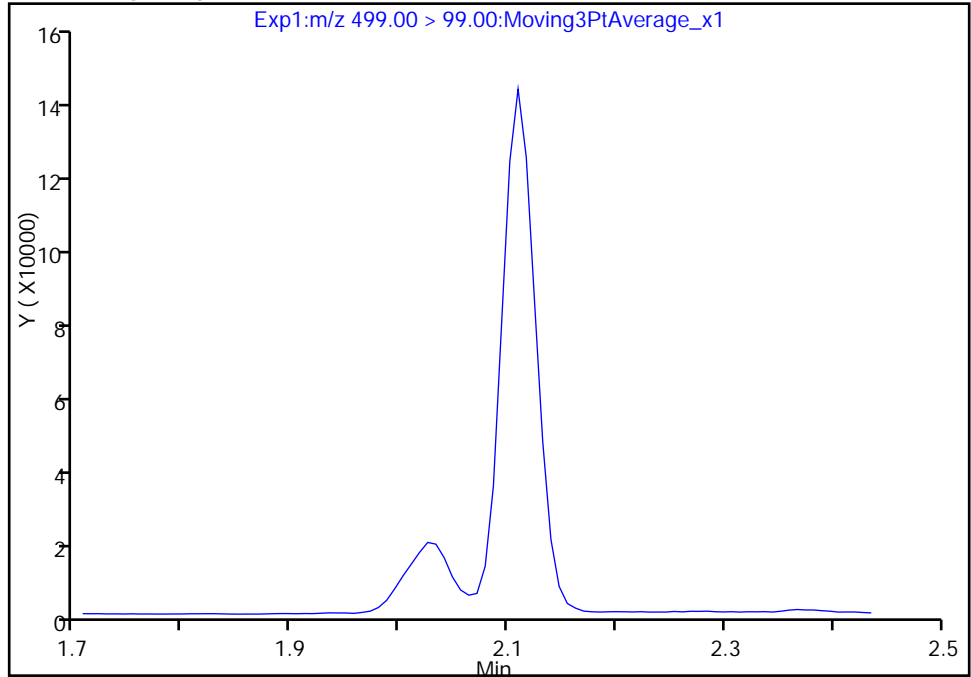
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_005.d  
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8\_N  
Lims ID: IC L2  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

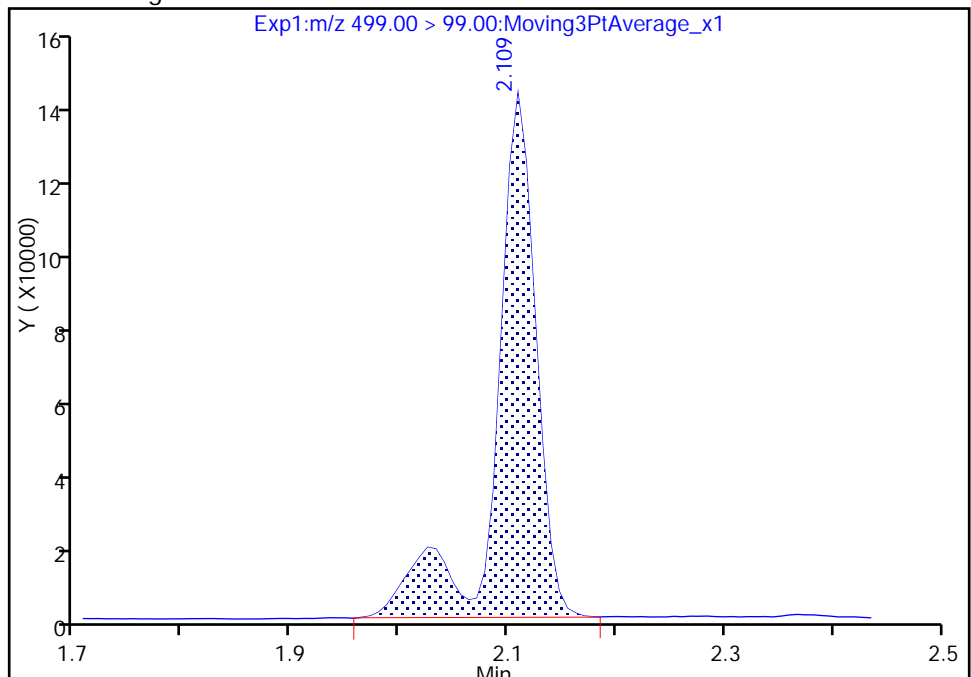
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 369952  
Amount: 8.784044  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:04:48

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

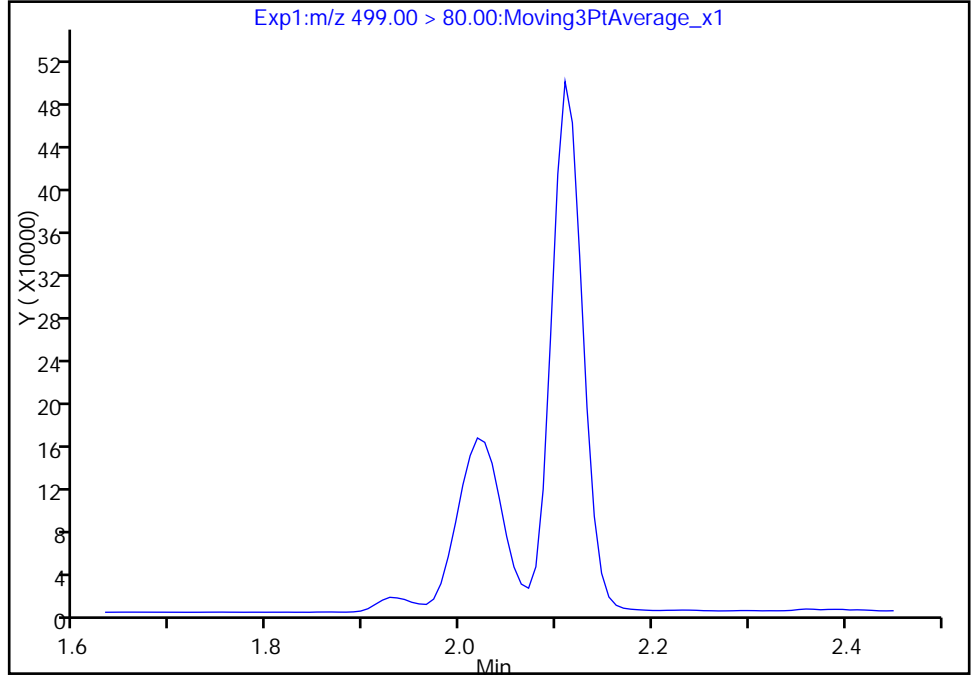
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_005.d  
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8\_N  
Lims ID: IC L2  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

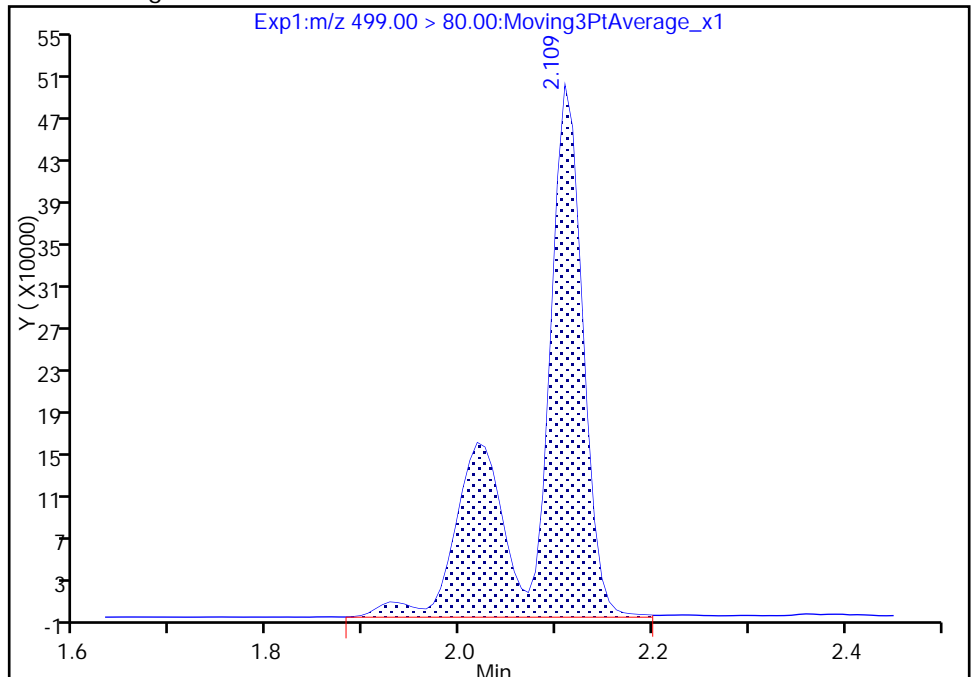
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 1684976  
Amount: 8.784044  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:04:48

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_006.d  
 Lims ID: IC L3  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 20-Sep-2017 03:05:32 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:31 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:05:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	9714039	46.3		7320	
298.90 > 99.00	1.396	1.402	-0.006	1.000	6860395		1.42(0.00-0.00)	6049	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2444565	10.1		7634	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	4809005	15.4		5113	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	996370	5.10		304	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2075481	10.0		7307	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	1931186	10.1		80.1	
413.00 > 169.00	1.851	1.856	-0.005	1.000	1010441		1.91(0.00-0.00)	3393	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		5478893	28.7		7009	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	3635963	20.4		4871	M
499.00 > 99.00	2.102	2.109	-0.007	1.000	723199		5.03(0.00-0.00)	729	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	1293375	10.0		234	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1162968	10.0		8493	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L3\_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_006.d

Injection Date: 20-Sep-2017 03:05:32

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

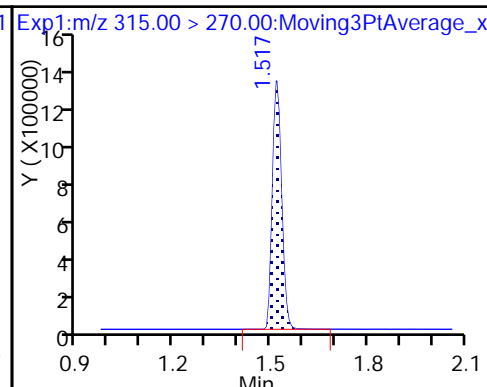
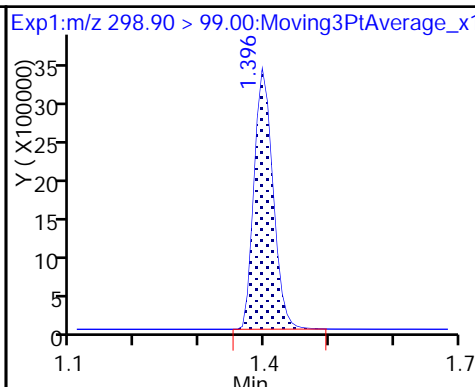
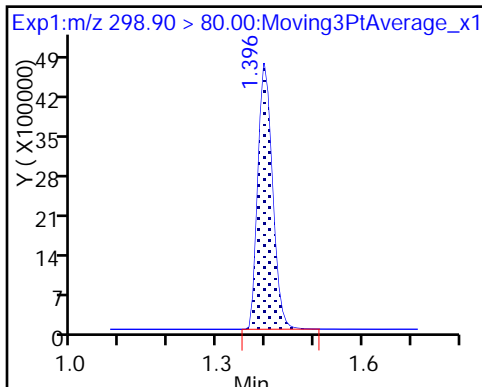
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

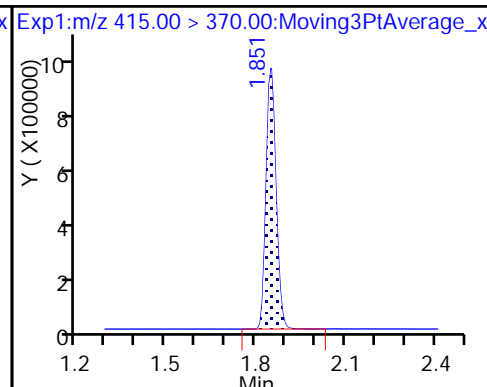
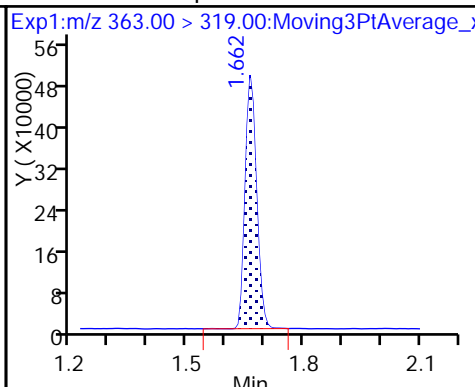
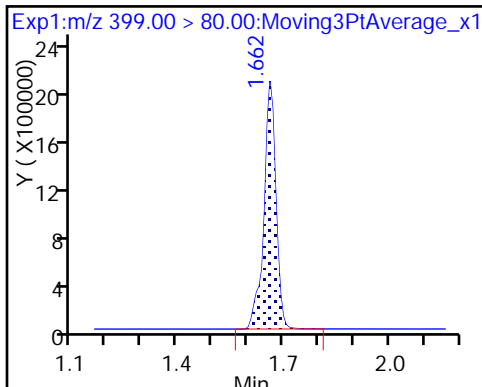
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

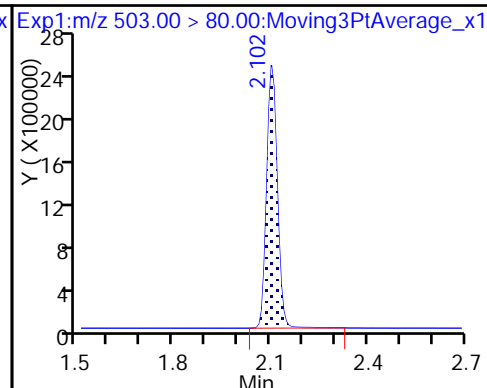
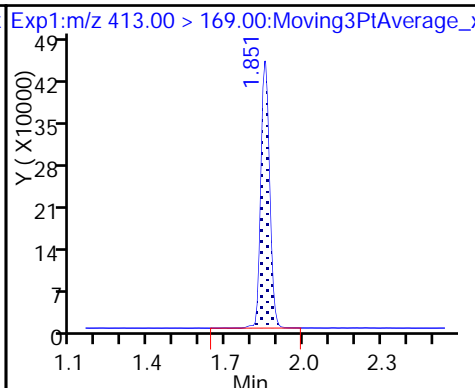
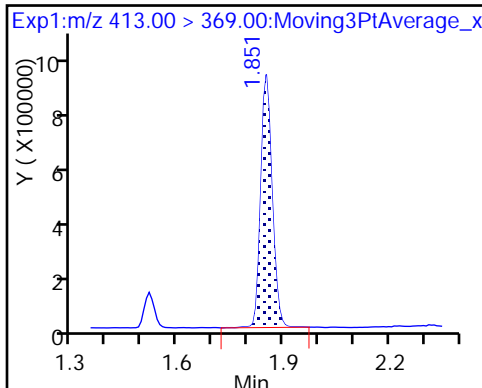
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

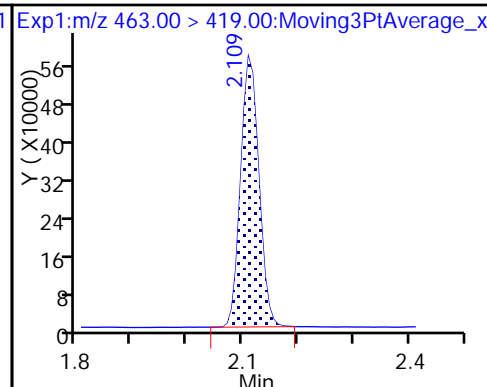
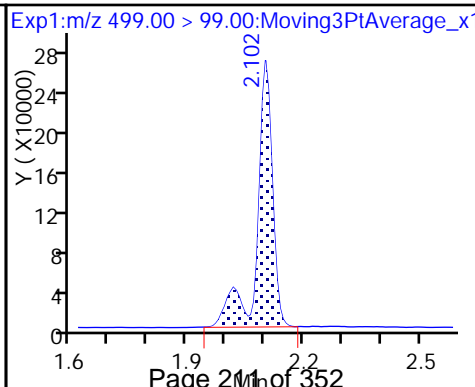
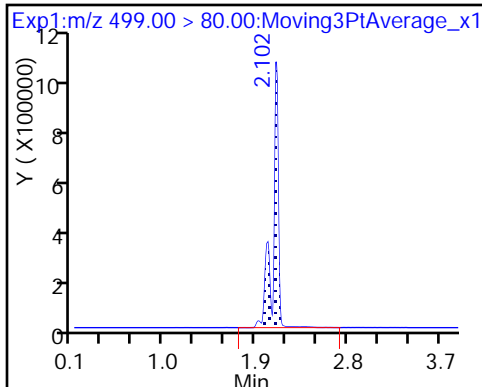
\* 7 13C4 PFOS



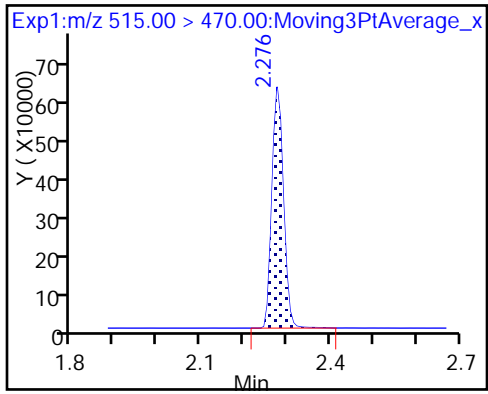
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

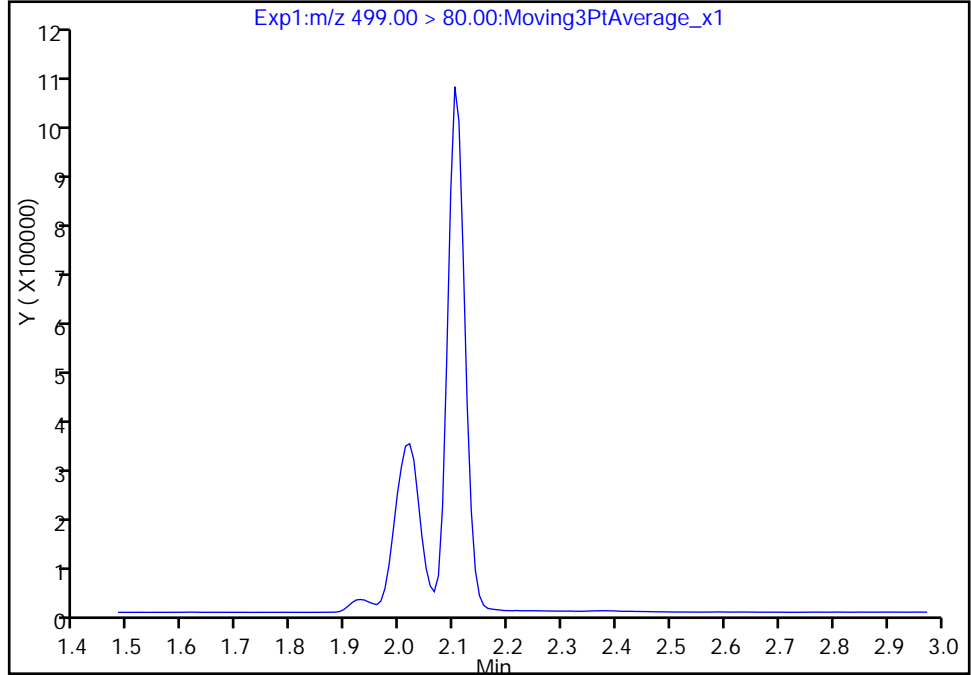
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_006.d  
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8\_N  
Lims ID: IC L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

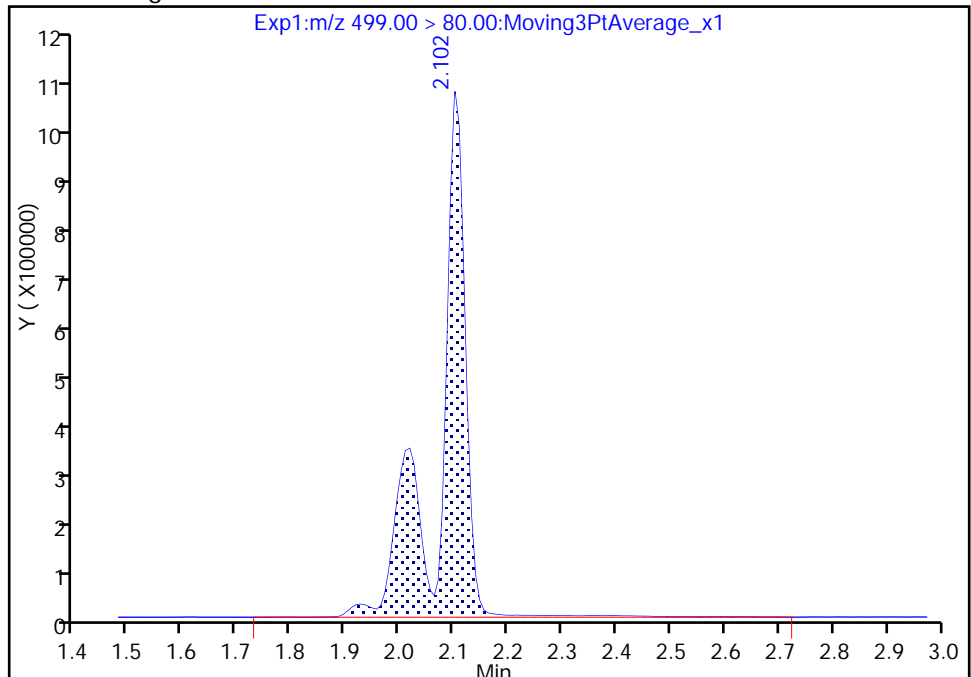
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10  
Area: 3635963  
Amount: 20.428176  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:06  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

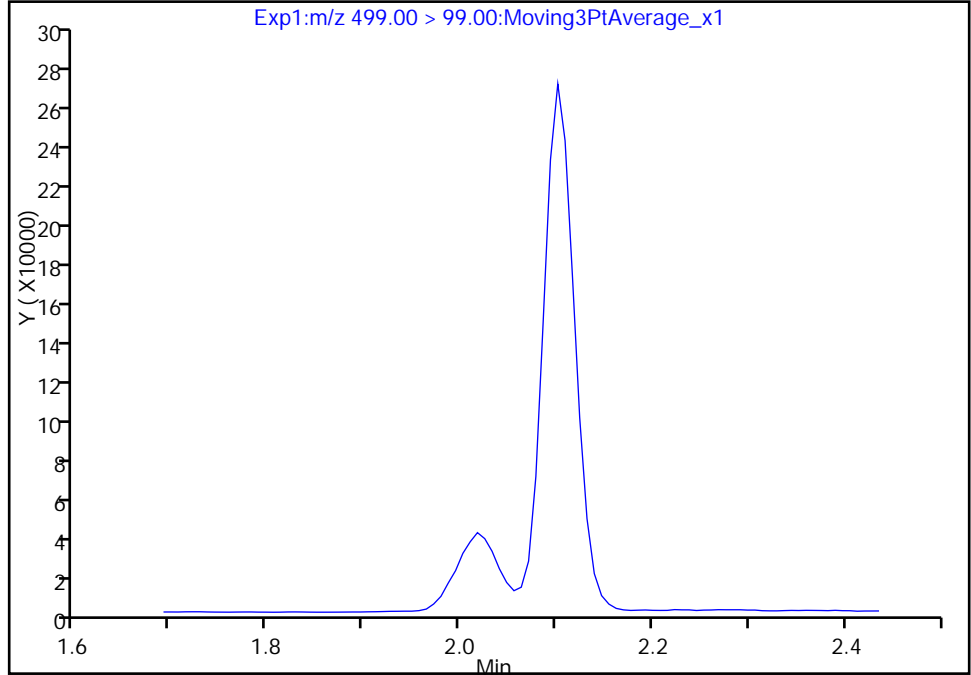
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_006.d  
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8\_N  
Lims ID: IC L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

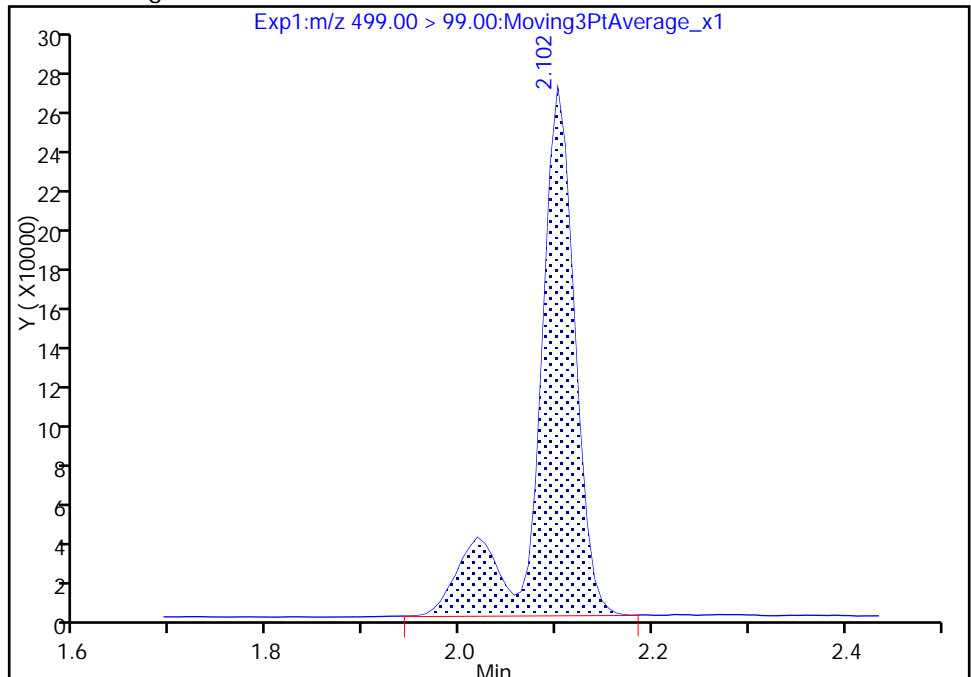
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10  
Area: 723199  
Amount: 20.428176  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:21

Audit Action: Manually Integrated

Audit Reason: Missed Peak



TestAmerica Sacramento

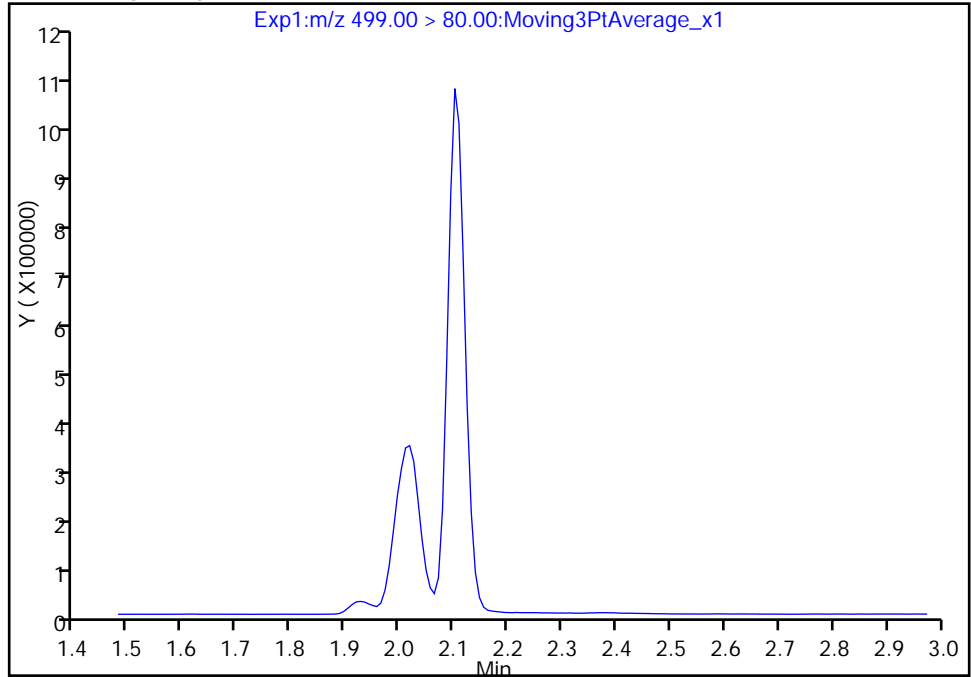
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_006.d  
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8\_N  
Lims ID: IC L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

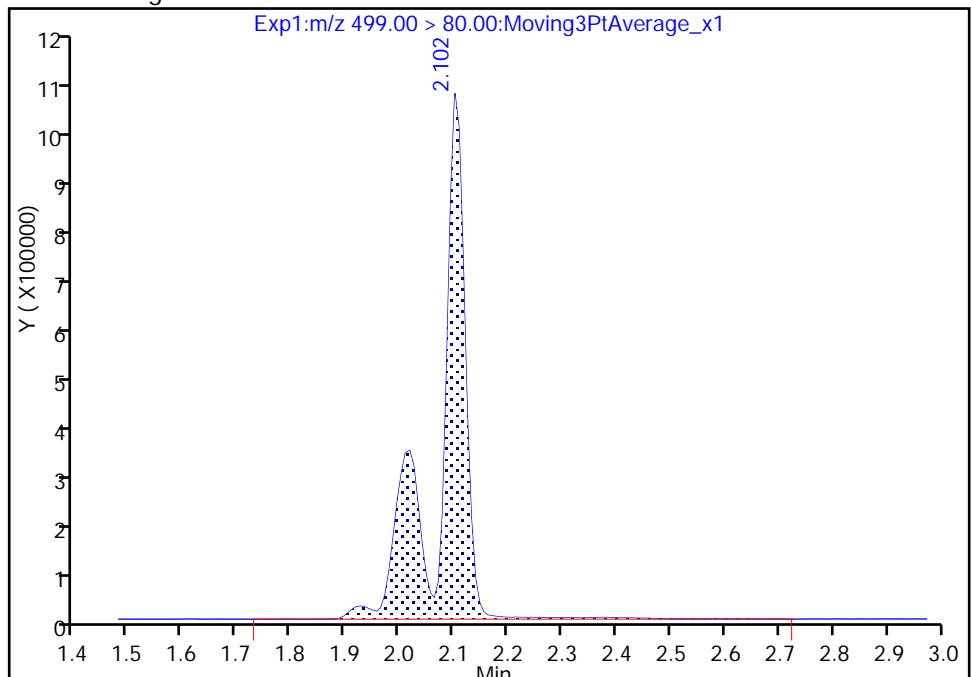
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10  
Area: 3635963  
Amount: 20.428176  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:21

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_007.d  
 Lims ID: IC L4  
 Client ID:  
 Sample Type: ICISAV Calib Level: 4  
 Inject. Date: 20-Sep-2017 03:10:16 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:32 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:06:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	16708415	89.3		6528	
298.90 > 99.00	1.404	1.402	0.002	1.000	12155594		1.37(0.00-0.00)	6466	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2443470	9.95		7571	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	1954380	9.90		573	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	9481986	30.6		5903	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.855	0.004		2095801	10.0		7193	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	3817782	19.8		156	
413.00 > 169.00	1.859	1.856	0.003	1.000	2029912		1.88(0.00-0.00)	6086	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5418565	28.7		8070	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	7143258	40.6		5401	M
499.00 > 99.00	2.109	2.109	0.0	1.000	1480190		4.83(0.00-0.00)	1160	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	2592159	19.9		433	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1156914	9.90		8203	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L4\_00020

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_007.d

Injection Date: 20-Sep-2017 03:10:16

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

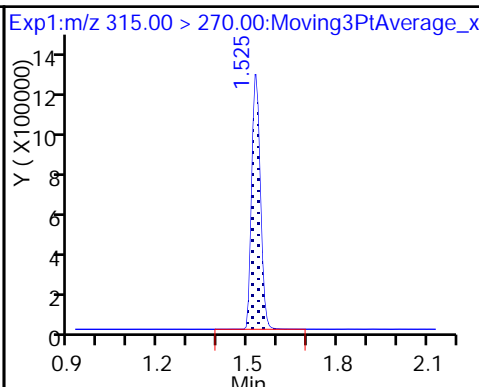
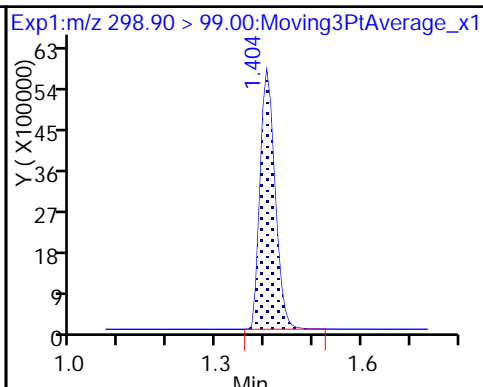
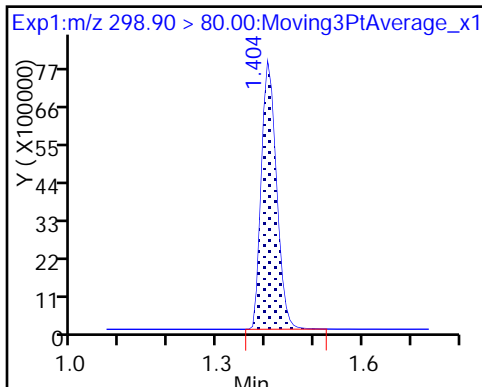
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

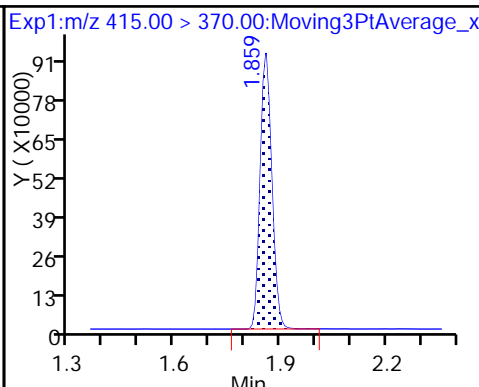
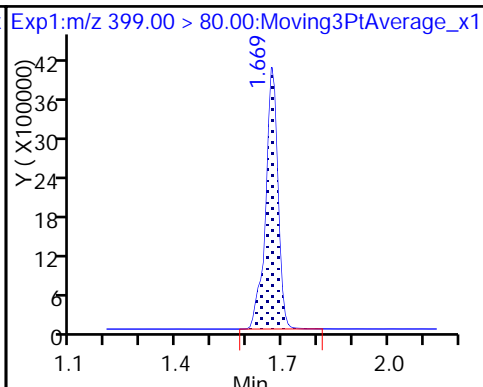
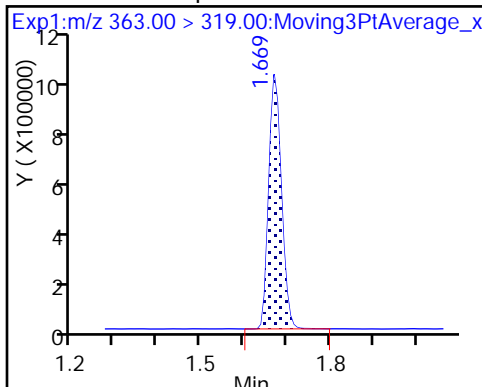
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

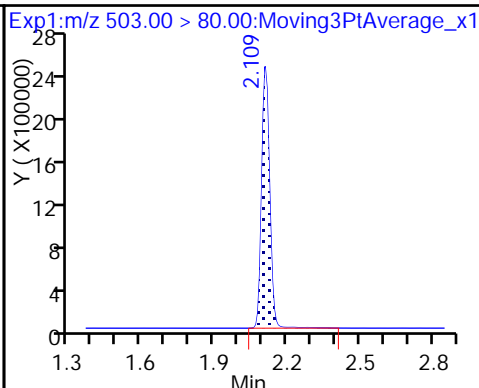
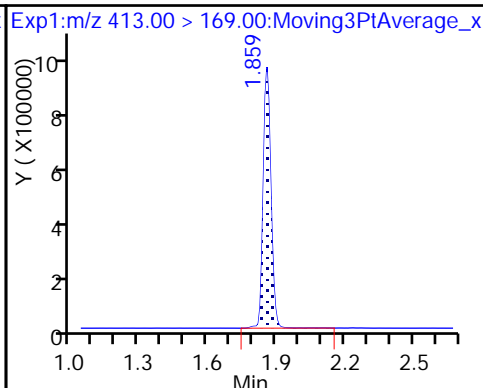
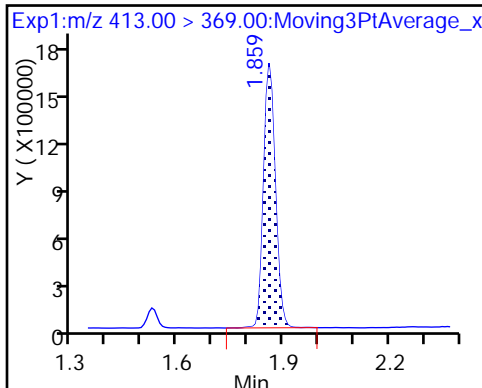
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

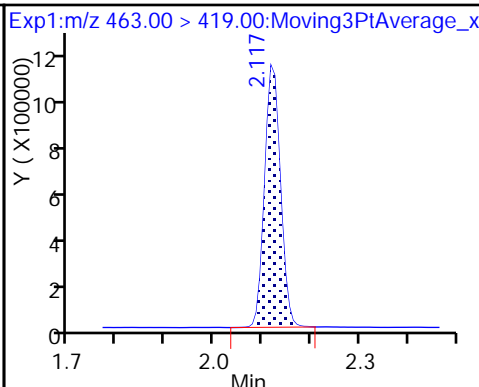
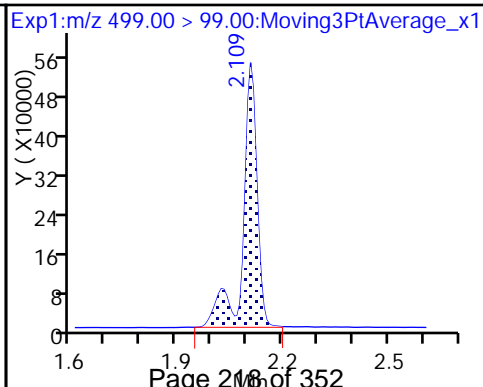
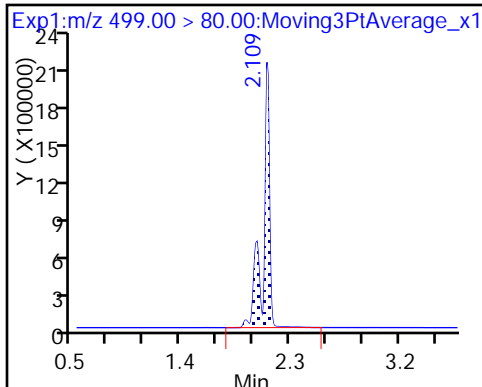
\* 7 13C4 PFOS



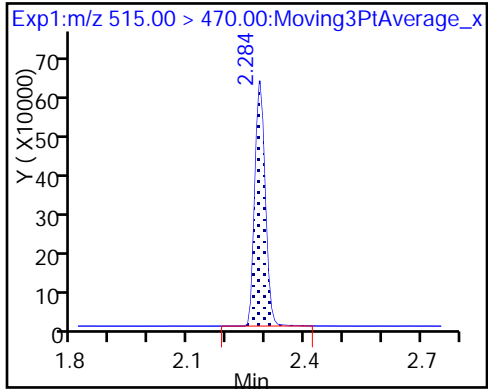
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

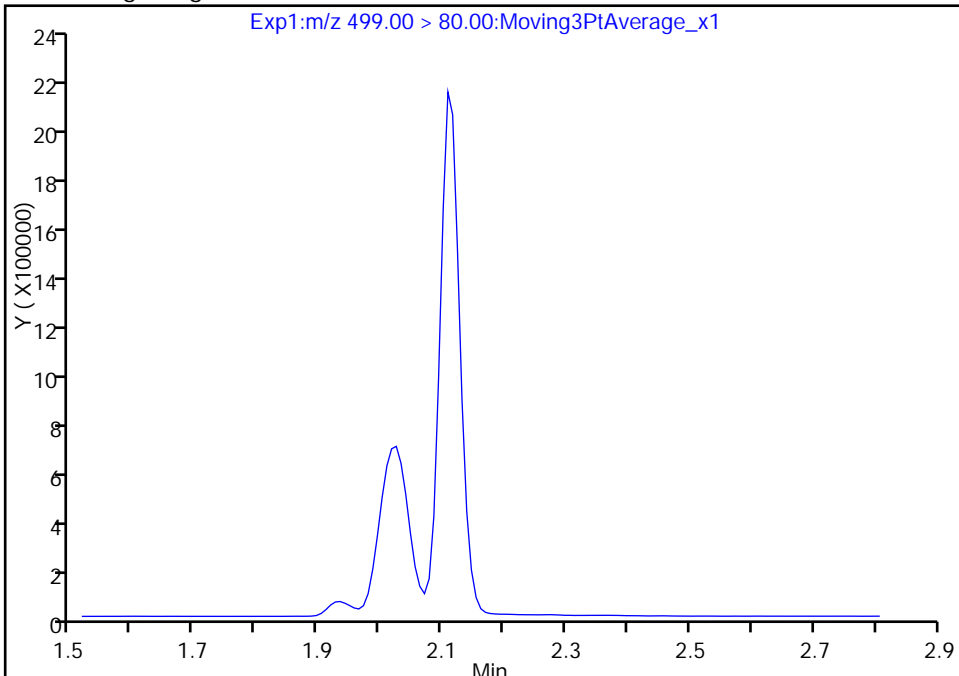
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_007.d  
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8\_N  
Lims ID: IC L4  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

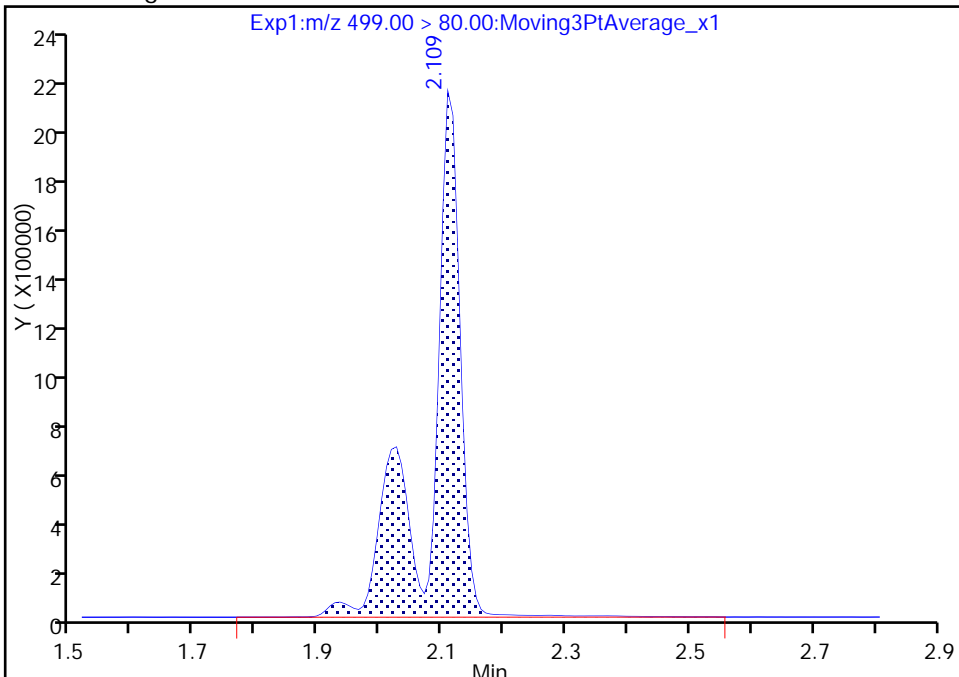
Signal: 1

Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11  
Area: 7143258  
Amount: 40.580278  
Amount Units: ng/ml

TestAmerica Sacramento

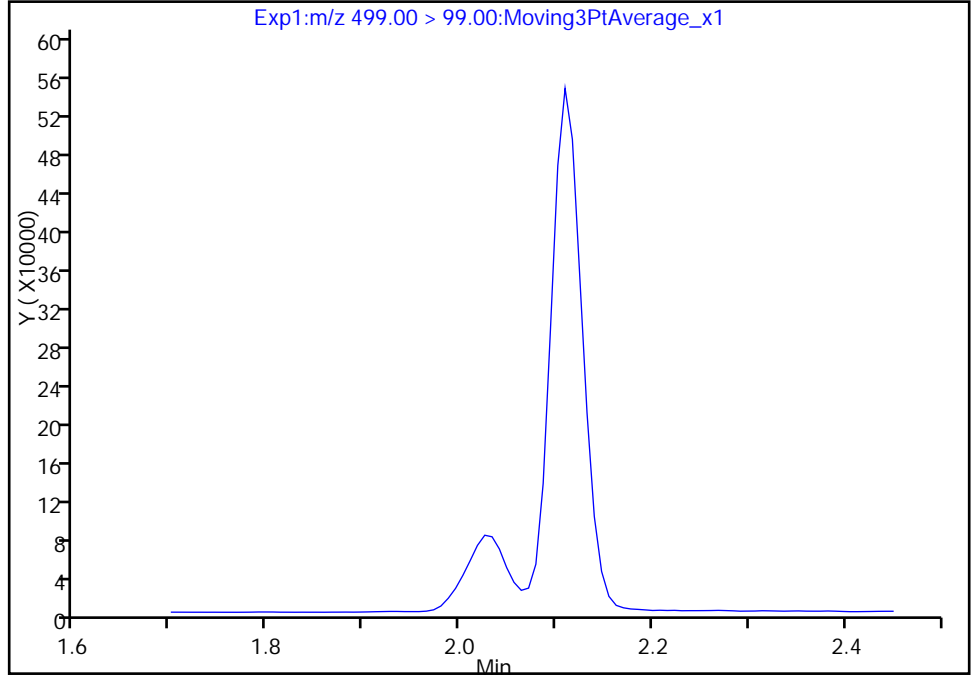
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_007.d  
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8\_N  
Lims ID: IC L4  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

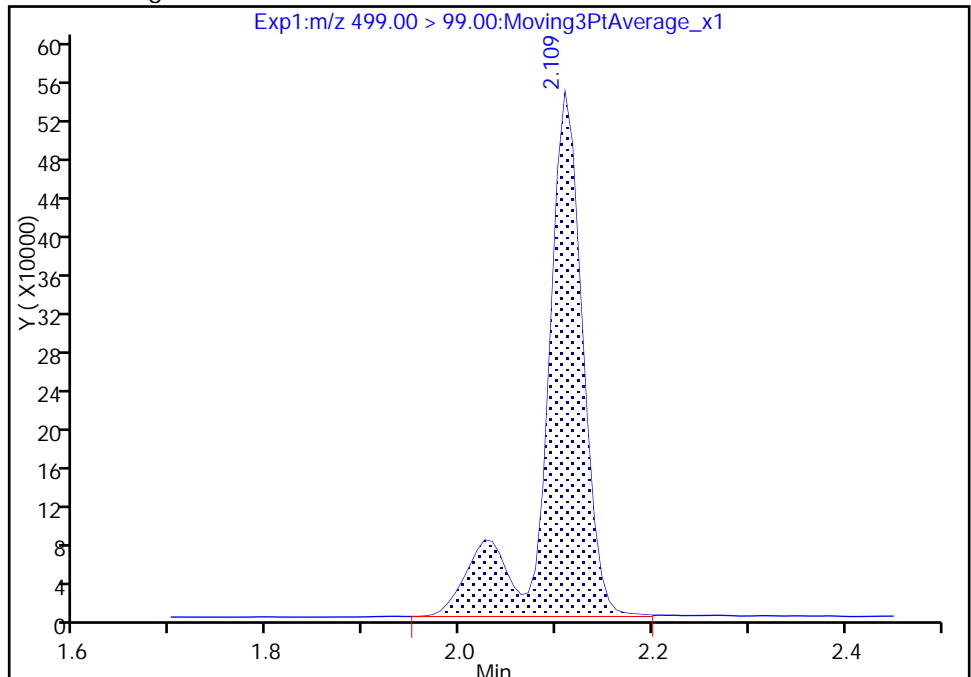
Not Detected  
Expected RT: 2.11

Processing Integration Results



RT: 2.11  
Area: 1480190  
Amount: 40.580278  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Sep-2017 10:05:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

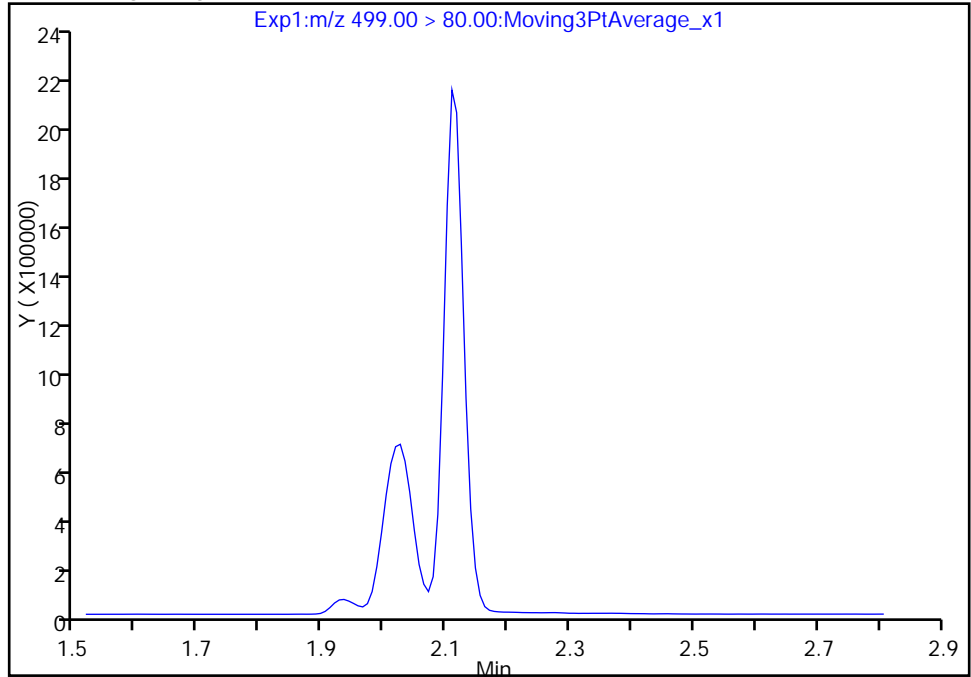
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_007.d  
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8\_N  
Lims ID: IC L4  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

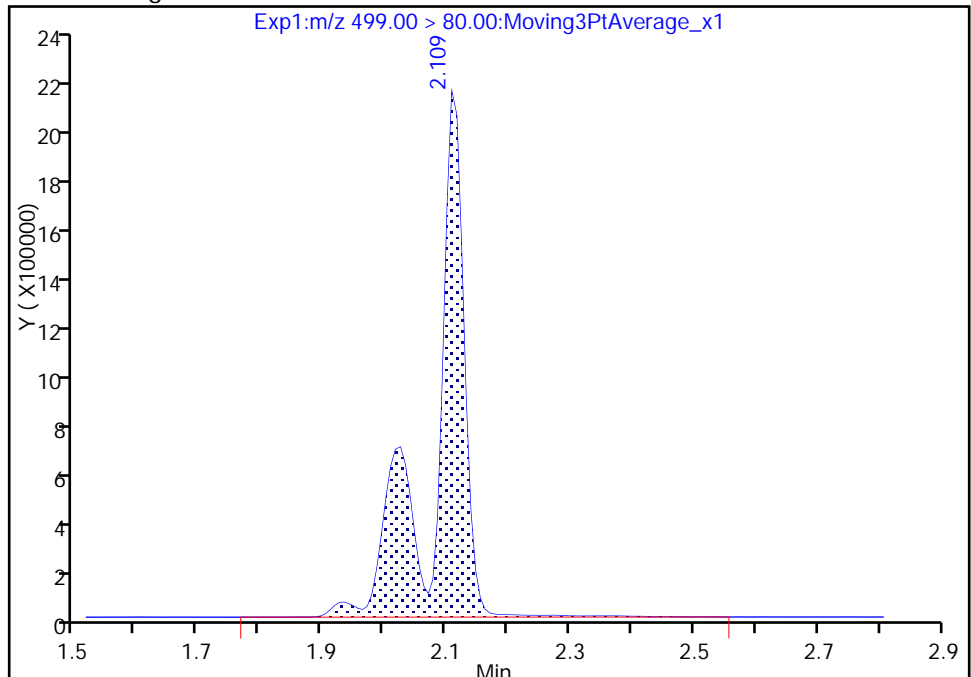
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 7143258  
Amount: 40.580278  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_008.d  
 Lims ID: IC L5  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 20-Sep-2017 03:15:01 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:33 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:06:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	22246597	132.8		7166	
298.90 > 99.00	1.404	1.402	0.002	1.000	16593473		1.34(0.00-0.00)	7174	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2454801	10.0		9700	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	13653533	43.9		6726	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	2871658	14.6		836	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.855	0.004		2087979	10.0		8636	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	5816384	30.3		226	
413.00 > 169.00	1.859	1.856	0.003	1.000	3025635		1.92(0.00-0.00)	7093	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5450221	28.7		7142	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	10806665	61.0		6680	M
499.00 > 99.00	2.109	2.109	0.0	1.000	2283151		4.73(0.00-0.00)	1726	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	3806555	29.3		645	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1189895	10.2		10440	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L5\_00024

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_008.d

Injection Date: 20-Sep-2017 03:15:01

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

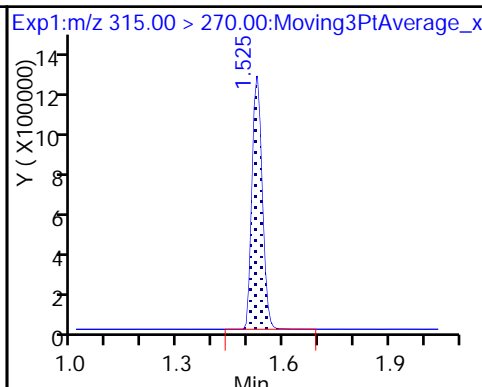
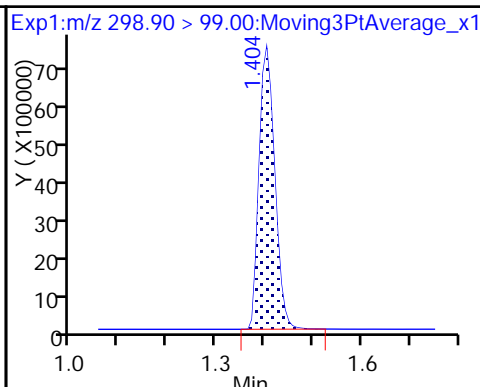
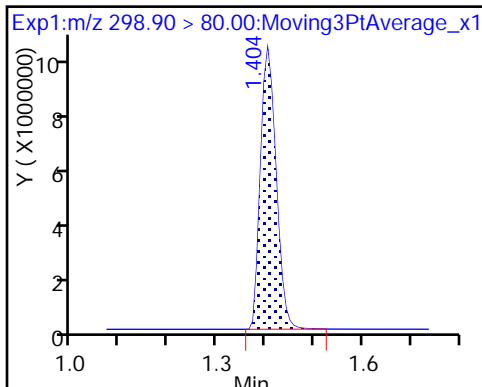
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

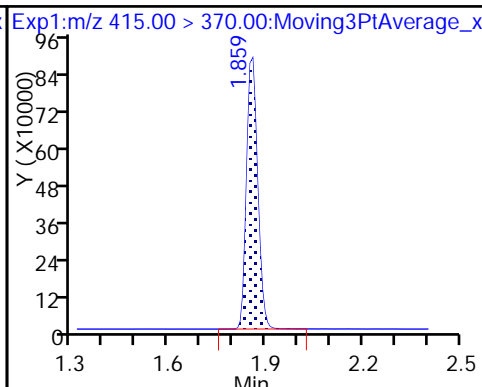
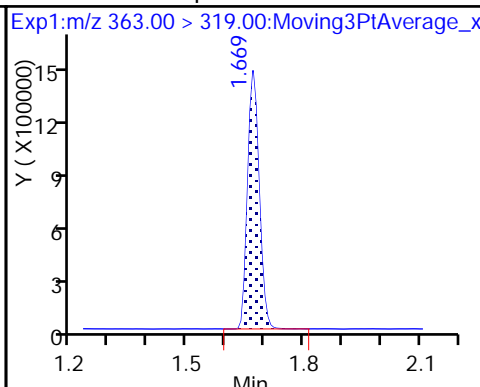
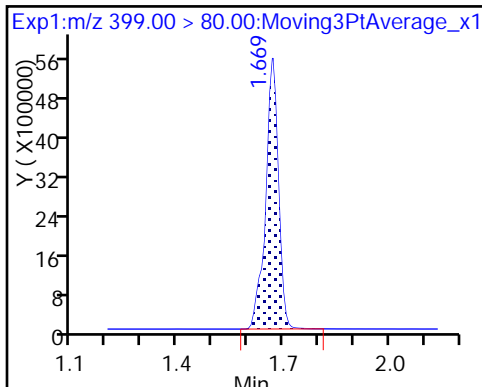
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

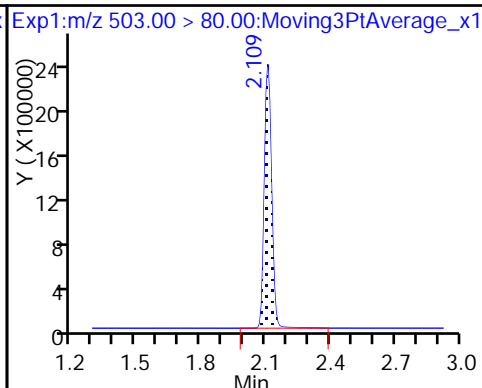
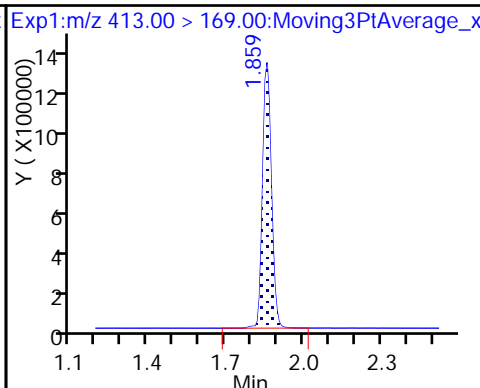
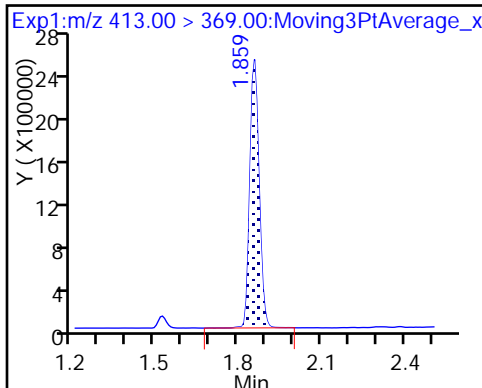
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

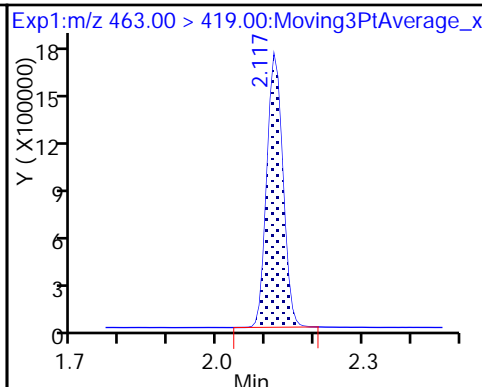
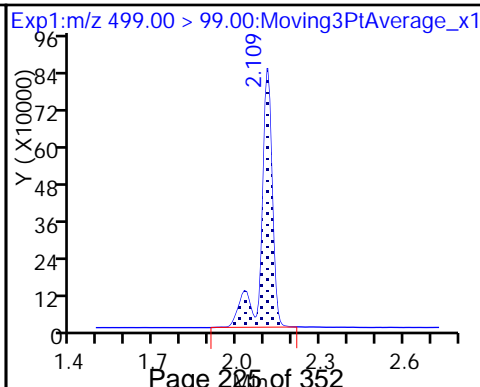
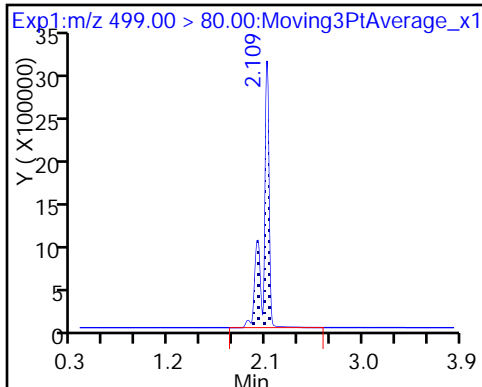
\* 7 13C4 PFOS



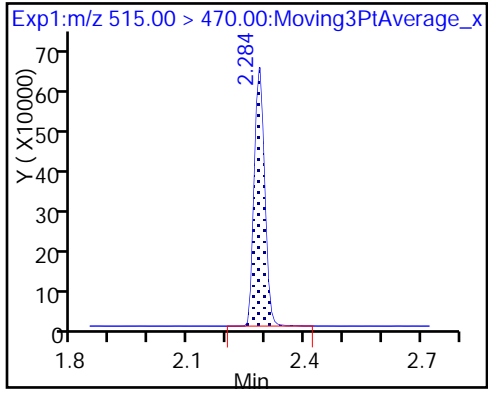
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

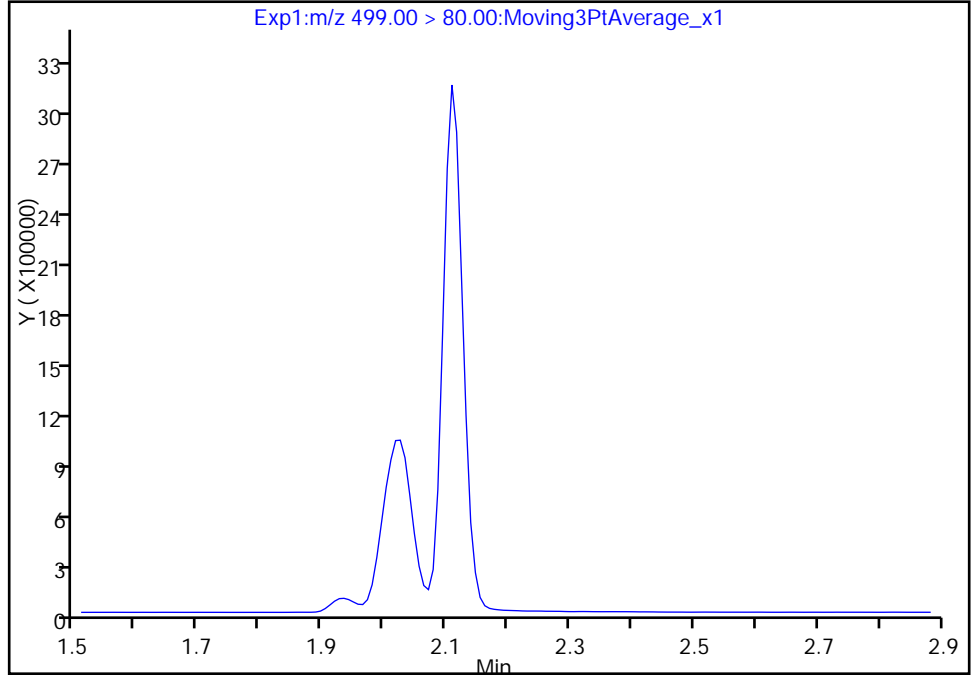
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_008.d  
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8\_N  
Lims ID: IC L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

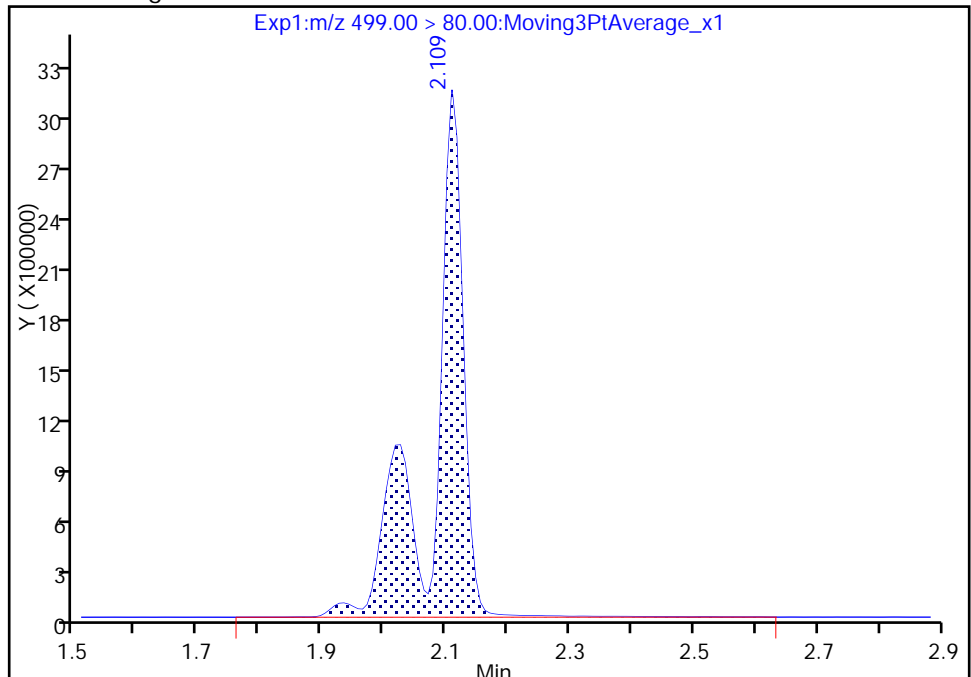
Signal: 1

Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11  
Area: 10806665  
Amount: 61.035224  
Amount Units: ng/ml

TestAmerica Sacramento

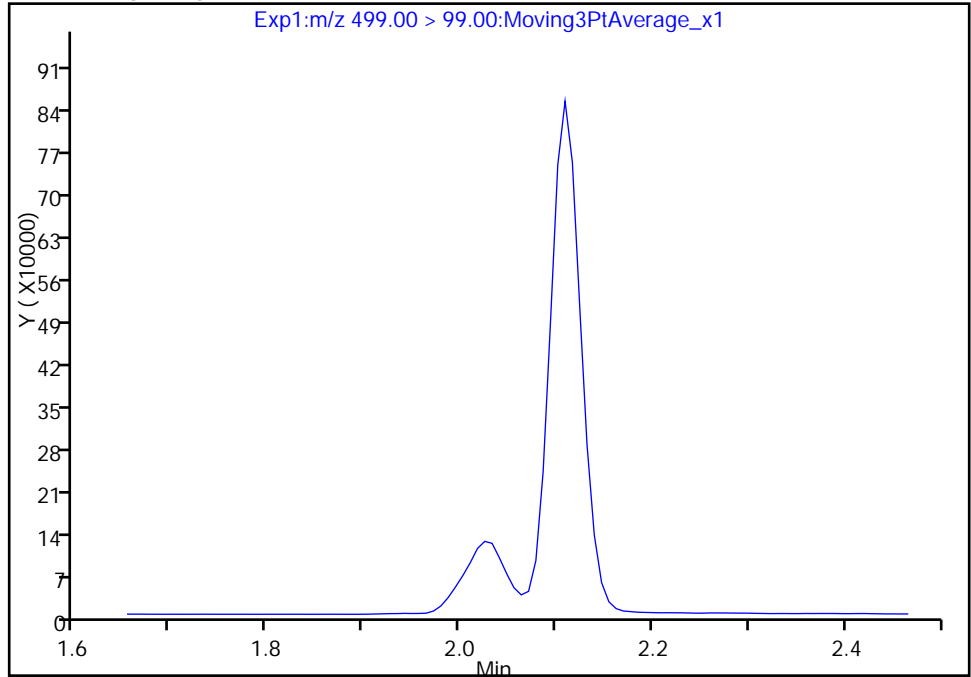
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_008.d  
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8\_N  
Lims ID: IC L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

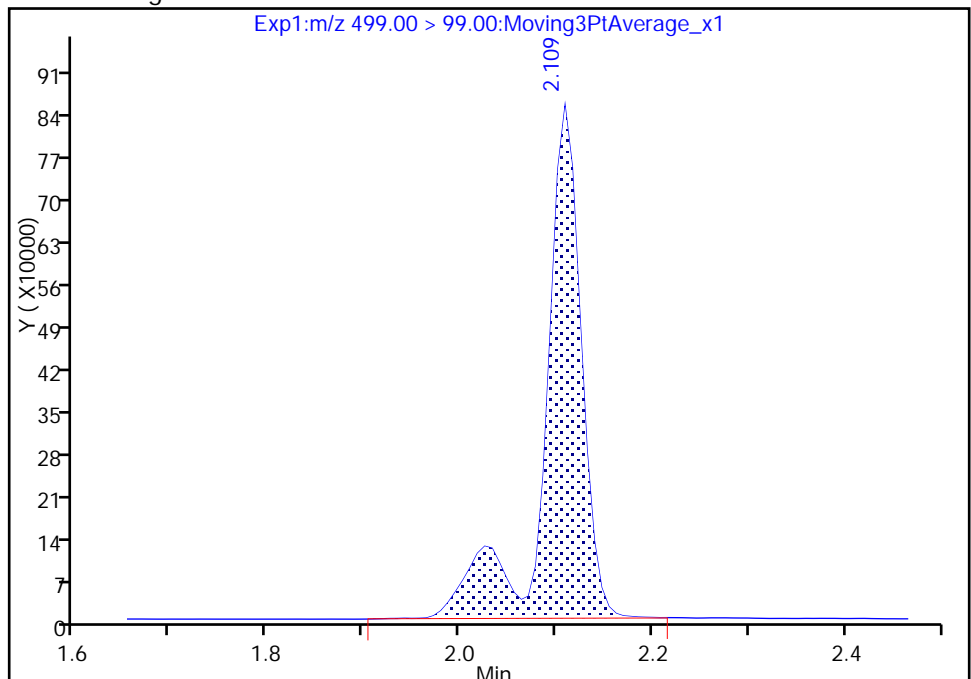
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 2283151  
Amount: 61.035224  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:06:32

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

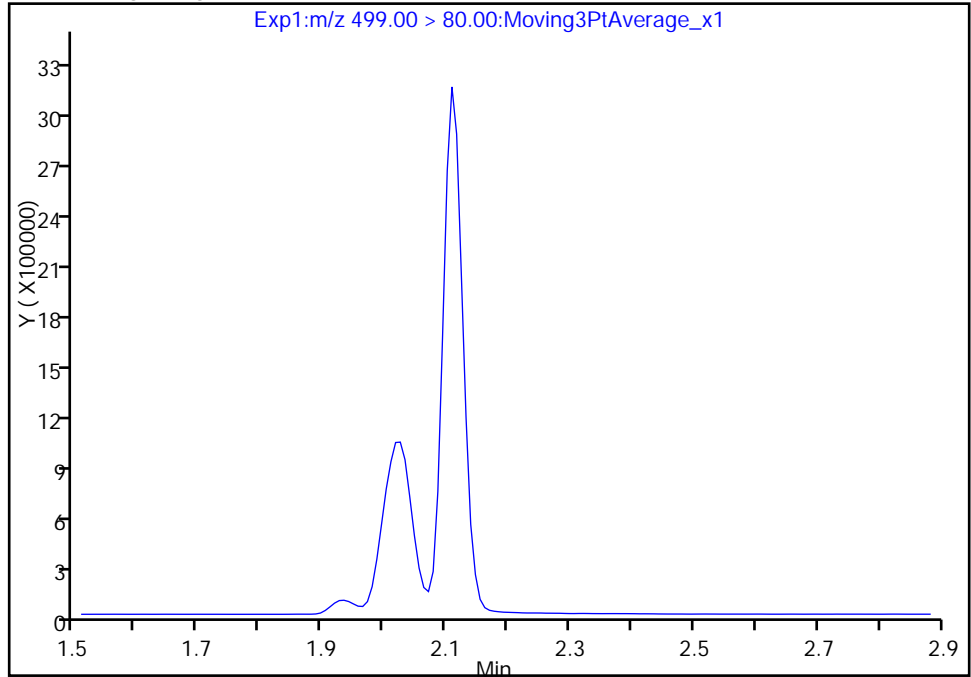
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_008.d  
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8\_N  
Lims ID: IC L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

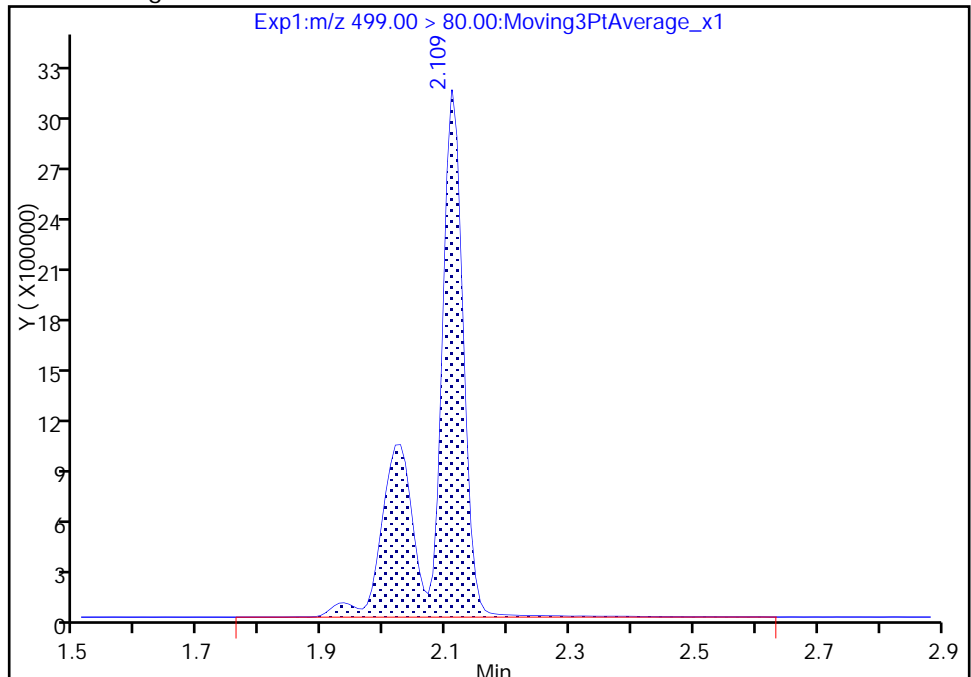
Not Detected  
Expected RT: 2.11

Processing Integration Results



RT: 2.11  
Area: 10806665  
Amount: 61.035224  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Sep-2017 10:06:32

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Lims ID: IC L6  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 20-Sep-2017 03:19:48 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:34 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:07:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	26277877	182.3		5148	
298.90 > 99.00	1.404	1.402	0.002	1.000	20065753		1.31(0.00-0.00)	5796	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2461679	10.3		8448	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	3731330	19.5		999	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	17148552	55.0		5562	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2036942	10.0		7709	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	7591950	40.5		298	
413.00 > 169.00	1.851	1.856	-0.005	1.000	4055944		1.87(0.00-0.00)	6840	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5454650	28.7		5153	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	14414630	81.3		7141	M
499.00 > 99.00	2.102	2.109	-0.007	0.996	3087448		4.67(0.00-0.00)	1891	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	5046017	39.8		666	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1164862	10.3		8578	



**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L6\_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Injection Date: 20-Sep-2017 03:19:48

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

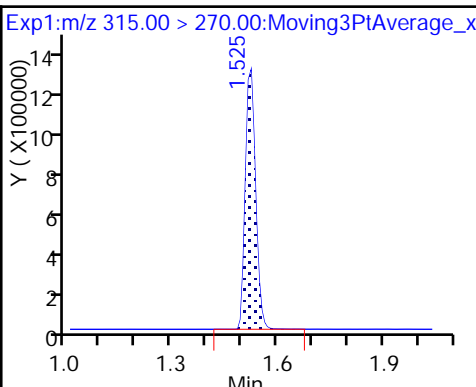
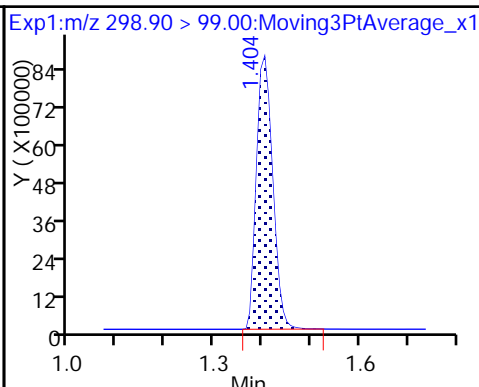
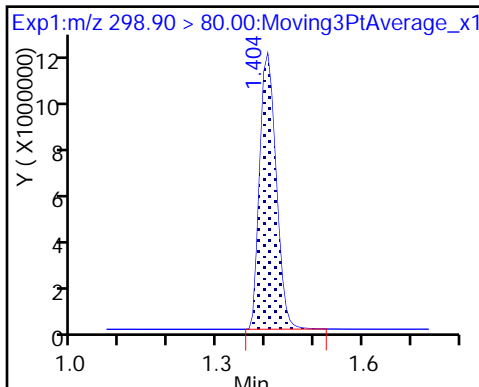
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

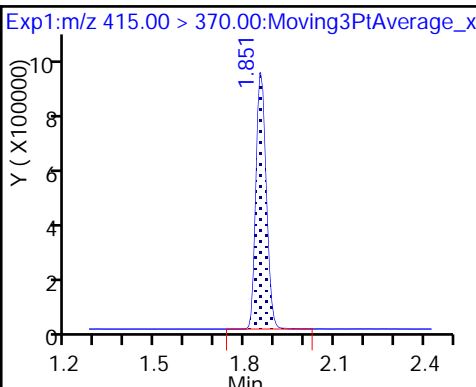
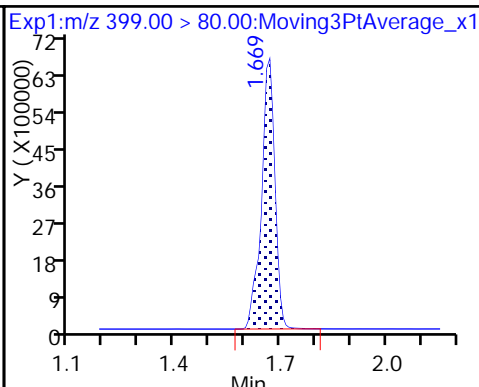
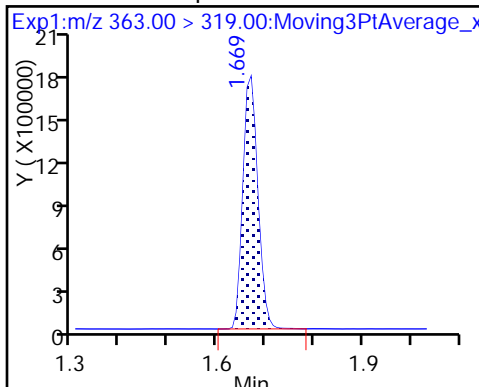
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

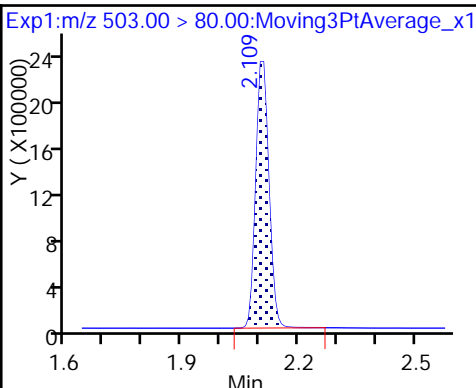
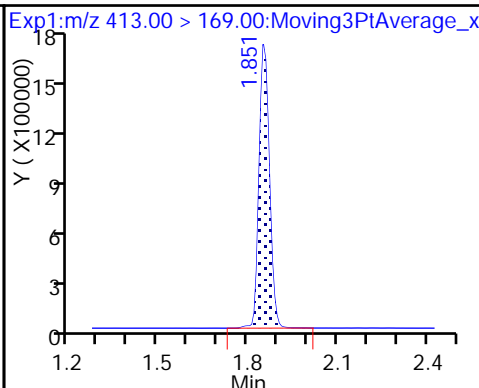
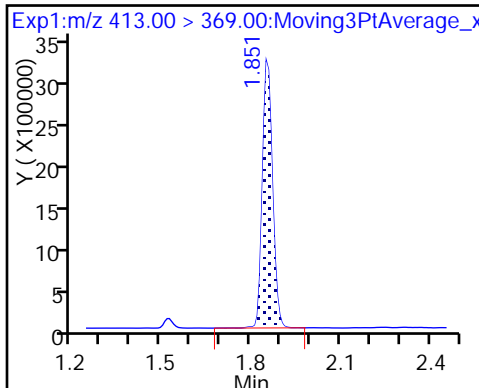
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

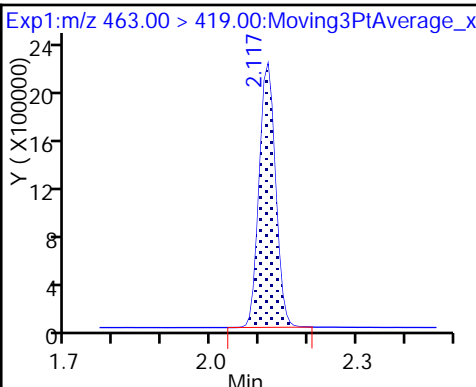
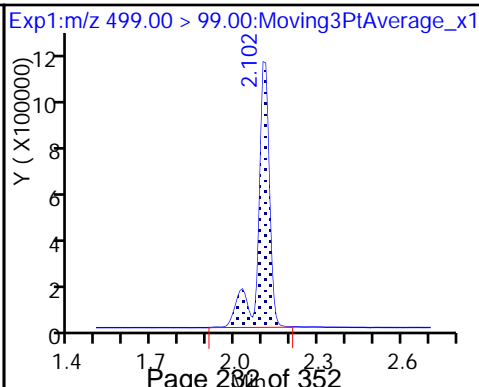
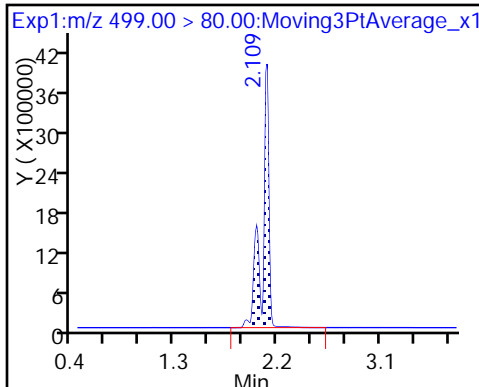
\* 7 13C4 PFOS



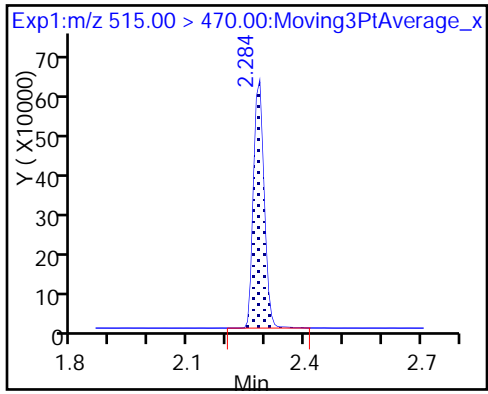
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

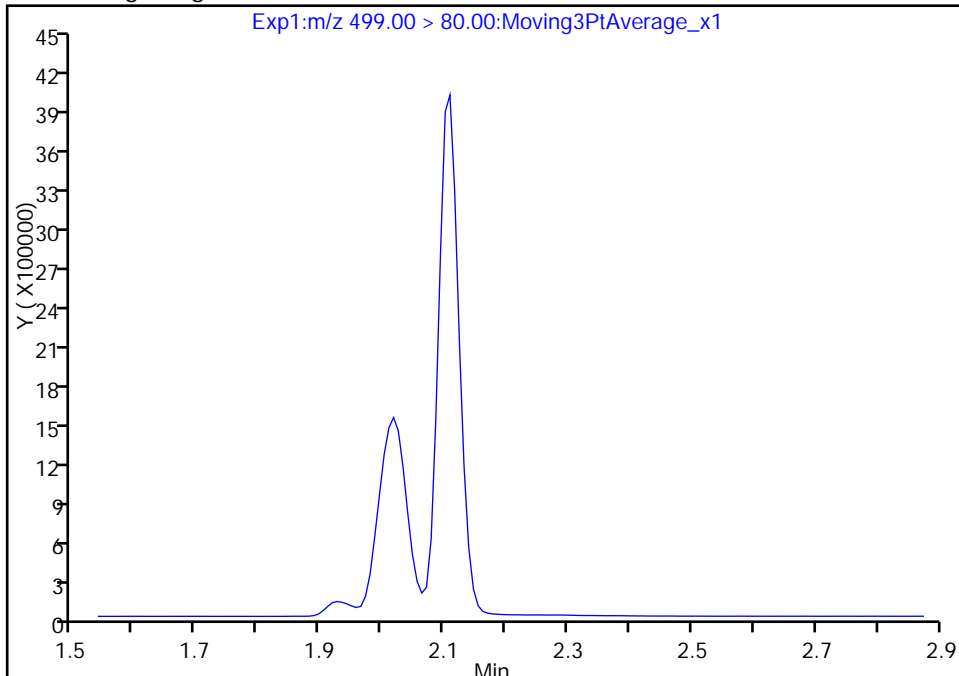
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8\_N  
Lims ID: IC L6  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

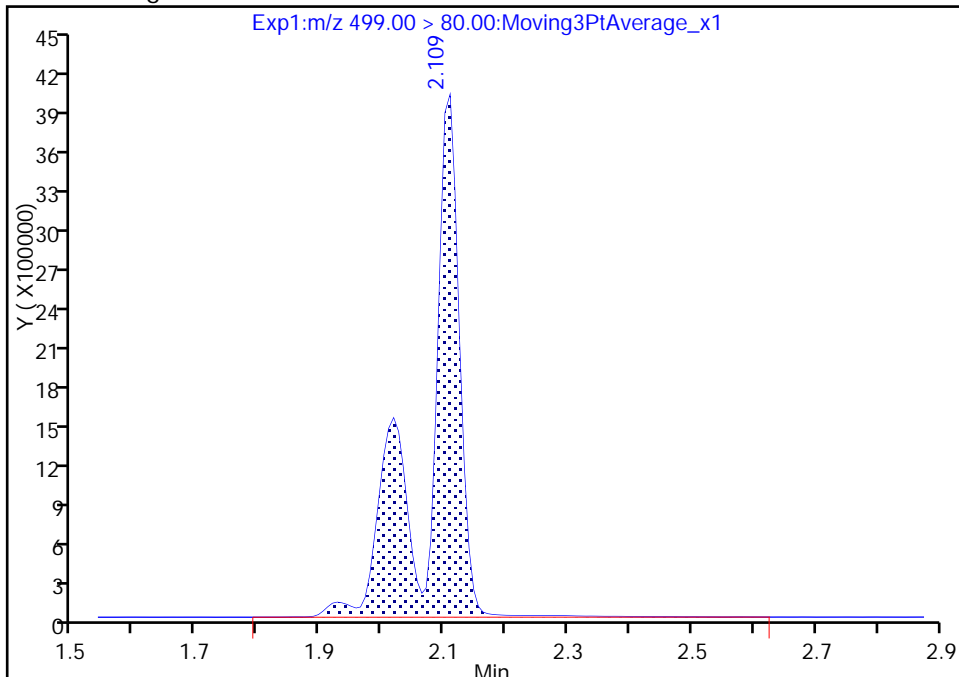
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 14414630  
Amount: 81.346632  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:06:49  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

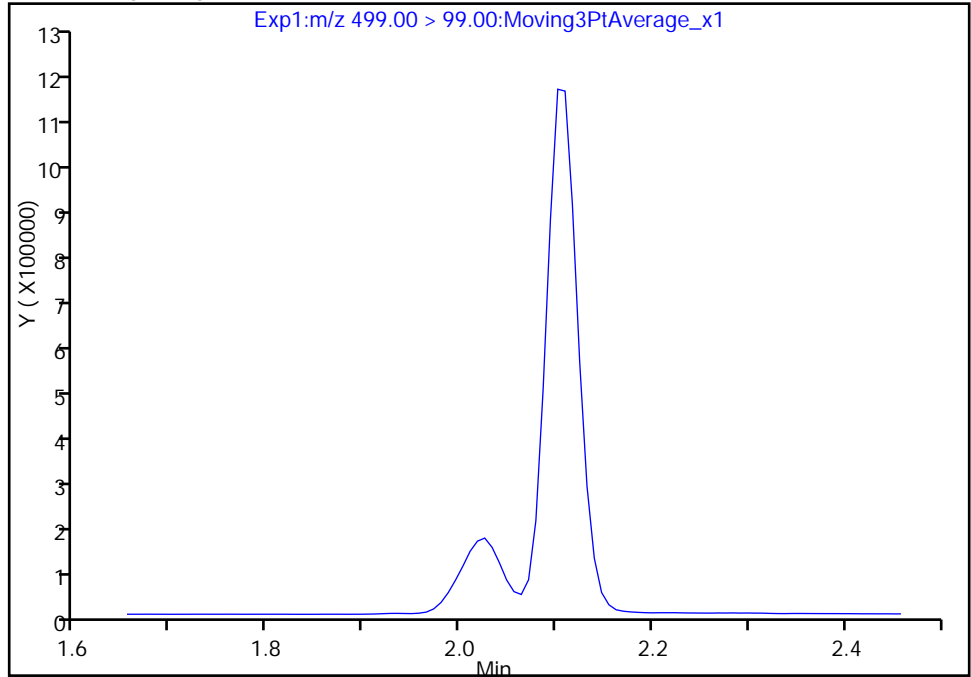
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8\_N  
Lims ID: IC L6  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

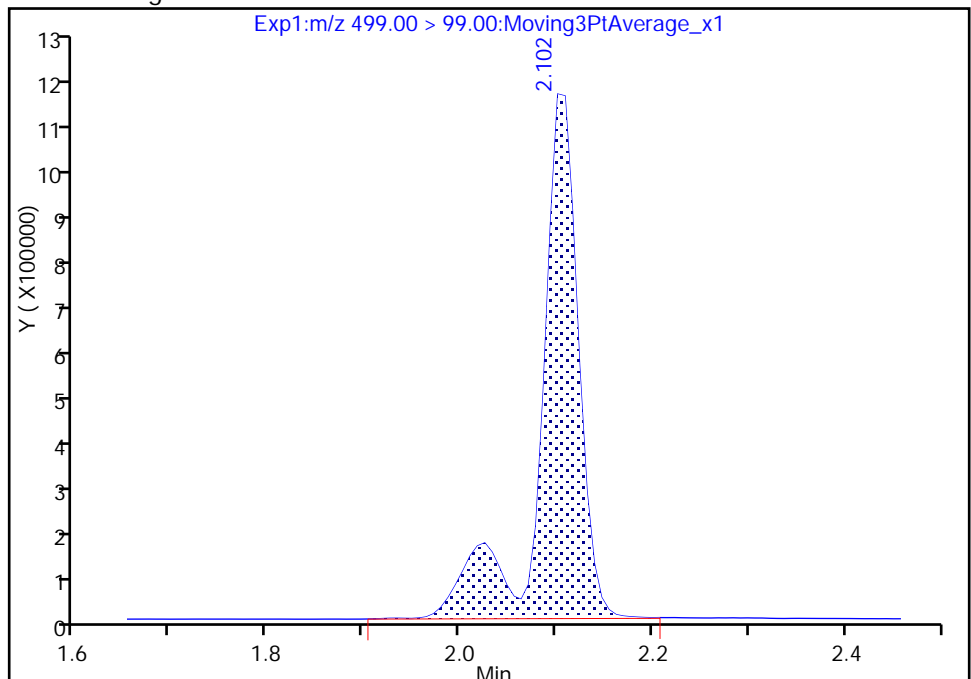
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10  
Area: 3087448  
Amount: 81.346632  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:07:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

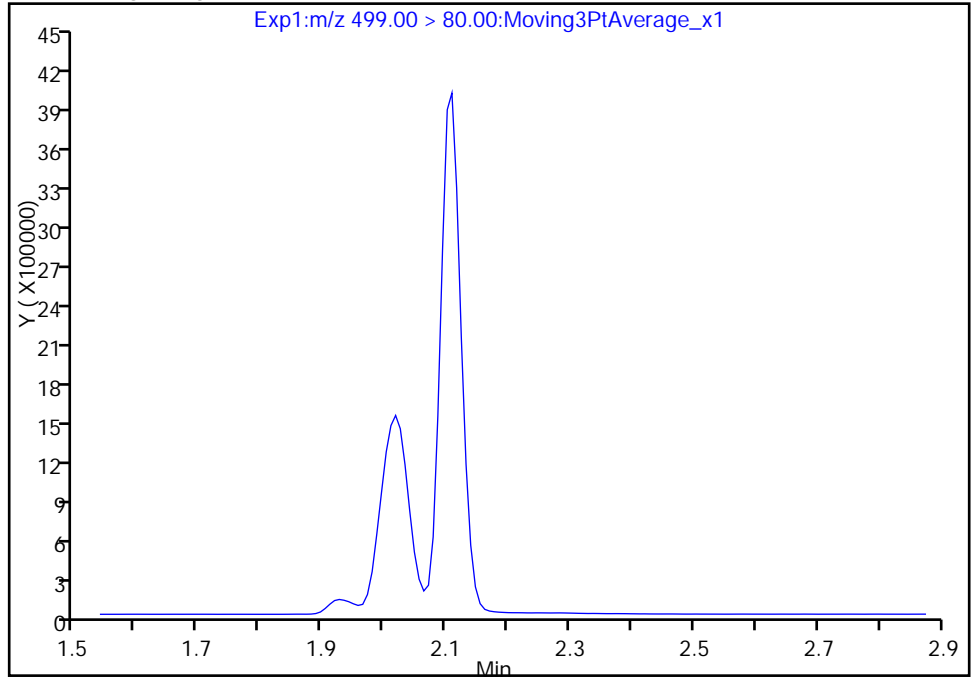
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8\_N  
Lims ID: IC L6  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

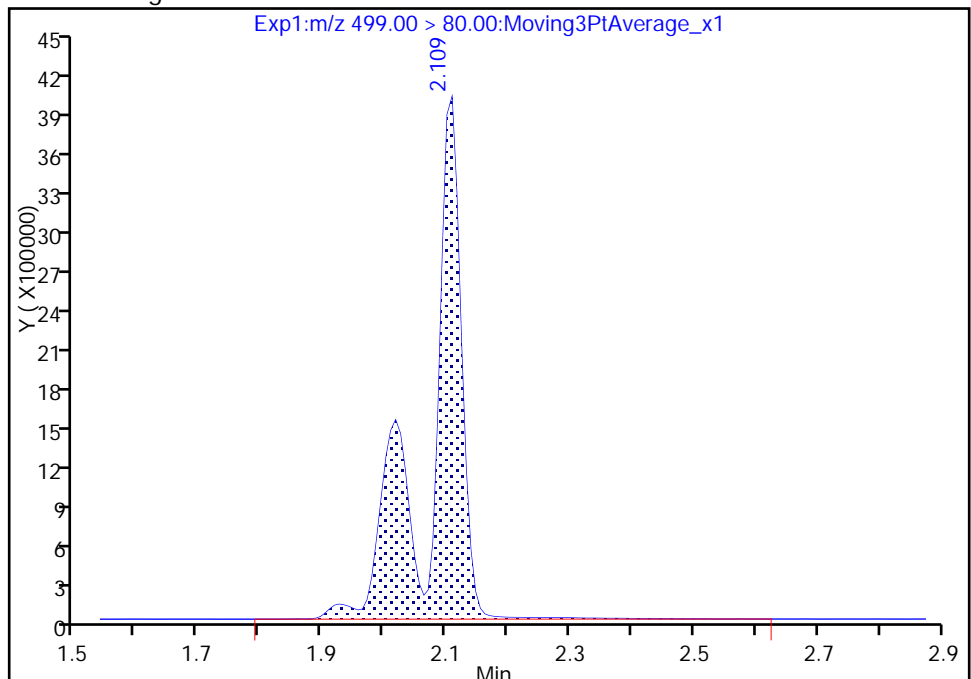
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 14414630  
Amount: 81.346632  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:07:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-185329/11 Calibration Date: 09/20/2017 03:29  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.09.19\_537ICAL\_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.235		21.3	20.0	6.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9779		2.31	2.22	3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.762		7.17	6.67	7.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9059		4.38	4.45	-1.5	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9490		9.06	8.89	1.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6352		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.172	1.139		9.72	10.0	-2.8	30.0
13C2 PFDA	Ave	0.5578	0.5694		10.2	10.0	2.1	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_011.d  
 Lims ID: CCVL  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 20-Sep-2017 03:29:17 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:36 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:10:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	4928523	21.3		8745	
298.90 > 99.00	1.396	1.402	-0.006	1.000	3609505		1.37(0.00-0.00)	6187	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2565324	9.72		10005	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	2344621	7.17		4423	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	489617	2.31		144	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2252465	10.0		8774	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	907626	4.38		34.8	
413.00 > 169.00	1.851	1.856	-0.005	1.000	489379		1.85(0.00-0.00)	2088	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		5723538	28.7		6648	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1683920	9.06		2776	M
499.00 > 99.00	2.102	2.109	-0.007	1.000	342465		4.92(0.00-0.00)	388	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	636035	4.54		88.8	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1282617	10.2		10770	



**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L2\_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_011.d

Injection Date: 20-Sep-2017 03:29:17

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

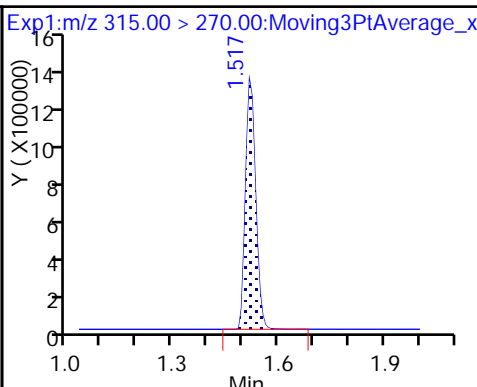
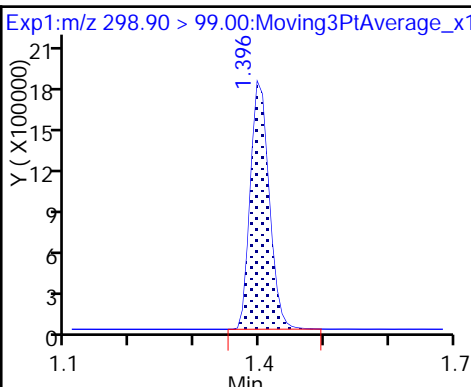
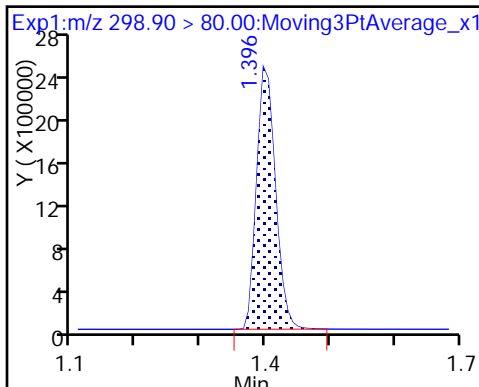
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

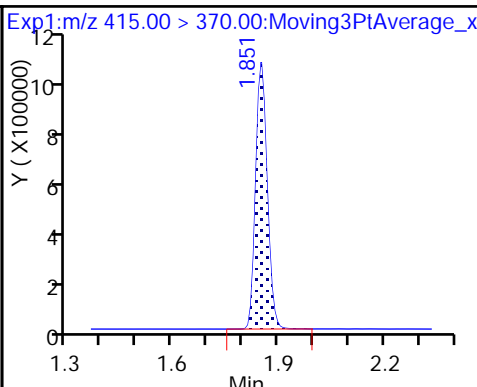
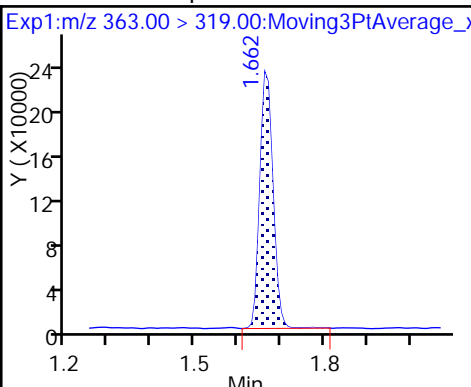
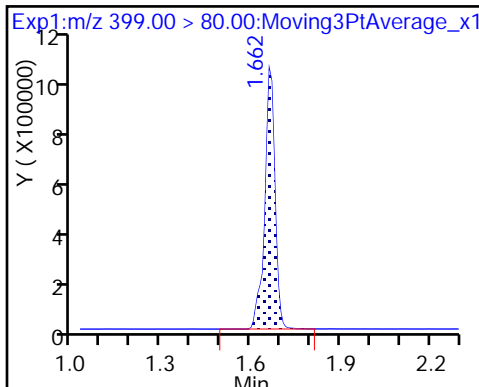
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

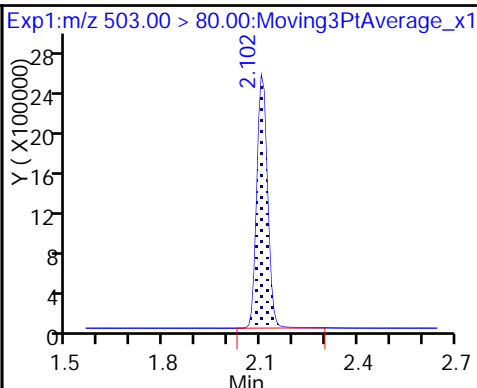
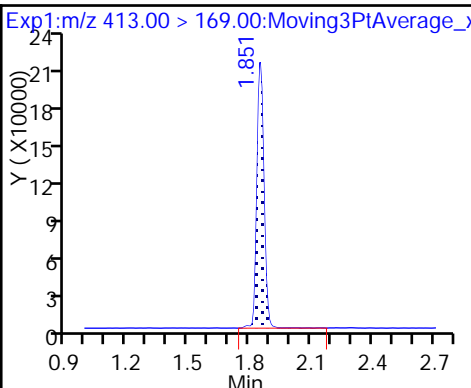
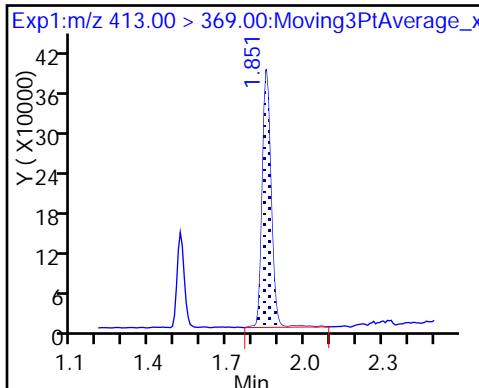
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

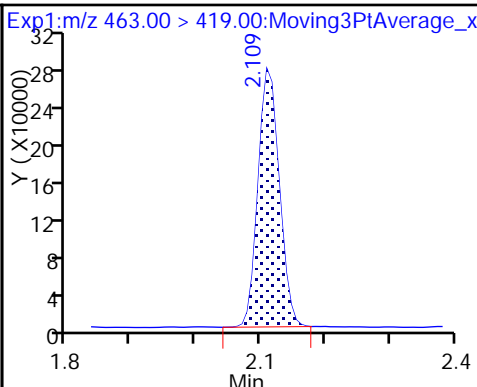
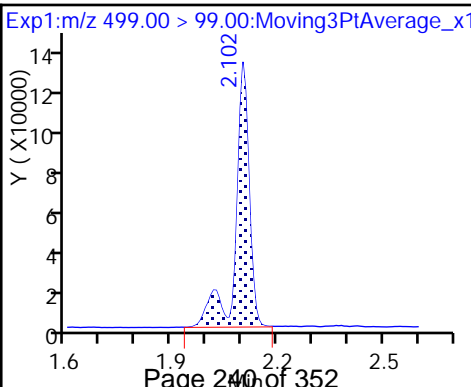
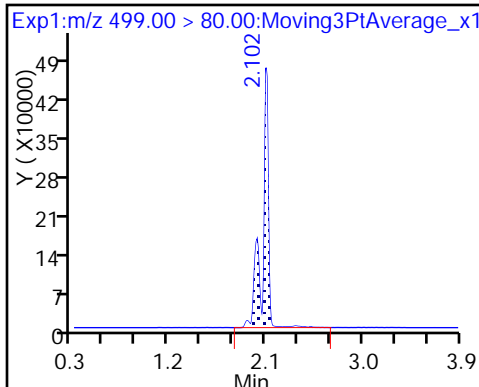
\* 7 13C4 PFOS



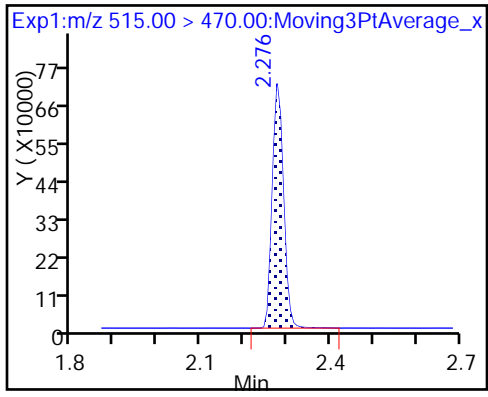
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

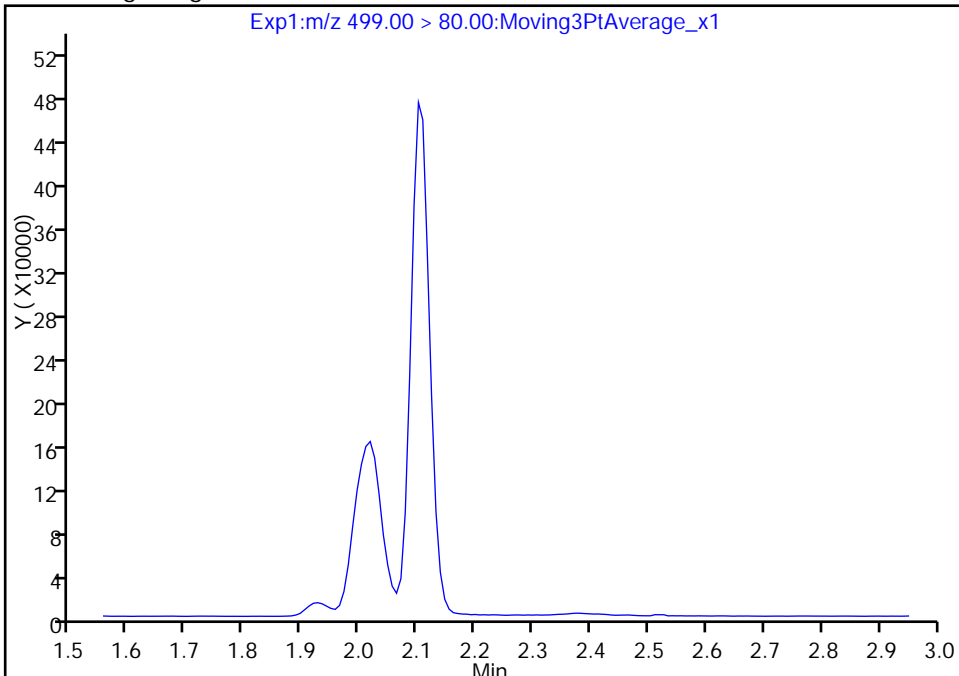
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_011.d  
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8\_N  
Lims ID: CCVL  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

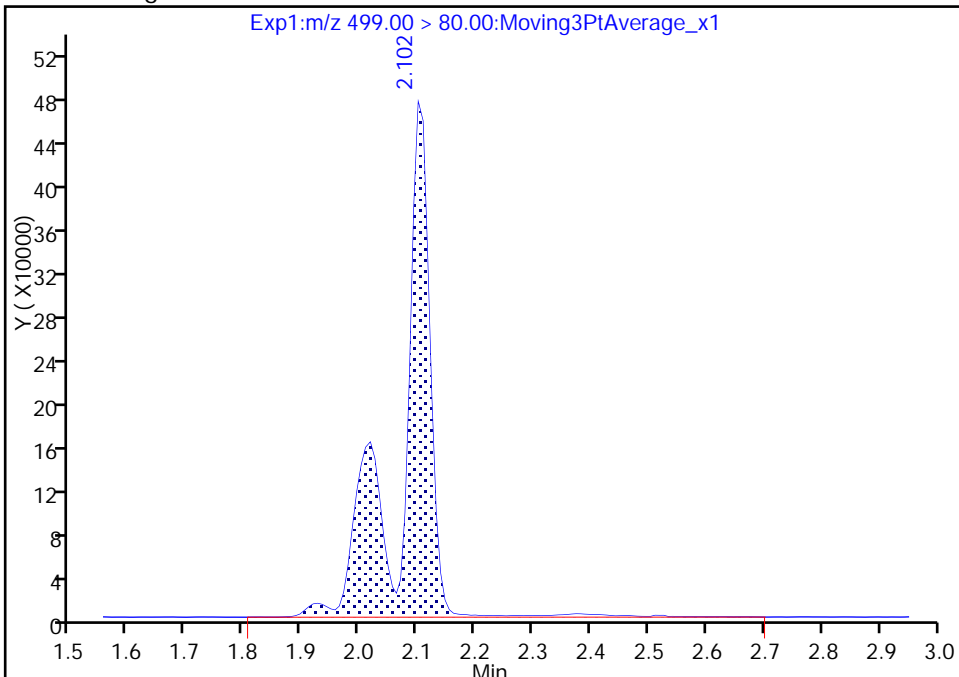
Not Detected  
Expected RT: 2.11

Processing Integration Results



RT: 2.10  
Area: 1683920  
Amount: 9.056489  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Sep-2017 10:10:03  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

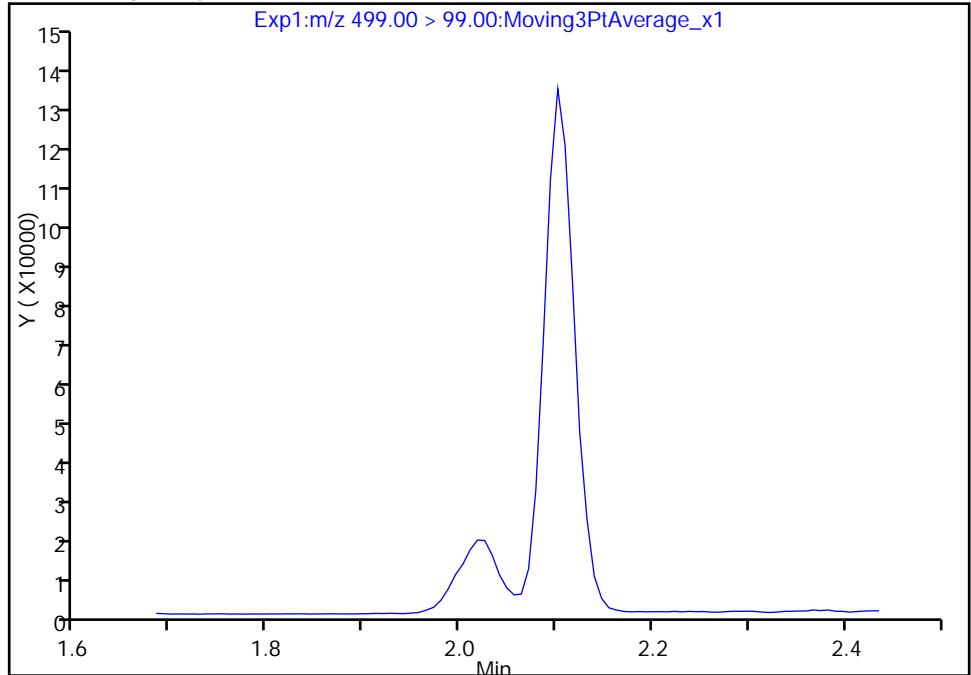
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_011.d  
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8\_N  
Lims ID: CCVL  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

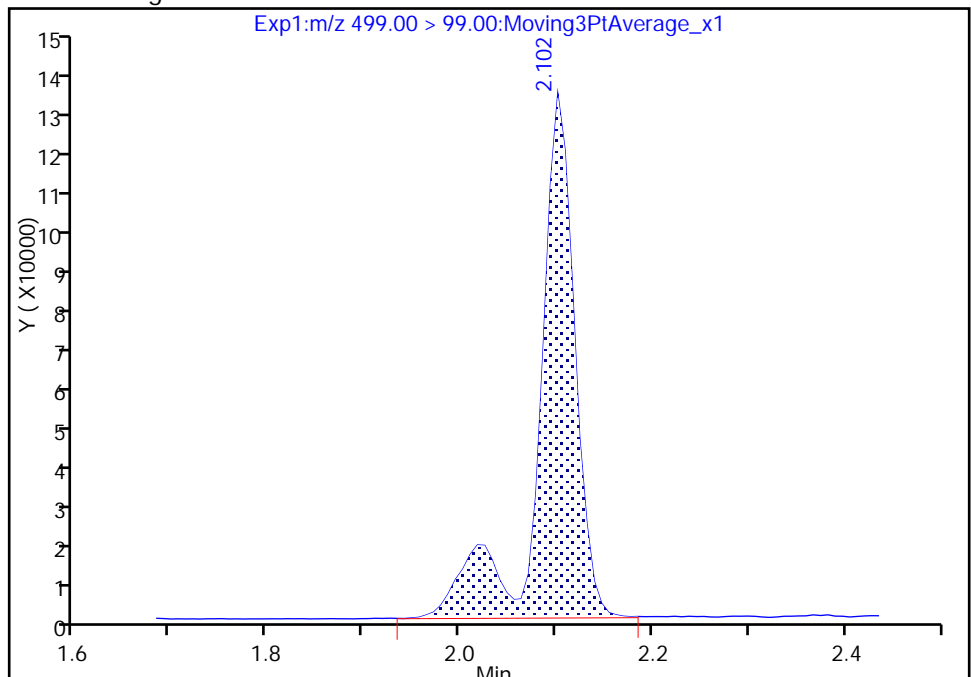
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10  
Area: 342465  
Amount: 9.056489  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:10:20

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

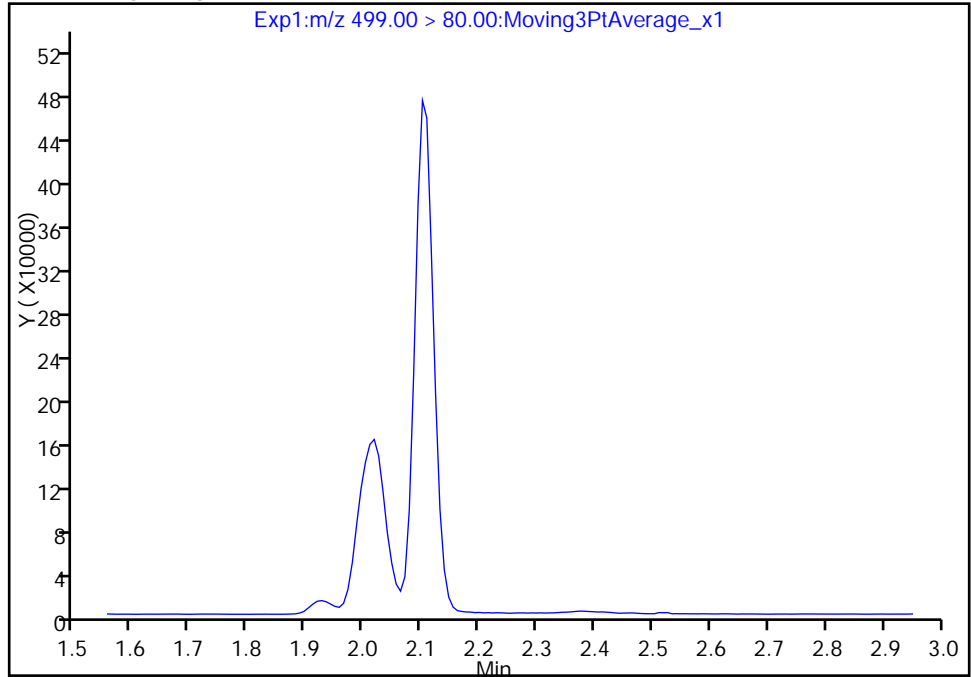
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_011.d  
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8\_N  
Lims ID: CCVL  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

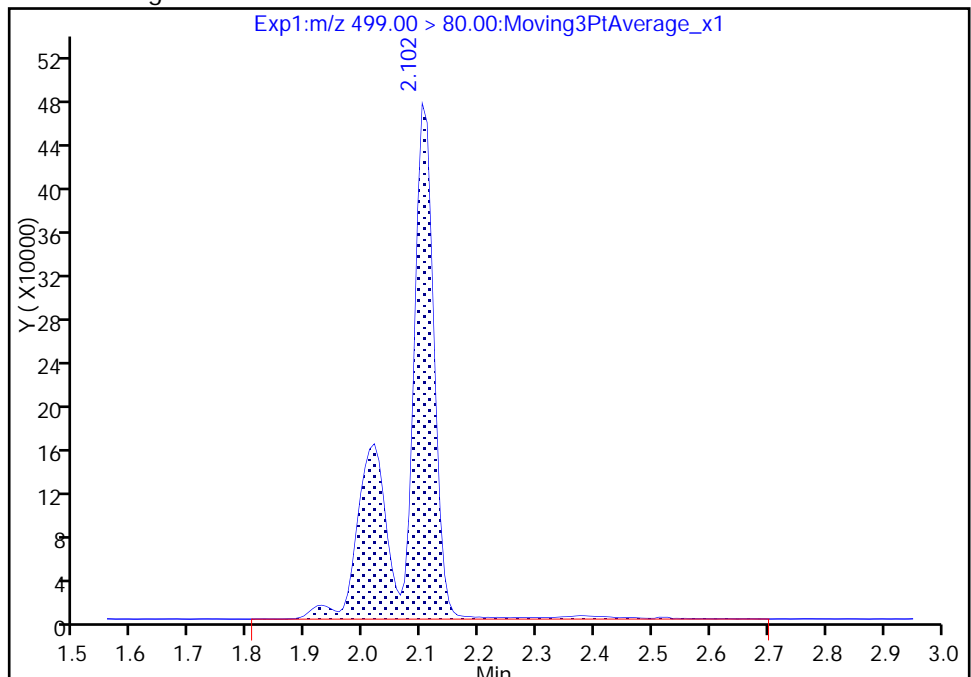
Not Detected  
Expected RT: 2.11

Processing Integration Results



RT: 2.10  
Area: 1683920  
Amount: 9.056489  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Sep-2017 10:10:20

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-185329/13 Calibration Date: 09/20/2017 03:38  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.09.19\_537ICAL\_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9069		92.5	100	-7.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9703		10.3	10.0	3.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.860		22.8	20.1	13.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9535		21.2	20.5	3.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	1.134		24.0	19.7	21.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.7173		23.2	20.1	15.3	30.0
13C2 PFHxA	Ave	1.172	1.165		9.94	10.0	-0.6	30.0
13C2 PFDA	Ave	0.5578	0.5781		10.4	10.0	3.6	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_013.d  
 Lims ID: ICV  
 Client ID:  
 Sample Type: ICV  
 Inject. Date: 20-Sep-2017 03:38:46 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\20170919-48154.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 20-Sep-2017 10:35:38 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 10:35:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	23093305	92.5		5826	
298.90 > 99.00	1.404	1.402	0.002	1.000	17724893		1.30(0.00-0.00)	6513	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	3047368	9.94		9351	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	9496803	22.8		6818	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	2537716	10.3		696	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2616480	10.0		7926	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	5110686	21.2		193	
413.00 > 169.00	1.851	1.856	-0.005	1.000	2741837		1.86(0.00-0.00)	6488	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		7294448	28.7		6378	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5683706	24.0		5285	M
499.00 > 99.00	2.102	2.109	-0.007	0.996	1038148		5.47(0.00-0.00)	913	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	3777210	23.2		739	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1512622	10.4		11751	



**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-ICV\_00028

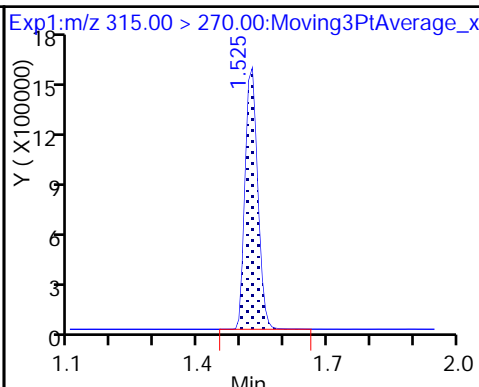
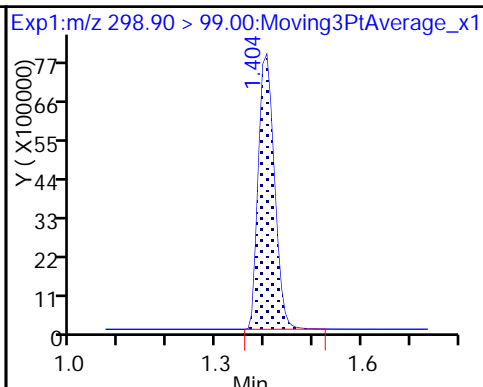
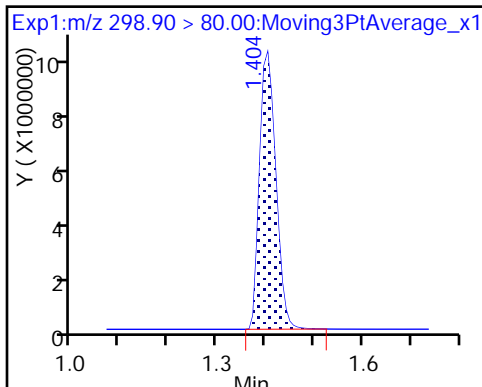
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

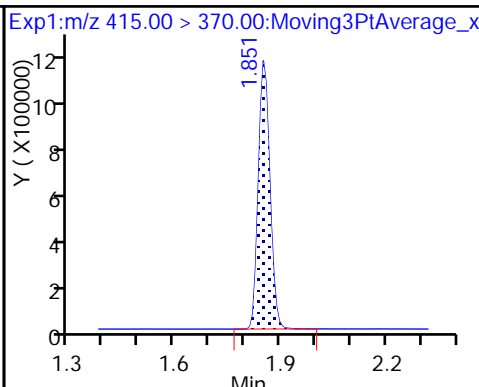
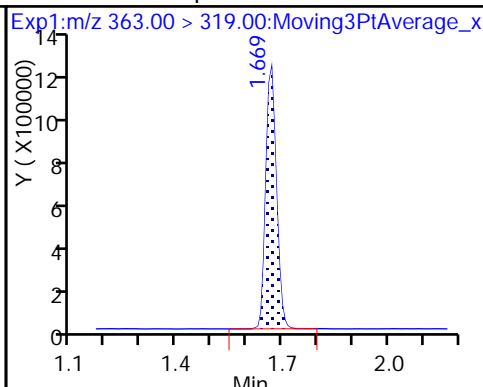
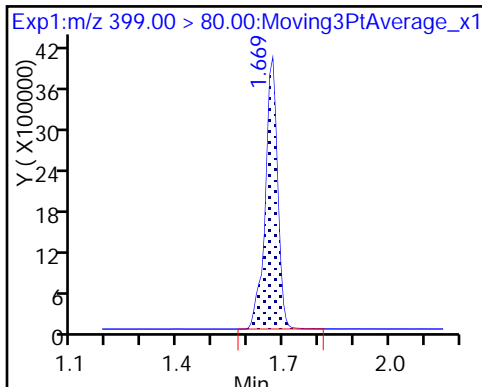
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

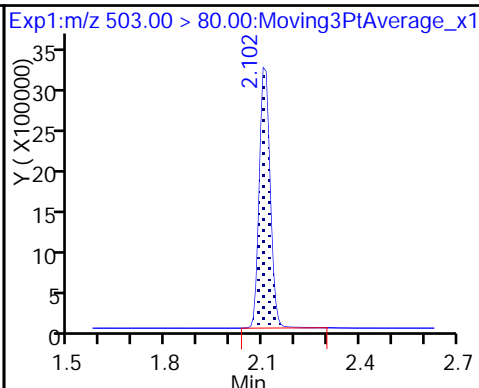
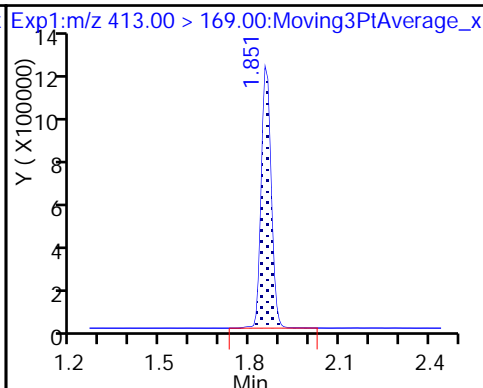
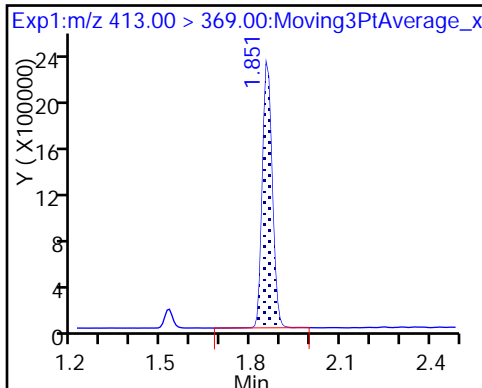
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

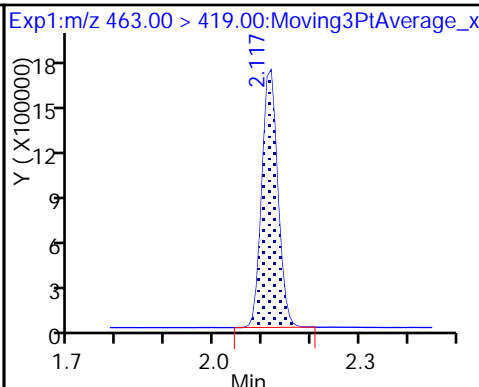
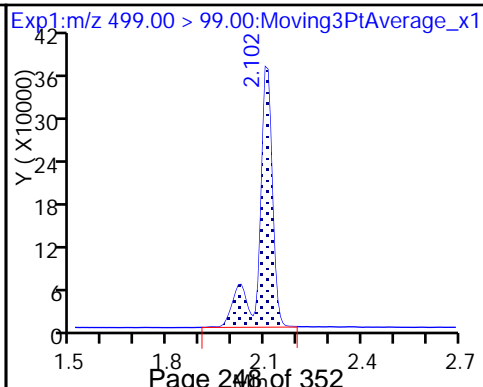
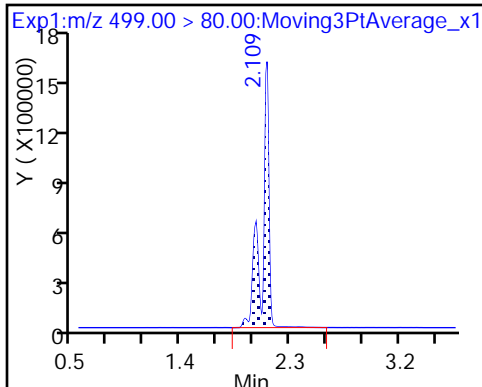
\* 7 13C4 PFOS



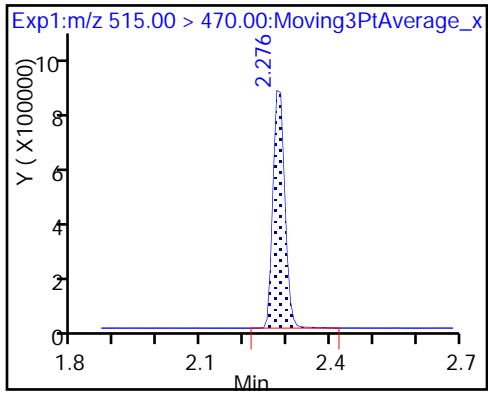
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

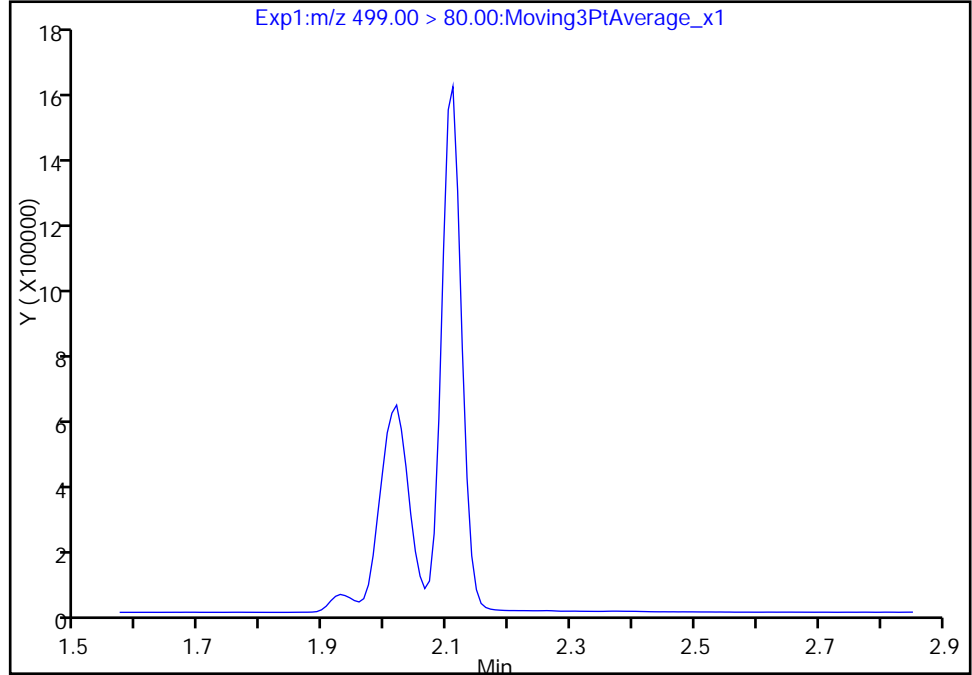
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Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8\_N  
Lims ID: ICV  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

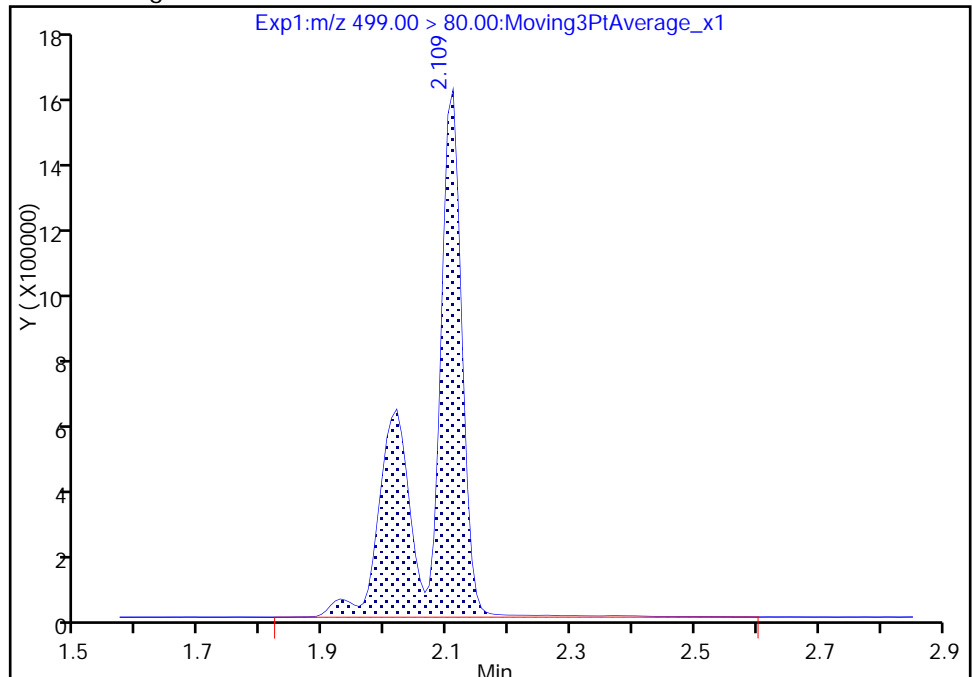
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 5683706  
Amount: 23.985133  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:10:51  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

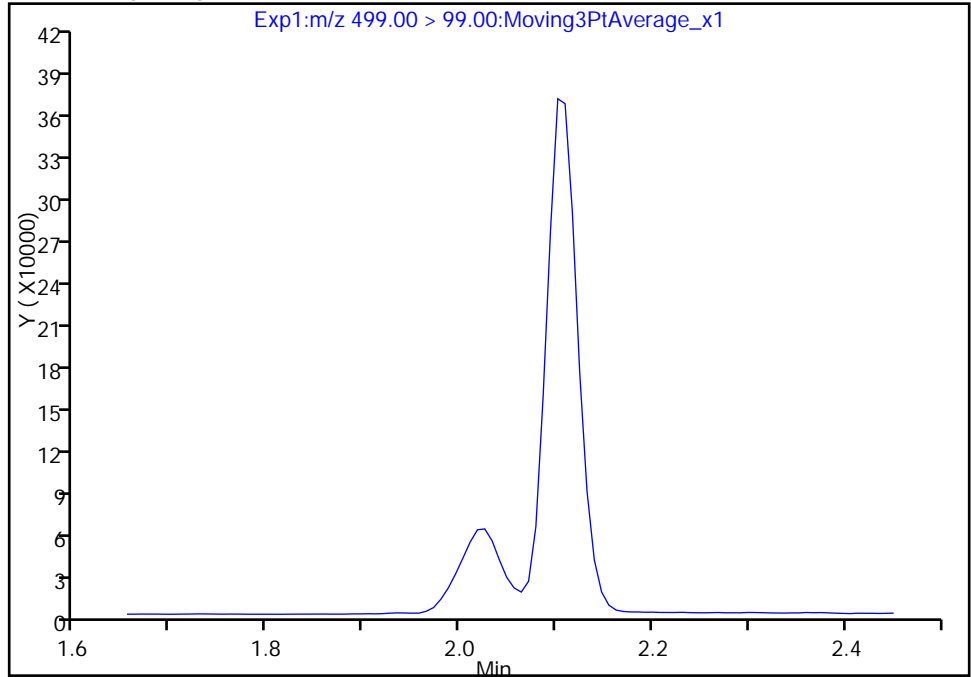
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Lims ID: ICV  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

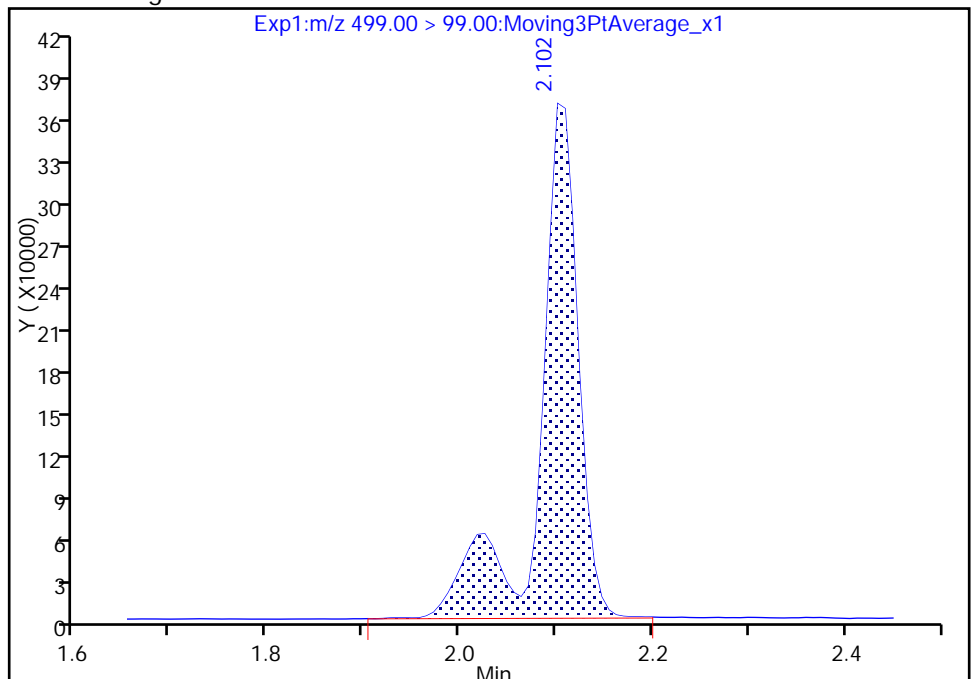
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10  
Area: 1038148  
Amount: 23.985133  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:11:07

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

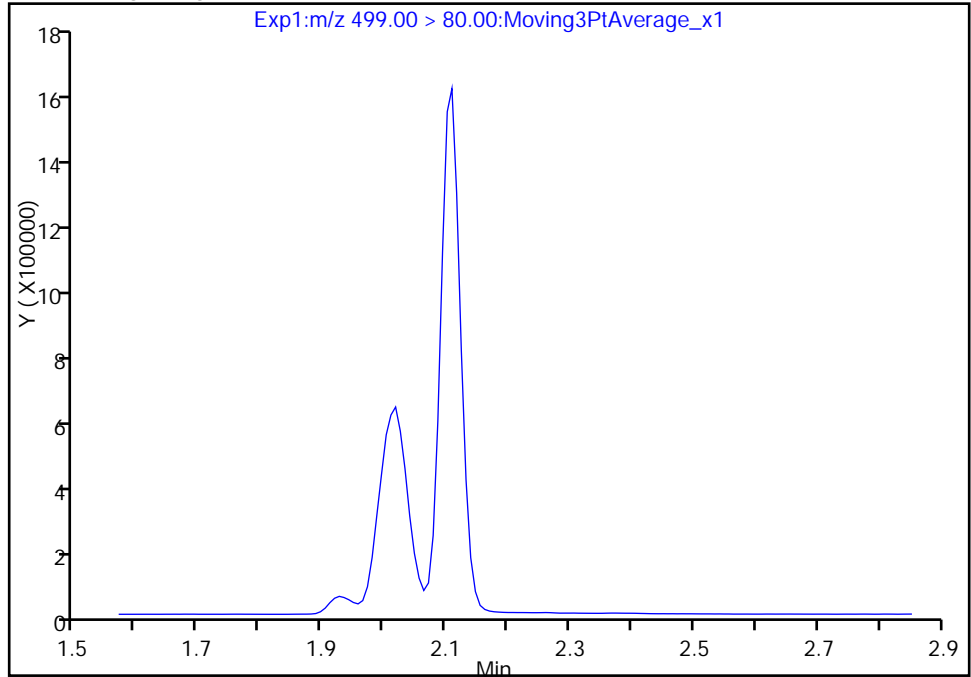
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Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8\_N  
Lims ID: ICV  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

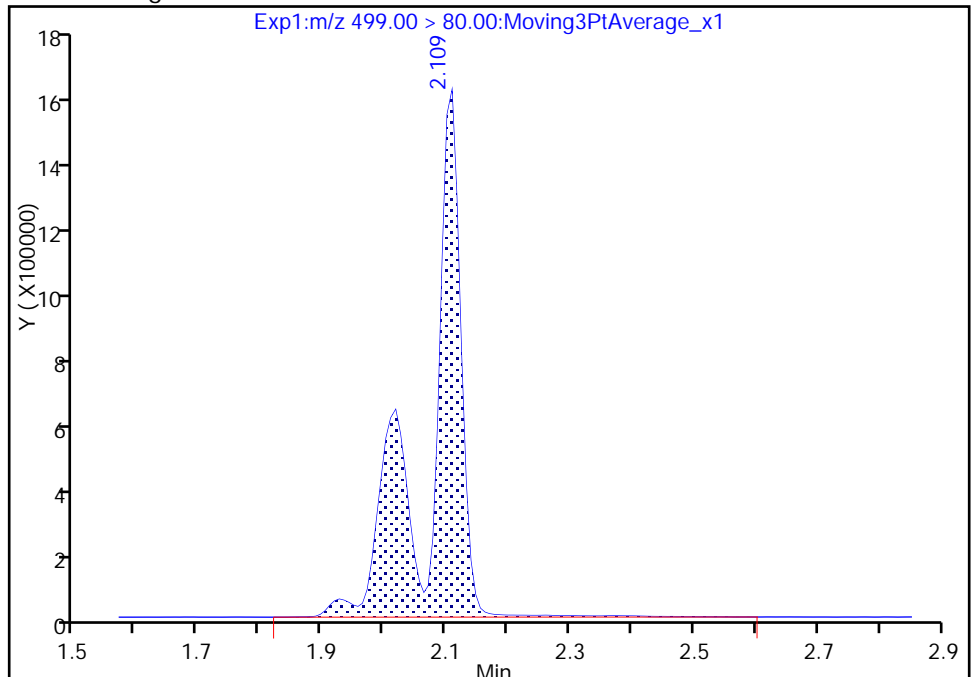
Not Detected  
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11  
Area: 5683706  
Amount: 23.985133  
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:11:07

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-189541/3 Calibration Date: 10/16/2017 10:32  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537.003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.276		22.0	20.0	10.2	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8245		1.95	2.22	-12.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.725		7.02	6.67	5.3	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8658		4.19	4.45	-5.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5149		3.68	4.45	-17.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9422		8.99	8.89	1.1	50.0
13C2 PFHxA	Ave	1.172	0.9853		8.41	10.0	-15.9	30.0
13C2 PFDA	Ave	0.5578	0.4591		8.23	10.0	-17.7	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49187.b\2017.10.16A\_537.003.d  
 Lims ID: CCVL  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 16-Oct-2017 10:32:04 ALS Bottle#: 2 Worklist Smp#: 3  
 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\20171016-49187.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:10:25 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:10:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.402	0.032	1.000	5869378	22.0		7101	
298.90 > 99.00	1.434	1.402	0.032	1.000	3993181		1.47(0.00-0.00)	4523	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.524	0.046	1.000	2776761	8.41		10256	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.668	0.069	1.000	2646612	7.02		4255	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.668	0.069	1.000	516471	1.95		115	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.855	0.095		2818274	10.0		8170	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.856	0.094	1.000	1085329	4.19		50.9	
413.00 > 169.00	1.950	1.856	0.094	1.000	615739		1.76(0.00-0.00)	2173	
* 7 13C4 PFOS									
503.00 > 80.00	2.193	2.108	0.085		6598116	28.7		7241	
9 Perfluorononanoic acid									
463.00 > 419.00	2.200	2.116	0.084	1.000	645017	3.68		57.7	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.200	2.193	0.007	1.000	1927275	8.99		360	
499.00 > 99.00	2.193	2.193	0.0	0.997	415225		4.64(0.00-0.00)	214	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.282	0.062	1.000	1293734	8.23		6871	



**Reagents:**

LC537-L2\_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49187.b\2017.10.16A\_537.003.d

Injection Date: 16-Oct-2017 10:32:04

Instrument ID: A8\_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

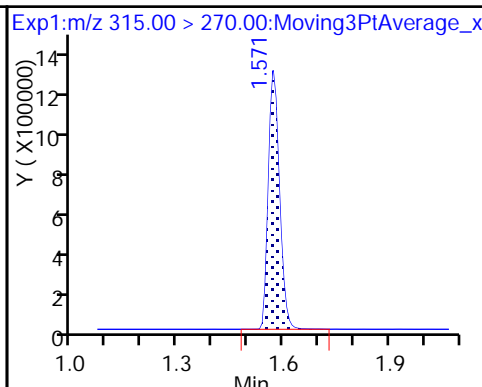
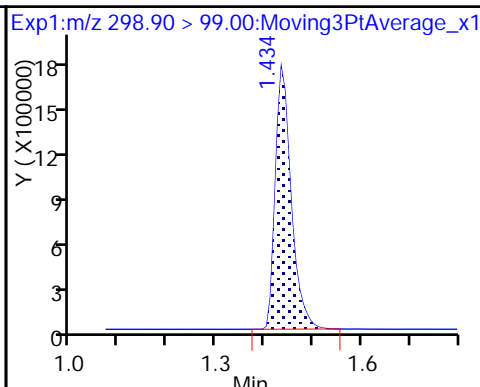
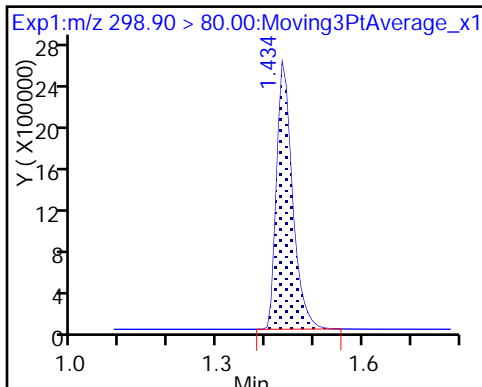
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

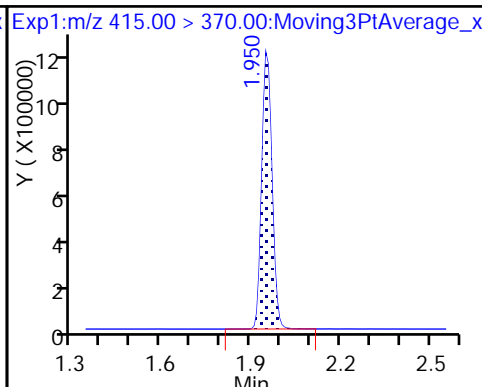
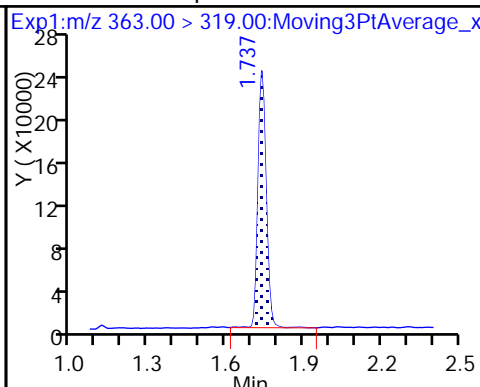
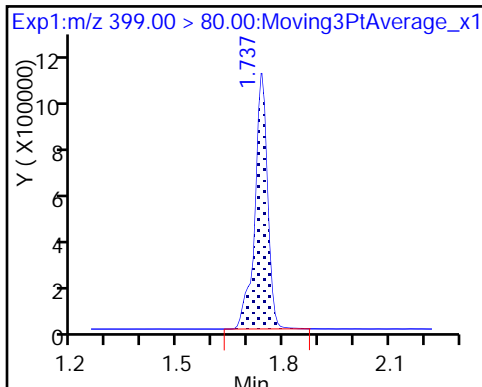
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

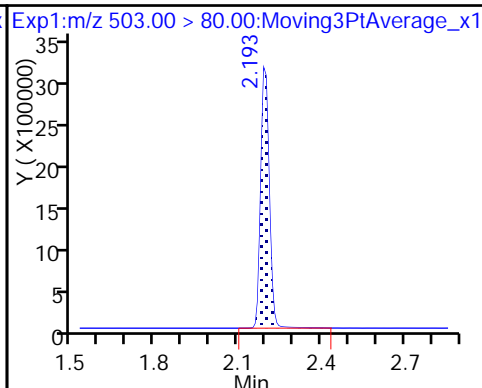
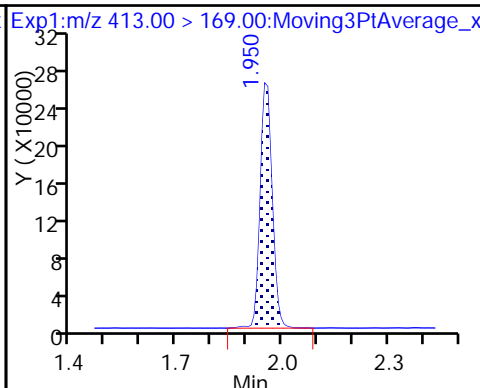
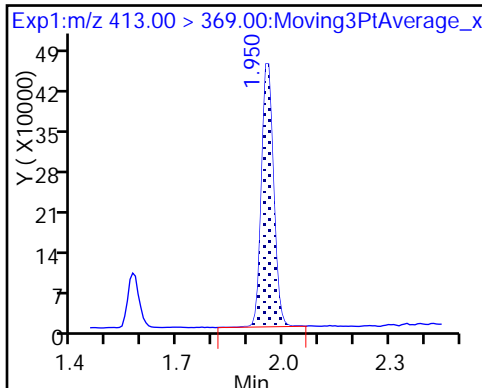
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

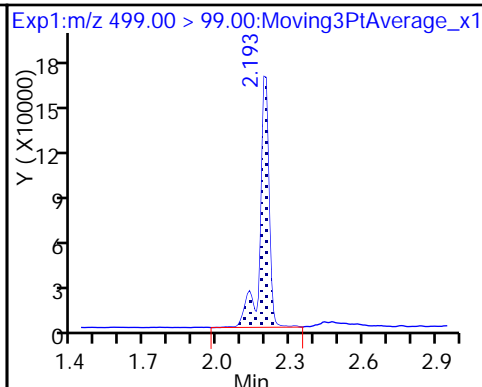
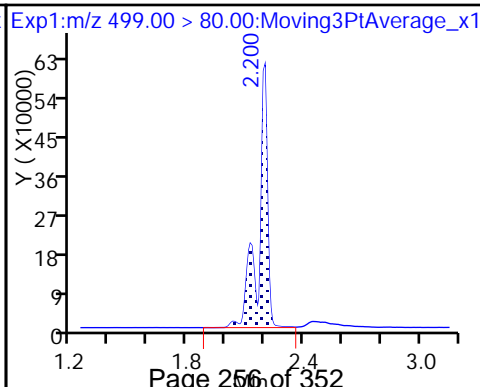
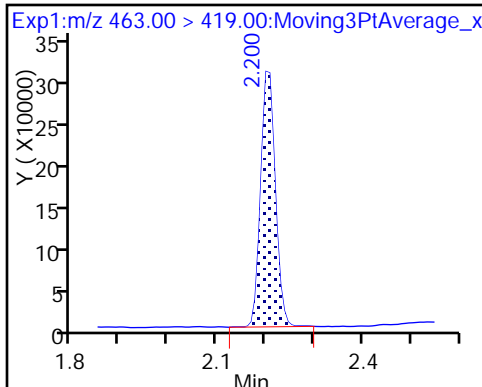
\* 7 13C4 PFOS



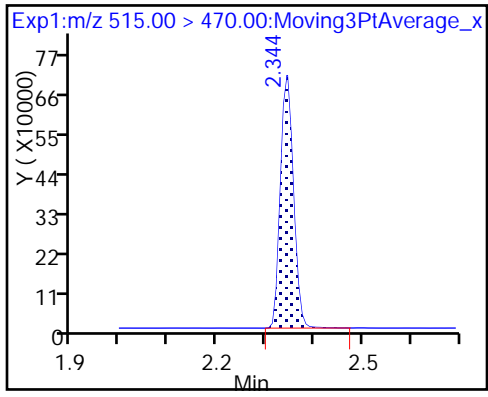
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189551/1 Calibration Date: 10/16/2017 11:57  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.144		47.0	45.0	4.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8426		4.47	5.00	-10.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.697		15.5	15.0	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8956		9.75	10.0	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9304		20.0	20.0	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5372		8.64	10.0	-13.6	30.0
13C2 PFHxA	Ave	1.172	1.066		9.10	10.0	-9.0	30.0
13C2 PFDA	Ave	0.5578	0.4907		8.80	10.0	-12.0	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.010.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 16-Oct-2017 11:57:27 ALS Bottle#: 3 Worklist Smp#: 1  
 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\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:11:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	10751135	47.0		5590	
298.90 > 99.00	1.426	1.402	0.024	1.000	7667351		1.40(0.00-0.00)	4661	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.555	1.524	0.031	1.000	2511480	9.10		7332	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.715	1.668	0.047	1.000	5316136	15.5		4749	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.715	1.668	0.047	1.000	992455	4.47		190	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.855	0.065		2355084	10.0		5951	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.856	0.064	1.000	2110957	9.75		70.6	
413.00 > 169.00	1.920	1.856	0.064	1.000	1192571		1.77(0.00-0.00)	2940	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.108	0.054		5989032	28.7		6497	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.116	0.054	1.000	1265371	8.64		128	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.155	0.007	1.000	3886786	20.0		572	M
499.00 > 99.00	2.162	2.155	0.007	1.000	807689		4.81(0.00-0.00)	340	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.282	0.032	1.000	1155737	8.80		5410	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L3\_00023

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.010.d

Injection Date: 16-Oct-2017 11:57:27

Instrument ID: A8\_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

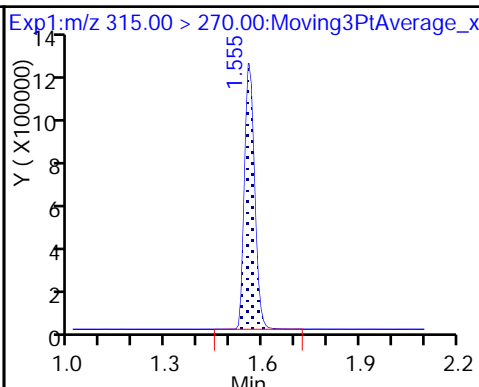
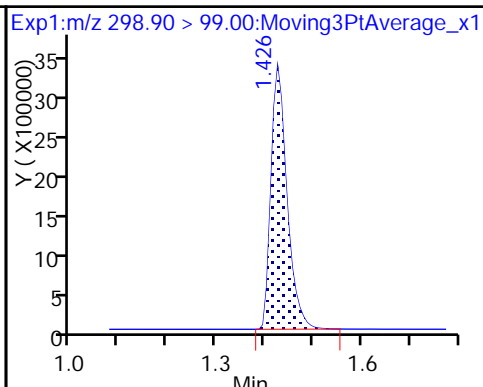
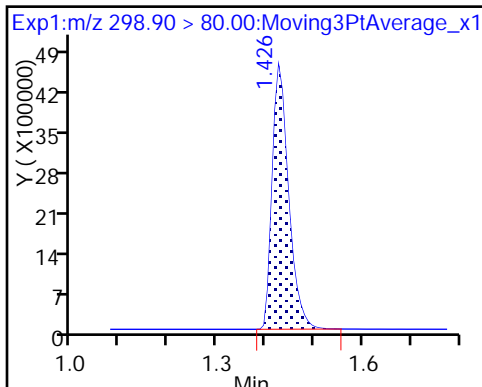
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

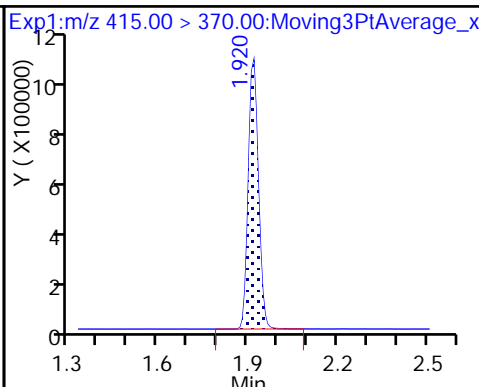
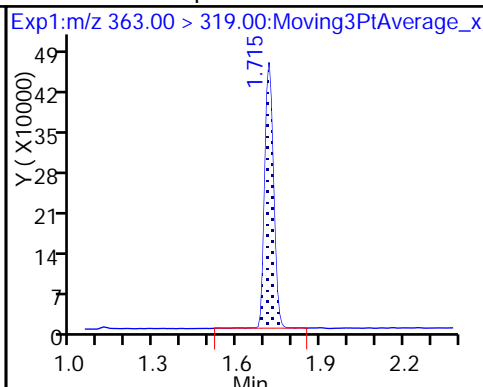
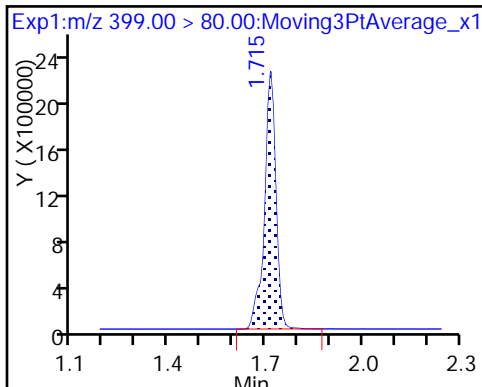
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

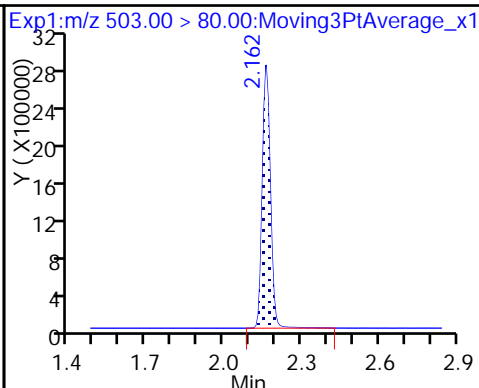
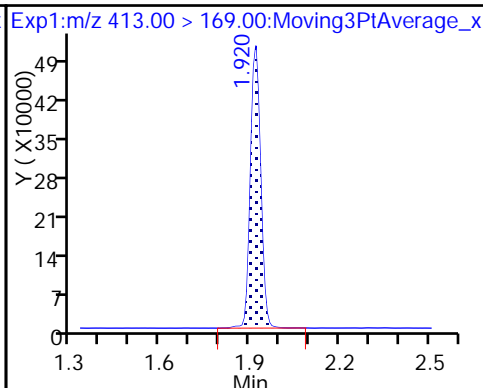
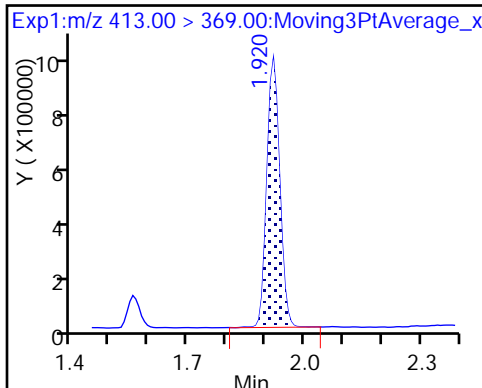
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

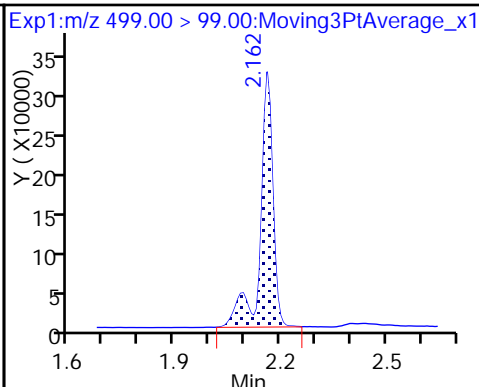
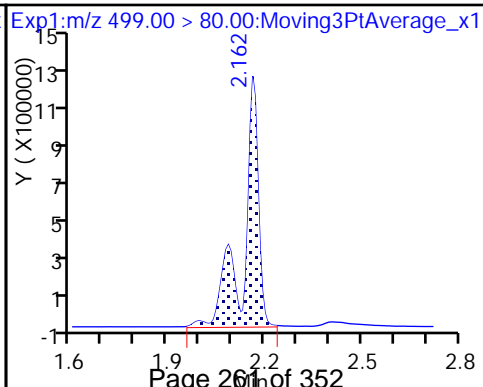
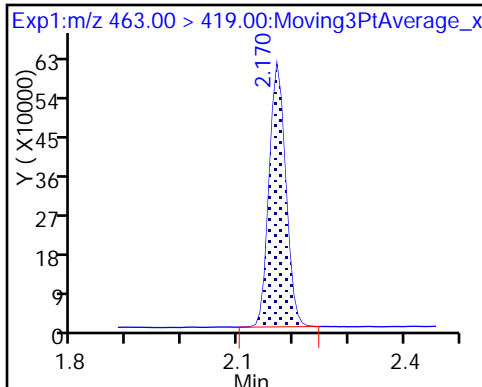
\* 7 13C4 PFOS



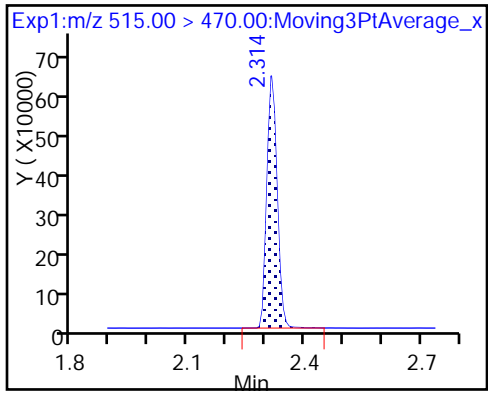
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA





TestAmerica Sacramento

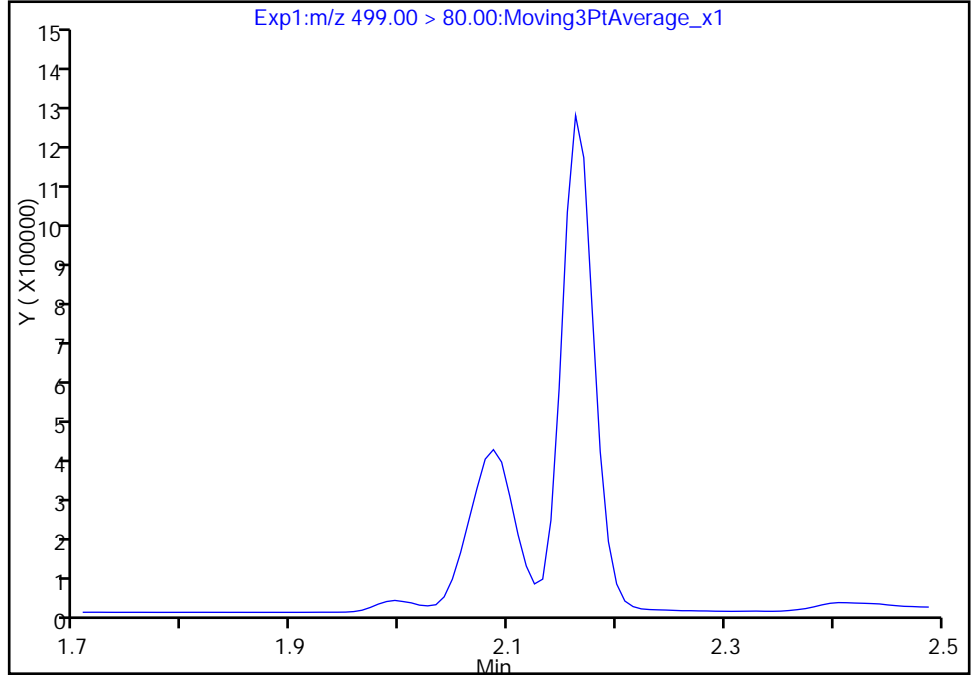
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.010.d  
Injection Date: 16-Oct-2017 11:57:27 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

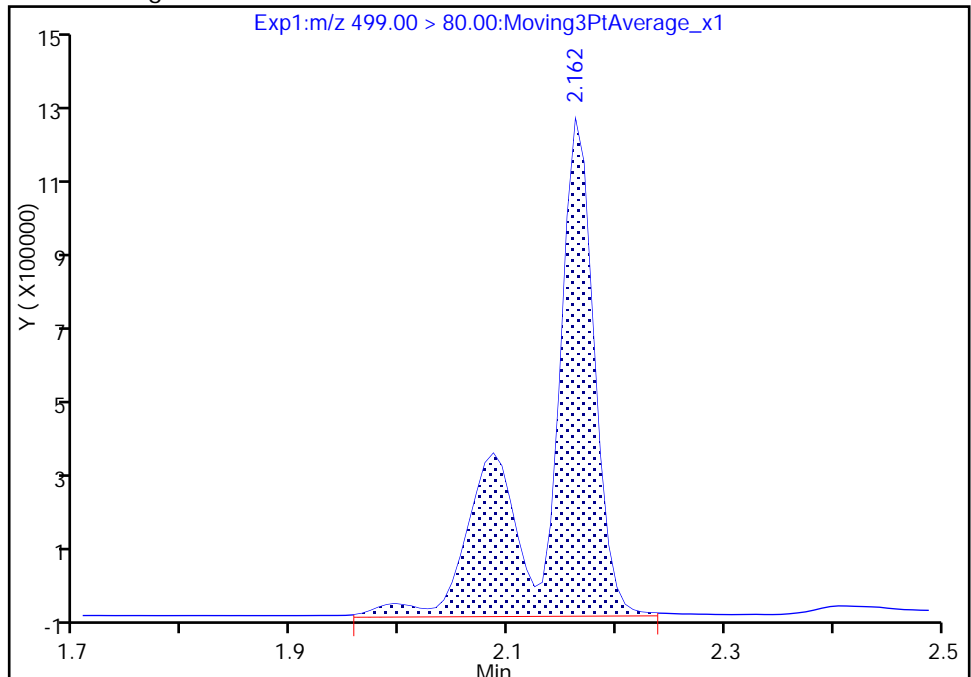
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 3886786  
Amount: 19.977308  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:10:42  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

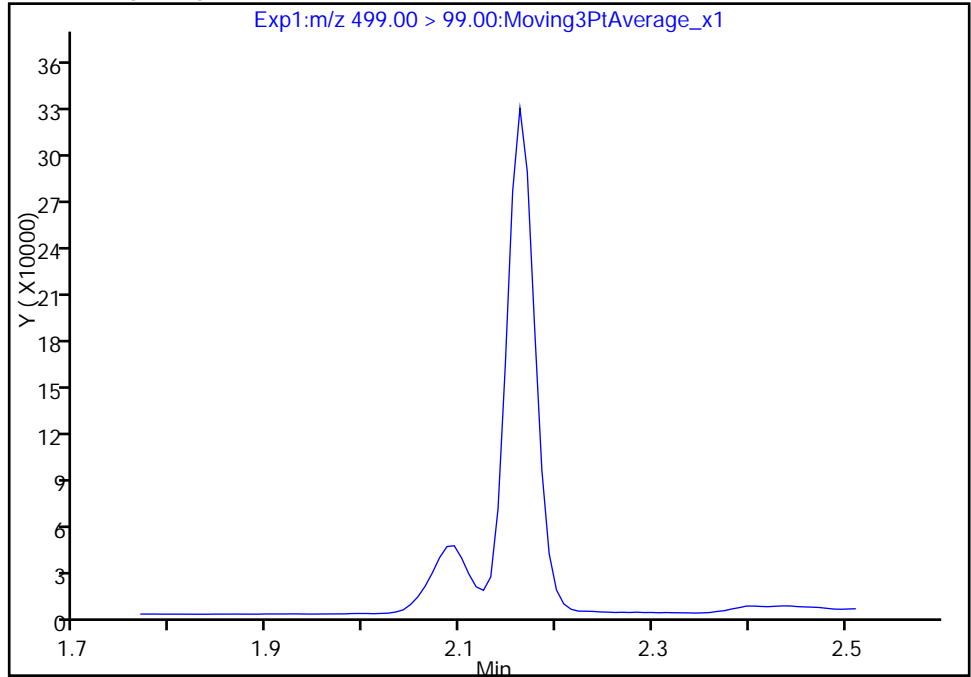
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.010.d  
Injection Date: 16-Oct-2017 11:57:27 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

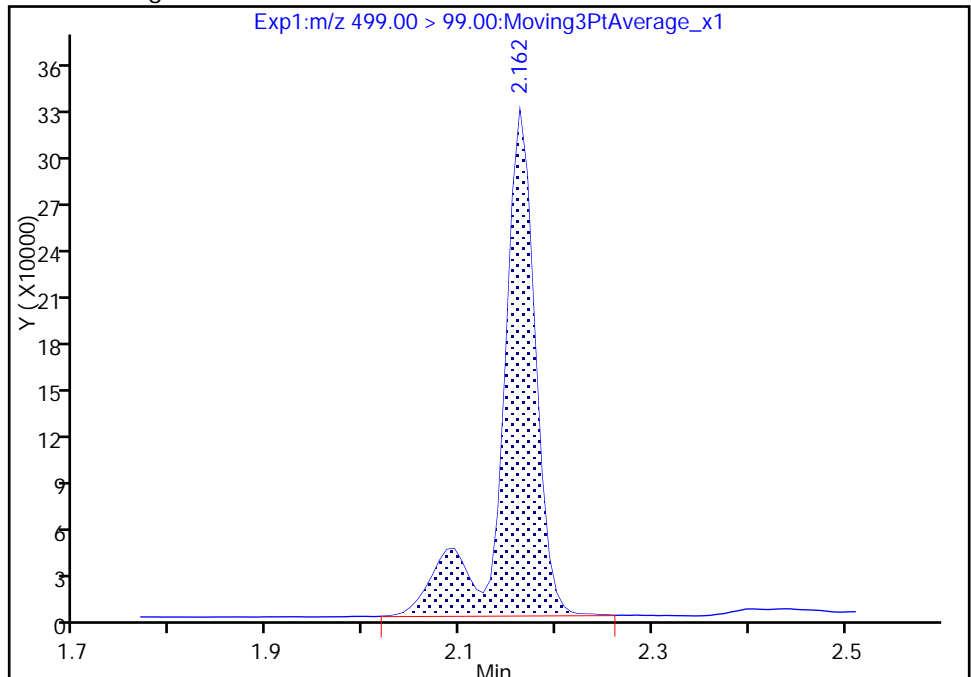
Not Detected  
Expected RT: 2.15

Processing Integration Results



RT: 2.16  
Area: 807689  
Amount: 19.977308  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:10:58

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

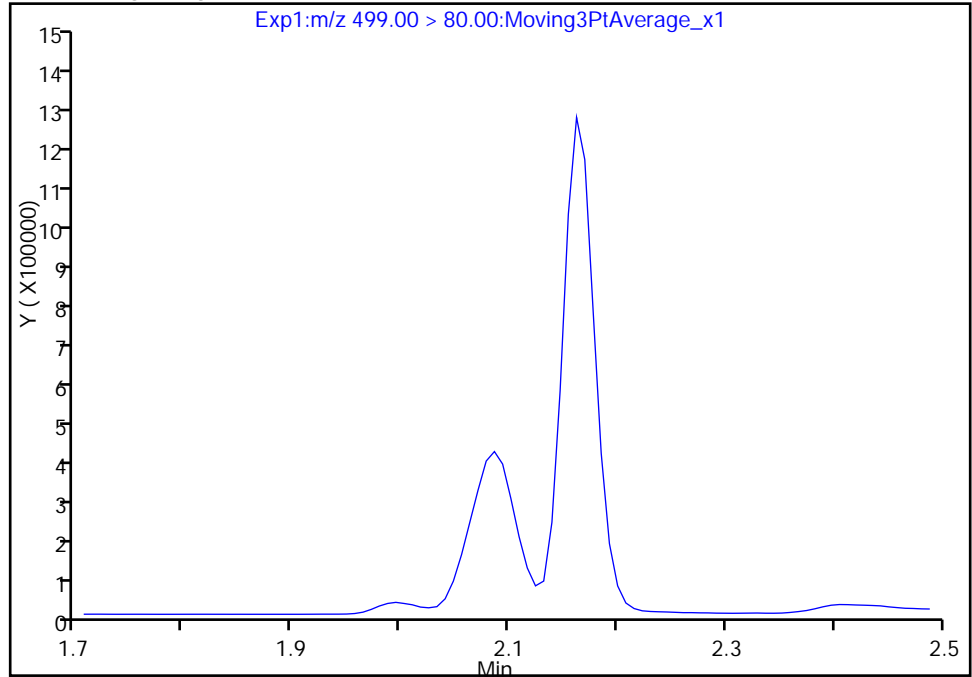
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Injection Date: 16-Oct-2017 11:57:27 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

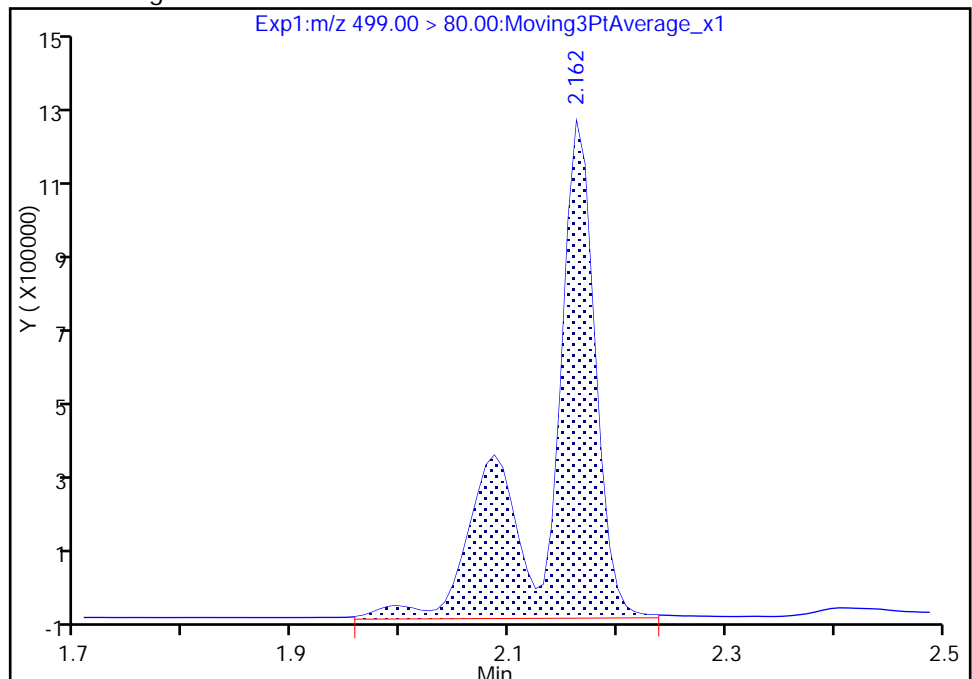
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 3886786  
Amount: 19.977308  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:11:06

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189551/13 Calibration Date: 10/16/2017 12:54  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8814		136	135	1.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8823		14.1	15.0	-6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.586		43.6	45.0	-3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9076		29.6	30.0	-1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9418		60.7	60.0	1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5768		27.8	30.0	-7.3	30.0
13C2 PFHxA	Ave	1.172	1.157		9.87	10.0	-1.3	30.0
13C2 PFDA	Ave	0.5578	0.5305		9.51	10.0	-4.9	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189553/13 Calibration Date: 10/16/2017 12:54  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8814		136	135	1.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8823		14.1	15.0	-6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.586		43.6	45.0	-3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9076		29.6	30.0	-1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9418		60.7	60.0	1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5768		27.8	30.0	-7.3	30.0
13C2 PFHxA	Ave	1.172	1.157		9.87	10.0	-1.3	30.0
13C2 PFDA	Ave	0.5578	0.5305		9.51	10.0	-4.9	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.021.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 16-Oct-2017 12:54:20 ALS Bottle#: 5 Worklist Smp#: 13  
 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\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:52 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:18:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	24852018	136.4		4531	
298.90 > 99.00	1.426	1.402	0.024	1.000	18951186		1.31(0.00-0.00)	4454	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2634465	9.87		7571	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.707	1.668	0.039	1.000	14907592	43.6		4968	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.707	1.668	0.039	1.000	3015231	14.1		543	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.855	0.049		2277718	10.0		6256	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.904	1.856	0.048	1.000	6207082	29.6		189	
413.00 > 169.00	1.904	1.856	0.048	1.000	3441293		1.80(0.00-0.00)	5749	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.108	0.047		5989702	28.7		5983	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.116	0.046	1.000	3941708	27.8		345	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.155	0.0	1.000	11804642	60.7		1276	M
499.00 > 99.00	2.155	2.155	0.0	1.000	2529226		4.67(0.00-0.00)	815	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.282	0.032	1.000	1208258	9.51		5161	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L5\_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.021.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 16-Oct-2017 12:54:20 ALS Bottle#: 5 Worklist Smp#: 13  
 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\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:52 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:18:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	24852018	136.4		4531	
298.90 > 99.00	1.426	1.402	0.024	1.000	18951186		1.31(0.00-0.00)	4454	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2634465	9.87		7571	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.707	1.668	0.039	1.000	14907592	43.6		4968	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.707	1.668	0.039	1.000	3015231	14.1		543	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.855	0.049		2277718	10.0		6256	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.904	1.856	0.048	1.000	6207082	29.6		189	
413.00 > 169.00	1.904	1.856	0.048	1.000	3441293		1.80(0.00-0.00)	5749	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.108	0.047		5989702	28.7		5983	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.116	0.046	1.000	3941708	27.8		345	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.155	0.0	1.000	11804642	60.7		1276	M
499.00 > 99.00	2.155	2.155	0.0	1.000	2529226		4.67(0.00-0.00)	815	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.282	0.032	1.000	1208258	9.51		5161	



**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L5\_00024

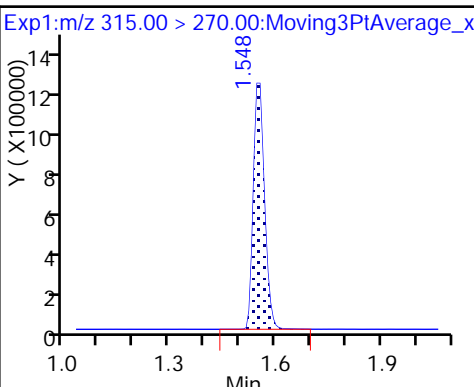
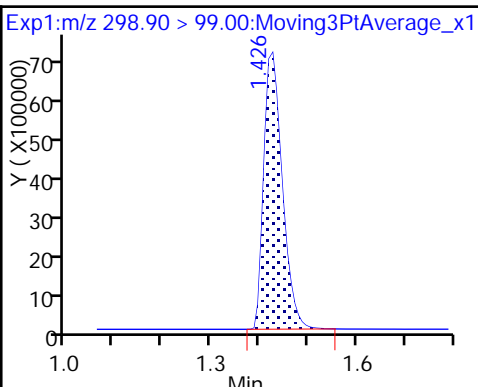
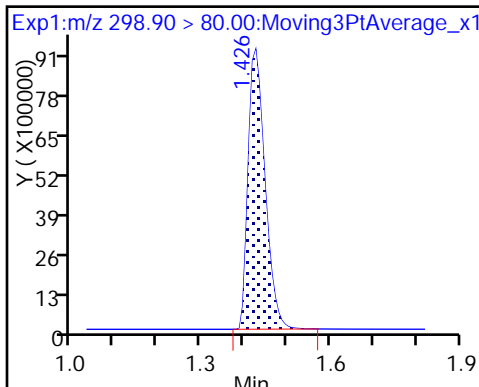
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

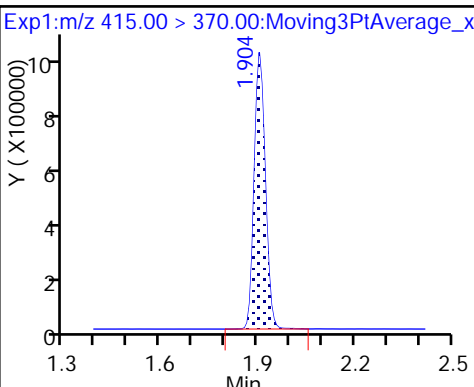
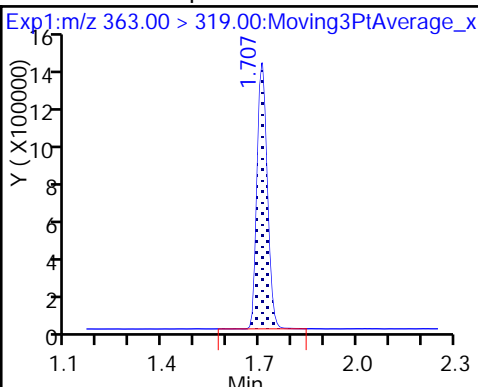
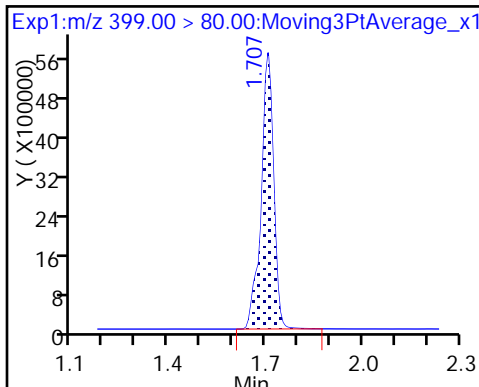
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

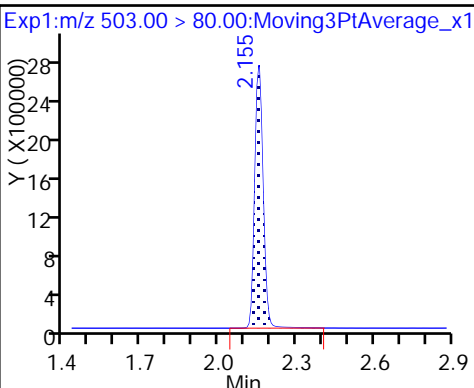
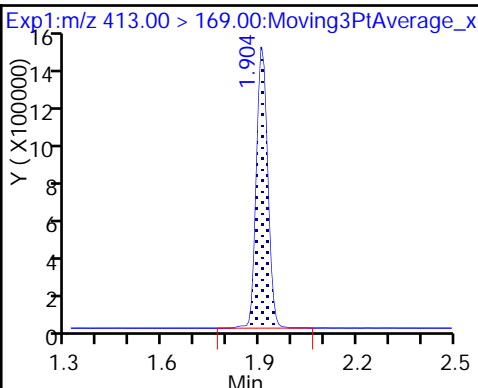
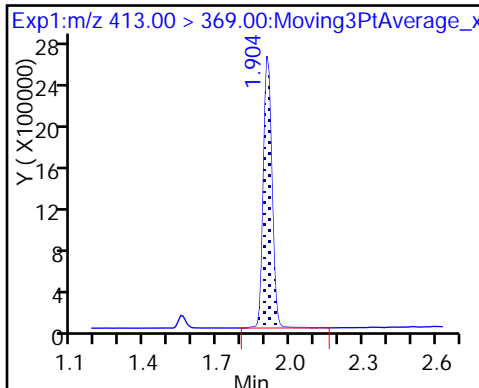
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

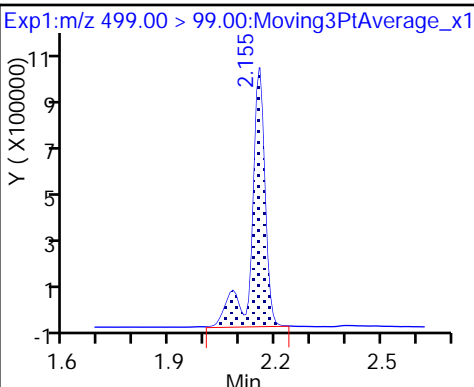
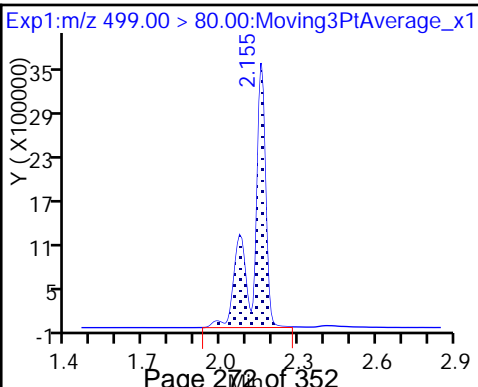
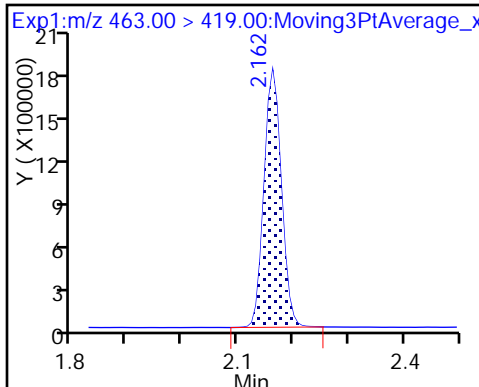
\* 7 13C4 PFOS



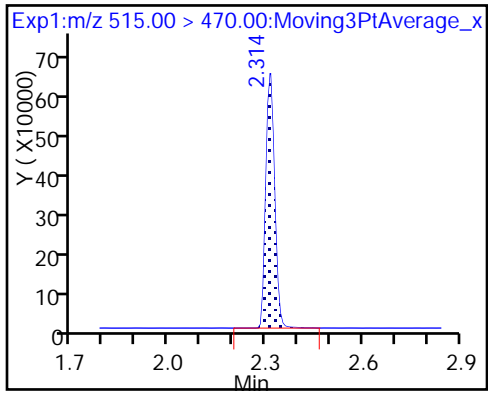
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.021.d

Injection Date: 16-Oct-2017 12:54:20

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

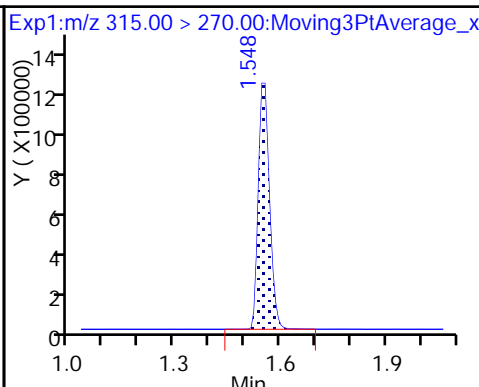
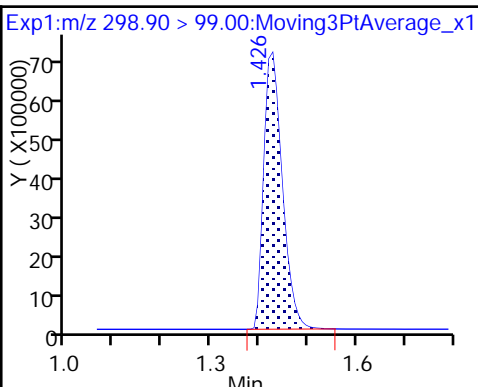
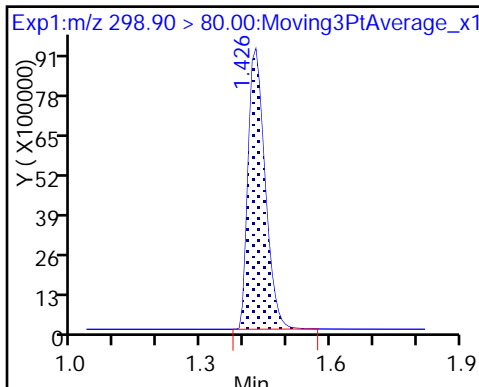
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

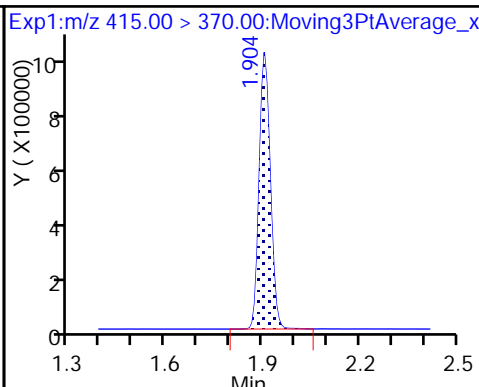
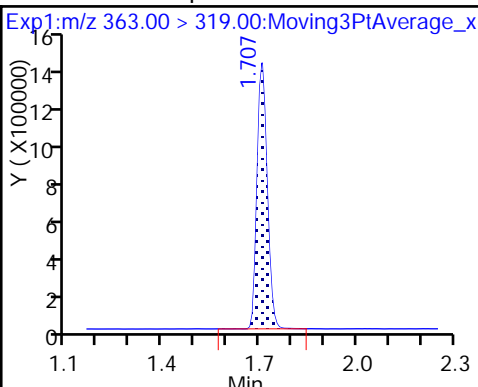
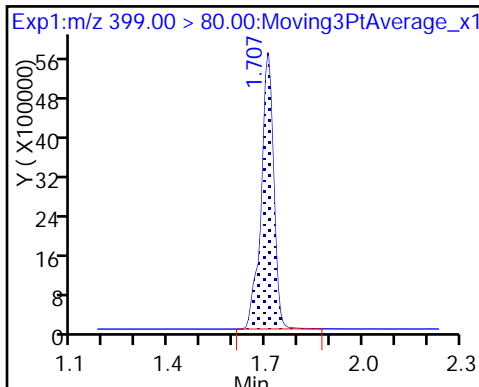
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

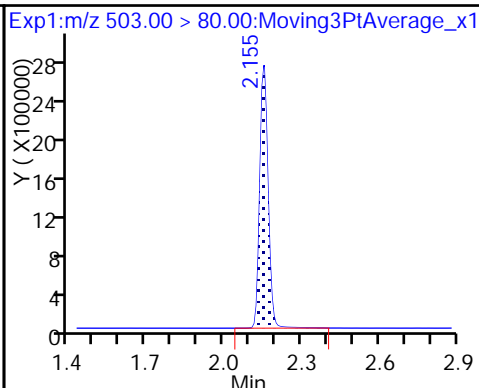
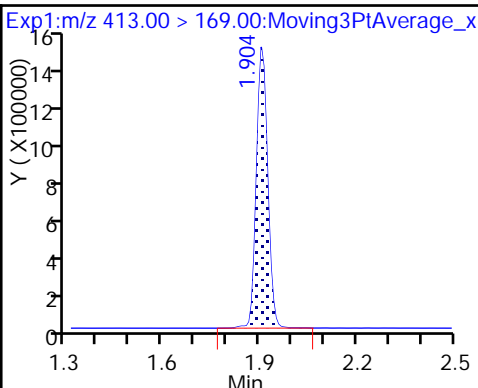
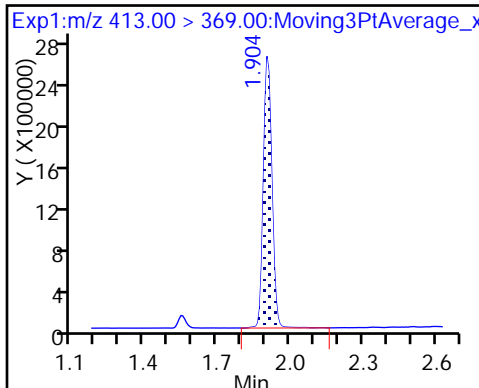
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

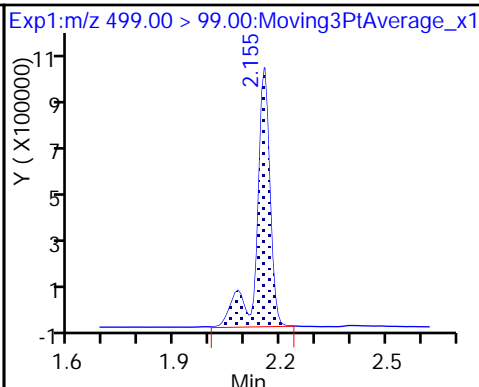
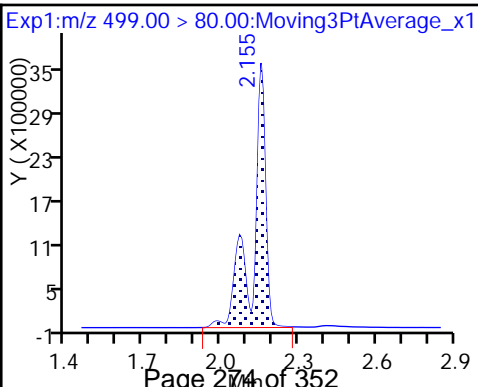
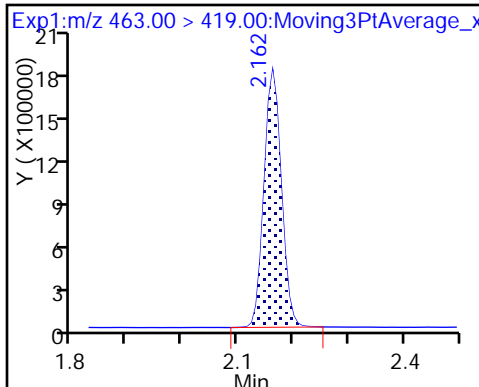
\* 7 13C4 PFOS



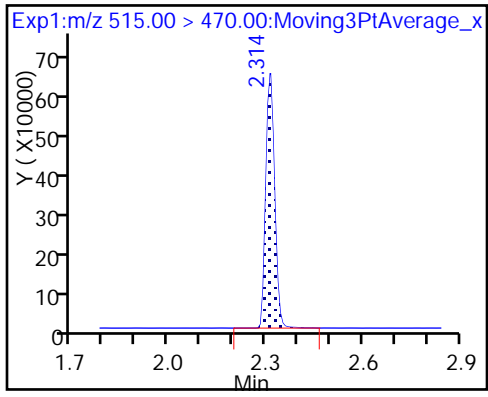
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento

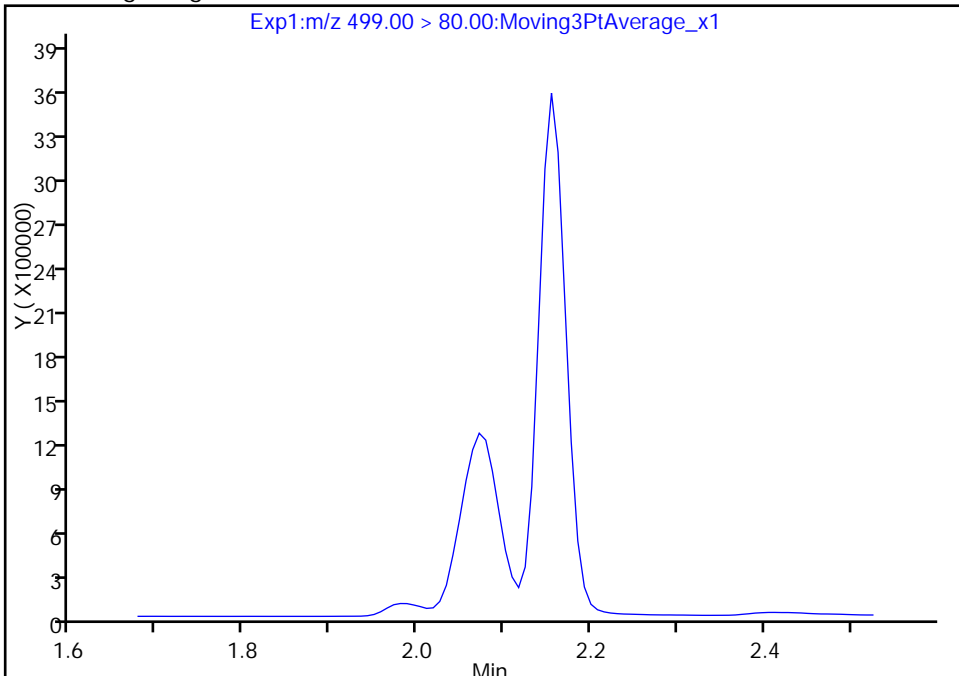
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.021.d  
Injection Date: 16-Oct-2017 12:54:20 Instrument ID: A8\_N  
Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

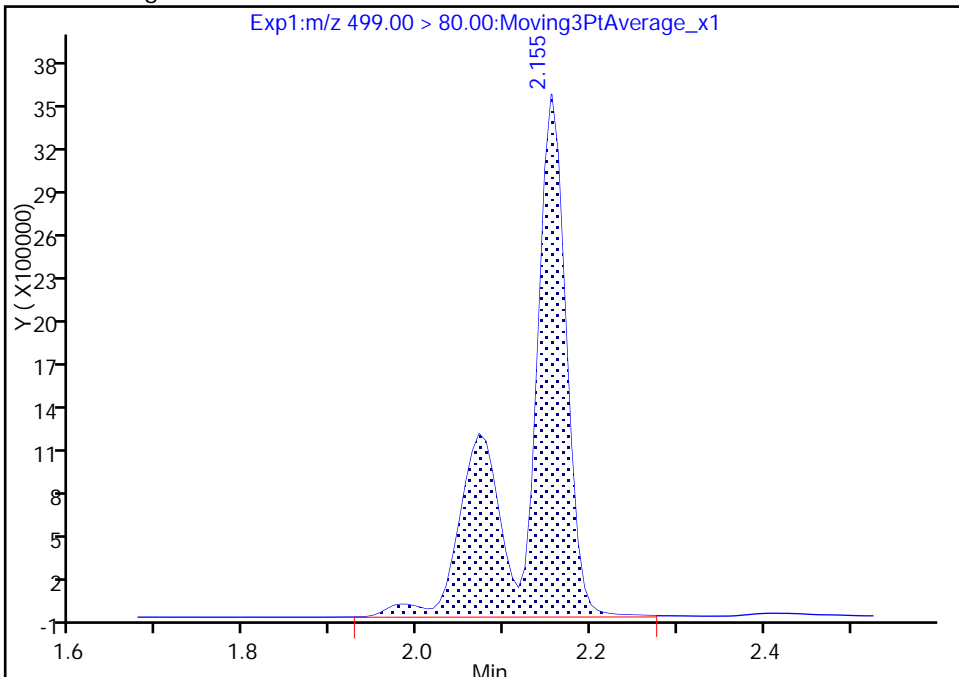
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 11804642  
Amount: 60.666728  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:17:34  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

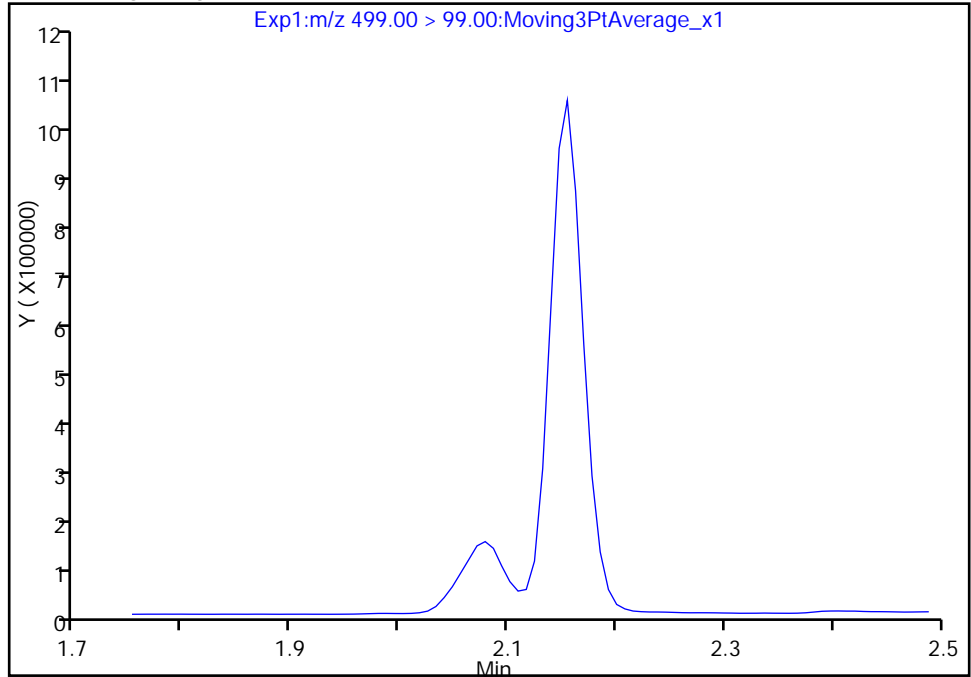
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Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

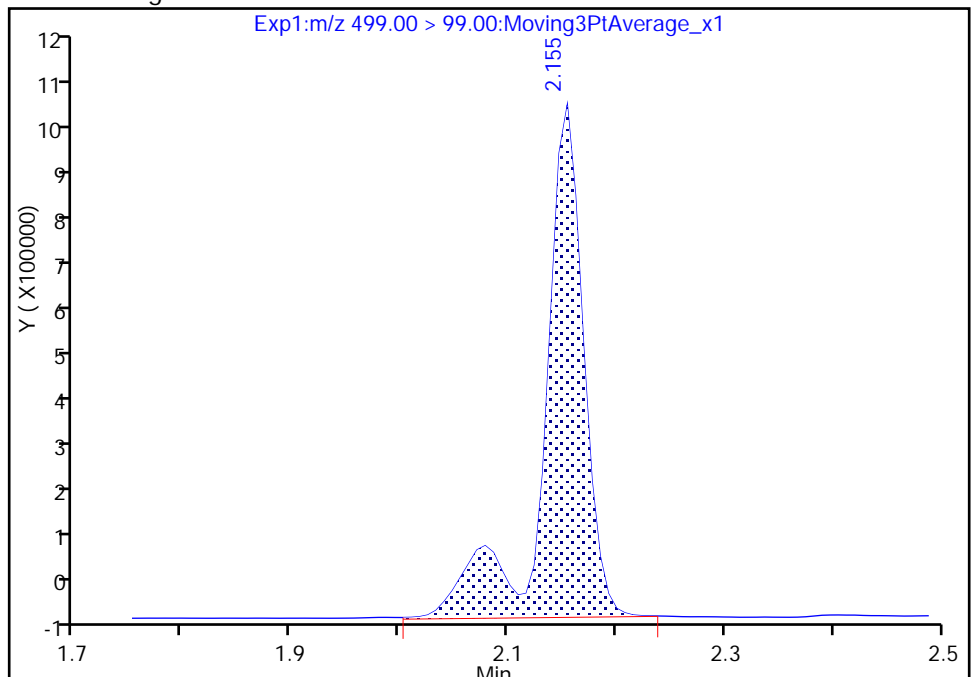
Not Detected  
Expected RT: 2.15

Processing Integration Results



RT: 2.15  
Area: 2529226  
Amount: 60.666728  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:17:57

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

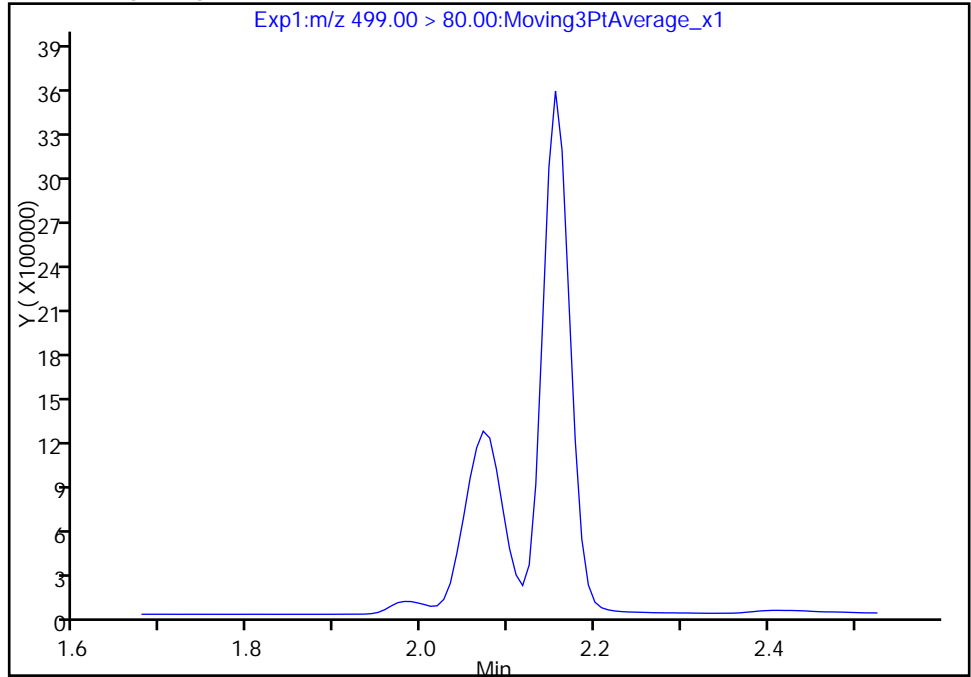
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Injection Date: 16-Oct-2017 12:54:20 Instrument ID: A8\_N  
Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

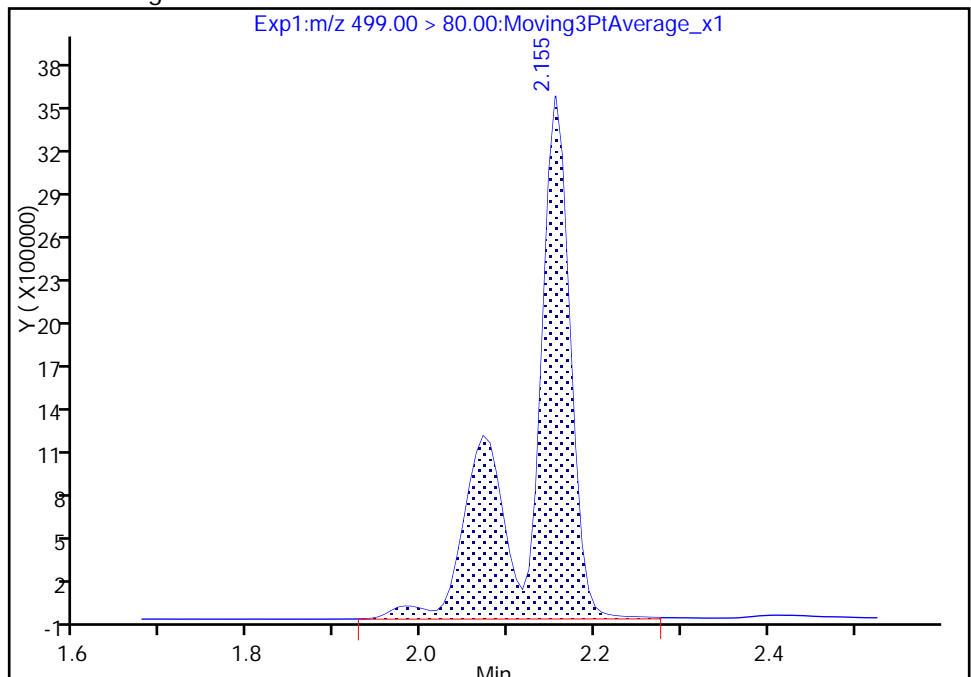
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 11804642  
Amount: 60.666728  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:17:57

Audit Action: Manually Integrated

Audit Reason: Missed Peak



TestAmerica Sacramento

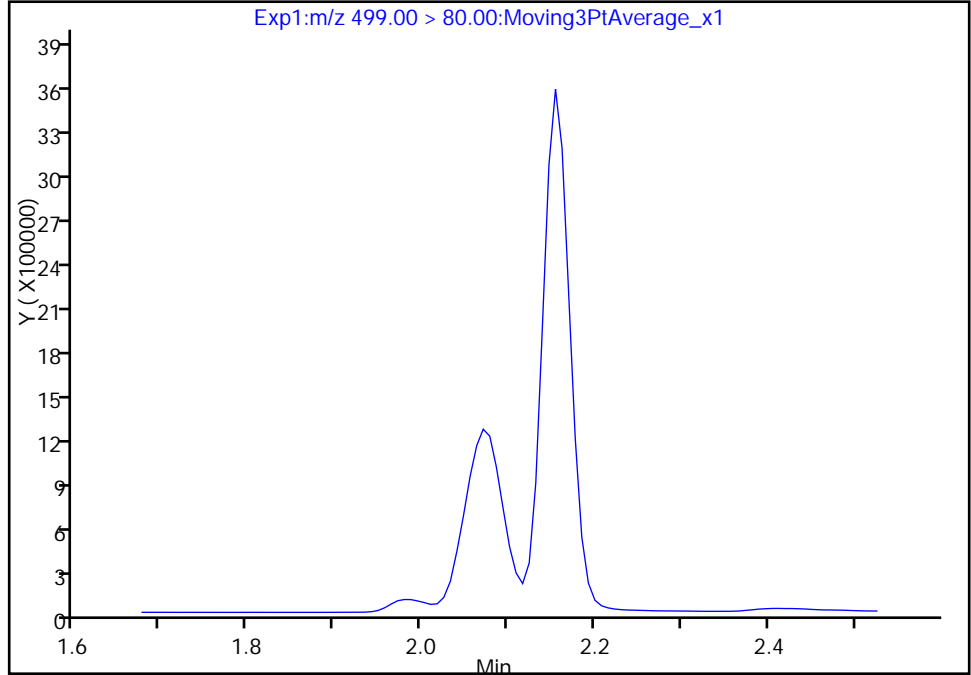
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.021.d  
Injection Date: 16-Oct-2017 12:54:20 Instrument ID: A8\_N  
Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

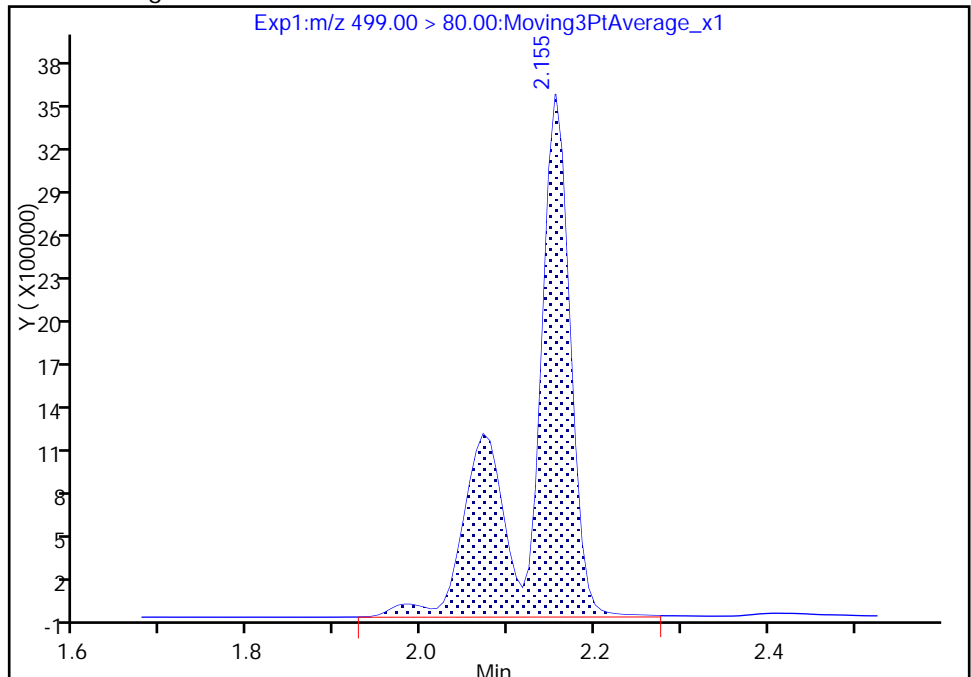
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 11804642  
Amount: 60.666728  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:17:34  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

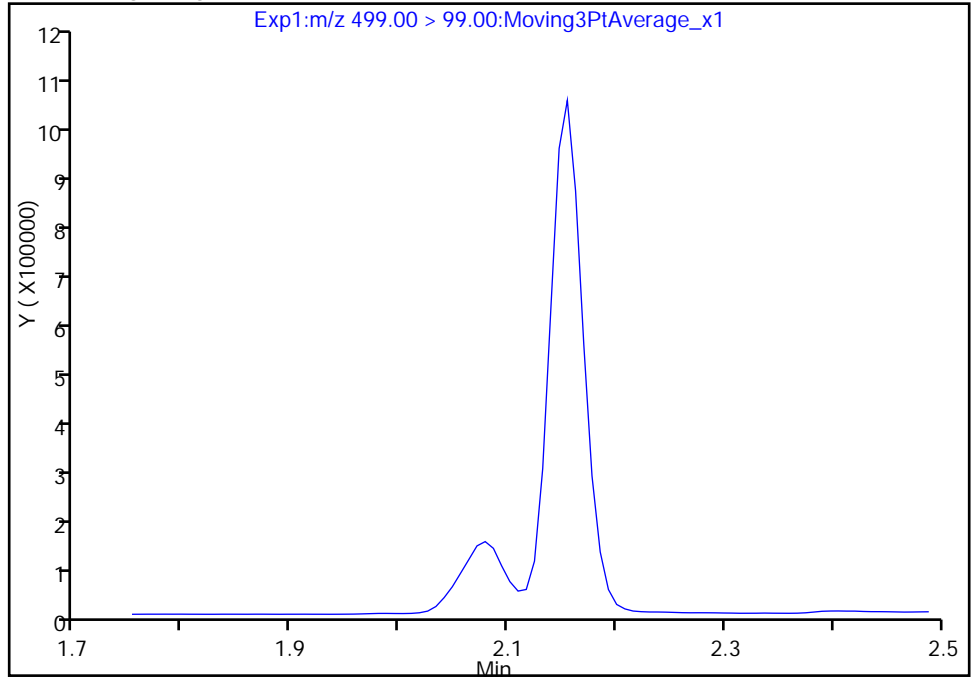
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Injection Date: 16-Oct-2017 12:54:20 Instrument ID: A8\_N  
Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

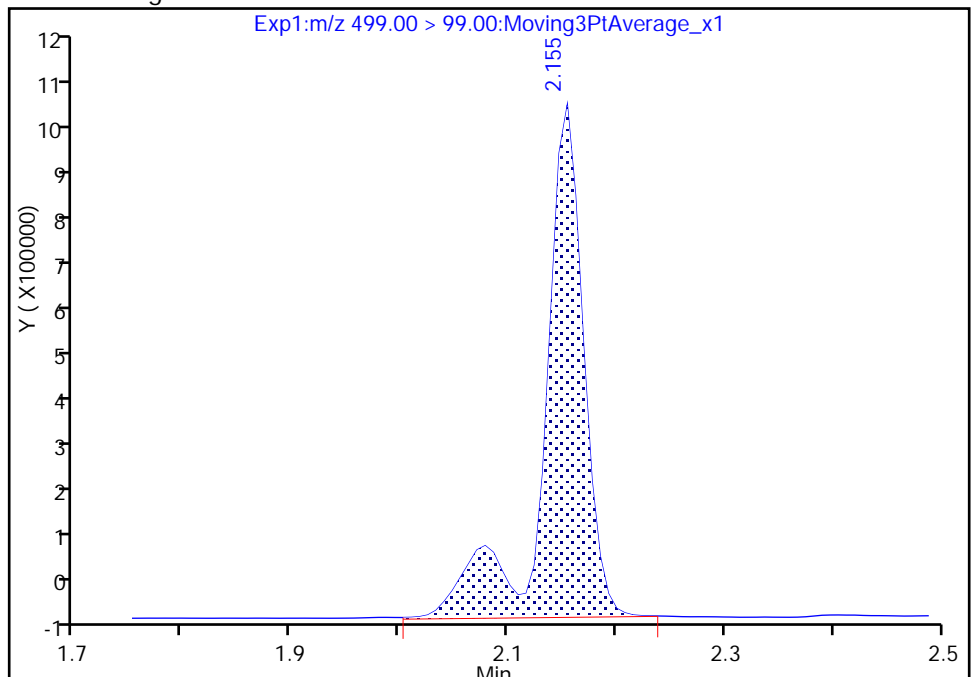
Not Detected  
Expected RT: 2.15

Processing Integration Results



RT: 2.15  
Area: 2529226  
Amount: 60.666728  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:17:57

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

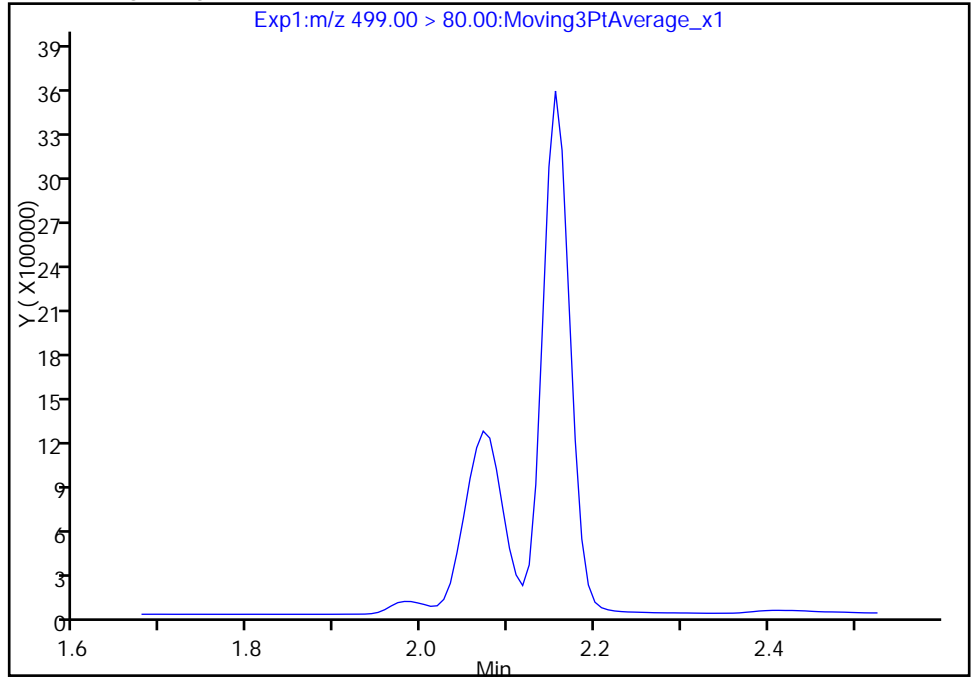
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Injection Date: 16-Oct-2017 12:54:20 Instrument ID: A8\_N  
Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

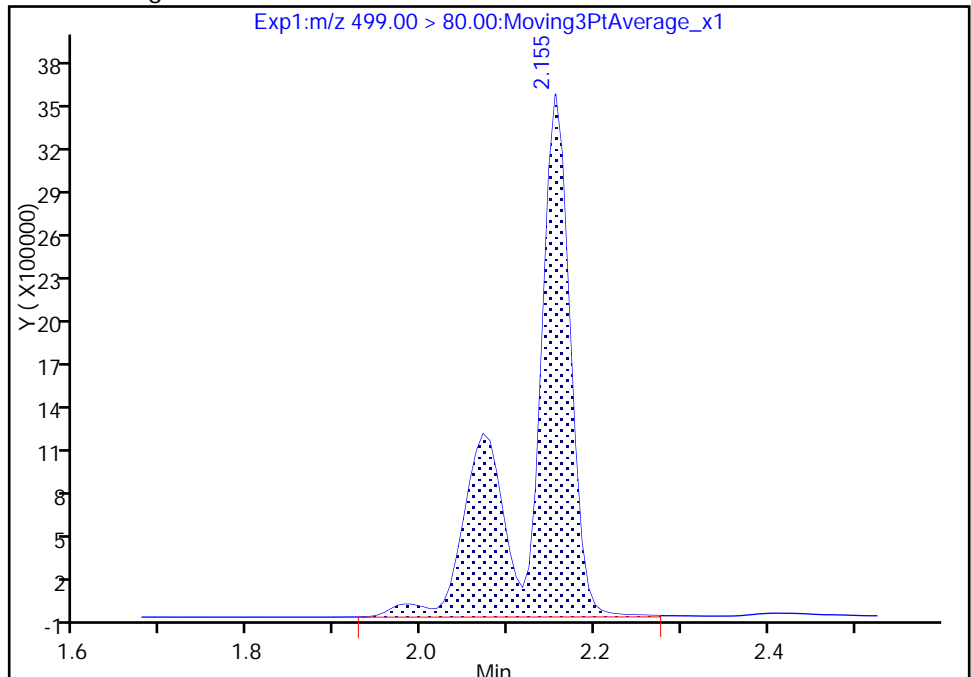
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 11804642  
Amount: 60.666728  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:17:57

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189553/23 Calibration Date: 10/16/2017 13:41  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.114		45.6	45.0	1.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9345		4.96	5.00	-0.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.718		15.7	15.0	4.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8875		9.66	10.0	-3.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9131		19.6	20.0	-2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5843		9.40	10.0	-6.0	30.0
13C2 PFHxA	Ave	1.172	1.165		9.94	10.0	-0.6	30.0
13C2 PFDA	Ave	0.5578	0.5262		9.43	10.0	-5.7	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.030.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 16-Oct-2017 13:41:45 ALS Bottle#: 3 Worklist Smp#: 23  
 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\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:29:58 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:27:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	11230537	45.6		4653	
298.90 > 99.00	1.419	1.402	0.017	1.000	8175521		1.37(0.00-0.00)	3874	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2749448	9.94		7063	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.668	0.031	1.000	5775317	15.7		4172	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.668	0.031	1.000	1102882	4.96		208	
* 6 13C2-PFOA									
415.00 > 370.00	1.897	1.855	0.042		2359791	10.0		6257	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.897	1.856	0.041	1.000	2096071	9.66		65.7	
413.00 > 169.00	1.897	1.856	0.041	1.000	1169989		1.79(0.00-0.00)	2675	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.108	0.039		6426616	28.7		6095	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.116	0.039	1.000	1379007	9.40		137	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.147	0.0	1.000	4093108	19.6		566	M
499.00 > 99.00	2.147	2.147	0.0	1.000	861088		4.75(0.00-0.00)	298	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.282	0.017	1.000	1241626	9.43		5119	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L3\_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.030.d

Injection Date: 16-Oct-2017 13:41:45

Instrument ID: A8\_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

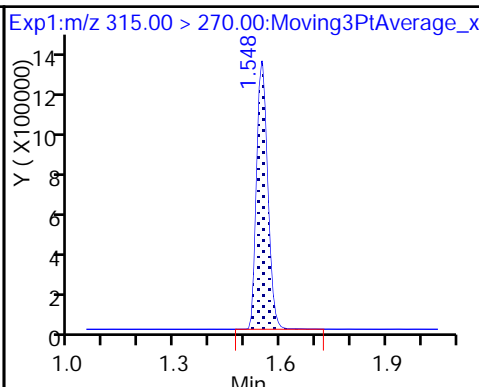
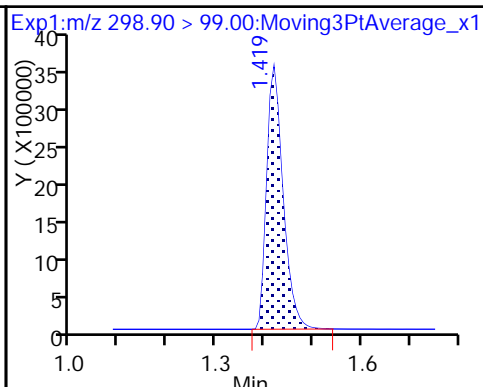
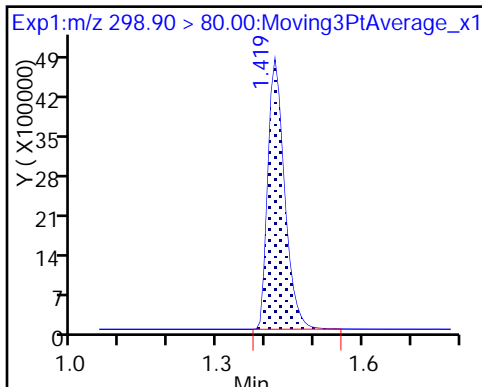
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

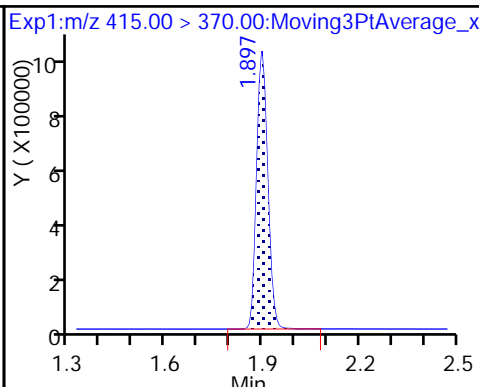
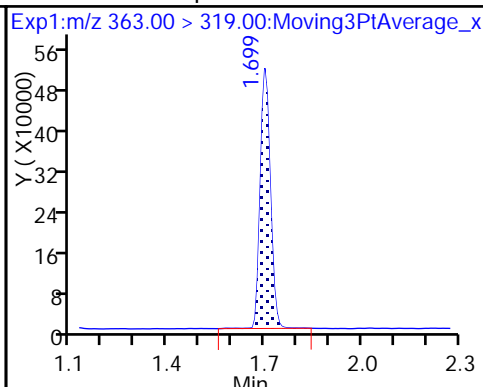
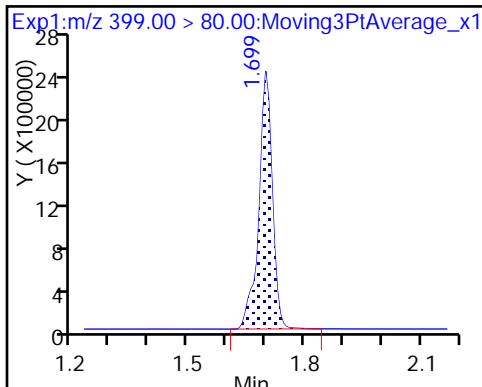
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

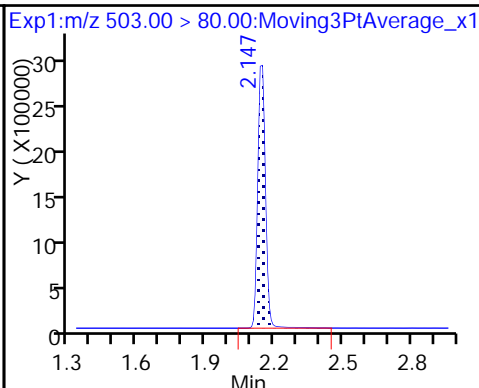
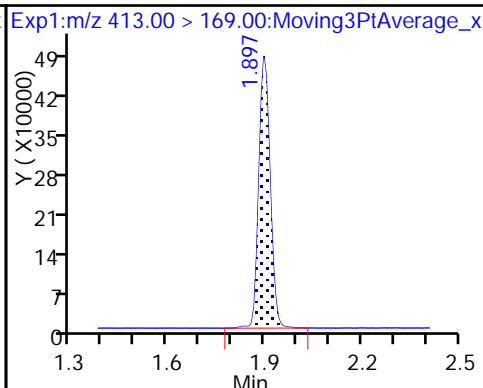
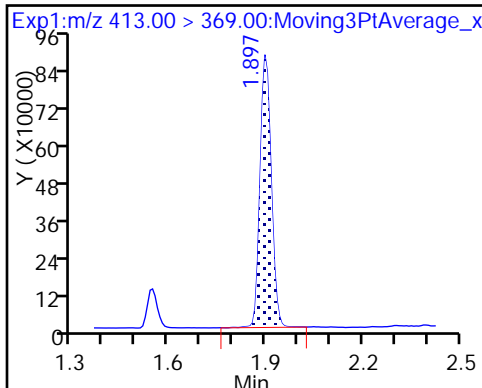
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

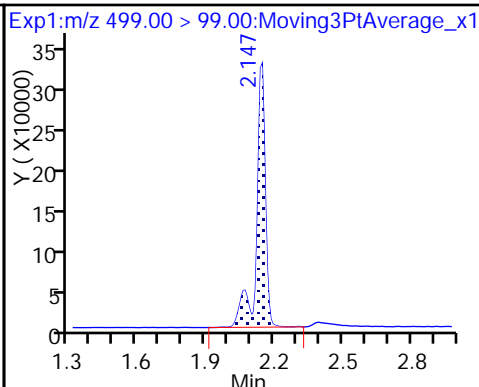
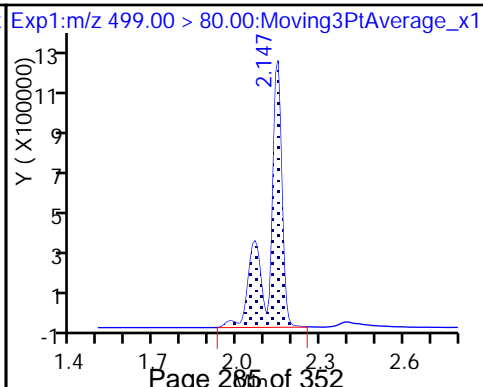
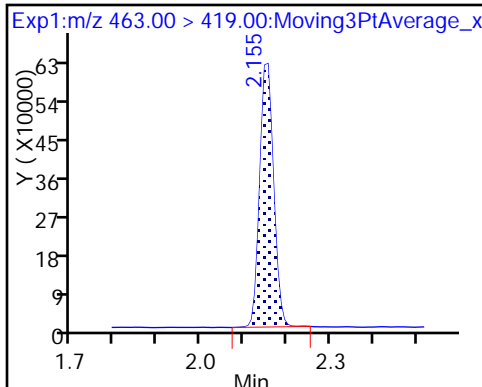
\* 7 13C4 PFOS



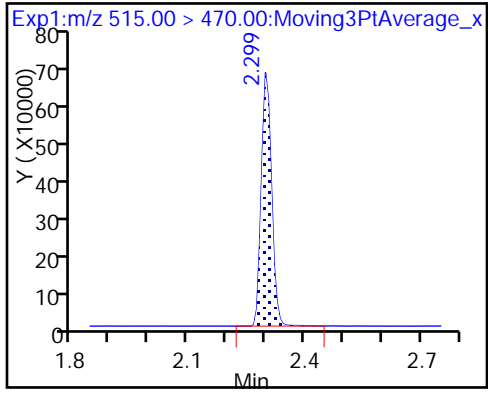
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA





TestAmerica Sacramento

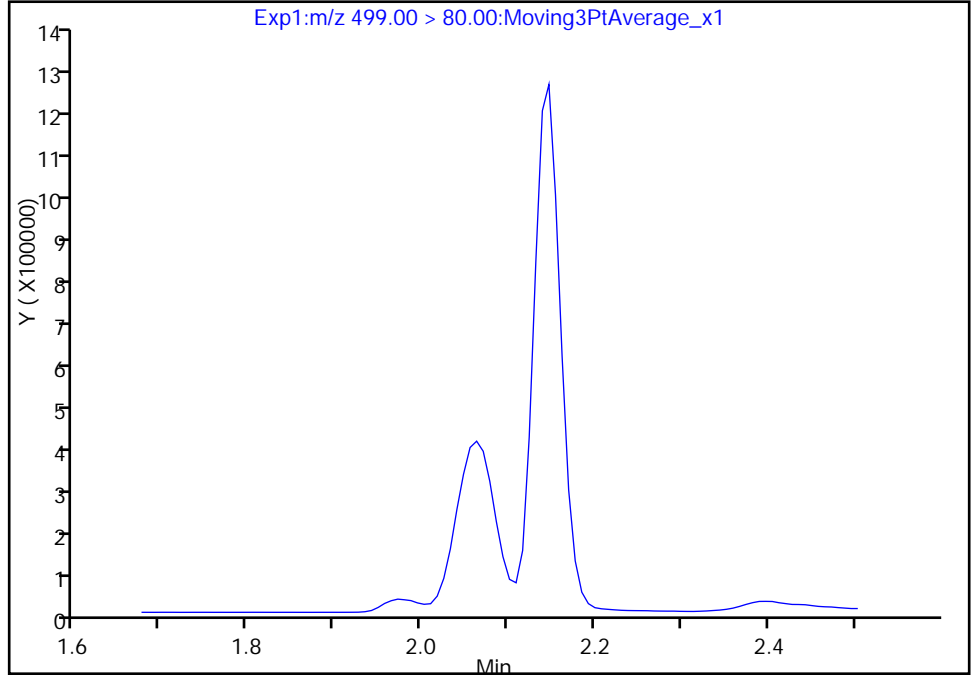
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Injection Date: 16-Oct-2017 13:41:45 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 23  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

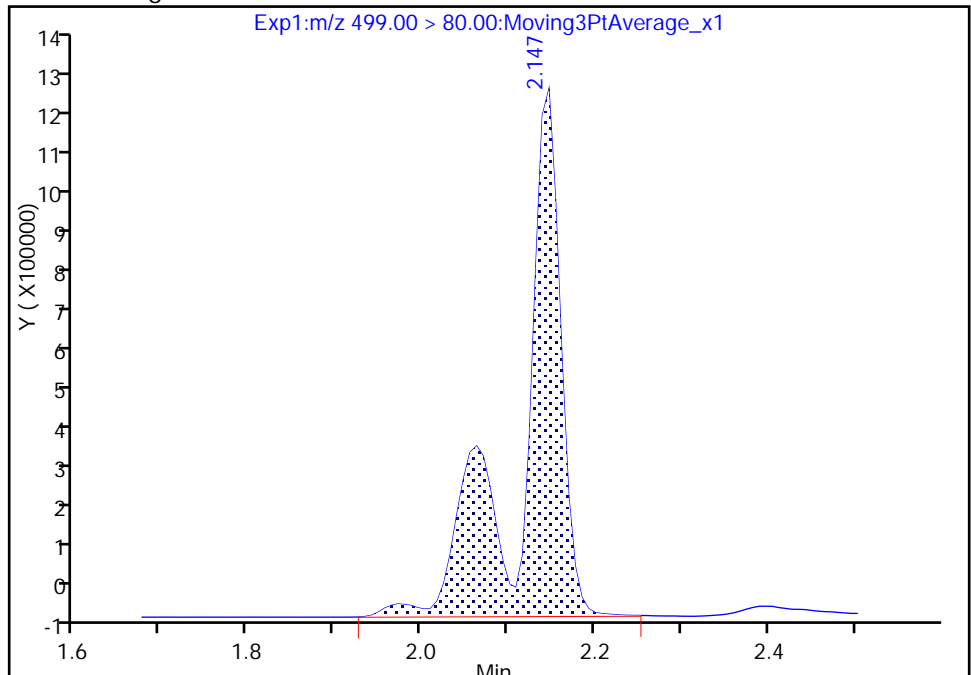
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15  
Area: 4093108  
Amount: 19.605315  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:21:41  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

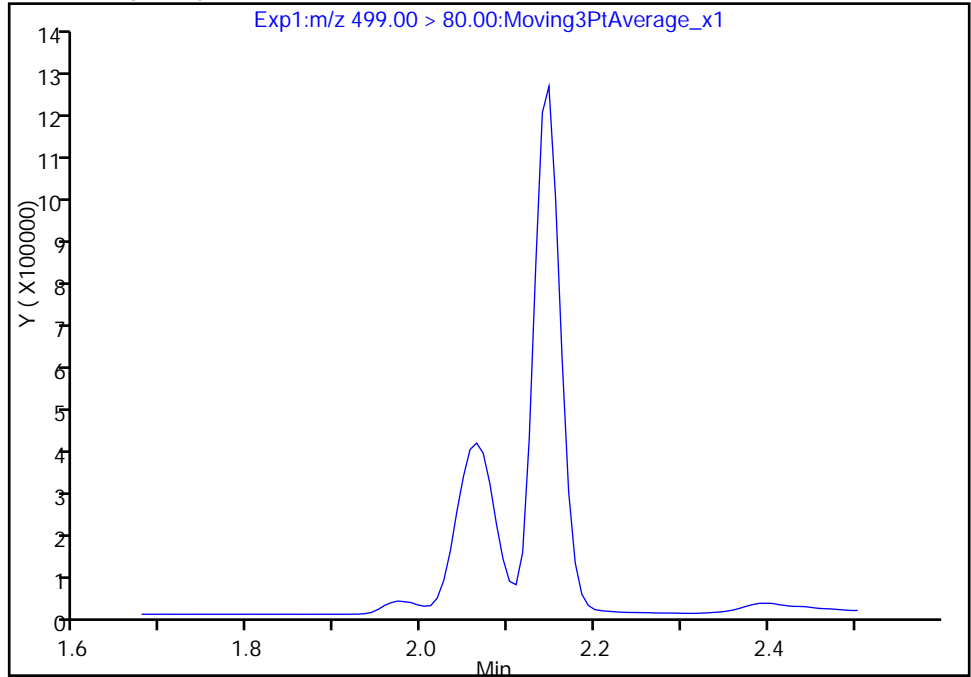
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.030.d  
Injection Date: 16-Oct-2017 13:41:45 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 23  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

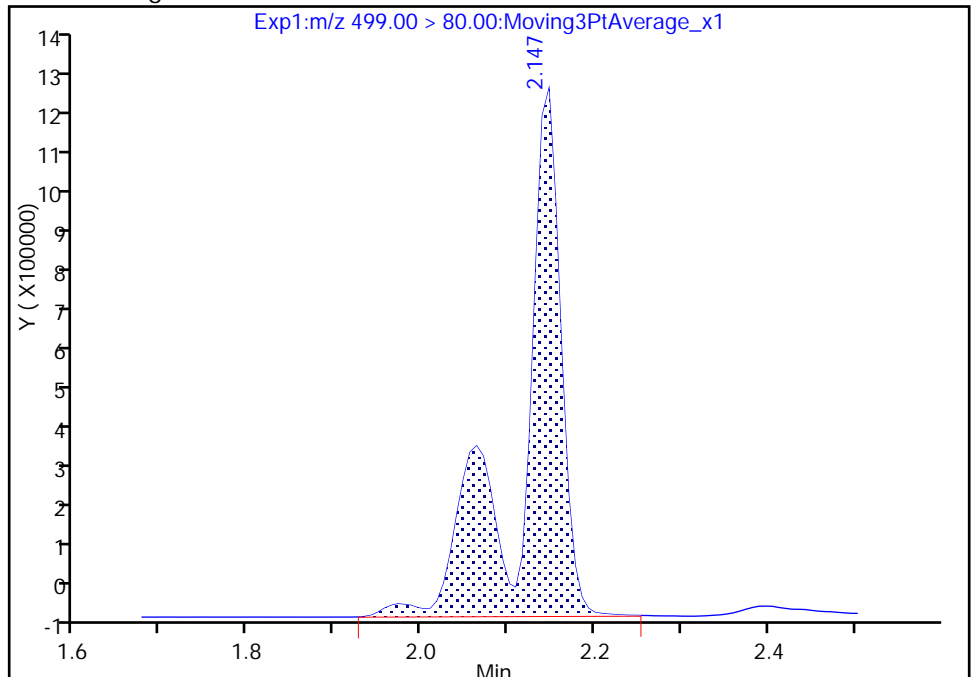
Not Detected  
Expected RT: 2.15

Processing Integration Results



RT: 2.15  
Area: 4093108  
Amount: 19.605315  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:21:56

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-189890/4 Calibration Date: 10/18/2017 01:36  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.17\_537A\_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.245		21.5	20.0	7.4	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.003		2.37	2.22	6.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.771		7.21	6.67	8.1	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9043		4.37	4.45	-1.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9353		8.93	8.89	0.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6058		4.33	4.45	-2.6	50.0
13C2 PFHxA	Ave	1.172	1.233		10.5	10.0	5.2	30.0
13C2 PFDA	Ave	0.5578	0.5395		9.67	10.0	-3.3	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_004.d  
 Lims ID: CCVL  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 18-Oct-2017 01:36:12 ALS Bottle#: 2 Worklist Smp#: 4  
 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\20171018-49283.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 18-Oct-2017 14:22:29 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 18-Oct-2017 14:18:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	4856526	21.5		4480	
298.90 > 99.00	1.426	1.402	0.024	1.000	3416706		1.42(0.00-0.00)	3132	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.555	1.524	0.031	1.000	2553004	10.5		7635	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.707	1.668	0.039	1.000	2302730	7.21		1985	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.668	0.031	1.000	461912	2.37		72.4	
* 6 13C2-PFOA									
415.00 > 370.00	1.897	1.855	0.042		2071180	10.0		6000	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.897	1.856	0.041	1.000	833107	4.37		21.1	
413.00 > 169.00	1.897	1.856	0.041	1.000	449617		1.85(0.00-0.00)	752	
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.108	0.032		5593709	28.7		5892	
9 Perfluorononanoic acid									
463.00 > 419.00	2.147	2.116	0.031	1.000	557731	4.33		59.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.140	2.132	0.008	1.000	1621949	8.93		97.4	
499.00 > 99.00	2.140	2.132	0.008	1.000	345120		4.70(0.00-0.00)	89.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.282	0.017	1.000	1117400	9.67		5520	

**Reagents:**

LC537-L2\_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_004.d

Injection Date: 18-Oct-2017 01:36:12

Instrument ID: A8\_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

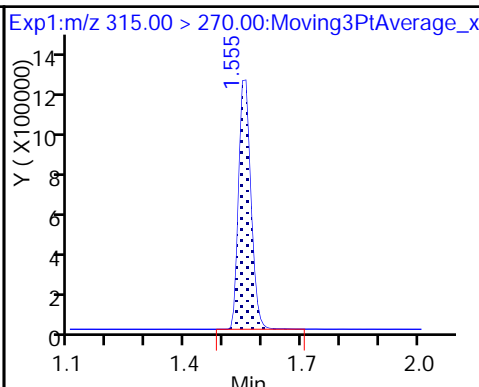
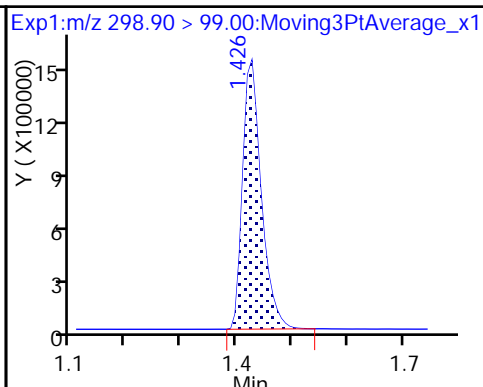
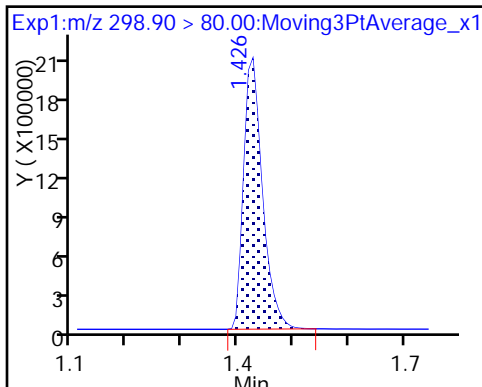
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

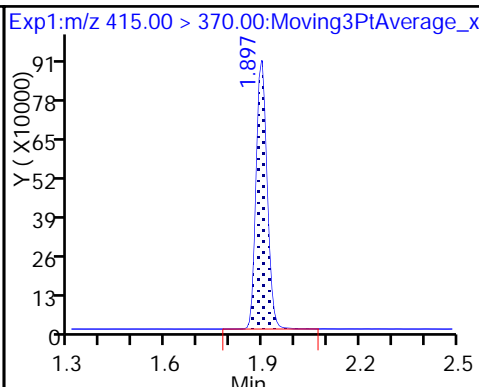
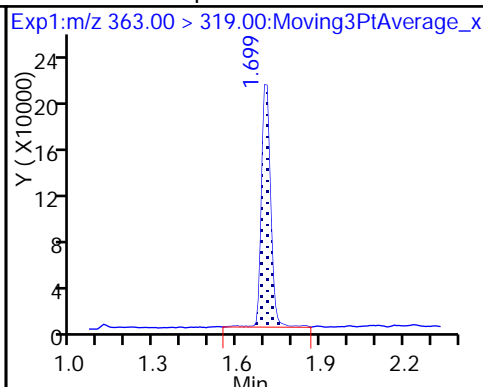
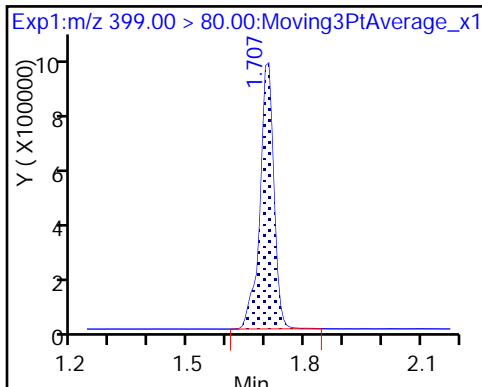
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

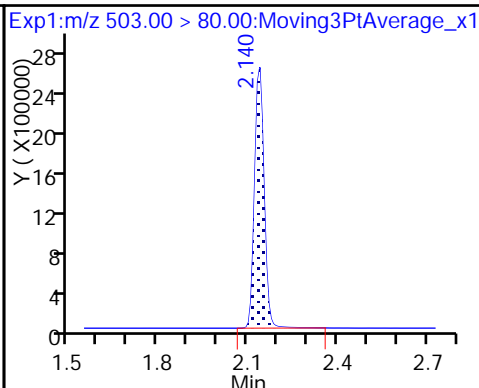
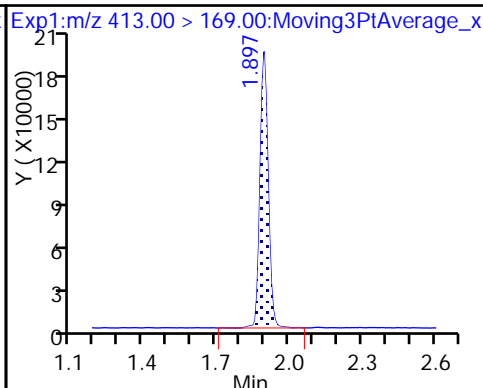
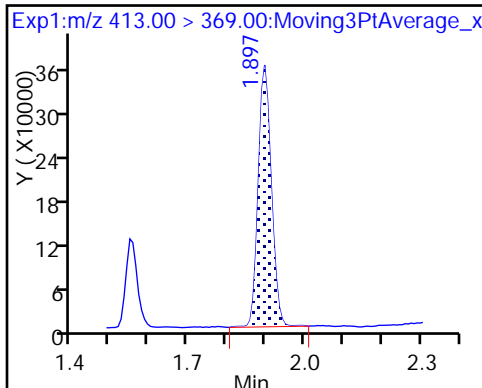
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

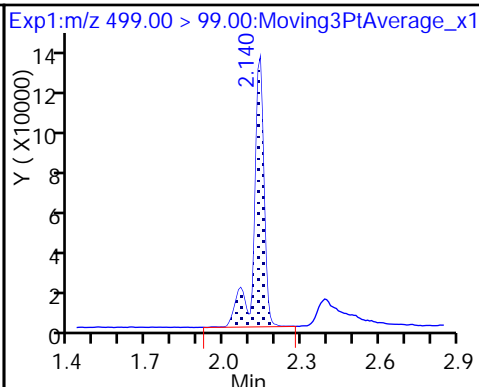
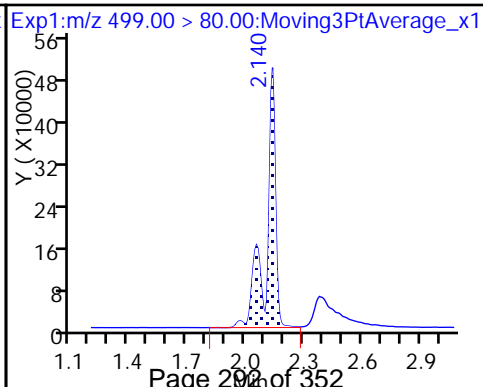
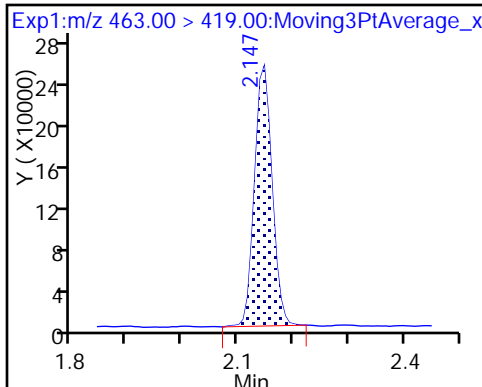
\* 7 13C4 PFOS



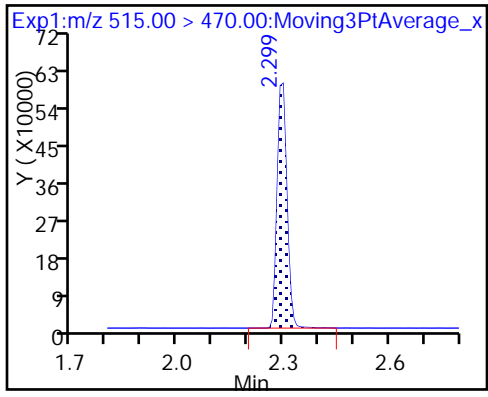
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189890/5 Calibration Date: 10/18/2017 01:40  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.17\_537A\_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9894		169	135	24.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9653		15.4	15.0	2.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.684		46.3	45.0	2.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9138		29.8	30.0	-0.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9439		60.8	60.0	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6150		29.7	30.0	-1.1	30.0
13C2 PFHxA	Ave	1.172	1.266		10.8	10.0	8.1	30.0
13C2 PFDA	Ave	0.5578	0.5520		9.90	10.0	-1.0	30.0



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_005.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 18-Oct-2017 01:40:56 ALS Bottle#: 5 Worklist Smp#: 5  
 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\20171018-49283.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 18-Oct-2017 14:22:30 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 18-Oct-2017 14:18:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	21851503	168.7		2103	
298.90 > 99.00	1.426	1.402	0.024	1.000	16485897		1.33(0.00-0.00)	2221	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.555	1.524	0.031	1.000	2152076	10.8		3754	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.707	1.668	0.039	1.000	12400421	46.3		2362	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.707	1.668	0.039	1.000	2461576	15.4		373	
* 6 13C2-PFOA									
415.00 > 370.00	1.897	1.855	0.042		1699689	10.0		3210	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.897	1.856	0.041	1.000	4663223	29.8		116	
413.00 > 169.00	1.897	1.856	0.041	1.000	2559362		1.82(0.00-0.00)	2543	
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.108	0.032		4691632	28.7		3302	
9 Perfluorononanoic acid									
463.00 > 419.00	2.147	2.116	0.031	1.000	3136335	29.7		350	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.140	2.132	0.008	1.000	9267147	60.8		445	M
499.00 > 99.00	2.140	2.132	0.008	1.000	1959120		4.73(0.00-0.00)	442	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	938295	9.90		3534	

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L5\_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_005.d

Injection Date: 18-Oct-2017 01:40:56

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

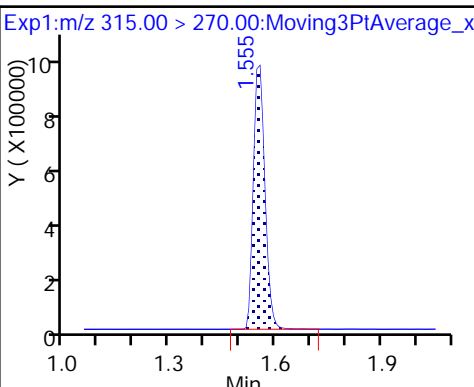
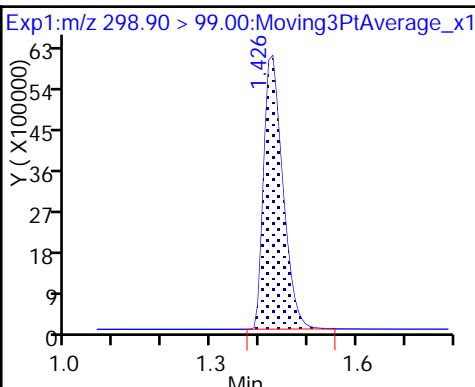
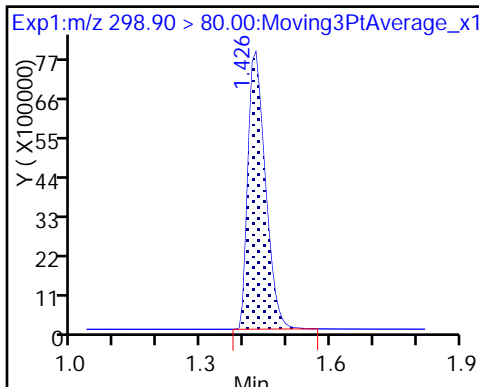
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

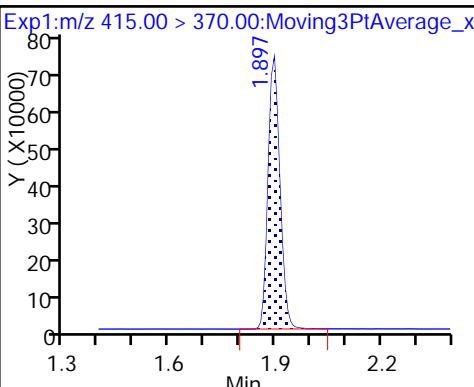
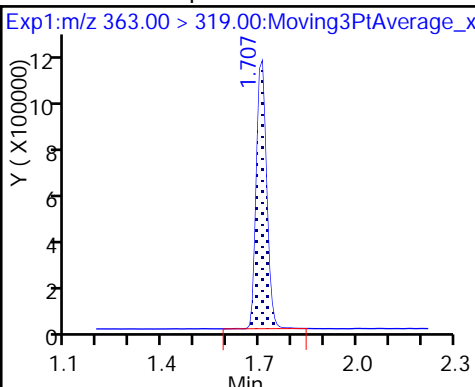
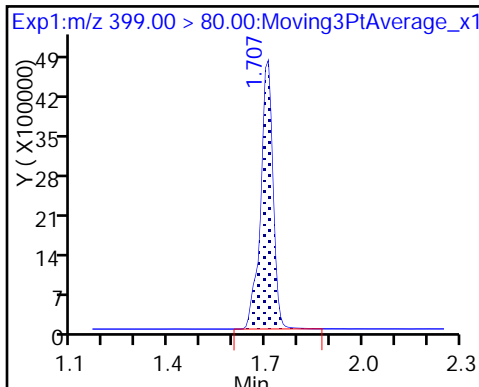
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

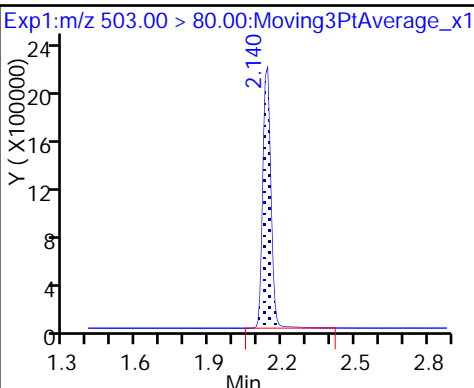
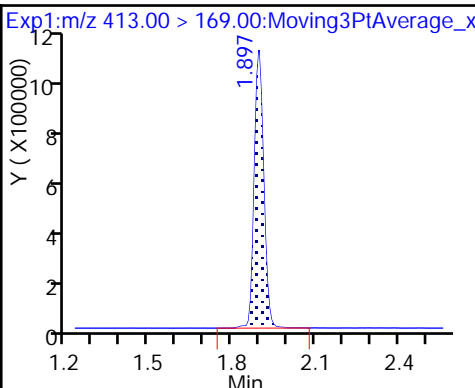
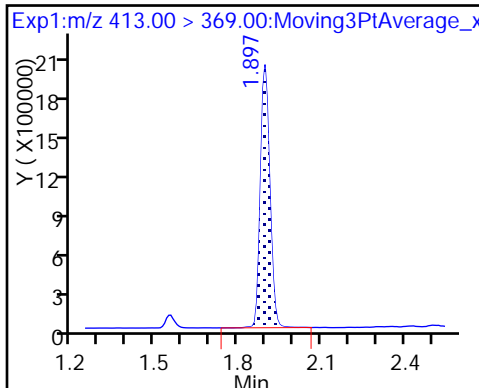
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

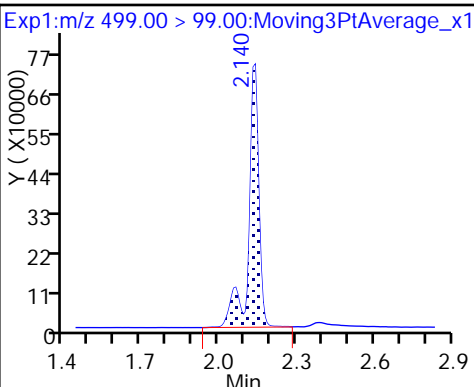
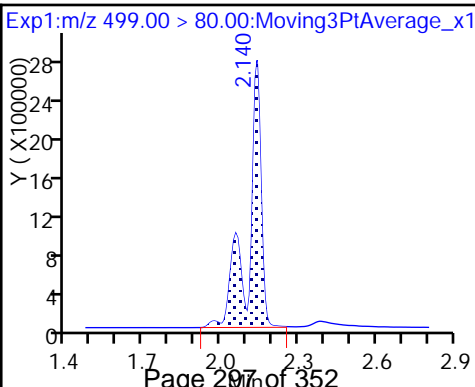
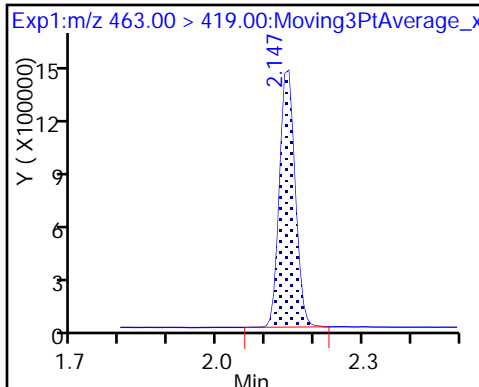
\* 7 13C4 PFOS



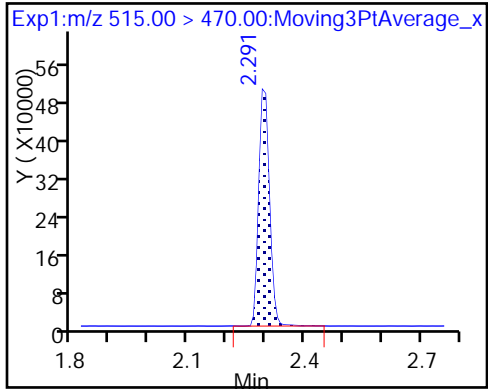
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

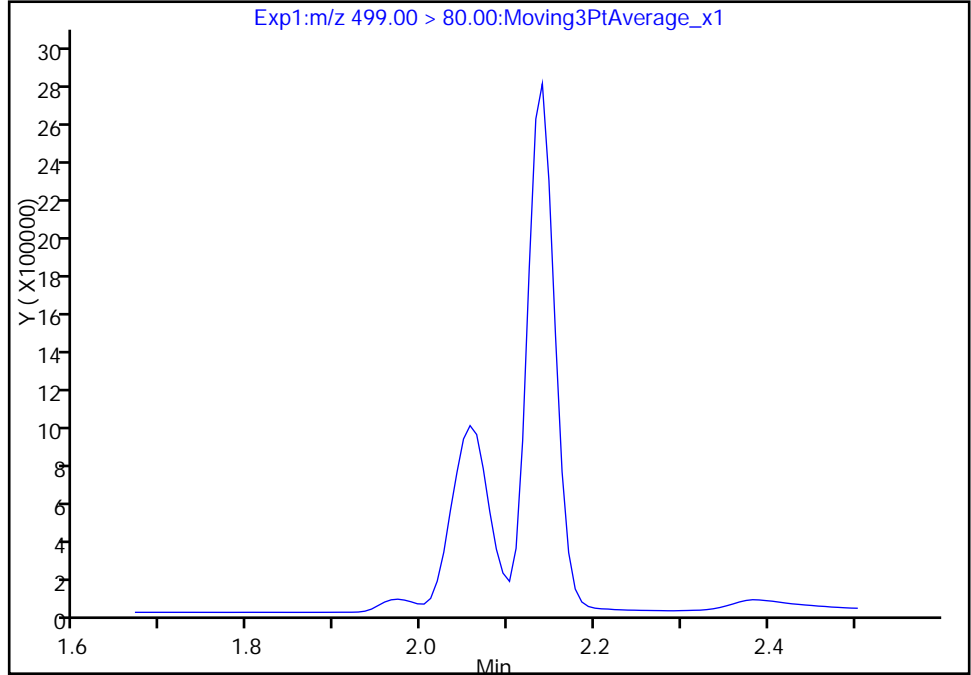
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Injection Date: 18-Oct-2017 01:40:56 Instrument ID: A8\_N  
Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

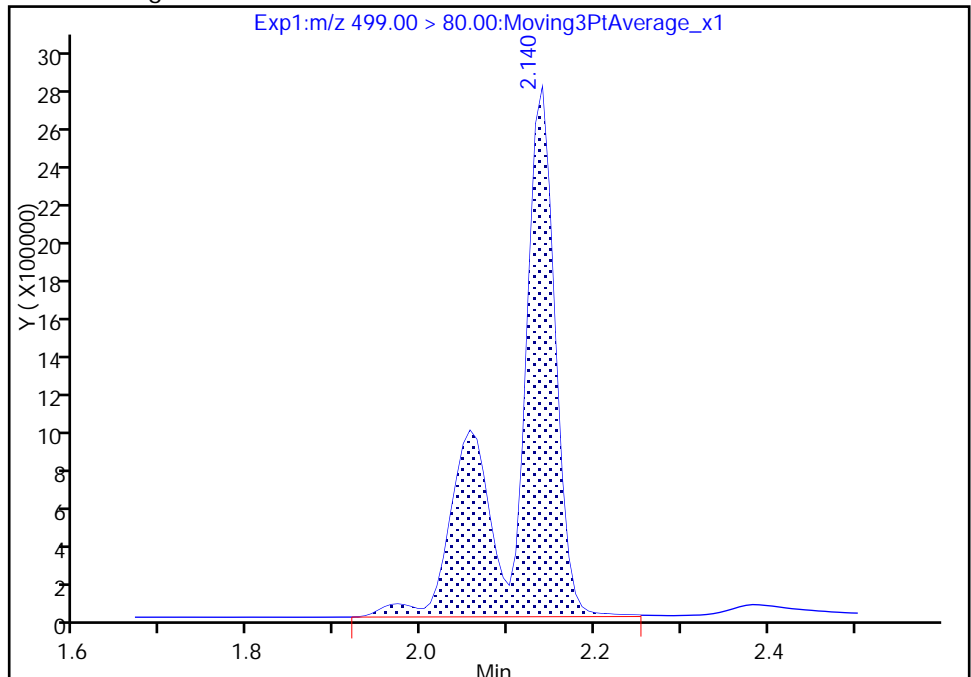
Not Detected  
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.14  
Area: 9267147  
Amount: 60.803010  
Amount Units: ng/ml



TestAmerica Sacramento

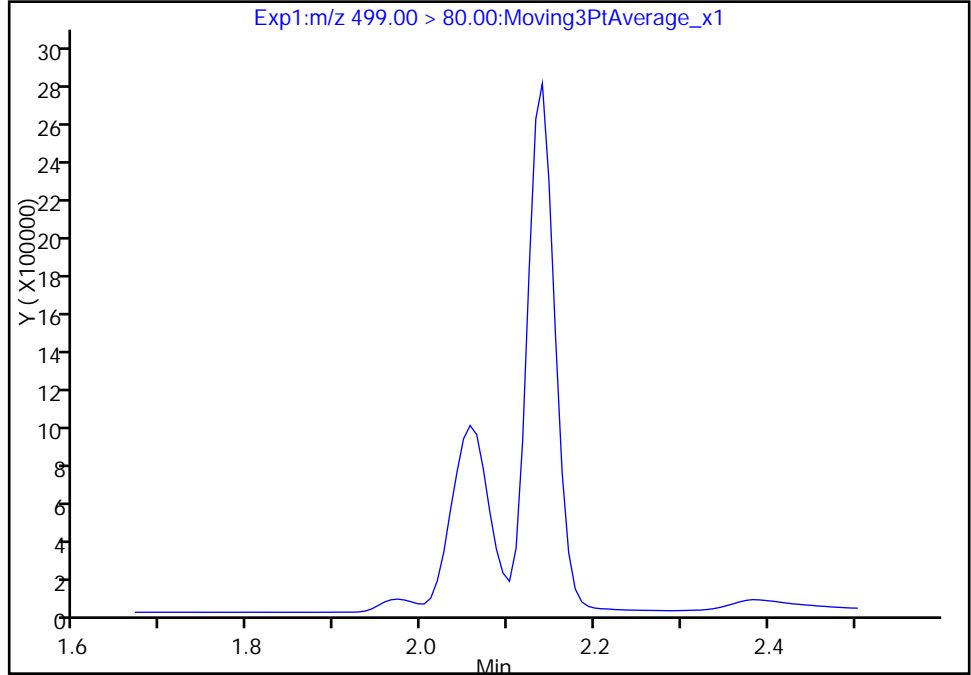
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_005.d  
Injection Date: 18-Oct-2017 01:40:56 Instrument ID: A8\_N  
Lims ID: CCV L5  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

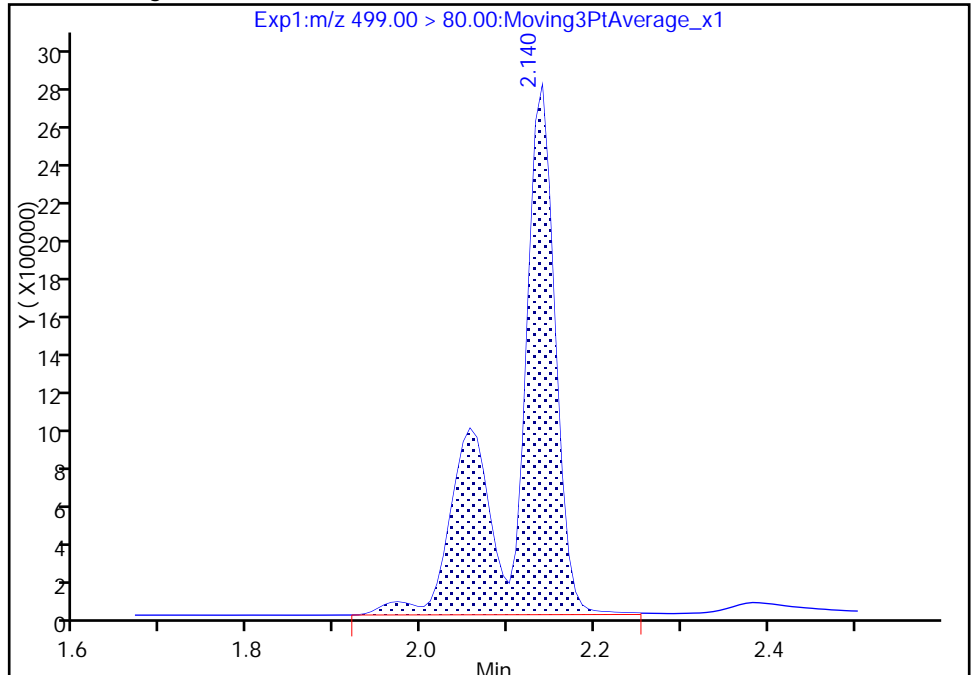
Not Detected  
Expected RT: 2.13

Processing Integration Results



RT: 2.14  
Area: 9267147  
Amount: 60.803010  
Amount Units: ng/ml

Manual Integration Results



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189890/15 Calibration Date: 10/18/2017 02:28  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.17\_537A\_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.186		48.9	45.0	8.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9759		5.18	5.00	3.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.716		15.7	15.0	4.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8977		9.77	10.0	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9327		20.0	20.0	0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6051		9.73	10.0	-2.7	30.0
13C2 PFHxA	Ave	1.172	1.230		10.5	10.0	4.9	30.0
13C2 PFDA	Ave	0.5578	0.5529		9.91	10.0	-0.9	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_015.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 18-Oct-2017 02:28:24 ALS Bottle#: 3 Worklist Smp#: 15  
 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\20171018-49283.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 18-Oct-2017 14:22:37 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 18-Oct-2017 14:21:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.402	0.024	1.000	9352276	48.9		4014	
298.90 > 99.00	1.426	1.402	0.024	1.000	6723793		1.39(0.00-0.00)	3274	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2241785	10.5		5384	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.668	0.031	1.000	4512300	15.7		2410	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.668	0.031	1.000	889761	5.18		139	
* 6 13C2-PFOA									
415.00 > 370.00	1.889	1.855	0.034		1823062	10.0		4550	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.889	1.856	0.033	1.000	1637850	9.77		39.1	
413.00 > 169.00	1.889	1.856	0.033	1.000	868049		1.89(0.00-0.00)	1405	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.108	0.024		5026319	28.7		4935	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.116	0.024	1.000	1103324	9.73		123	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.132	0.0	1.000	3269941	20.0		187	M
499.00 > 99.00	2.132	2.132	0.0	1.000	672433		4.86(0.00-0.00)	184	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1007878	9.91		4640	



**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L3\_00023

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b\2017.10.17\_537A\_015.d

Injection Date: 18-Oct-2017 02:28:24

Instrument ID: A8\_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

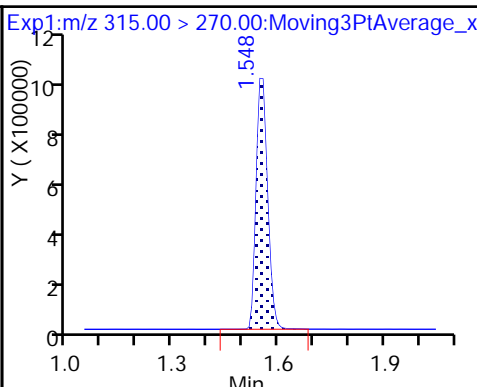
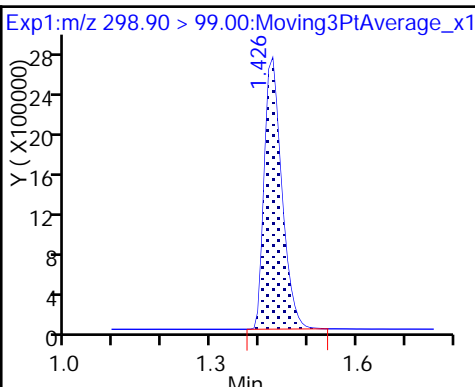
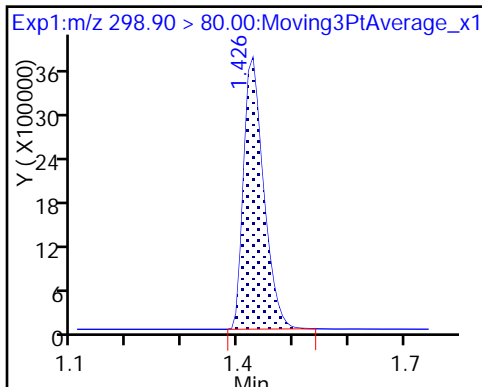
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

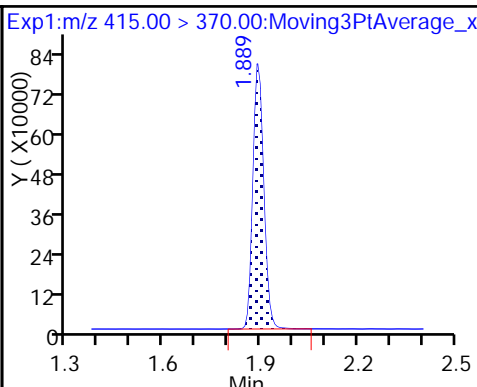
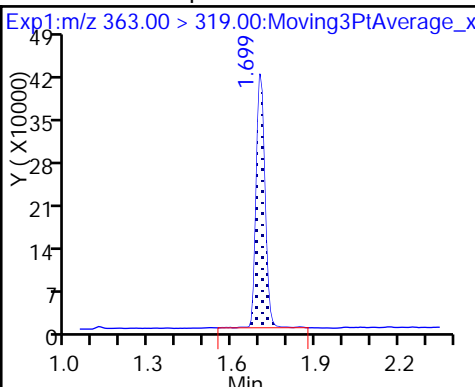
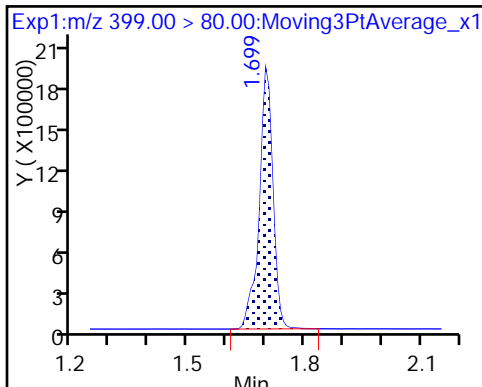
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

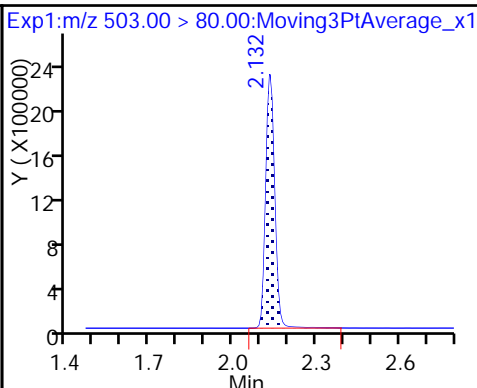
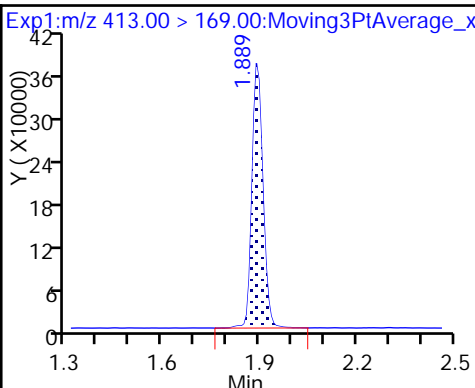
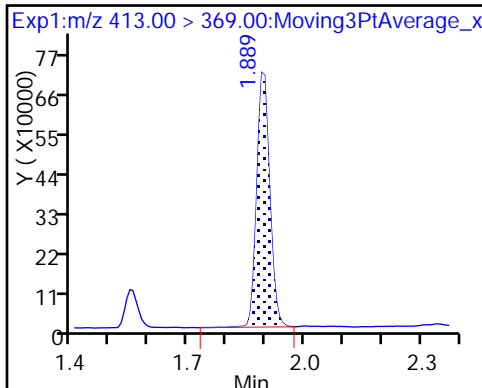
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

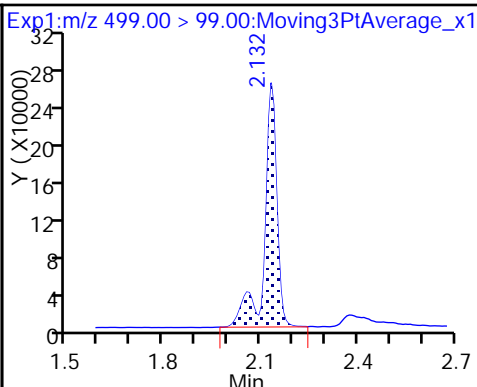
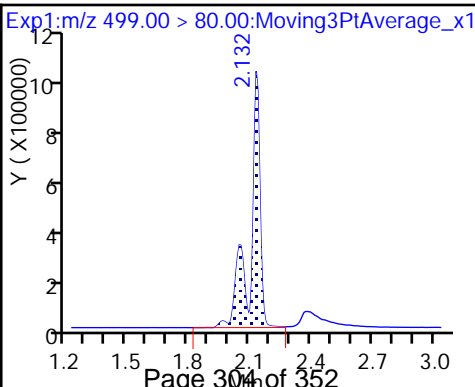
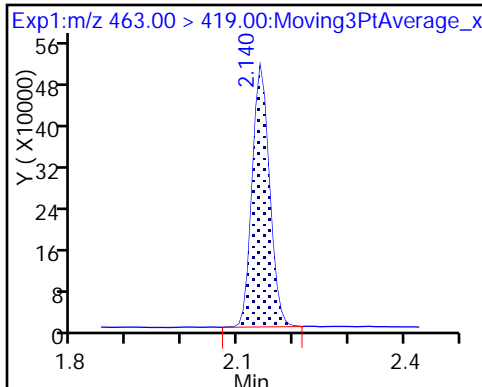
\* 7 13C4 PFOS



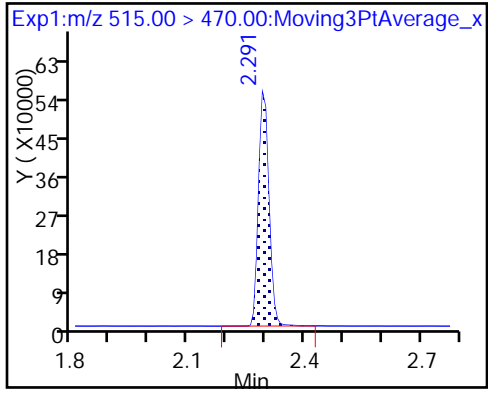
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento

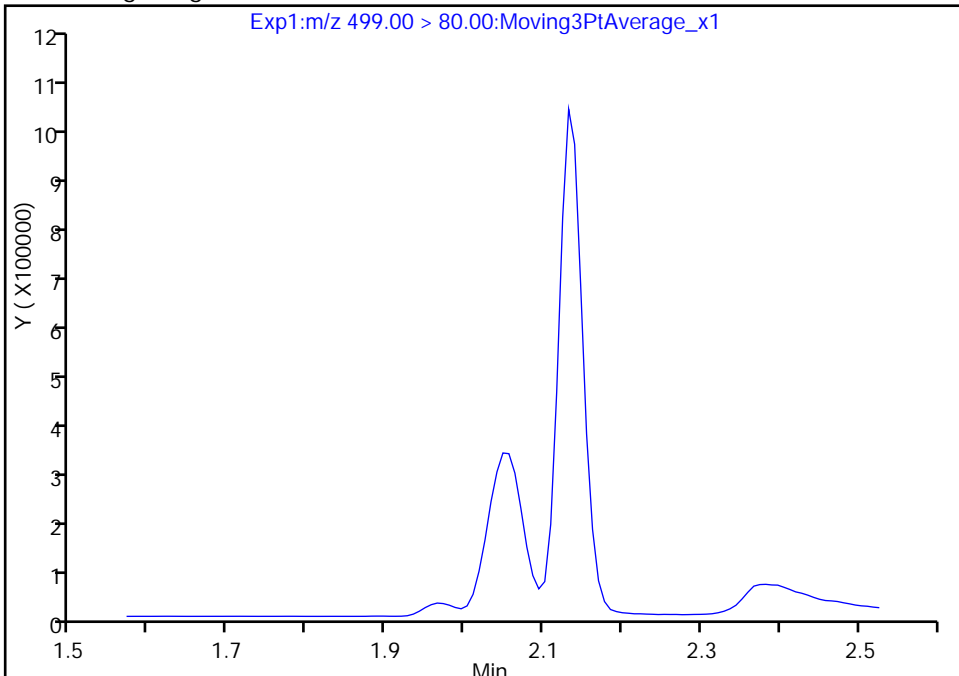
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Injection Date: 18-Oct-2017 02:28:24 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 15  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

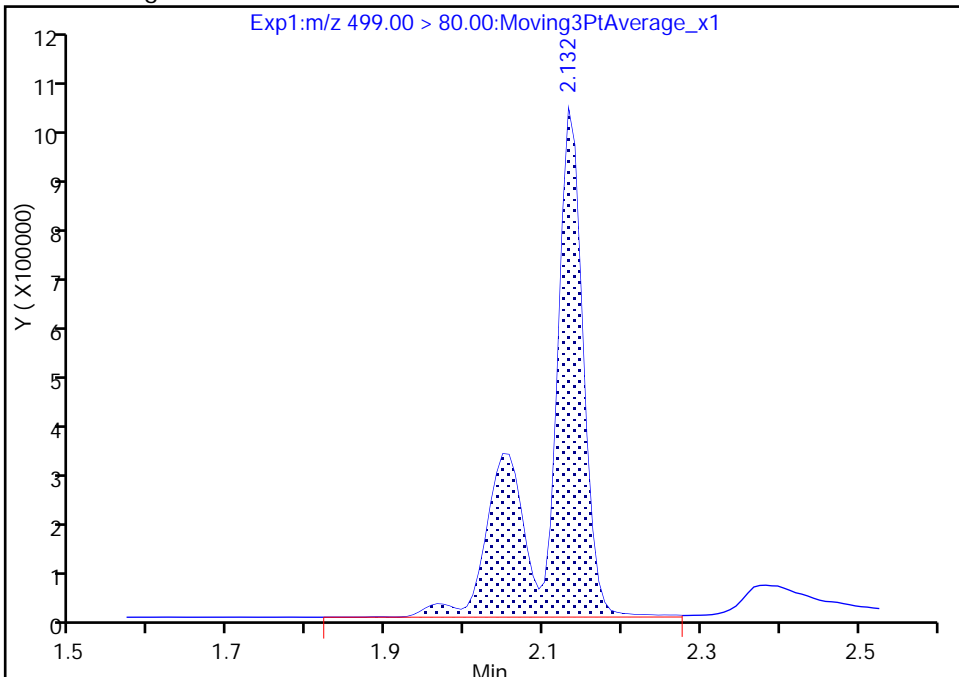
Not Detected  
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13  
Area: 3269941  
Amount: 20.025936  
Amount Units: ng/ml



Reviewer: barnettj, 18-Oct-2017 14:21:15  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

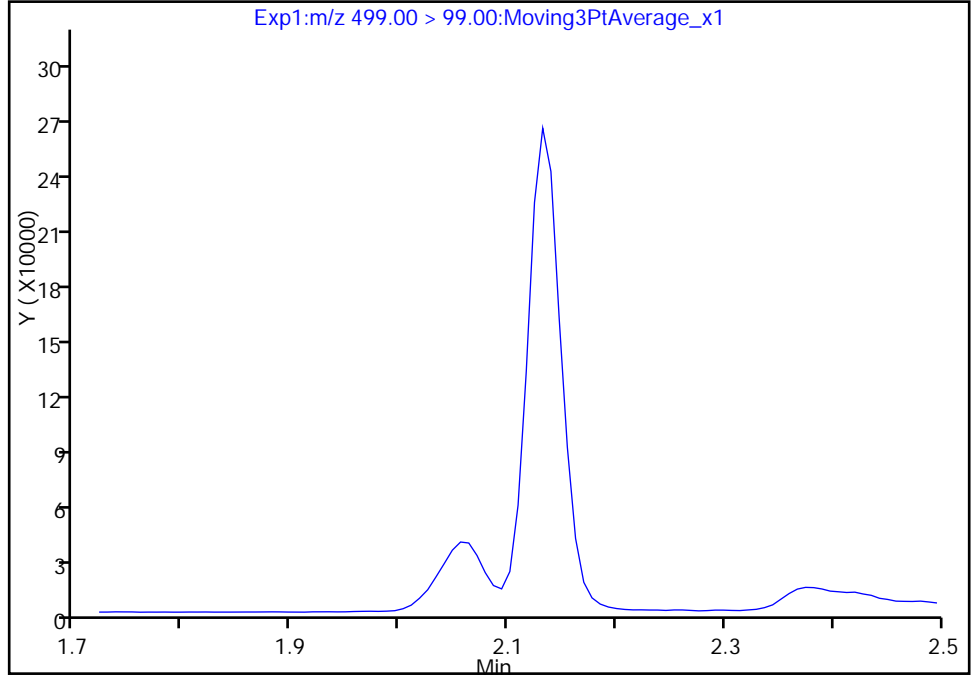
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Injection Date: 18-Oct-2017 02:28:24 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 15  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

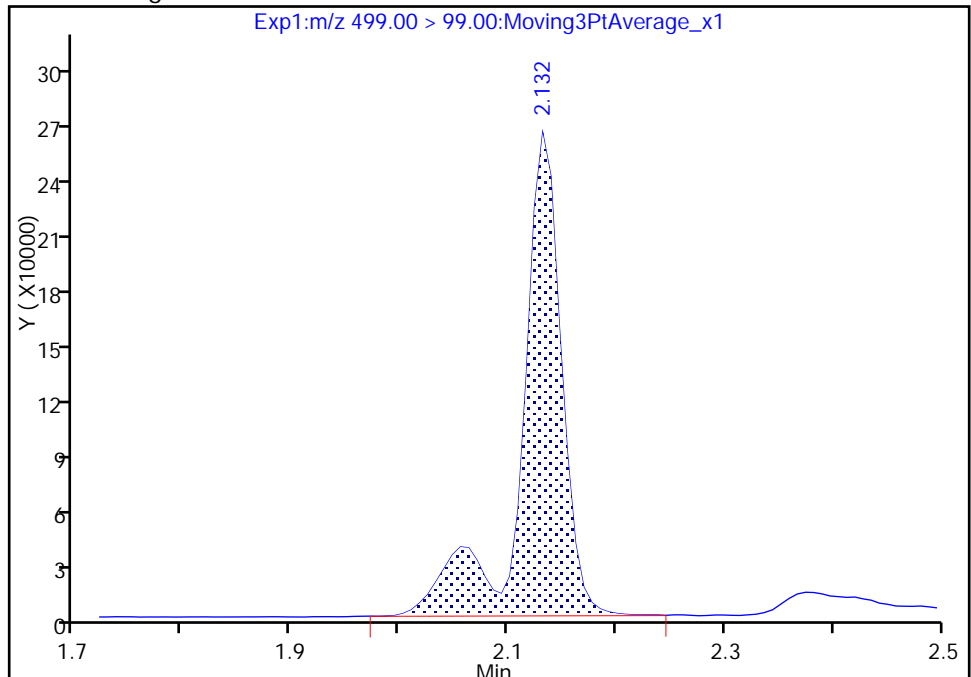
Not Detected  
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13  
Area: 672433  
Amount: 20.025936  
Amount Units: ng/ml



TestAmerica Sacramento

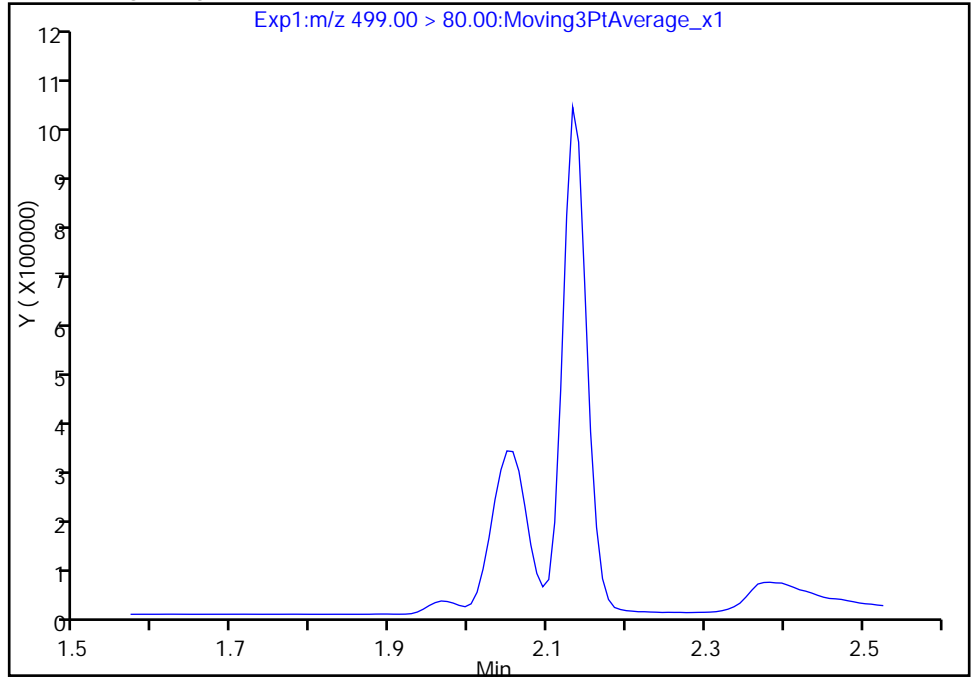
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Injection Date: 18-Oct-2017 02:28:24 Instrument ID: A8\_N  
Lims ID: CCV L3  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 15  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

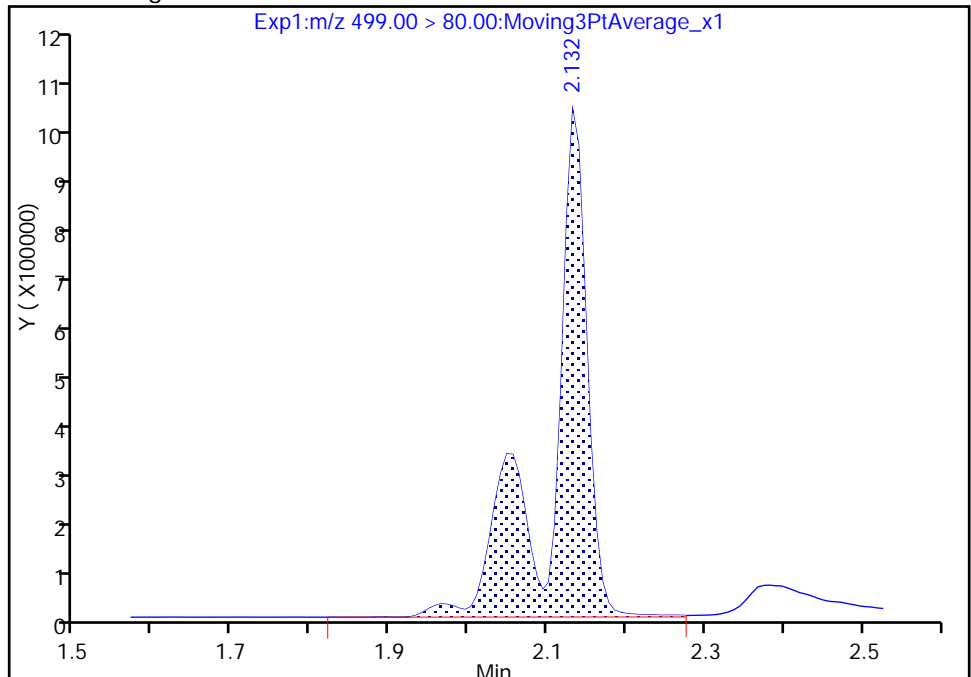
Not Detected  
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13  
Area: 3269941  
Amount: 20.025936  
Amount Units: ng/ml



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-188627/1-A  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.011.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/16/2017 12:06  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 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	83		70-130
STL00996	13C2 PFDA	86		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.011.d  
 Lims ID: MB 320-188627/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 16-Oct-2017 12:06:56 ALS Bottle#: 37 Worklist Smp#: 3  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: mb 320-188627/1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.555	1.524	0.031	1.000	2190140	8.27	7608	
* 6 13C2-PFOA	415.00 > 370.00	1.912	1.855	0.057		2261062	10.0	5422	
* 7 13C4 PFOS	503.00 > 80.00	2.162	2.108	0.054		5678373	28.7	4925	
\$ 10 13C2 PFDA	515.00 > 470.00	2.314	2.282	0.032	1.000	1083540	8.59	5487	



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.011.d

Injection Date: 16-Oct-2017 12:06:56

Instrument ID: A8\_N

Lims ID: MB 320-188627/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 37

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

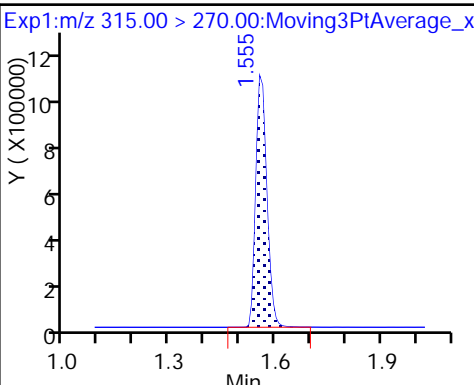
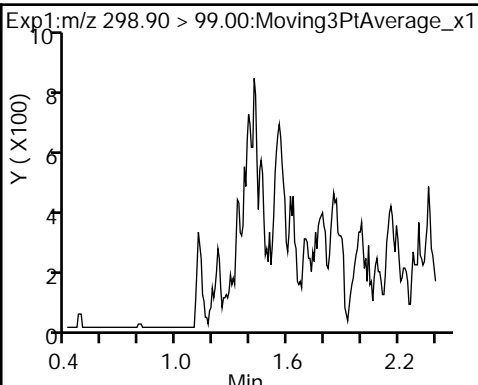
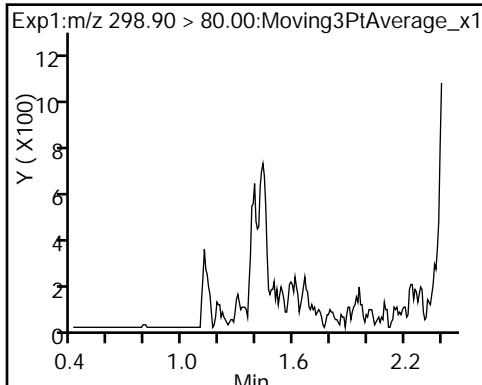
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

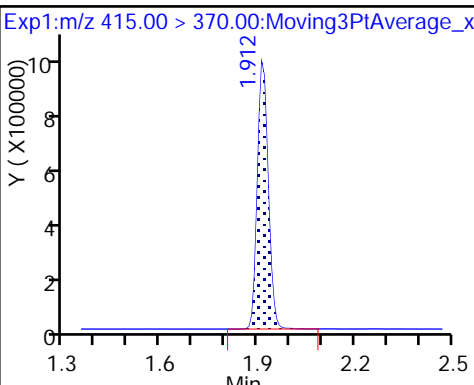
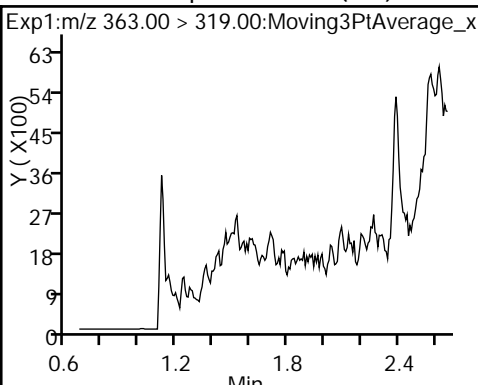
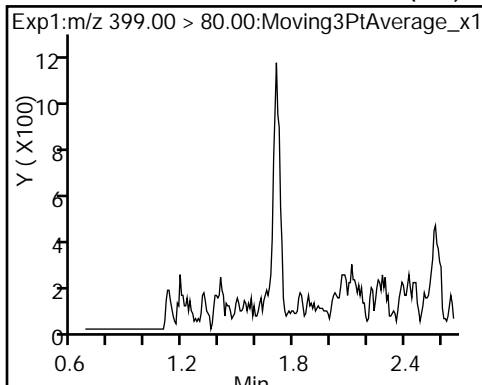
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

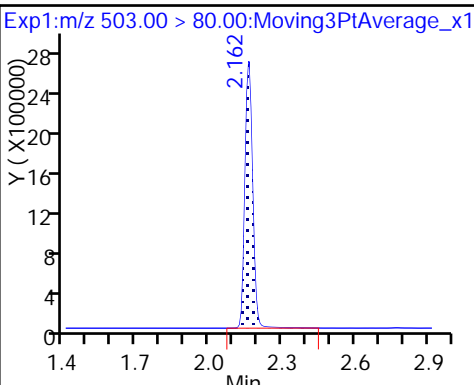
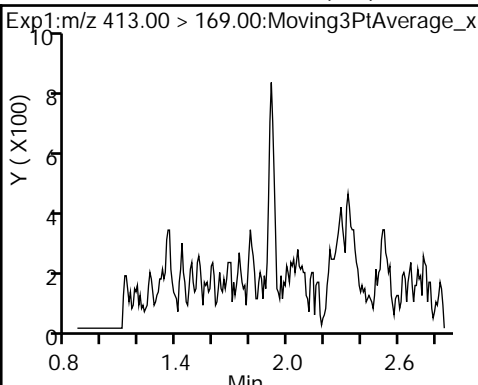
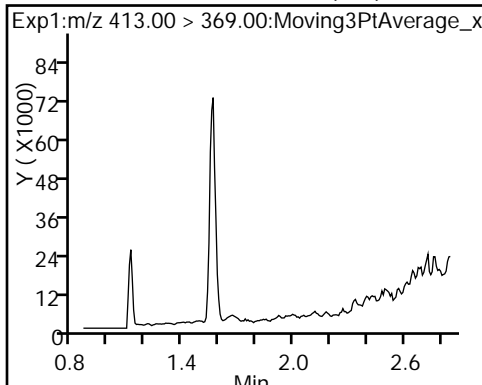
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

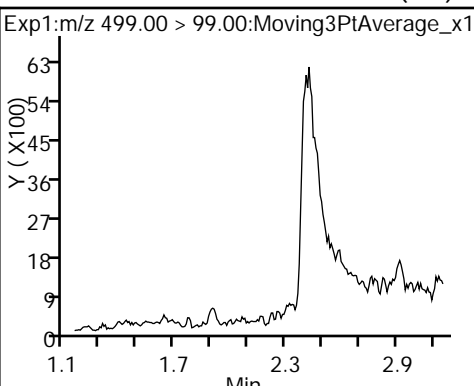
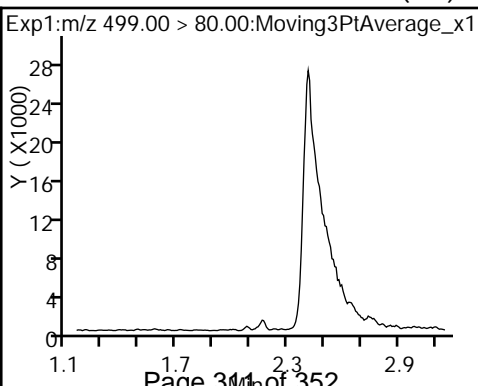
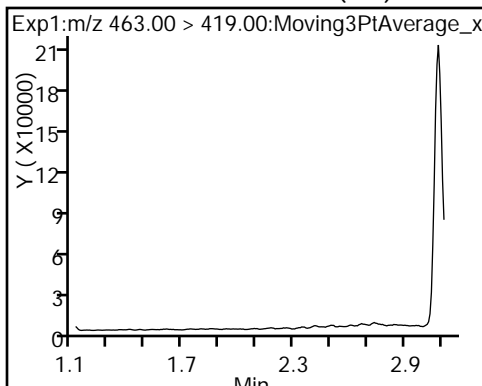
\* 7 13C4 PFOS



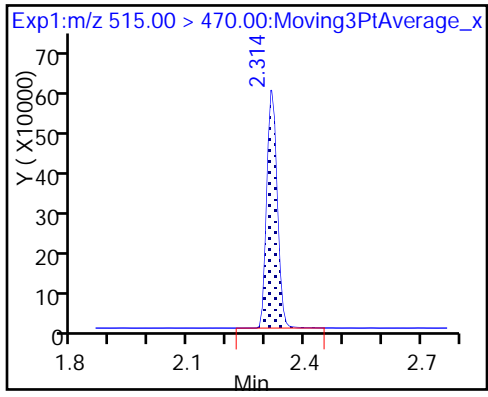
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.011.d  
 Lims ID: MB 320-188627/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 16-Oct-2017 12:06:56 ALS Bottle#: 37 Worklist Smp#: 3  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: mb 320-188627/1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.27	82.66
\$ 10 13C2 PFDA	10.0	8.59	85.92

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCS 320-188627/2-A  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.012.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/16/2017 12:11  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	208	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	97.4		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	95.8		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	161		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	51.1		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	509		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.012.d  
 Lims ID: LCS 320-188627/2-A  
 Client ID:  
 Sample Type: LCS  
 Inject. Date: 16-Oct-2017 12:11:43 ALS Bottle#: 38 Worklist Smp#: 4  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcs 320-188627/2-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:12:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.402	0.032	1.000	21985777	127.1		4054	
298.90 > 99.00	1.434	1.402	0.032	1.000	16457819		1.34(0.00-0.00)	4524	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.524	0.039	1.000	2111737	8.33		6597	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.715	1.668	0.047	1.000	12703475	40.2		4316	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.715	1.668	0.047	1.000	2604150	12.8		488	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.855	0.065		2163124	10.0		6106	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.856	0.064	1.000	4843070	24.4		179	
413.00 > 169.00	1.920	1.856	0.064	1.000	2692827		1.80(0.00-0.00)	4774	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.108	0.054		5538277	28.7		4565	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.116	0.054	1.000	3221035	23.9		160	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.155	0.007	1.000	9360957	52.0		1074	M
499.00 > 99.00	2.162	2.155	0.007	1.000	2058772		4.55(0.00-0.00)	739	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.282	0.032	1.000	1085591	9.00		5151	

## QC Flag Legend

### Review Flags

M - Manually Integrated

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.012.d

Injection Date: 16-Oct-2017 12:11:43

Instrument ID: A8\_N

Lims ID: LCS 320-188627/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 38

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

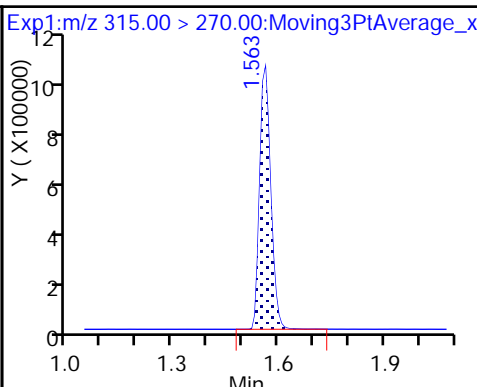
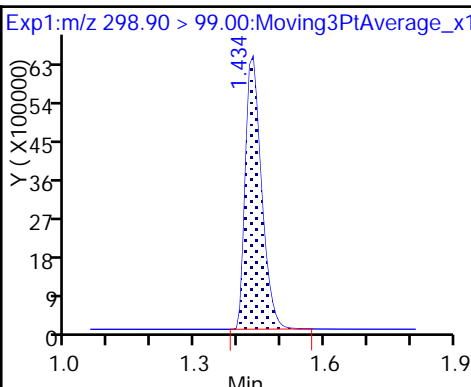
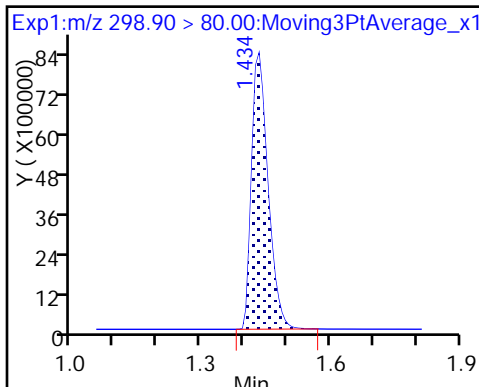
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

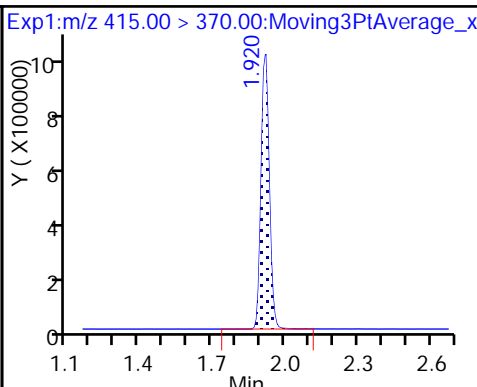
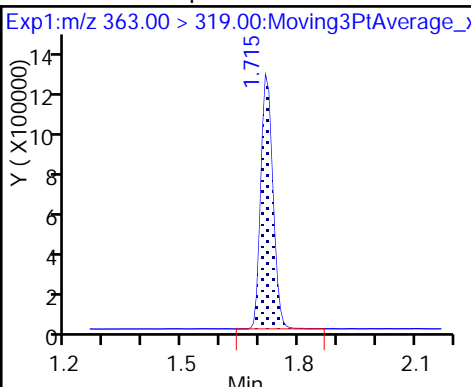
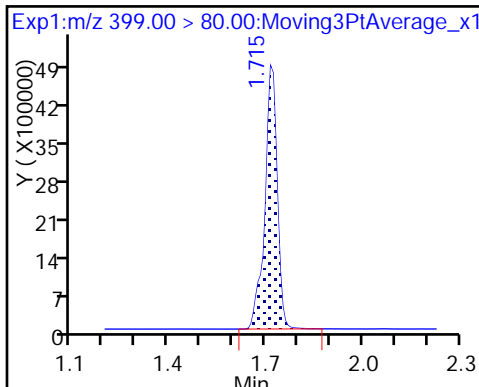
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

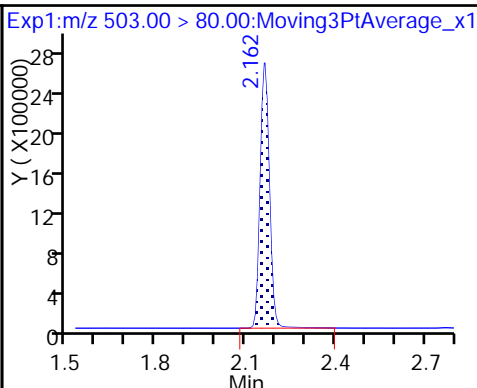
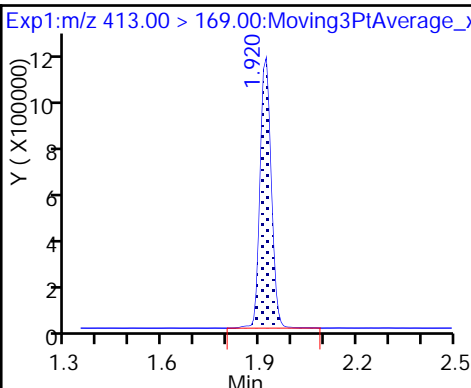
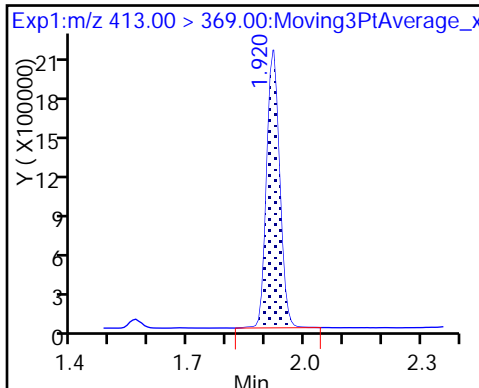
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

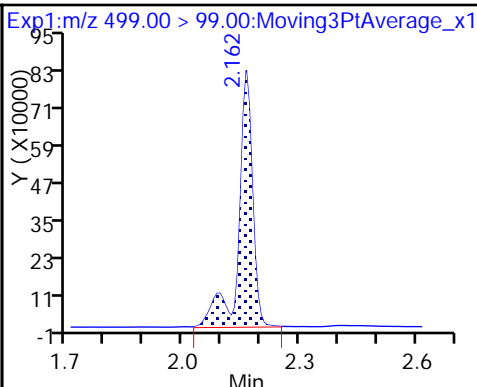
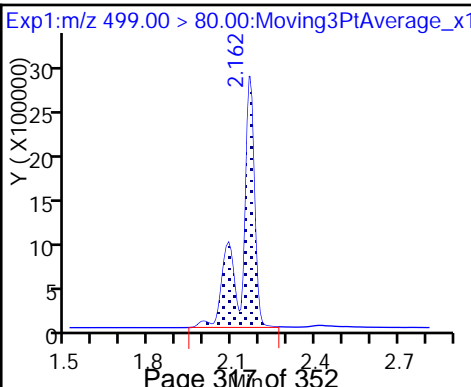
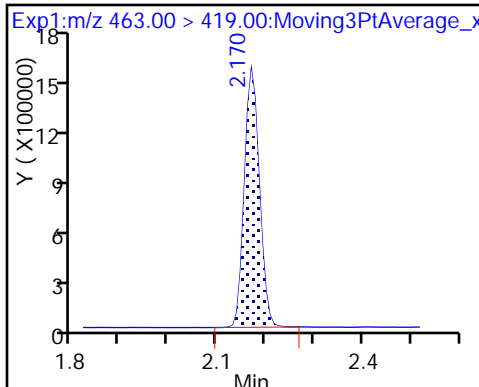
\* 7 13C4 PFOS



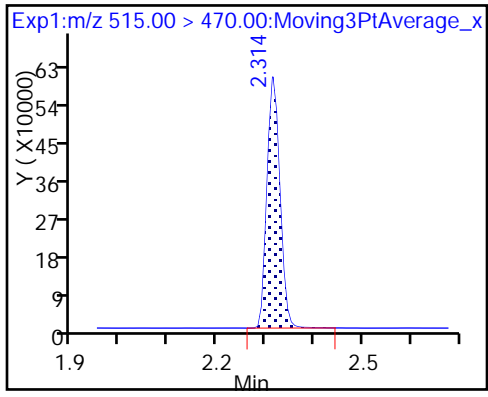
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA





TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.012.d  
 Lims ID: LCS 320-188627/2-A  
 Client ID:  
 Sample Type: LCS  
 Inject. Date: 16-Oct-2017 12:11:43 ALS Bottle#: 38 Worklist Smp#: 4  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcs 320-188627/2-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:12:05

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.33	83.31
\$ 10 13C2 PFDA	10.0	9.00	89.98

TestAmerica Sacramento

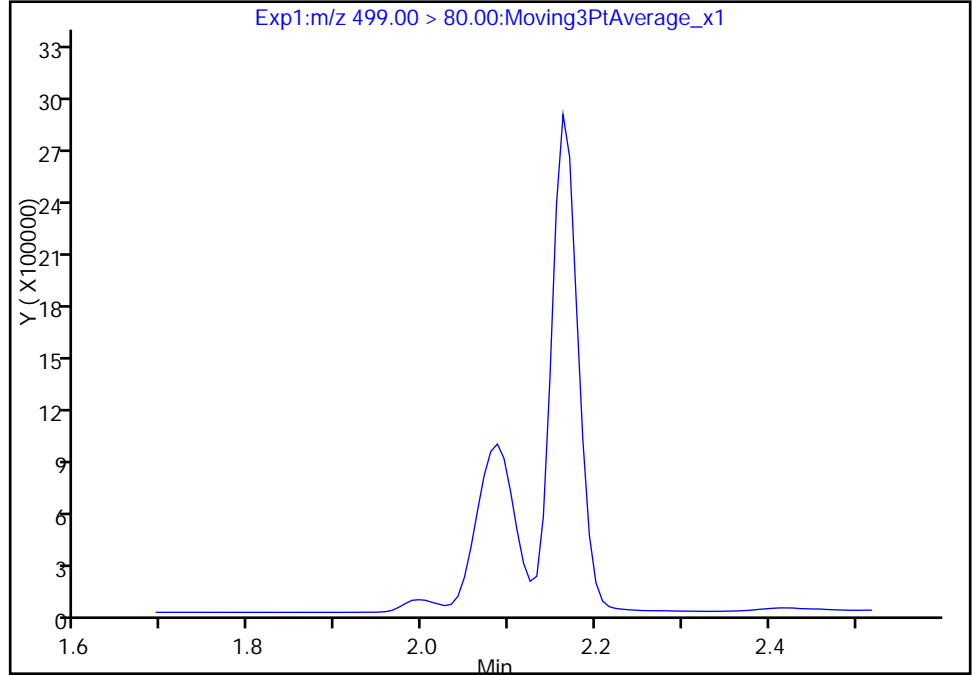
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.012.d  
Injection Date: 16-Oct-2017 12:11:43 Instrument ID: A8\_N  
Lims ID: LCS 320-188627/2-A  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 38 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

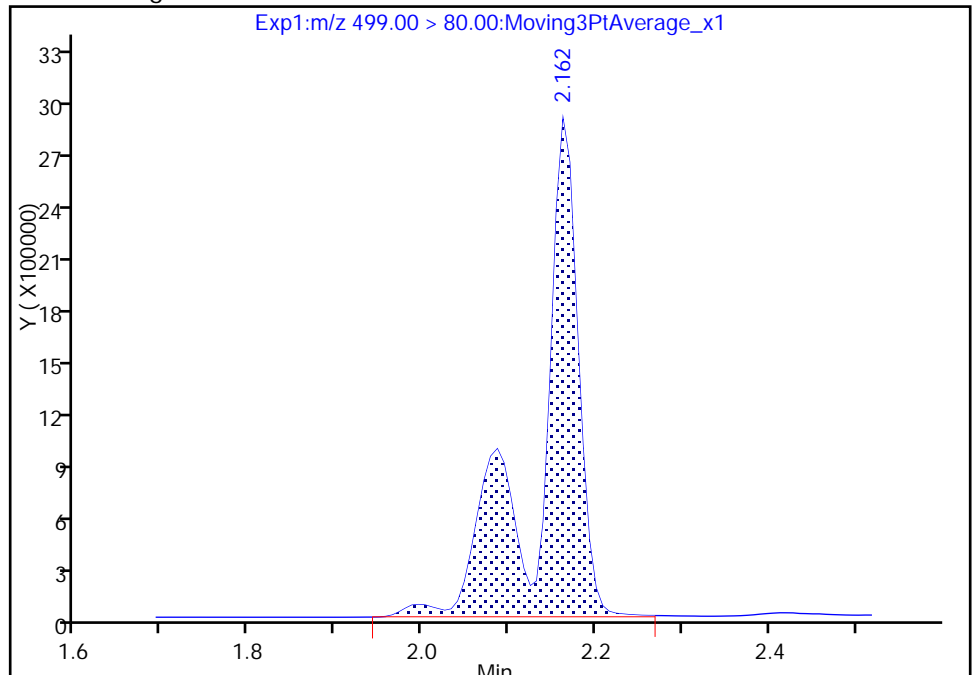
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 9360957  
Amount: 52.029367  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:11:24  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

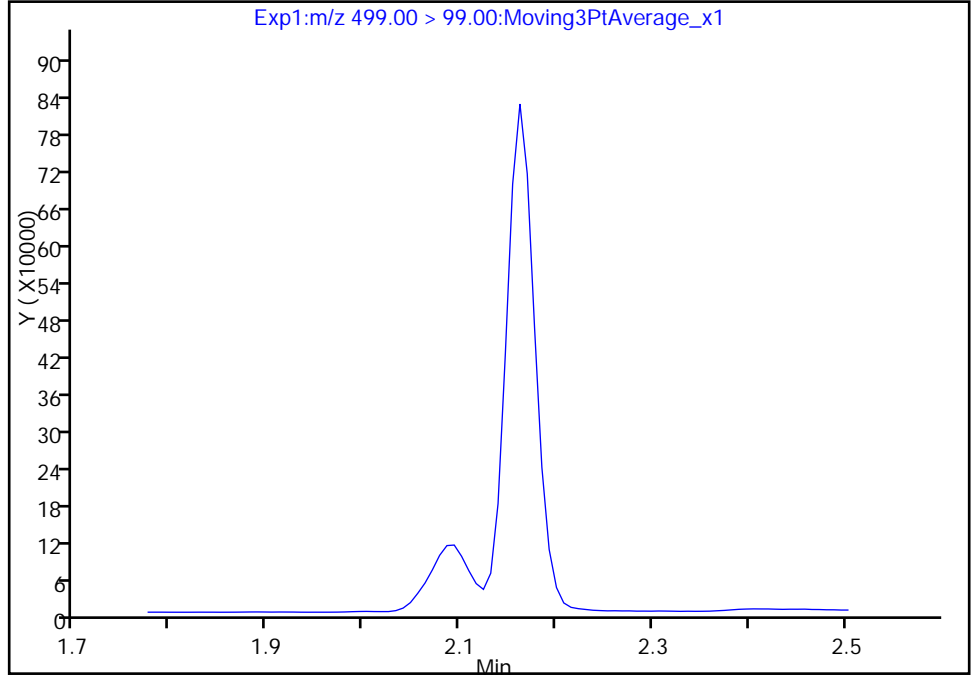
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.012.d  
Injection Date: 16-Oct-2017 12:11:43 Instrument ID: A8\_N  
Lims ID: LCS 320-188627/2-A  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 38 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

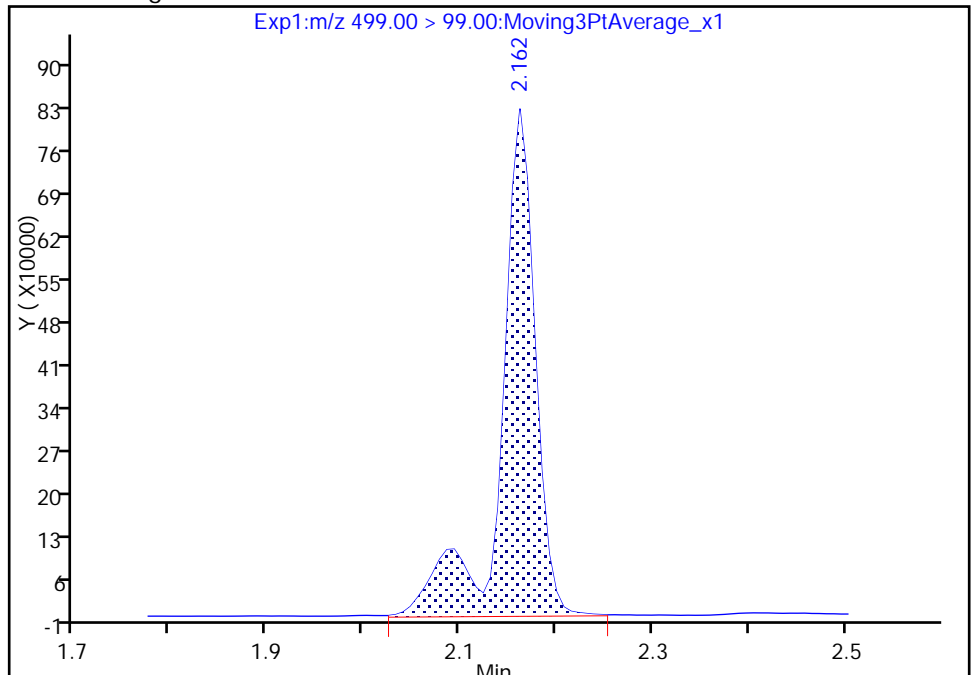
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 2058772  
Amount: 52.029367  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:11:45

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

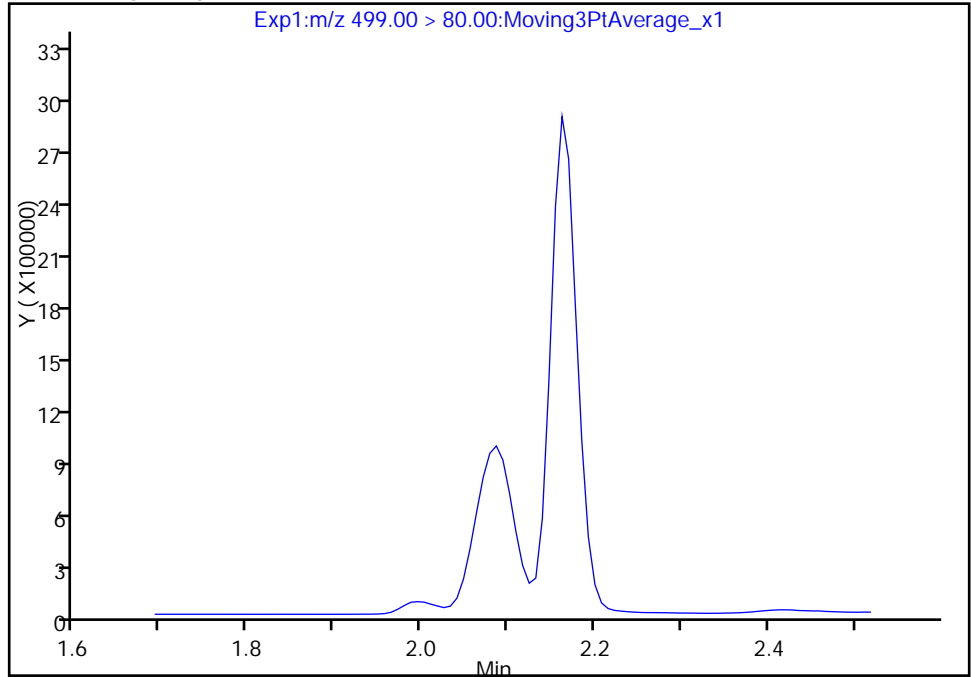
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.012.d  
Injection Date: 16-Oct-2017 12:11:43 Instrument ID: A8\_N  
Lims ID: LCS 320-188627/2-A  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 38 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

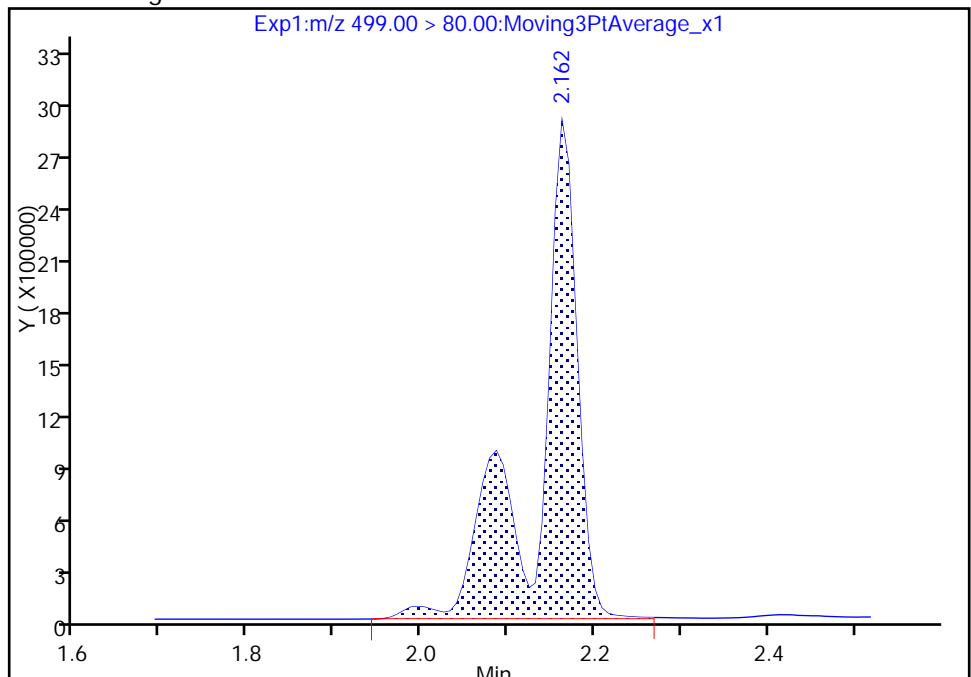
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 9360957  
Amount: 52.029367  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:11:45

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCSD 320-188627/3-A  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.013.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/16/2017 12:16  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	220	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	107		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	105		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	162		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	54.6		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	521		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.013.d  
 Lims ID: LCSD 320-188627/3-A  
 Client ID:  
 Sample Type: LCSD  
 Inject. Date: 16-Oct-2017 12:16:28 ALS Bottle#: 39 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcsd 320-188627/3-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:12:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.402	0.032	1.000	22747836	130.1		3410	
298.90 > 99.00	1.434	1.402	0.032	1.000	17254281		1.32(0.00-0.00)	3407	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.524	0.039	1.000	2125554	8.68		5890	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.715	1.668	0.047	1.000	13021156	40.4		4115	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.715	1.668	0.047	1.000	2686857	13.7		514	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.855	0.057		2088892	10.0		5180	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.856	0.056	1.000	5127105	26.7		189	
413.00 > 169.00	1.912	1.856	0.056	1.000	2832084		1.81(0.00-0.00)	4028	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.108	0.054		5644879	28.7		4837	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.116	0.054	1.000	3425427	26.4		175	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.155	0.007	1.000	10072675	54.9		1045	M
499.00 > 99.00	2.162	2.155	0.007	1.000	2092207		4.81(0.00-0.00)	727	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.282	0.032	1.000	1103013	9.47		4957	

## QC Flag Legend

### Review Flags

M - Manually Integrated

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.013.d

Injection Date: 16-Oct-2017 12:16:28 Instrument ID: A8\_N

Lims ID: LCSD 320-188627/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 39

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

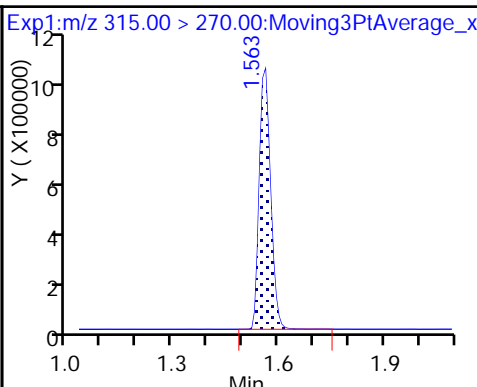
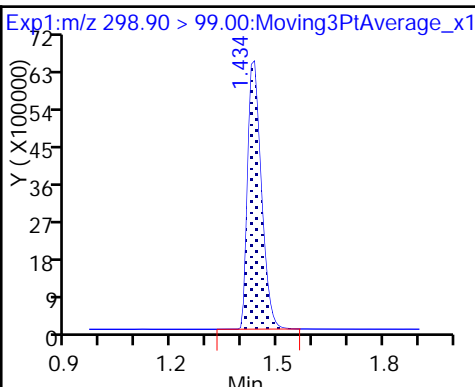
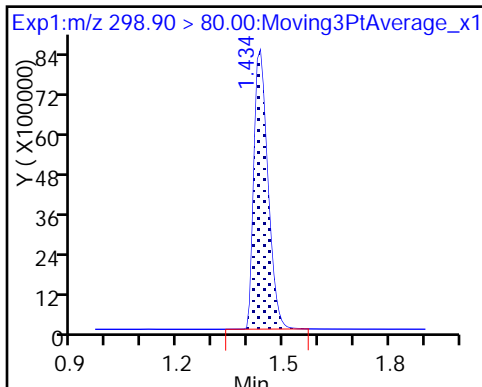
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

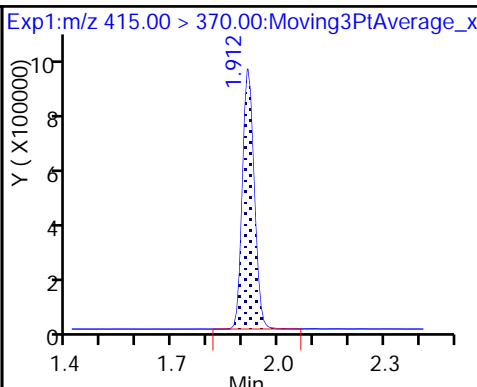
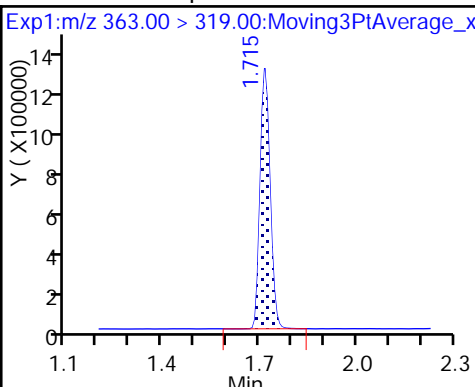
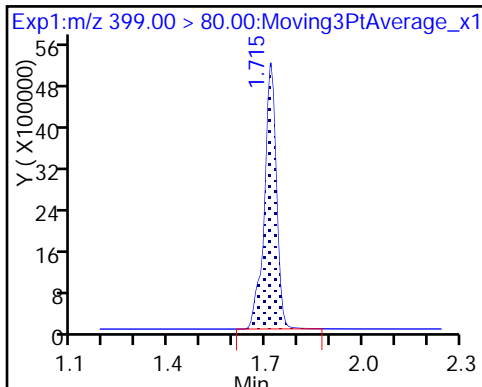
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

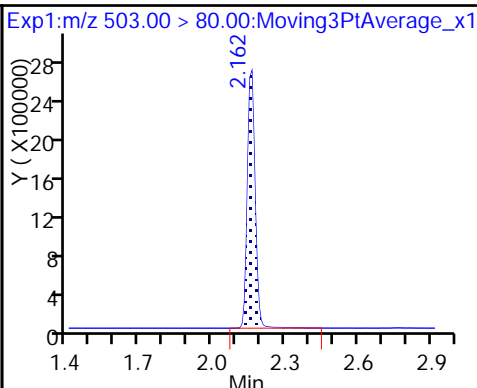
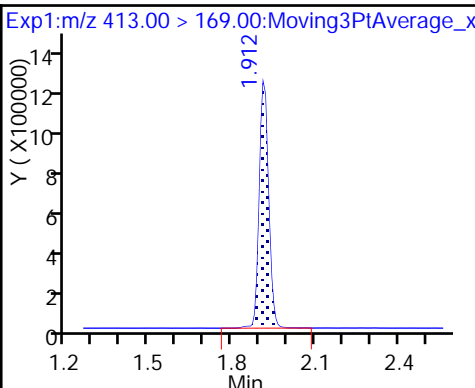
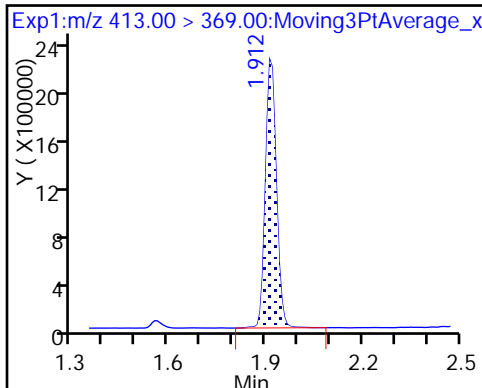
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

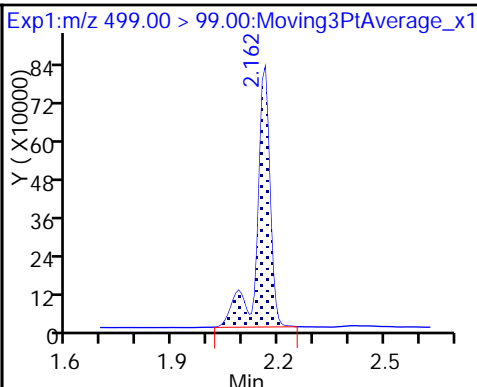
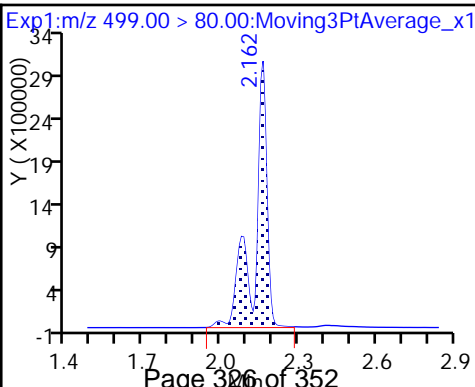
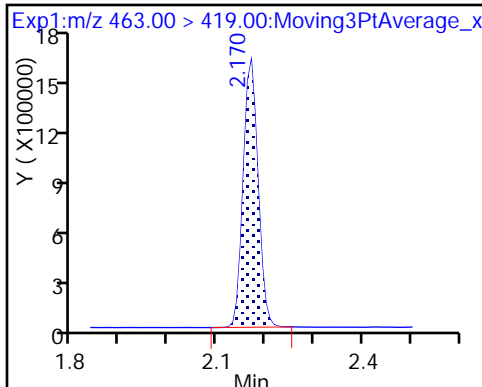
\* 7 13C4 PFOS



9 Perfluorononanoic acid

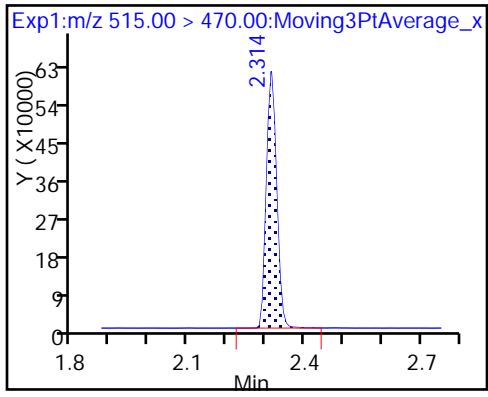
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)





\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.013.d  
 Lims ID: LCSD 320-188627/3-A  
 Client ID:  
 Sample Type: LCSD  
 Inject. Date: 16-Oct-2017 12:16:28 ALS Bottle#: 39 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcsd 320-188627/3-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 17-Oct-2017 10:19:40 Calib Date: 20-Sep-2017 03:19:48  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170919-48154.b\2017.09.19\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 17-Oct-2017 10:12:56

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.68	86.84
\$ 10 13C2 PFDA	10.0	9.47	94.67

TestAmerica Sacramento

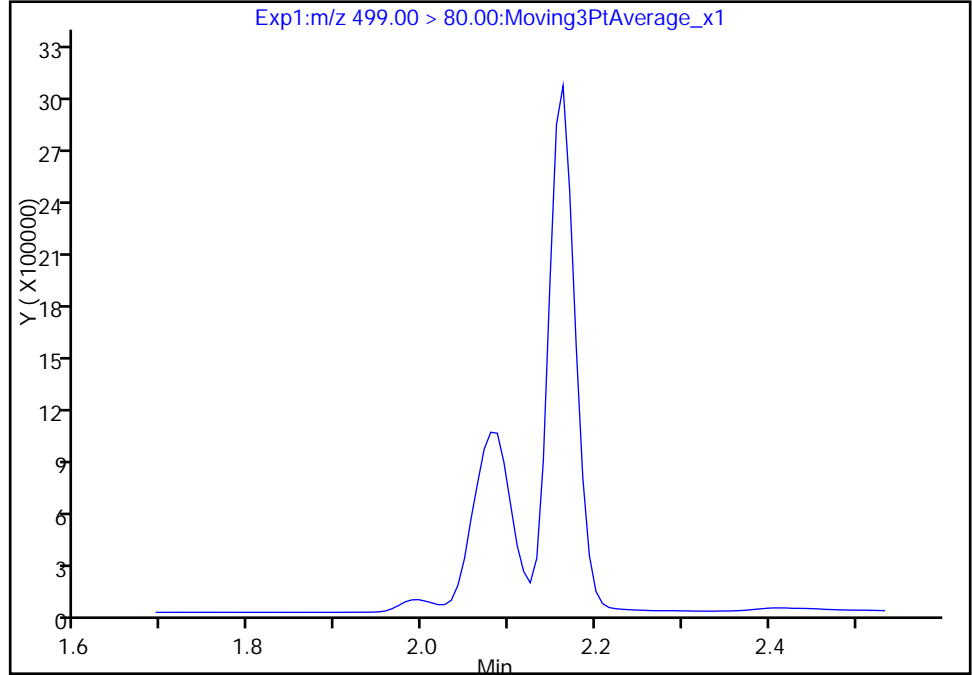
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.013.d  
Injection Date: 16-Oct-2017 12:16:28 Instrument ID: A8\_N  
Lims ID: LCSD 320-188627/3-A  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

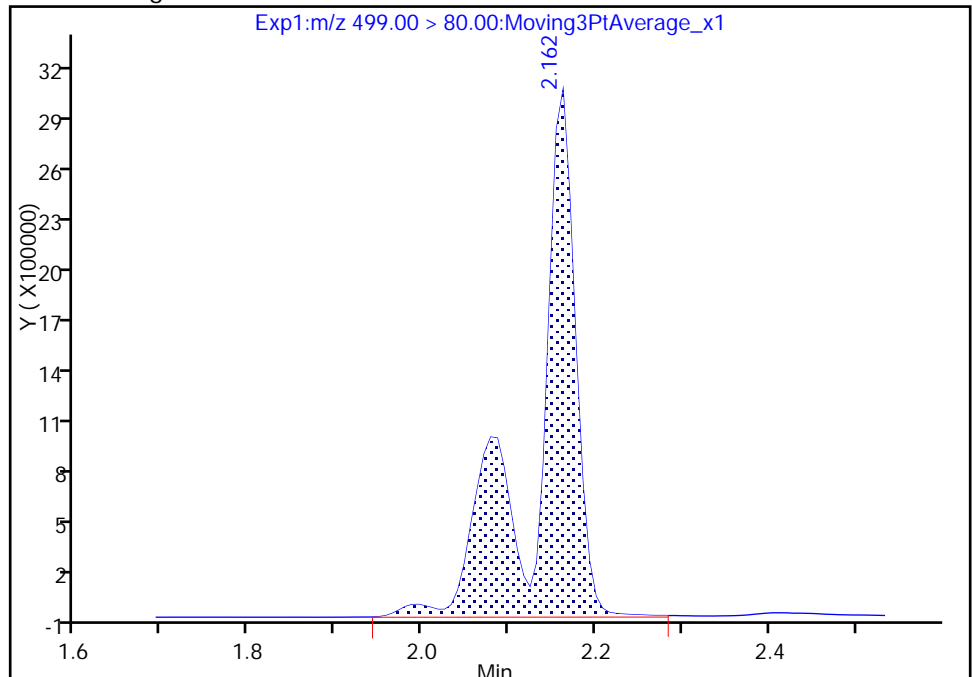
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 10072675  
Amount: 54.927919  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:12:11  
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

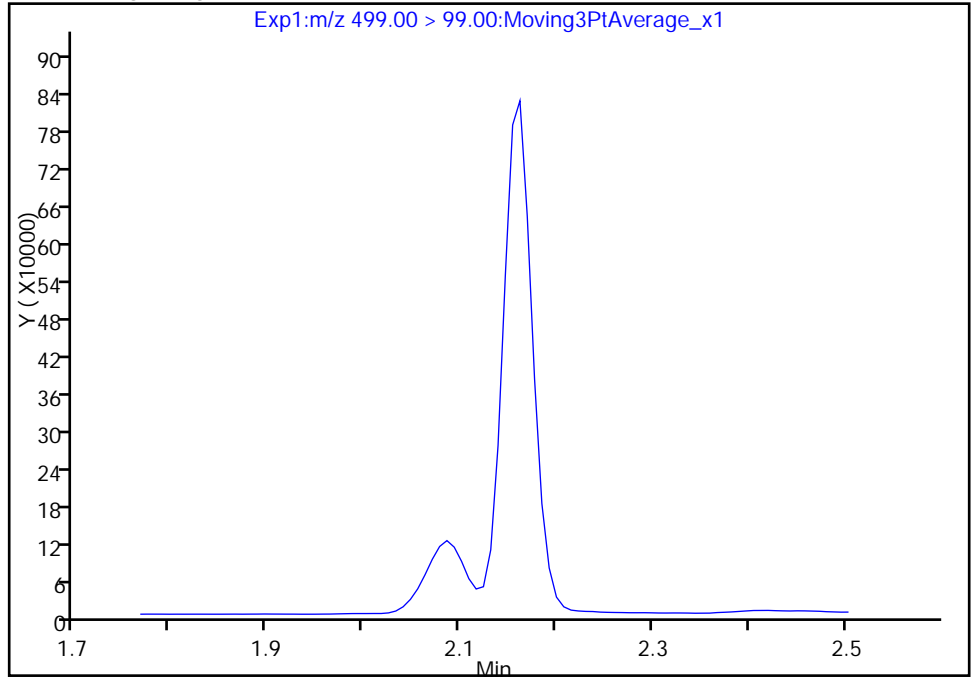
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.013.d  
Injection Date: 16-Oct-2017 12:16:28 Instrument ID: A8\_N  
Lims ID: LCSD 320-188627/3-A  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

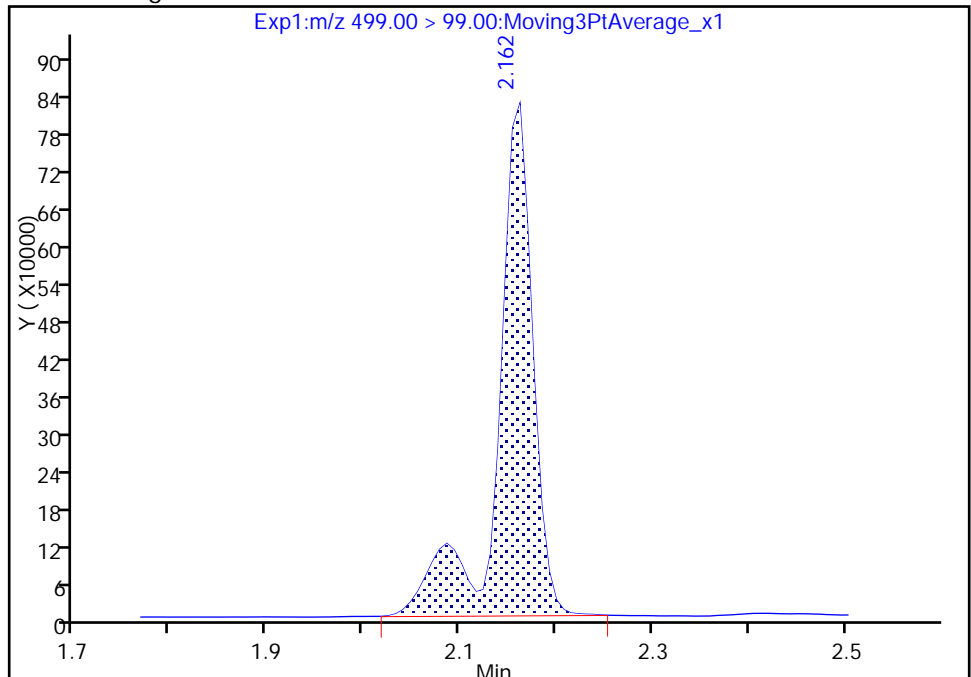
Not Detected  
Expected RT: 2.15

Processing Integration Results



RT: 2.16  
Area: 2092207  
Amount: 54.927919  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Oct-2017 10:12:46

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

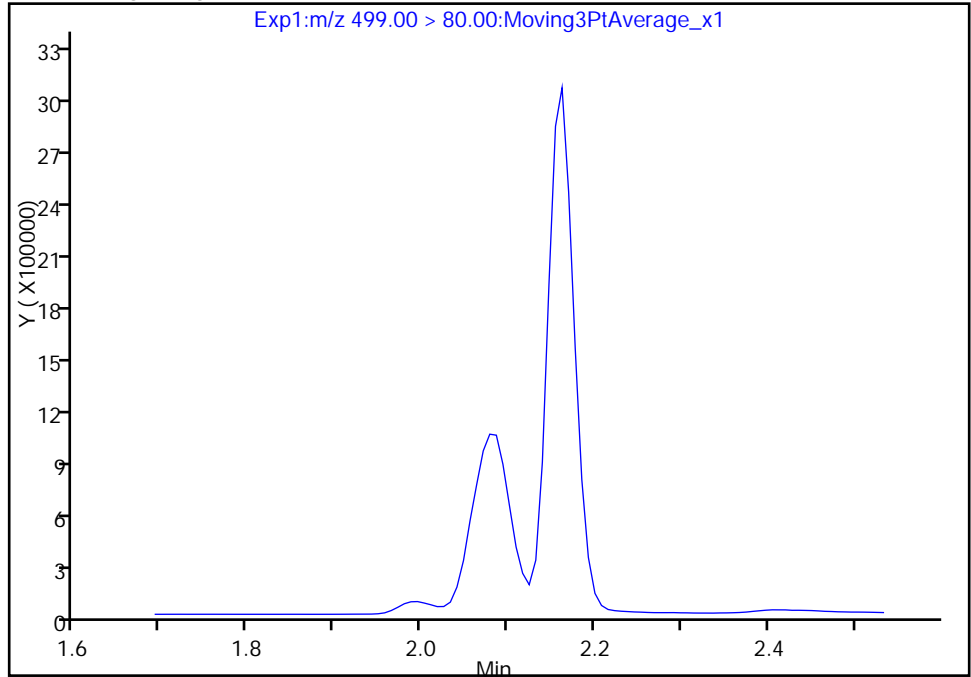
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b\2017.10.16A\_537AA.013.d  
Injection Date: 16-Oct-2017 12:16:28 Instrument ID: A8\_N  
Lims ID: LCSD 320-188627/3-A  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

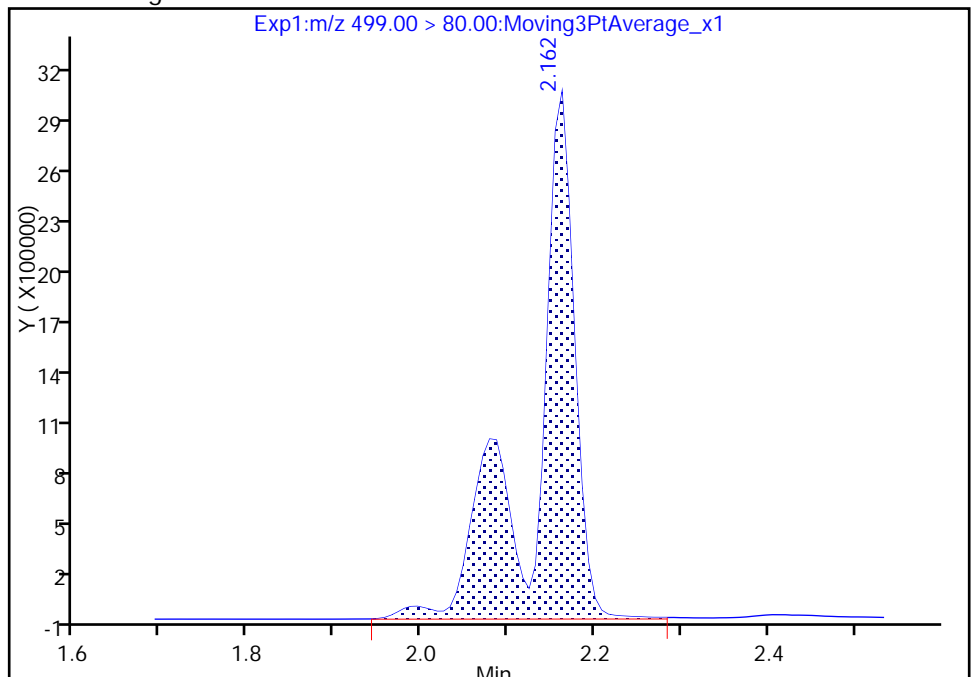
Not Detected  
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.16  
Area: 10072675  
Amount: 54.927919  
Amount Units: ng/ml



Reviewer: barnettj, 17-Oct-2017 10:12:46

Audit Action: Manually Integrated

Audit Reason: Missed Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 09/20/2017 02:56

Analysis Batch Number: 185329 End Date: 09/20/2017 03:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185329/4		09/20/2017 02:56	1	2017.09.19_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-185329/5		09/20/2017 03:00	1	2017.09.19_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-185329/6		09/20/2017 03:05	1	2017.09.19_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-185329/7 ICISAV		09/20/2017 03:10	1	2017.09.19_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-185329/8		09/20/2017 03:15	1	2017.09.19_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-185329/9		09/20/2017 03:19	1	2017.09.19_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:24	1		GeminiC18 3x100 3(mm)
CCVL 320-185329/11		09/20/2017 03:29	1	2017.09.19_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:34	1		GeminiC18 3x100 3(mm)
ICV 320-185329/13		09/20/2017 03:38	1	2017.09.19_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/16/2017 10:32

Analysis Batch Number: 189541 End Date: 10/16/2017 10:32

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-189541/3		10/16/2017 10:32	1	2017.10.16A_537 .003.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/16/2017 11:57

Analysis Batch Number: 189551 End Date: 10/16/2017 12:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-189551/1 CCVIS		10/16/2017 11:57	1	2017.10.16A_537 AA.010.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 12:02	1		GeminiC18 3x100 3(mm)
MB 320-188627/1-A		10/16/2017 12:06	1	2017.10.16A_537 AA.011.d	GeminiC18 3x100 3(mm)
LCS 320-188627/2-A		10/16/2017 12:11	1	2017.10.16A_537 AA.012.d	GeminiC18 3x100 3(mm)
LCSD 320-188627/3-A		10/16/2017 12:16	1	2017.10.16A_537 AA.013.d	GeminiC18 3x100 3(mm)
320-31889-1		10/16/2017 12:21	1	2017.10.16A_537 AA.014.d	GeminiC18 3x100 3(mm)
320-31889-2		10/16/2017 12:25	1	2017.10.16A_537 AA.015.d	GeminiC18 3x100 3(mm)
320-31889-3		10/16/2017 12:30	1	2017.10.16A_537 AA.016.d	GeminiC18 3x100 3(mm)
320-31889-4		10/16/2017 12:35	1	2017.10.16A_537 AA.017.d	GeminiC18 3x100 3(mm)
320-31889-5		10/16/2017 12:40	1	2017.10.16A_537 AA.018.d	GeminiC18 3x100 3(mm)
320-31889-6		10/16/2017 12:44	1	2017.10.16A_537 AA.019.d	GeminiC18 3x100 3(mm)
320-31889-7		10/16/2017 12:49	1	2017.10.16A_537 AA.020.d	GeminiC18 3x100 3(mm)
CCV 320-189551/13 CCVIS		10/16/2017 12:54	1	2017.10.16A_537 AA.021.d	GeminiC18 3x100 3(mm)



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/16/2017 12:54

Analysis Batch Number: 189553 End Date: 10/16/2017 13:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-189553/13 CCVIS		10/16/2017 12:54	1	2017.10.16A_537 AA.021.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 12:59	1		GeminiC18 3x100 3(mm)
320-31889-8		10/16/2017 13:03	1	2017.10.16A_537 AA.022.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:08	1		GeminiC18 3x100 3(mm)
320-31889-10		10/16/2017 13:13	1	2017.10.16A_537 AA.024.d	GeminiC18 3x100 3(mm)
320-31889-11		10/16/2017 13:18	1	2017.10.16A_537 AA.025.d	GeminiC18 3x100 3(mm)
320-31889-12		10/16/2017 13:22	1	2017.10.16A_537 AA.026.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:27	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:32	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:37	1		GeminiC18 3x100 3(mm)
CCV 320-189553/23 CCVIS		10/16/2017 13:41	1	2017.10.16A_537 AA.030.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/18/2017 01:36

Analysis Batch Number: 189890 End Date: 10/18/2017 02:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-189890/4		10/18/2017 01:36	1	2017.10.17_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-189890/5 CCVIS		10/18/2017 01:40	1	2017.10.17_537A 005.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 01:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 01:50	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 01:55	1		GeminiC18 3x100 3(mm)
320-31889-9		10/18/2017 01:59	1	2017.10.17_537A 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 02:04	1		GeminiC18 3x100 3(mm)
CCV 320-189890/15 CCVIS		10/18/2017 02:28	1	2017.10.17_537A 015.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Batch Number: 188627 Batch Start Date: 10/10/17 09:44 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 10/16/17 08:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00022
MB 320-188627/1		537, 537				250 mL	1.00 mL	7 SU	
LCS 320-188627/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-188627/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-31889-A-1	NAWC-092617-RW-256	537, 537	T	282.58 g	28.33 g	254.3 mL	1.00 mL	7 SU	
320-31889-A-2	NAWC-092617-FRB-256	537, 537	T	275.53 g	28.01 g	247.5 mL	1.00 mL	7 SU	
320-31889-A-3	NAWC-092617-RW-354	537, 537	T	285.27 g	27.87 g	257.4 mL	1.00 mL	7 SU	
320-31889-A-4	NAWC-092617-FRB-354	537, 537	T	287.13 g	27.59 g	259.5 mL	1.00 mL	7 SU	
320-31889-A-5	NAWC-092617-RW-4784	537, 537	T	279.98 g	28.79 g	251.2 mL	1.00 mL	7 SU	
320-31889-A-6	NAWC-092617-FRB-4784	537, 537	T	276.96 g	27.07 g	249.9 mL	1.00 mL	7 SU	
320-31889-A-7	NAWC-092617-RW-120	537, 537	T	272.57 g	27.69 g	244.9 mL	1.00 mL	7 SU	
320-31889-A-8	NAWC-092617-FRB-120	537, 537	T	278.12 g	27.75 g	250.4 mL	1.00 mL	7 SU	
320-31889-A-9	NAWC-092617-RW-315	537, 537	T	281.03 g	27.71 g	253.3 mL	1.00 mL	7 SU	
320-31889-A-10	NAWC-092617-FRB-315	537, 537	T	276.33 g	27.24 g	249.1 mL	1.00 mL	7 SU	
320-31889-A-11	NAWC-092617-RW-091	537, 537	T	276.94 g	28.22 g	248.7 mL	1.00 mL	7 SU	
320-31889-A-12	NAWC-092617-FRB-091	537, 537	T	287.42 g	27.80 g	259.6 mL	1.00 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00049	LC537-SU 00051	AnalysisComment			
MB 320-188627/1		537, 537		100 uL	100 uL	ch nd			
LCS 320-188627/2		537, 537		100 uL	100 uL	ch nd			
LCSD 320-188627/3		537, 537		100 uL	100 uL	ch nd			
320-31889-A-1	NAWC-092617-RW-256	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-2	NAWC-092617-FRB-256	537, 537	T	100 uL	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.: 320-31889-1

SDG No.: \_\_\_\_\_

Batch Number: 188627 Batch Start Date: 10/10/17 09:44 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 10/16/17 08:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00049	LC537-SU 00051	AnalysisComment			
320-31889-A-3	NAWC-092617-RW-354	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-4	NAWC-092617-FRB-354	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-5	NAWC-092617-RW-4784	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-6	NAWC-092617-FRB-4784	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-7	NAWC-092617-RW-120	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-8	NAWC-092617-FRB-120	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-9	NAWC-092617-RW-315	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-10	NAWC-092617-FRB-315	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-11	NAWC-092617-RW-091	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-12	NAWC-092617-FRB-091	537, 537	T	100 uL	100 uL	ch nd			

Batch Notes	
Batch Comment	IS:1041817 BD:nights/ccb FV:ccb AL:ccb
Manifold ID	3,9
Methanol ID	1052424
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	JNS
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge ID	6357081-08
Trizma ID	SLBR4303V
Reagent Water ID	10/3/17

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.: 320-31889-1

SDG No.: \_\_\_\_\_

Batch Number: 188627 Batch Start Date: 10/10/17 09:44 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 10/16/17 08:11

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: 31889, 31962 Instrument ID & Date: 10-16-17 ICAL Batch: 185329  
 Extraction Batch: 188627 Worklist #: 49188, 49283 TALS Batch: 189551, 189553, 189890

Review Items	-- Level 1 --			Level 2
	Yes	No	N/A	
<b>Initial Calibration</b>				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
<b>Continuing Calibration</b>				
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 ±50% of true value Mid and High-range within ±30% of true value	✓			✓
4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICAL and 70-140% of the most recent CCV.	✓			✓
<b>Client Samples &amp; QC Sample Results</b>				
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? ±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?	✓			✓

1<sup>st</sup> Level Reviewer / Date: JRB 10-18-17 2<sup>nd</sup> Level Reviewer / Date: MWJ 10/18/17

NCM # and Comments: 104407

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TestAmerica Laboratories  
Worklist QC Batch Report

Worklist Name: 16OCT2017\_537B      Worklist Number: 49188  
 Instrument Name: A8\_N      Chrom Method: 537\_A8\_N  
 Data Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20171016-49188.b  
 QC Batching: Enabled      Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 189551
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-188627/1-A	# 3 MB 320-188627/1-A
# 4 LCS 320-188627/2-A	# 4 LCS 320-188627/2-A
# 5 LCSD 320-188627/3-A	# 5 LCSD 320-188627/3-A
# 6 320-31889-A-1-A	# 6 320-31889-A-1-A
# 7 320-31889-A-2-A	# 7 320-31889-A-2-A
# 8 320-31889-A-3-A	# 8 320-31889-A-3-A
# 9 320-31889-A-4-A	# 9 320-31889-A-4-A
#10 320-31889-A-5-A	#10 320-31889-A-5-A
#11 320-31889-A-6-A	#11 320-31889-A-6-A
#12 320-31889-A-7-A	#12 320-31889-A-7-A
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 189553
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-31889-A-8-A	#15 320-31889-A-8-A
#16 320-31889-A-9-A	#16 320-31889-A-9-A
#17 320-31889-A-10-A	#17 320-31889-A-10-A
#18 320-31889-A-11-A	#18 320-31889-A-11-A
#19 320-31889-A-12-A	#19 320-31889-A-12-A
#20 320-31962-A-1-A	#20 320-31962-A-1-A
#21 320-31962-B-2-A	#21 320-31962-B-2-A
#22 320-31962-A-3-A	#22 320-31962-A-3-A
#23 CCV L3	#23 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 189555
#23 CCV L3	#23 CCV L3
#24 RB	#24 RB
#25 MB 320-188449/1-A	#25 MB 320-188449/1-A
#26 LLCS 320-188449/2-A	#26 LLCS 320-188449/2-A
#27 280-101602-C-3-A	#27 280-101602-C-3-A
#28 280-101602-A-3-C LMS	#28 280-101602-A-3-C LMS
#29 280-101602-A-3-D LMSD	#29 280-101602-A-3-D LMSD
#30 MB 320-187051/1-A	#30 MB 320-187051/1-A
#31 320-28355-A-32-B MDLV	#31 320-28355-A-32-B MDLV
#32 320-28355-A-33-B LOQV	#32 320-28355-A-33-B LOQV
#33 CCV L5	#33 CCV L5
#34 RB	#34 RB

TestAmerica Laboratories  
Worklist QC Batch Report

Worklist Name: 16OCT2017\_537C  
Instrument Name: A8\_N  
Data Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20171018-49283.b  
QC Batching: Enabled

Worklist Number: 49283  
Chrom Method: 537\_A8\_N  
Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 189890	LC 537 CS ICAL Raw Batch: 189891
# 1 RINSE	# 1 RINSE	# 1 RINSE
# 2 RINSE	# 2 RINSE	# 2 RINSE
# 3 RINSE	# 3 RINSE	# 3 RINSE
# 4 CCVL	# 4 CCVL	# 4 CCVL
# 5 CCV L5	# 5 CCV L5	# 5 CCV L5
# 6 RB	# 6 RB	# 6 RB
# 7 320-31889-A-1-A	# 7 320-31889-A-1-A	
# 8 320-31889-A-7-A	# 8 320-31889-A-7-A	
# 9 320-31889-A-9-A	# 9 320-31889-A-9-A	
#10 320-31962-A-3-A	#10 320-31962-A-3-A	
#11 MB 320-188465/1-A		#11 MB 320-188465/1-A
#12 LCS 320-188465/2-A		#12 LCS 320-188465/2-A
#13 LCSD 320-188465/3-A		#13 LCSD 320-188465/3-A
#14 320-32002-A-1-A		#14 320-32002-A-1-A
#15 CCV L3	#15 CCV L3	#15 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 189892	LC 537 CS ICAL Raw Batch: 189893
#15 CCV L3	#15 CCV L3	#15 CCV L3
#16 RB	#16 RB	#16 RB
#17 320-32002-A-2-A		#17 320-32002-A-2-A
#18 320-32002-A-2-B MS		#18 320-32002-A-2-B MS
#19 320-32002-A-2-C MSD		#19 320-32002-A-2-C MSD
#20 320-32002-A-3-A		#20 320-32002-A-3-A
#21 320-32002-A-4-A		#21 320-32002-A-4-A
#22 320-32002-A-5-A		#22 320-32002-A-5-A
#23 320-32002-A-6-A		#23 320-32002-A-6-A
#24 320-32002-A-7-A		#24 320-32002-A-7-A
#25 320-32002-A-8-A		#25 320-32002-A-8-A
#26 320-32002-A-9-A		#26 320-32002-A-9-A
#27 CCV L5		#27 CCV L5
#28 RB		#28 RB
#29 RINSE	#29 RINSE	#29 RINSE
#30 RINSE	#30 RINSE	#30 RINSE
#31 RINSE	#31 RINSE	#31 RINSE
#32 RINSE	#32 RINSE	#32 RINSE



A8

Instrument ID & Date: 9-20-17 Worklist#: 48154

ICAL Batch: 185329, 185330 Calibration ID number: 34457

Review Items	-- Level 1 --			Level 2
	Yes	No	N/A	
<b>Initial Calibration</b>				
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 <sup>2</sup> )Linear <u>Quadratic</u> (6 points minimum)				
4. Meets fit criteria? Intercept ≤ 1/2 RL RSD ≤ 30% for Average R <sup>2</sup> ≥ 0.990 for Linear R <sup>2</sup> ≥ 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 <sup>nd</sup> source) ± 30% of true value?	✓			✓
11. Is ICV (2 <sup>nd</sup> 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?				✓

1<sup>st</sup> Level Reviewer / Date: Murray for JRB  
9/22/2017

2<sup>nd</sup> Level Reviewer / Date: Murray 9/22/2017

NCM # and Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

45

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-188627

Analyst: Branscum, Cassie

Method Code: 320-537\_Prep-320

AS 10/

AS 10/

Batch O

Batch I

## Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments
1 MB-320-188627/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd
			1.00 mL							
2 LCS-320-188627/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd
			1.00 mL							
3 LCSD-320-188627/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd
			1.00 mL							
4 320-31889-A-1 (537_DOD5)	N/A (320-31889-1)	282.58 g	254.3 mL	7			10/1/17	16_Days	4	ch nd RI
		28.33 g	1.00 mL							
5 320-31889-A-2 (537_DOD5)	N/A (320-31889-1)	275.53 g	247.5 mL	7			10/1/17	16_Days	4	ch nd
		28.01 g	1.00 mL							
6 320-31889-A-3 (537_DOD5)	N/A (320-31889-1)	285.27 g	257.4 mL	7			10/1/17	16_Days	4	ch nd
		27.87 g	1.00 mL							
7 320-31889-A-4 (537_DOD5)	N/A (320-31889-1)	287.13 g	259.5 mL	7			10/1/17	16_Days	4	ch nd
		27.59 g	1.00 mL							
8 320-31889-A-5 (537_DOD5)	N/A (320-31889-1)	279.98 g	251.2 mL	7			10/1/17	16_Days	4	ch nd
		28.79 g	1.00 mL							
320-31889-A-6	N/A									

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-188627

Analyst: Branscum, Cassie

Batch C

Method Code: 320-537\_Prep-320

Batch

11	320-31889-A-8 (537_DOD5)	N/A (320-31889-1)	278.12 g	250.4 mL	7			10/1/17	16_Days	4	ch nd	
			27.75 g	1.00 mL								
12	320-31889-A-9 (537_DOD5)	N/A (320-31889-1)	281.03 g	253.3 mL	7			10/1/17	16_Days	4	ch nd	RI
			27.71 g	1.00 mL								
13	320-31889-A-10 (537_DOD5)	N/A (320-31889-1)	276.33 g	249.1 mL	7			10/1/17	16_Days	4	ch nd	
			27.24 g	1.00 mL								
14	320-31889-A-11 (537_DOD5)	N/A (320-31889-1)	276.94 g	248.7 mL	7			10/1/17	16_Days	4	ch nd	
			28.22 g	1.00 mL								
15	320-31889-A-12 (537_DOD5)	N/A (320-31889-1)	287.42 g	259.6 mL	7			10/1/17	16_Days	4	ch nd	
			27.80 g	1.00 mL								
16	320-31962-A-1 (537_DOD5)	N/A (320-31962-1)	285.50 g	258.5 mL	7			10/4/17	12_Days	4	ch nd	
			27.05 g	1.00 mL								
17	320-31962-B-2 (537_DOD5)	N/A (320-31962-1)	277.99 g	250.7 mL	7			10/4/17	12_Days	4	ch nd	
			27.34 g	1.00 mL								
18	320-31962-A-3 (537_DOD5)	N/A (320-31962-1)	279.70 g	252.4 mL	7			10/4/17	12_Days	4	ch nd	RI
			27.27 g	1.00 mL								

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-188627

Analyst: Branscum, Cassie

Batch O

Method Code: 320-537\_Prep-320

Batch I

## Batch Notes

Manifold ID 3,9

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-08

Methanol ID 1052424

Reagent Water ID 10/3/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop CCB

Analyst ID - TA Reagent Drop JNS  
Witness

Analyst ID - SU Reagent Drop CCB

Analyst ID - SU Reagent Drop JNS  
Witness

Analyst ID - IS Reagent Drop CCB

Analyst ID - IS Reagent Drop JNS  
Witness

Batch Comment IS:1041817 BD:nights/ccb FV:ccb AL:ccb

## Comments

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-188627

Analyst: Branscum, Cassie

Batch C

Method Code: 320-537\_Prep-320

Batch

## Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By
MB 320-188627/1	LC537-SU_00051	100 uL	1.00 mL	CBS, 10-10-17
LCS 320-188627/2	LC537-HSP_00022	100 uL	1.00 mL	
LCS 320-188627/2	LC537-SU_00051	100 uL	1.00 mL	
LCSD 320-188627/3	LC537-HSP_00022	100 uL	1.00 mL	
LCSD 320-188627/3	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-1	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-2	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-3	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-4	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-5	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-6	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-7	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-8	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-9	LC537-SU_00051	100 uL	1.00 mL	
320-31889-A-10	LC537-SU_00051	100 uL	1.00 mL	

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-188627

Analyst: Branscum, Cassie

Batch O

Method Code: 320-537\_Prep-320

Batch

320-31962-B-2	LC537-SU_00051	100 uL	1.00 mL	COB 10-10-17 ↓
320-31962-A-3	LC537-SU_00051	100 uL	1.00 mL	

## Other Reagents:

Reagent

Amount/Units


Preparation Batch Number(s): 320-158027 Test: 537-Drp  
 Earliest Holding Time: 10/10/17

<b>Sample List Tab</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> Level Reviewer
Samples identified to the correct method		/	✓
All necessary NCMs filed (including holding time)		/	✓
Method/sample/login/QAS checked and correct		/	✓
<b>Worksheet Tab</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> 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 Cl 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		/	✓
<b>Reagents Tab</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> Level Reviewer
All necessary reagents not expired and entered into TALS		/	✓
All spike amounts correct and added to necessary samples and QC		/	✓
<b>Batch Information</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> Level Reviewer
Date and time accurate and entered into TALS correctly		/	✓
All necessary 'batch information' complete and entered into TALS correctly		/	✓

1<sup>st</sup> Level Reviewer: Cof  
 2<sup>nd</sup> Level Reviewer: VPM

Date: 10-16-17  
 Date: 10/16/17

Comments: \_\_\_\_\_

# Shipping and Receiving Documents



**TestAmerica Sacramento**

880 Riverside Parkway  
 West Sacramento, CA 95605-1500  
 phone 916.373.5600 fax 303.467.7248

**Chain of Custody Record**

**Regulatory Program:**  DW  NPDES  RCRA  Other:

<b>Client Contact</b>		<b>Project Manager:</b> Andy Frebowitz				<b>Site Contact:</b> Mary Kay Bond			<b>Date:</b> 9/26/2017		
TetraTech		<b>Tel/Fax:</b> 610.382.1170				<b>Lab Contact:</b> Dave Alltucker			<b>Carrier:</b> FedEx		
234 Mall Boulevard Suite 260		<b>Analysis Turnaround Time</b>									
King of Prussia, PA 19406		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 21									
610-382-1174		<input type="checkbox"/> 2 weeks									
610-491-9688		<input type="checkbox"/> 1 week									
Project Name: WE04		<input type="checkbox"/> 2 days									
Site: WE04		<input type="checkbox"/> 1 day									
P O # 1132358 (through EarthToxics)											

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3
NAWC-092617-RW-256	9/26/2017	09:10	G	DW	2	N	N	Y
NAWC-092617-FRB-256	9/26/2017	09:05	G	DW	2	N	N	Y
NAWC-092617-RW-354	9/26/2017	09:40	G	DW	2	N	N	Y
NAWC-092617-FRB-354	9/26/2017	09:35	G	DW	2	N	N	Y
WGNA-092617-RW-4784	9/26/2017	11:10	G	DW	2	N	N	Y
WGNA-092617-FRB-4784	9/26/2017	11:05	G	DW	2	N	N	Y
NAWC-092617-RW-120	9/26/2017	10:10	G	DW	2	N	N	Y
NAWC-092617-FRB-120	9/26/2017	10:05	G	DW	2	N	N	Y
NAWC-092617-RW-315	9/26/2017	16:10	G	DW	2	N	N	Y
NAWC-092617-FRB-315	9/26/2017	16:05	G	DW	2	N	N	Y
NAWC-092617-RW-091	9/26/2017	10:40	G	DW	2	N	N	Y
NAWC-092617-FRB-091	9/26/2017	10:35	G	DW	2	N	N	Y



**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

**Possible Hazard Identification:** Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the

**Sample Disposal ( A fee may be assessed if samples are retained**

# Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-31889-1

**Login Number: 31889**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <= 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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","34","ng/L","J M","6.7","DL","","TRG","","","39","LOQ","YES","-99","","254.3","1.00","16","","

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","26","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","254.3","1.00","7.9","","

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","6.8","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","254.3","1.00","12","","

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","254.3","1.00","35","","

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","7.6","ng/L","J","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","254.3","1.00","3.9","","

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U M","7.9","DL","","TRG","","","24","LOQ","YES","-99","","254.3","1.00","20","","

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","STL00993","13C2 PFHxA","25","ng/L","Q","-99","DL","","SURR","62","","-99","LOQ","YES","39.3","","254.3","1.00","0","","

"NAWC-092617-RW-256","537","RES","320-31889-1","TALSAC","STL00996","13C2 PFDA","35","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","39.3","","254.3","1.00","0","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","249.1","1.00","16","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","249.1","1.00","8.0","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","249.1","1.00","12","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","249.1","1.00","36","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","249.1","1.00","4.0","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","249.1","1.00","20","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","-99","DL","","SURR","83","","-99","LOQ","YES","40.1","","249.1","1.00","0","","

"NAWC-092617-FRB-315","537","RES","320-31889-10","TALSAC","STL00996","13C2 PFDA","38","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","40.1","","249.1","1.00","0","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","21","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.7","1.00","16","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","19","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.7","1.00","8.0","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.1","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.7","1.00","12","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","248.7","1.00","36","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.0","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.7","1.00","4.0","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","248.7","1.00","20","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","STL00993","13C2 PFHxA","29","ng/L","","-99","DL","","SURR","73","","-99","LOQ","YES","40.2","","248.7","1.00","0","","

"NAWC-092617-RW-091","537","RES","320-31889-11","TALSAC","STL00996","13C2 PFDA","37","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","40.2","","248.7","1.00","0","","

"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.5","DL","","TRG","","","39","LOQ","YES","-99","","259.6","1.00","15","","

"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","259.6","1.00","7.7","","

"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS),"12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES",-99","","259.6","1.00","12","","  
"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES",-99","","259.6","1.00","35","","  
"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"3.9","ng/L","U","1.8","DL","","TRG","","","9.6","LOQ","YES",-99","","259.6","1.00","3.9","","  
"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES",-99","","259.6","1.00","19","","  
"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","STL00993","13C2  
PFHxA),"31","ng/L","","-99","DL","","SURR","80","","-99","LOQ","YES","38.5","","259.6","1.00","0","","  
"NAWC-092617-FRB-091","537","RES","320-31889-12","TALSAC","STL00996","13C2  
PFDA),"34","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","38.5","","259.6","1.00","0","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS),"16","ng/L","U","6.9","DL","","TRG","","","40","LOQ","YES",-99","","247.5","1.00","16","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES",-99","","247.5","1.00","8.1","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES",-99","","247.5","1.00","12","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES",-99","","247.5","1.00","36","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES",-99","","247.5","1.00","4.0","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES",-99","","247.5","1.00","20","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","STL00993","13C2  
PFHxA),"33","ng/L","","-99","DL","","SURR","81","","-99","LOQ","YES","40.4","","247.5","1.00","0","","  
"NAWC-092617-FRB-256","537","RES","320-31889-2","TALSAC","STL00996","13C2  
PFDA),"37","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","40.4","","247.5","1.00","0","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS),"16","ng/L","U M","6.6","DL","","TRG","","","39","LOQ","YES",-99","","257.4","1.00","16","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"9.6","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES",-99","","257.4","1.00","7.8","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"12","ng/L","U M","5.3","DL","","TRG","","","29","LOQ","YES",-99","","257.4","1.00","12","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES",-99","","257.4","1.00","35","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"4.8","ng/L","J","1.8","DL","","TRG","","","9.7","LOQ","YES",-99","","257.4","1.00","3.9","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES",-99","","257.4","1.00","19","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","STL00993","13C2  
PFHxA),"29","ng/L","","-99","DL","","SURR","74","","-99","LOQ","YES","38.9","","257.4","1.00","0","","  
"NAWC-092617-RW-354","537","RES","320-31889-3","TALSAC","STL00996","13C2  
PFDA),"35","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","38.9","","257.4","1.00","0","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS),"15","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES",-99","","259.5","1.00","15","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES",-99","","259.5","1.00","7.7","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES",-99","","259.5","1.00","12","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES",-99","","259.5","1.00","35","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"3.9","ng/L","U","1.8","DL","","TRG","","","9.6","LOQ","YES",-99","","259.5","1.00","3.9","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","259.5","1.00","19","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","STL00993","13C2  
PFHxA","33","ng/L","","-99","DL","","SURR","84","","-99","LOQ","YES","38.5","","259.5","1.00","0","","  
"NAWC-092617-FRB-354","537","RES","320-31889-4","TALSAC","STL00996","13C2  
PFDA","36","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","38.5","","259.5","1.00","0","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","14","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","251.2","1.00","16","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","13","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","251.2","1.00","8.0","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","5.8","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES","-99","","251.2","1.00","12","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","251.2","1.00","36","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.7","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","251.2","1.00","4.0","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","251.2","1.00","20","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","STL00993","13C2  
PFHxA","28","ng/L","","-99","DL","","SURR","70","","-99","LOQ","YES","39.8","","251.2","1.00","0","","  
"NAWC-092617-RW-4784","537","RES","320-31889-5","TALSAC","STL00996","13C2  
PFDA","33","ng/L","","-99","DL","","SURR","84","","-99","LOQ","YES","39.8","","251.2","1.00","0","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","249.9","1.00","16","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","249.9","1.00","8.0","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","249.9","1.00","12","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","249.9","1.00","36","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","249.9","1.00","4.0","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","249.9","1.00","20","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","STL00993","13C2  
PFHxA","33","ng/L","","-99","DL","","SURR","82","","-99","LOQ","YES","40.0","","249.9","1.00","0","","  
"NAWC-092617-FRB-4784","537","RES","320-31889-6","TALSAC","STL00996","13C2  
PFDA","37","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","40.0","","249.9","1.00","0","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","20","ng/L","J M","6.9","DL","","TRG","","","41","LOQ","YES","-99","","244.9","1.00","16","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","12","ng/L","J","2.9","DL","","TRG","","","20","LOQ","YES","-99","","244.9","1.00","8.2","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","31","LOQ","YES","-99","","244.9","1.00","12","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","37","ng/L","U","16","DL","","TRG","","","92","LOQ","YES","-99","","244.9","1.00","37","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.1","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","244.9","1.00","4.1","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","20","ng/L","U M","8.2","DL","","TRG","","","24","LOQ","YES","-99","","244.9","1.00","20","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","STL00993","13C2  
PFHxA","24","ng/L","Q","-99","DL","","SURR","60","","-99","LOQ","YES","40.8","","244.9","1.00","0","","  
"NAWC-092617-RW-120","537","RES","320-31889-7","TALSAC","STL00996","13C2  
PFDA","36","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","40.8","","244.9","1.00","0","","  
"NAWC-092617-FRB-120","537","RES","320-31889-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.4","1.00","16",""  
"NAWC-092617-FRB-120","537","RES","320-31889-8","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.4","1.00","8.0",""  
"NAWC-092617-FRB-120","537","RES","320-31889-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.4","1.00","12",""  
"NAWC-092617-FRB-120","537","RES","320-31889-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.4","1.00","36",""  
"NAWC-092617-FRB-120","537","RES","320-31889-8","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.4","1.00","4.0",""  
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(PFNA),"20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.4","1.00","20",""  
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"NAWC-092617-FRB-120","537","RES","320-31889-8","TALSAC","STL00996","13C2  
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(PFOS),"13","ng/L","J M","6.7","DL","","TRG","","","39","LOQ","YES","-99","","253.3","1.00","16",""  
"NAWC-092617-RW-315","537","RES","320-31889-9","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"8.0","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.3","1.00","7.9",""  
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(PFHxS),"12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.3","1.00","12",""  
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"NAWC-092617-RW-315","537","RES","320-31889-9","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"2.3","ng/L","J","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","253.3","1.00","3.9",""  
"NAWC-092617-RW-315","537","RES","320-31889-9","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.3","1.00","20",""  
"NAWC-092617-RW-315","537","RES","320-31889-9","TALSAC","STL00993","13C2  
PFHxA","28","ng/L","","-99","DL","","SURR","70","","-99","LOQ","YES","39.5","","253.3","1.00","0",""  
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PFDA","46","ng/L","","-99","DL","","SURR","117","","-99","LOQ","YES","39.5","","253.3","1.00","0",""  
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(PFOS),"208","ng/L","M","6.8","DL","","SPK","94","","40","LOQ","YES","222","","250","1.00","16",""  
"LCS 320-188627/2-A","537","RES","LCS 320-188627/2-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"97.4","ng/L","","2.8","DL","","SPK","88","","20","LOQ","YES","111","","250","1.00","8.0",""  
"LCS 320-188627/2-A","537","RES","LCS 320-188627/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"161","ng/L","","5.5","DL","","SPK","96","","30","LOQ","YES","167","","250","1.00","12",""  
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(PFBS),"509","ng/L","","16","DL","","SPK","102","","90","LOQ","YES","500","","250","1.00","36",""  
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(PFHpA),"51.1","ng/L","","1.9","DL","","SPK","92","","10","LOQ","YES","55.6","","250","1.00","4.0",""  
"LCS 320-188627/2-A","537","RES","LCS 320-188627/2-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"95.8","ng/L","","8.0","DL","","SPK","86","","24","LOQ","YES","111","","250","1.00","20",""  
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PFHxA","33.3","ng/L","","-99","DL","","SURR","83","","-99","LOQ","YES","40.0","","250","1.00","0",""  
"LCS 320-188627/2-A","537","RES","LCS 320-188627/2-A","TALSAC","STL00996","13C2  
PFDA","36.0","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","40.0","","250","1.00","0",""  
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acid (PFOS),"220","ng/L","M","6.8","DL","","SPK","99","5","40","LOQ","YES","222","LCS 320-188627/2-  
A","250","1.00","16",""  
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(PFOA),"107","ng/L","","2.8","DL","","SPK","96","9","20","LOQ","YES","111","LCS 320-188627/2-  
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acid (PFHxS)", "162", "ng/L", "", "5.5", "DL", "", "SPK", "97", "1", "30", "LOQ", "YES", "167", "LCS 320-188627/2-A", "250", "1.00", "12", ""

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"MB 320-188627/1-A", "537", "RES", "MB 320-188627/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250", "1.00", "36", ""

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189551","320-31889-1","10/10/2017 09:45","09/28/2017 15:30",""





TO: A. FREBOWITZ                      DATE: OCTOBER 24, 2017

FROM: TERRI L. SOLOMON              COPIES: DV FILE

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)  
NAS JRB WILLOW GROVE  
SAMPLE DELIVERY GROUP (SDG) 320-31889-1**

SAMPLES: 6/Field Reagent Blank (FRB)  
NAWC-092617-FRB-091                      NAWC-092617-FRB-120  
NAWC-092617-FRB-256                      NAWC-092617-FRB-315  
NAWC-092617-FRB-354                      NAWC-092617-FRB-4784

6/Drinking Water  
NAWC-092617-RW-091                      NAWC-092617-RW-120  
NAWC-092617-RW-256                      NAWC-092617-RW-315  
NAWC-092617-RW-354                      NAWC-092617-RW-4784

Overview

The sample set for NAS JRB Willow Grove, SDG 320-31889-1, consisted of six (6) drinking water samples and six (6) FRB samples. All samples were analyzed for select polyfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). No field duplicate sample pairs were included in this SDG.

The samples were collected by Tetra Tech on September 26, 2017 and analyzed by Test America-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, initial/continuing calibrations, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

The following surrogate recoveries were below the 70% quality control limit. The samples were reanalyzed by the laboratory with similar recoveries and the original analysis was reported. The detected and nondetected results reported in the affected samples were qualified as estimated (J) and (UJ), respectively.

<u>Sample</u>	<u>Surrogate</u>
NAWC-092617-RW-256	13C2 Perfluorohexanoic acid
NAWC-092617-RW-120	13C2 Perfluorohexanoic acid

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).

TO: A. FREBOWITZ  
SDG: 320-31889-1

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**Notes**

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

<b><u>Sample</u></b>	<b><u>Associated FRB</u></b>
NAWC-092617-RW-091	NAWC-092617-FRB-091
NAWC-092617-RW-120	NAWC-092617-FRB-120
NAWC-092617-RW-256	NAWC-092617-FRB-256
NAWC-092617-RW-315	NAWC-092617-FRB-315
NAWC-092617-RW-354	NAWC-092617-FRB-354
NAWC-092617-RW-4784	NAWC-092617-FRB-4784

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

**Executive Summary**

**Laboratory Performance:** Two surrogate recoveries were below the quality control limit.

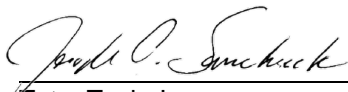
**Other Factors Affecting Data Quality:** Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



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Tetra Tech, Inc.  
Terri L. Solomon  
Chemist/Data Validator



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Tetra Tech, Inc.  
Joseph A. Samchuck  
Data Validation Manager

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

### Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

<b>U</b>	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
<b>J</b>	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
<b>J+</b>	The result is an estimated quantity, but the result may be biased high.
<b>J-</b>	The result is an estimated quantity, but the result may be biased low.
<b>UJ</b>	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
<b>R</b>	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
<b>UR</b>	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

**Appendix A**

Qualified Analytical Results

**Qualifier Codes:**

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's  $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ( $< 2 \times$  IDL for inorganics and  $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors  $>40\%$  for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient  $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids  $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

<b>PROJ_NO: 08005-WE04</b> <b>SDG: 320-31889-1</b> <b>FRACTION: PFAS</b> <b>MEDIA: WATER</b>	NSAMPLE	NAWC-092617-FRB-091			NAWC-092617-FRB-120			NAWC-092617-FRB-256			NAWC-092617-FRB-315		
	LAB_ID	320-31889-12			320-31889-8			320-31889-2			320-31889-10		
	SAMP_DATE	9/26/2017			9/26/2017			9/26/2017			9/26/2017		
	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	7.7	U		8	U		8.1	U		8	U		
PERFLUOROBUTANESULFONIC ACID	35	U		36	U		36	U		36	U		
PERFLUOROHEPTANOIC ACID	3.9	U		4	U		4	U		4	U		
PERFLUOROHXANESULFONIC ACID	12	U		12	U		12	U		12	U		
PERFLUORONONANOIC ACID	19	U		20	U		20	U		20	U		
PERFLUOROOCTANE SULFONIC ACID	15	U		16	U		16	U		16	U		

<b>PROJ_NO: 08005-WE04</b> <b>SDG: 320-31889-1</b> <b>FRACTION: PFAS</b> <b>MEDIA: WATER</b>	NSAMPLE	NAWC-092617-FRB-354			NAWC-092617-FRB-4784			NAWC-092617-RW-091			NAWC-092617-RW-120		
	LAB_ID	320-31889-4			320-31889-6			320-31889-11			320-31889-7		
	SAMP_DATE	9/26/2017			9/26/2017			9/26/2017			9/26/2017		
	QC_TYPE	FB			FB			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	7.7	U		8	U		19	J	P	12	J	PR	
PERFLUOROBUTANESULFONIC ACID	35	U		36	U		36	U		37	UJ	R	
PERFLUOROHEPTANOIC ACID	3.9	U		4	U		6	J	P	3.1	J	PR	
PERFLUOROHXANESULFONIC ACID	12	U		12	U		7.1	J	P	12	UJ	R	
PERFLUORONONANOIC ACID	19	U		20	U		20	U		20	UJ	R	
PERFLUOROOCTANE SULFONIC ACID	15	U		16	U		21	J	P	20	J	PR	

<b>PROJ_NO: 08005-WE04</b> <b>SDG: 320-31889-1</b> <b>FRACTION: PFAS</b> <b>MEDIA: WATER</b>	NSAMPLE	NAWC-092617-RW-256			NAWC-092617-RW-315			NAWC-092617-RW-354			NAWC-092617-RW-4784		
	LAB_ID	320-31889-1			320-31889-9			320-31889-3			320-31889-5		
	SAMP_DATE	9/26/2017			9/26/2017			9/26/2017			9/26/2017		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	26	J	R	8	J	P	9.6	J	P	13	J	P	
PERFLUOROBUTANESULFONIC ACID	35	UJ	R	36	U		35	U		36	U		
PERFLUOROHEPTANOIC ACID	7.6	J	PR	2.3	J	P	4.8	J	P	3.7	J	P	
PERFLUOROHXANESULFONIC ACID	6.8	J	PR	12	U		12	U		5.8	J	P	
PERFLUORONONANOIC ACID	20	UJ	R	20	U		19	U		20	U		
PERFLUOROOCTANE SULFONIC ACID	34	J	PR	13	J	P	16	U		14	J	P	



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Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-256 Lab Sample ID: 320-31889-1  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.014.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 254.3(mL) Date Analyzed: 10/16/2017 12:21  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34	<del>J</del> M J	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	26	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	<del>U</del> M UJ	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.8	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	<del>U</del> UJ	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	62	Q	70-130
STL00996	13C2 PFDA	90		70-130

*Amir L. Salaman*  
10/24/2017

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Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-256 Lab Sample ID: 320-31889-2  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.015.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 247.5 (mL) Date Analyzed: 10/16/2017 12:25  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	91		70-130

*Steve L. Salzman*  
10/24/2017

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-354 Lab Sample ID: 320-31889-3  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.016.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:40  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 257.4 (mL) Date Analyzed: 10/16/2017 12:30  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U <del>M</del>	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	9.6	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U <del>M</del>	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	89		70-130

*Wesley L. Selman*  
10/24/2017

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Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-354 Lab Sample ID: 320-31889-4  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.017.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:35  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 259.5 (mL) Date Analyzed: 10/16/2017 12:35  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	92		70-130

*Steve L. Salzman*  
10/24/2017

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-4784 Lab Sample ID: 320-31889-5  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.018.d  
 Analysis Method: 537 Date Collected: 09/26/2017 11:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 251.2 (mL) Date Analyzed: 10/16/2017 12:40  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J <del>M</del>	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	J	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	70		70-130
STL00996	13C2 PFDA	84		70-130

*Teri L. Salaman*  
10/24/2017

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Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-4784 Lab Sample ID: 320-31889-6  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.019.d  
 Analysis Method: 537 Date Collected: 09/26/2017 11:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 249.9(mL) Date Analyzed: 10/16/2017 12:44  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 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	82		70-130
STL00996	13C2 PFDA	92		70-130

*Amir I. Salameh*  
10/24/2017

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-120 Lab Sample ID: 320-31889-7  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.020.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 244.9(mL) Date Analyzed: 10/16/2017 12:49  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	<del>J</del> M <del>J</del>	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	12	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	<del>U</del> M <del>U</del>	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	<del>U</del> UJ	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.1	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	<del>U</del> UJ	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	60	Q	70-130
STL00996	13C2 PFDA	89		70-130

*Thomas L. Salzman*  
10/24/2017

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-120 Lab Sample ID: 320-31889-8  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.022.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 250.4 (mL) Date Analyzed: 10/16/2017 13:03  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 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	80		70-130
STL00996	13C2 PFDA	89		70-130

*Steve L. Selman*  
10/24/2017



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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-315 Lab Sample ID: 320-31889-9  
 Matrix: Water Lab File ID: 2017.10.17\_537A\_009.d  
 Analysis Method: 537 Date Collected: 09/26/2017 16:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 253.3(mL) Date Analyzed: 10/18/2017 01:59  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189890 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	13	J <del>M</del>	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	70		70-130
STL00996	13C2 PFDA	117		70-130

*Wesley L. Salmeron*  
10/24/2017

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-315 Lab Sample ID: 320-31889-10  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.024.d  
 Analysis Method: 537 Date Collected: 09/26/2017 16:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 249.1(mL) Date Analyzed: 10/16/2017 13:13  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 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	83		70-130
STL00996	13C2 PFDA	94		70-130

*Wesley L. Salzman*  
10/24/2017

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-091 Lab Sample ID: 320-31889-11  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.025.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:40  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 248.7(mL) Date Analyzed: 10/16/2017 13:18  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J <del>M</del>	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.1	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.0	J	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	73		70-130
STL00996	13C2 PFDA	91		70-130

*Heidi L. Salomon*  
10/24/2017

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-091 Lab Sample ID: 320-31889-12  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.026.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:35  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 259.6(mL) Date Analyzed: 10/16/2017 13:22  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	89		70-130

*Wesley L. Selman*  
10/24/2017

**Appendix B**

Results as Reported by the Laboratory

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-256 Lab Sample ID: 320-31889-1  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.014.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 254.3(mL) Date Analyzed: 10/16/2017 12:21  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	26		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.8	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	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	62	Q	70-130
STL00996	13C2 PFDA	90		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-256 Lab Sample ID: 320-31889-2  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.015.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 247.5 (mL) Date Analyzed: 10/16/2017 12:25  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	91		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-354 Lab Sample ID: 320-31889-3  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.016.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:40  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 257.4 (mL) Date Analyzed: 10/16/2017 12:30  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	9.6	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	89		70-130



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-354 Lab Sample ID: 320-31889-4  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.017.d  
 Analysis Method: 537 Date Collected: 09/26/2017 09:35  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 259.5 (mL) Date Analyzed: 10/16/2017 12:35  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	92		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-4784 Lab Sample ID: 320-31889-5  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.018.d  
 Analysis Method: 537 Date Collected: 09/26/2017 11:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 251.2 (mL) Date Analyzed: 10/16/2017 12:40  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	J	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	70		70-130
STL00996	13C2 PFDA	84		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-4784 Lab Sample ID: 320-31889-6  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.019.d  
 Analysis Method: 537 Date Collected: 09/26/2017 11:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 249.9(mL) Date Analyzed: 10/16/2017 12:44  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 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	82		70-130
STL00996	13C2 PFDA	92		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-120 Lab Sample ID: 320-31889-7  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.020.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 244.9(mL) Date Analyzed: 10/16/2017 12:49  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	12	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.1	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	60	Q	70-130
STL00996	13C2 PFDA	89		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-120 Lab Sample ID: 320-31889-8  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.022.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 250.4 (mL) Date Analyzed: 10/16/2017 13:03  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 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	80		70-130
STL00996	13C2 PFDA	89		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-315 Lab Sample ID: 320-31889-9  
 Matrix: Water Lab File ID: 2017.10.17\_537A\_009.d  
 Analysis Method: 537 Date Collected: 09/26/2017 16:10  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 253.3(mL) Date Analyzed: 10/18/2017 01:59  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189890 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	13	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	70		70-130
STL00996	13C2 PFDA	117		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-315 Lab Sample ID: 320-31889-10  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.024.d  
 Analysis Method: 537 Date Collected: 09/26/2017 16:05  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 249.1(mL) Date Analyzed: 10/16/2017 13:13  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 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	83		70-130
STL00996	13C2 PFDA	94		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-RW-091 Lab Sample ID: 320-31889-11  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.025.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:40  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 248.7(mL) Date Analyzed: 10/16/2017 13:18  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.1	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.0	J	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	73		70-130
STL00996	13C2 PFDA	91		70-130



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-092617-FRB-091 Lab Sample ID: 320-31889-12  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.026.d  
 Analysis Method: 537 Date Collected: 09/26/2017 10:35  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 259.6(mL) Date Analyzed: 10/16/2017 13:22  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189553 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	89		70-130

**Appendix C**

Support Documentation

**TestAmerica Sacramento**  
 880 Riverside Parkway  
 West Sacramento, CA 95605-1500  
 phone 916.373.5600 fax 303.467.7248

**Chain of Custody Record**



TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

<b>Client Contact</b>	<b>Project Manager:</b> Andy Frebowitz	<b>Site Contact:</b> Mary Kay Bond	<b>Date:</b> 9/26/2017	<b>COC No.:</b>
TetraTech	<b>Tel/Fax:</b> 610.382.1170	<b>Lab Contact:</b> Dave Alltucker	<b>Carrier:</b> FedEx	1 of 1 COCs
234 Mall Boulevard Suite 260	<b>Analysis Turnaround Time</b>			<b>Sampler:</b> Mary Kay Bond
King of Prussia, PA 19406	<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS			<b>For Lab Use Only:</b>
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	<input type="checkbox"/> 2 weeks			Lab Sampling:
Project Name: WE04	<input type="checkbox"/> 1 week			Job / SDG No.:
Site: WE04	<input type="checkbox"/> 2 days			
P O # 1132358 (through EarthToxics)	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
NAWC-092617-RW-256	9/26/2017	09:10	G	DW	2	N	Y		
NAWC-092617-FRB-256	9/26/2017	09:05	G	DW	2	N	Y		Field Reagent Blank
NAWC-092617-RW-354	9/26/2017	09:40	G	DW	2	N	Y		
NAWC-092617-FRB-354	9/26/2017	09:35	G	DW	2	N	Y		Field Reagent Blank
WGNA-092617-RW-4784	9/26/2017	11:10	G	DW	2	N	Y		
WGNA-092617-FRB-4784	9/26/2017	11:05	G	DW	2	N	Y		Field Reagent Blank
NAWC-092617-RW-120	9/26/2017	10:10	G	DW	2	N	Y		
NAWC-092617-FRB-120	9/26/2017	10:05	G	DW	2	N	Y		Field Reagent Blank
NAWC-092617-RW-315	9/26/2017	16:10	G	DW	2	N	Y		
NAWC-092617-FRB-315	9/26/2017	16:05	G	DW	2	N	Y		Field Reagent Blank
NAWC-092617-RW-091	9/26/2017	10:40	G	DW	2	N	Y		
NAWC-092617-FRB-091	9/26/2017	10:35	G	DW	2	N	Y		



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Fed Ex Tracking: 7703 2675 2695

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Custody Seals Intact:  Yes  No

Custody Seal No.:

Cooler Temp. (°C): Obs'd: 20 Corr'd: - Therm ID No.: AR-1

Relinquished by: <i>Mary Kay Bond</i>	Company: Tetra Tech	Date/Time: ***** 18:00	Received by: <i>[Signature]</i>	Company: Taus	Date/Time: 9/27/17 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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**Job Narrative**  
**320-31889-1**

**Receipt**

The samples were received on 9/27/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

**LCMS**

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 537: Surrogate recovery for the following samples was outside control limits: NAWC-092617-RW-256 (320-31889-1) and NAWC-092617-RW-120 (320-31889-7). Re-analysis was performed with concurring results. The original analysis has been reported.

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

**Organic Prep**

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-188627.

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

# Method Summary

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

TestAmerica Job ID: 320-31889-1

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<b>Method</b>	<b>Method Description</b>	<b>Protocol</b>	<b>Laboratory</b>
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: 320-31889-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31889-1	NAWC-092617-RW-256	Water	09/26/17 09:10	09/27/17 10:00
320-31889-2	NAWC-092617-FRB-256	Water	09/26/17 09:05	09/27/17 10:00
320-31889-3	NAWC-092617-RW-354	Water	09/26/17 09:40	09/27/17 10:00
320-31889-4	NAWC-092617-FRB-354	Water	09/26/17 09:35	09/27/17 10:00
320-31889-5	NAWC-092617-RW-4784	Water	09/26/17 11:10	09/27/17 10:00
320-31889-6	NAWC-092617-FRB-4784	Water	09/26/17 11:05	09/27/17 10:00
320-31889-7	NAWC-092617-RW-120	Water	09/26/17 10:10	09/27/17 10:00
320-31889-8	NAWC-092617-FRB-120	Water	09/26/17 10:05	09/27/17 10:00
320-31889-9	NAWC-092617-RW-315	Water	09/26/17 16:10	09/27/17 10:00
320-31889-10	NAWC-092617-FRB-315	Water	09/26/17 16:05	09/27/17 10:00
320-31889-11	NAWC-092617-RW-091	Water	09/26/17 10:40	09/27/17 10:00
320-31889-12	NAWC-092617-FRB-091	Water	09/26/17 10:35	09/27/17 10:00

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-092617-RW-256	320-31889-1	62 Q	90
NAWC-092617-FRB-256	320-31889-2	81	91
NAWC-092617-RW-354	320-31889-3	74	89
NAWC-092617-FRB-354	320-31889-4	84	92
NAWC-092617-RW-478	320-31889-5	70	84
NAWC-092617-FRB-478	320-31889-6	82	92
NAWC-092617-RW-120	320-31889-7	60 Q	89
NAWC-092617-FRB-120	320-31889-8	80	89
NAWC-092617-RW-315	320-31889-9	70	117
NAWC-092617-FRB-315	320-31889-10	83	94
NAWC-092617-RW-091	320-31889-11	73	91
NAWC-092617-FRB-091	320-31889-12	80	89
	MB 320-188627/1-A	83	86
	LCS 320-188627/2-A	83	90
	LCSD 320-188627/3-A	87	95

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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2017.10.16A\_537AA.012.d  
 Lab ID: LCS 320-188627/2-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	222	208	94	70-130	M
Perfluorooctanoic acid (PFOA)	111	97.4	88	70-130	
Perfluorononanoic acid (PFNA)	111	95.8	86	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	161	96	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	51.1	92	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	509	102	70-130	

# Column to be used to flag recovery and RPD values



FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low Lab File ID: 2017.10.16A\_537AA.013.d

Lab ID: LCSD 320-188627/3-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	222	220	99	5	30	70-130	M
Perfluorooctanoic acid (PFOA)	111	107	96	9	30	70-130	
Perfluorononanoic acid (PFNA)	111	105	95	10	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	162	97	1	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	54.6	98	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	521	104	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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 2017.10.16A\_537AA.011.d Lab Sample ID: MB 320-188627/1-A  
 Matrix: Water Date Extracted: 10/10/2017 09:45  
 Instrument ID: A8\_N Date Analyzed: 10/16/2017 12:06  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-188627/2-A	2017.10.16A_537AA.012. d	10/16/2017 12:11
	LCSD 320-188627/3-A	2017.10.16A_537AA.013. d	10/16/2017 12:16
NAWC-092617-RW-256	320-31889-1	2017.10.16A_537AA.014. d	10/16/2017 12:21
NAWC-092617-FRB-256	320-31889-2	2017.10.16A_537AA.015. d	10/16/2017 12:25
NAWC-092617-RW-354	320-31889-3	2017.10.16A_537AA.016. d	10/16/2017 12:30
NAWC-092617-FRB-354	320-31889-4	2017.10.16A_537AA.017. d	10/16/2017 12:35
NAWC-092617-RW-4784	320-31889-5	2017.10.16A_537AA.018. d	10/16/2017 12:40
NAWC-092617-FRB-4784	320-31889-6	2017.10.16A_537AA.019. d	10/16/2017 12:44
NAWC-092617-RW-120	320-31889-7	2017.10.16A_537AA.020. d	10/16/2017 12:49
NAWC-092617-FRB-120	320-31889-8	2017.10.16A_537AA.022. d	10/16/2017 13:03
NAWC-092617-FRB-315	320-31889-10	2017.10.16A_537AA.024. d	10/16/2017 13:13
NAWC-092617-RW-091	320-31889-11	2017.10.16A_537AA.025. d	10/16/2017 13:18
NAWC-092617-FRB-091	320-31889-12	2017.10.16A_537AA.026. d	10/16/2017 13:22
NAWC-092617-RW-315	320-31889-9	2017.10.17_537A_009.d	10/18/2017 01:59

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-188627/1-A  
 Matrix: Water Lab File ID: 2017.10.16A\_537AA.011.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 10/10/2017 09:45  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/16/2017 12:06  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 189551 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	83		70-130
STL00996	13C2 PFDA	86		70-130

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	2116635	1.86	5570738	2.11		
UPPER LIMIT	3174953	2.36	8356107	2.61		
LOWER LIMIT	1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-185329/11	2252465	1.85	5723538	2.10		
ICV 320-185329/13	2616480	1.85	7294448	2.10		
CCV 320-189551/1 CCVIS	2355084	1.92	5989032	2.16		
MB 320-188627/1-A	2261062	1.91	5678373	2.16		
LCS 320-188627/2-A	2163124	1.92	5538277	2.16		
LCSD 320-188627/3-A	2088892	1.91	5644879	2.16		
320-31889-1	NAWC-092617-RW-256	2160583	5905121	2.16		
320-31889-2	NAWC-092617-FRB-256	2375364	6047439	2.16		
320-31889-3	NAWC-092617-RW-354	2272516	5692781	2.16		
320-31889-4	NAWC-092617-FRB-354	2147572	5500677	2.16		
320-31889-5	NAWC-092617-RW-4784	2610475	6311970	2.16		
320-31889-6	NAWC-092617-FRB-4784	2531858	6317956	2.16		
320-31889-7	NAWC-092617-RW-120	2427262	6274247	2.16		
CCV 320-189551/13 CCVIS	2277718	1.90	5989702	2.16		
CCV 320-189553/13 CCVIS	2277718	1.90	5989702	2.16		
320-31889-8	NAWC-092617-FRB-120	2599941	6502165	2.16		
320-31889-10	NAWC-092617-FRB-315	2412206	6221671	2.15		
320-31889-11	NAWC-092617-RW-091	2500993	6499886	2.16		
320-31889-12	NAWC-092617-FRB-091	2462434	6308492	2.16		
CCV 320-189553/23 CCVIS	2359791	1.90	6426616	2.15		
CCVL 320-189890/4	2071180	1.90	5593709	2.14		
CCV 320-189890/5 CCVIS	1699689	1.90	4691632	2.14		
320-31889-9	NAWC-092617-RW-315	2316666	5687876	2.13		
CCV 320-189890/15 CCVIS	1823062	1.89	5026319	2.13		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189551/1 Date Analyzed: 10/16/2017 11:57  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2355084	1.92	5989032	2.16		
UPPER LIMIT	3297118	2.42	8384645	2.66		
LOWER LIMIT	1648559	1.42	4192322	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-188627/1-A		2261062	1.91	5678373	2.16	
LCS 320-188627/2-A		2163124	1.92	5538277	2.16	
LCSD 320-188627/3-A		2088892	1.91	5644879	2.16	
320-31889-1	NAWC-092617-RW-256	2160583	1.91	5905121	2.16	
320-31889-2	NAWC-092617-FRB-256	2375364	1.91	6047439	2.16	
320-31889-3	NAWC-092617-RW-354	2272516	1.91	5692781	2.16	
320-31889-4	NAWC-092617-FRB-354	2147572	1.90	5500677	2.16	
320-31889-5	NAWC-092617-RW-4784	2610475	1.91	6311970	2.16	
320-31889-6	NAWC-092617-FRB-4784	2531858	1.91	6317956	2.16	
320-31889-7	NAWC-092617-RW-120	2427262	1.90	6274247	2.16	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189551/13 Date Analyzed: 10/16/2017 12:54  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2277718	1.90	5989702	2.16		
UPPER LIMIT	3188805	2.40	8385583	2.66		
LOWER LIMIT	1594403	1.40	4192791	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-188627/1-A		2261062	1.91	5678373	2.16	
LCS 320-188627/2-A		2163124	1.92	5538277	2.16	
LCSD 320-188627/3-A		2088892	1.91	5644879	2.16	
320-31889-1	NAWC-092617-RW-256	2160583	1.91	5905121	2.16	
320-31889-2	NAWC-092617-FRB-256	2375364	1.91	6047439	2.16	
320-31889-3	NAWC-092617-RW-354	2272516	1.91	5692781	2.16	
320-31889-4	NAWC-092617-FRB-354	2147572	1.90	5500677	2.16	
320-31889-5	NAWC-092617-RW-4784	2610475	1.91	6311970	2.16	
320-31889-6	NAWC-092617-FRB-4784	2531858	1.91	6317956	2.16	
320-31889-7	NAWC-092617-RW-120	2427262	1.90	6274247	2.16	

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189553/13 Date Analyzed: 10/16/2017 12:54  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2277718	1.90	5989702	2.16		
UPPER LIMIT	3188805	2.40	8385583	2.66		
LOWER LIMIT	1594403	1.40	4192791	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-8	NAWC-092617-FRB-120	2599941	1.90	6502165	2.16	
320-31889-10	NAWC-092617-FRB-315	2412206	1.90	6221671	2.15	
320-31889-11	NAWC-092617-RW-091	2500993	1.90	6499886	2.16	
320-31889-12	NAWC-092617-FRB-091	2462434	1.90	6308492	2.16	

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189553/23 Date Analyzed: 10/16/2017 13:41  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.16A\_537AA.0 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2359791	1.90	6426616	2.15		
UPPER LIMIT	3303707	2.40	8997262	2.65		
LOWER LIMIT	1651854	1.40	4498631	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-8	NAWC-092617-FRB-120	2599941	1.90	6502165	2.16	
320-31889-10	NAWC-092617-FRB-315	2412206	1.90	6221671	2.15	
320-31889-11	NAWC-092617-RW-091	2500993	1.90	6499886	2.16	
320-31889-12	NAWC-092617-FRB-091	2462434	1.90	6308492	2.16	

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189890/5 Date Analyzed: 10/18/2017 01:40  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.17\_537A\_005 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1699689	1.90	4691632	2.14		
UPPER LIMIT	2379565	2.40	6568285	2.64		
LOWER LIMIT	1189782	1.40	3284142	1.64		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-9	NAWC-092617-RW-315		2316666	1.89	5687876	2.13

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 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.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-189890/15 Date Analyzed: 10/18/2017 02:28  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.10.17\_537A\_015 Heated Purge: (Y/N) N  
 Calibration ID: 34457

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1823062	1.89	5026319	2.13		
UPPER LIMIT	2552287	2.39	7036847	2.63		
LOWER LIMIT	1276143	1.39	3518423	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-31889-9	NAWC-092617-RW-315		2316666	1.89	5687876	2.13

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

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 0.5 minutes of internal standard RT

# Column used to flag values outside QC limits

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

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1 Analy Batch No.: 185329

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1549 0.7675	1.2218	1.1299	0.9825	0.8671	QuaF		1.2127	-0.002495					1.0000			0.9600
Perfluoroheptanoic acid (PFHpA)	0.9156 0.9157	1.0104	0.9599	0.9323	0.9167	Ave		0.9418			4.0		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.6240 1.5024	1.7562	1.6778	1.6725	1.5962	Ave		1.6382			5.3		30.0				
Perfluorooctanoic acid (PFOA)	0.8827 0.9310	0.9355	0.9297	0.9101	0.9278	Ave		0.9195			2.2		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8786 0.9472	0.9205	0.9514	0.9450	0.9475	Ave		0.9317			3.0		30.0				
Perfluorononanoic acid (PFNA)	0.6171 0.6192	0.6458	0.6231	0.6183	0.6076	Ave		0.6218			2.1		30.0				
13C2 PFHxA	1.1170 1.2085	1.1856	1.1778	1.1659	1.1757	Ave		1.1718			2.6		30.0				
13C2 PFDA	0.5262 0.5719	0.5663	0.5603	0.5520	0.5699	Ave		0.5578			3.1		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.: 320-31889-1 Analy Batch No.: 185329

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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	QuaF	2072419 26277877	5031340	9714039	16708415	22246597	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	202553 3731330	492336	996370	1954380	2871658	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	971572 17148552	2411042	4809005	9481986	13653533	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	390753 7591950	912252	1931186	3817782	5816384	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	700862 14414630	1684976	3635963	7143258	10806665	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	273016 5046017	629304	1293375	2592159	3806555	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	2470192 2461679	2599092	2444565	2443470	2454801	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1163662 1164862	1241510	1162968	1156914	1189895	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

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

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1 Analy Batch No.: 185329

SDG No.: \_\_\_\_\_

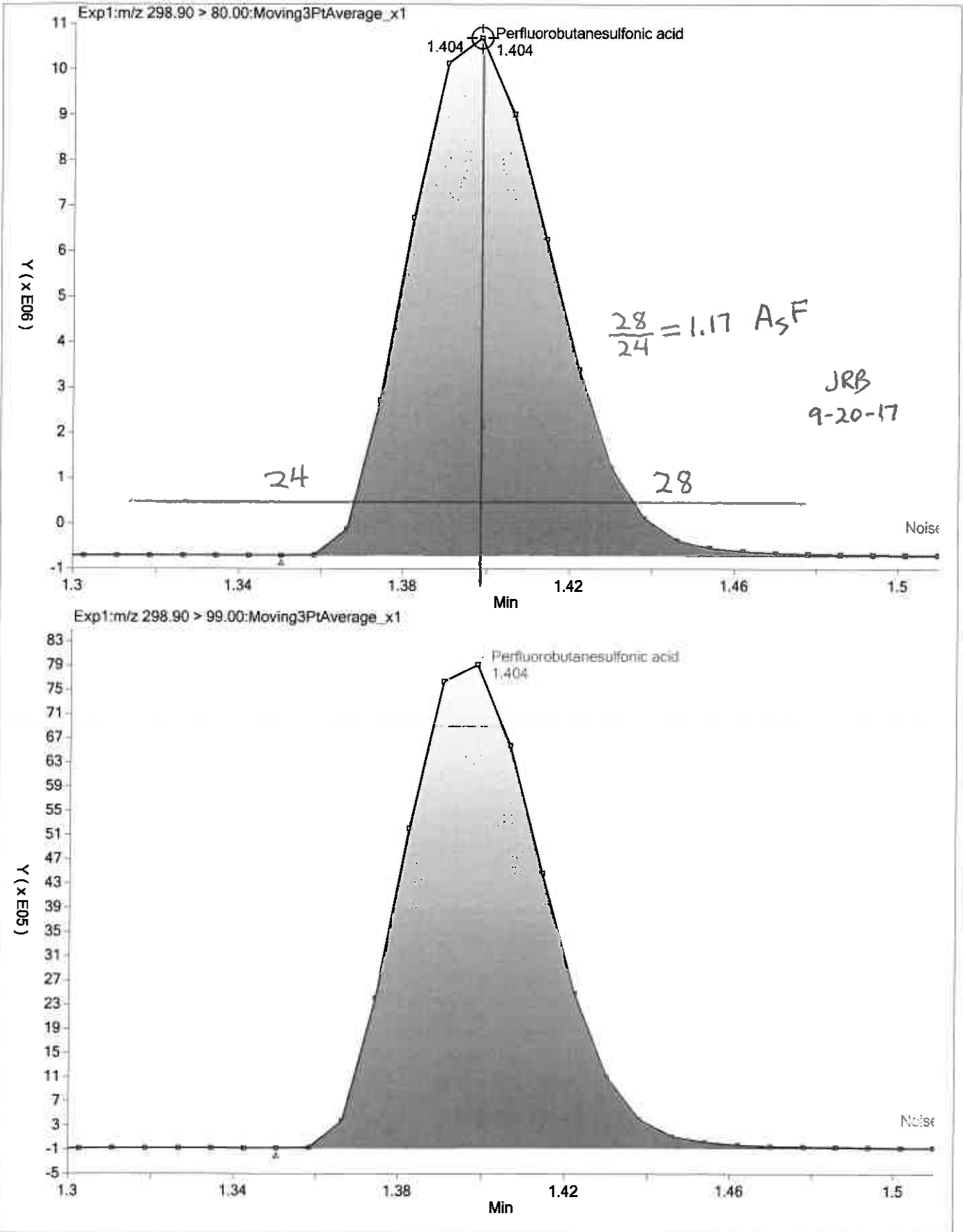
Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

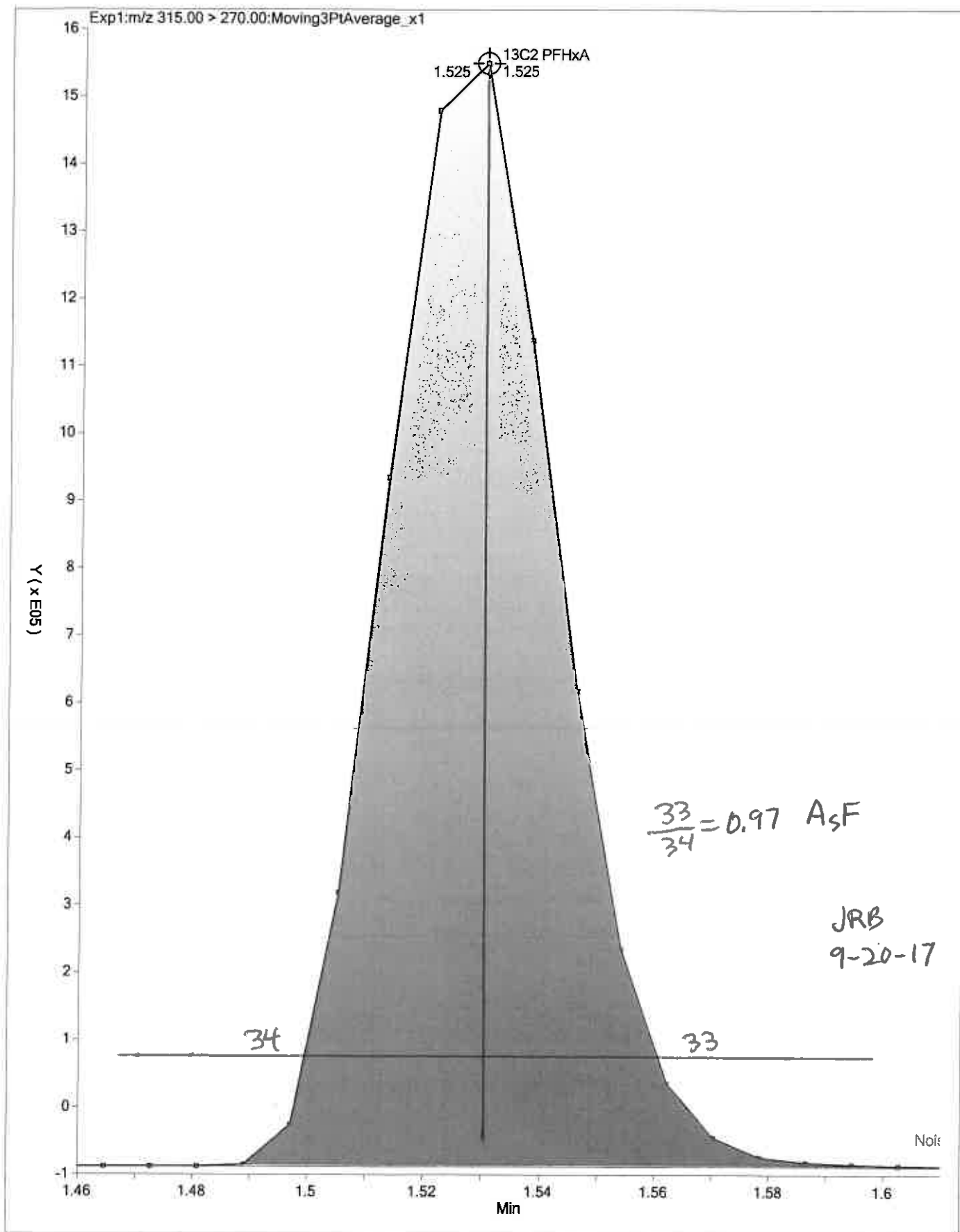
Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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)	-3.0	5.3	3.0	-0.7	-1.6	1.3	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-2.8	7.3	1.9	-1.0	-2.7	-2.8	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.9	7.2	2.4	2.1	-2.6	-8.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-4.0	1.7	1.1	-1.0	0.9	1.3	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.7	-1.2	2.1	1.4	1.7	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.8	3.8	0.2	-0.6	-2.3	-0.4	50	30	30	30	30	30
13C2 PFHxA	-4.7	1.2	0.5	-0.5	0.3	3.1	30	30	30	30	30	30
13C2 PFDA	-5.7	1.5	0.5	-1.0	2.2	2.5	30	30	30	30	30	30





FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-185329/11 Calibration Date: 09/20/2017 03:29  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.09.19\_537ICAL\_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.235		21.3	20.0	6.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9779		2.31	2.22	3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.762		7.17	6.67	7.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9059		4.38	4.45	-1.5	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9490		9.06	8.89	1.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6352		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.172	1.139		9.72	10.0	-2.8	30.0
13C2 PFDA	Ave	0.5578	0.5694		10.2	10.0	2.1	30.0



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-185329/13 Calibration Date: 09/20/2017 03:38  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.09.19\_537ICAL\_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9069		92.5	100	-7.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9703		10.3	10.0	3.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.860		22.8	20.1	13.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9535		21.2	20.5	3.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	1.134		24.0	19.7	21.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.7173		23.2	20.1	15.3	30.0
13C2 PFHxA	Ave	1.172	1.165		9.94	10.0	-0.6	30.0
13C2 PFDA	Ave	0.5578	0.5781		10.4	10.0	3.6	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-189541/3 Calibration Date: 10/16/2017 10:32  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537.003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.276		22.0	20.0	10.2	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8245		1.95	2.22	-12.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.725		7.02	6.67	5.3	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8658		4.19	4.45	-5.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5149		3.68	4.45	-17.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9422		8.99	8.89	1.1	50.0
13C2 PFHxA	Ave	1.172	0.9853		8.41	10.0	-15.9	30.0
13C2 PFDA	Ave	0.5578	0.4591		8.23	10.0	-17.7	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189551/1 Calibration Date: 10/16/2017 11:57  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.144		47.0	45.0	4.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8426		4.47	5.00	-10.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.697		15.5	15.0	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8956		9.75	10.0	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9304		20.0	20.0	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5372		8.64	10.0	-13.6	30.0
13C2 PFHxA	Ave	1.172	1.066		9.10	10.0	-9.0	30.0
13C2 PFDA	Ave	0.5578	0.4907		8.80	10.0	-12.0	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189551/13 Calibration Date: 10/16/2017 12:54  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8814		136	135	1.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8823		14.1	15.0	-6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.586		43.6	45.0	-3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9076		29.6	30.0	-1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9418		60.7	60.0	1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5768		27.8	30.0	-7.3	30.0
13C2 PFHxA	Ave	1.172	1.157		9.87	10.0	-1.3	30.0
13C2 PFDA	Ave	0.5578	0.5305		9.51	10.0	-4.9	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189553/13 Calibration Date: 10/16/2017 12:54  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8814		136	135	1.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8823		14.1	15.0	-6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.586		43.6	45.0	-3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9076		29.6	30.0	-1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9418		60.7	60.0	1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5768		27.8	30.0	-7.3	30.0
13C2 PFHxA	Ave	1.172	1.157		9.87	10.0	-1.3	30.0
13C2 PFDA	Ave	0.5578	0.5305		9.51	10.0	-4.9	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189553/23 Calibration Date: 10/16/2017 13:41  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.16A\_537AA.030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.114		45.6	45.0	1.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9345		4.96	5.00	-0.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.718		15.7	15.0	4.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8875		9.66	10.0	-3.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9131		19.6	20.0	-2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5843		9.40	10.0	-6.0	30.0
13C2 PFHxA	Ave	1.172	1.165		9.94	10.0	-0.6	30.0
13C2 PFDA	Ave	0.5578	0.5262		9.43	10.0	-5.7	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-189890/4 Calibration Date: 10/18/2017 01:36  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.17\_537A\_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.245		21.5	20.0	7.4	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.003		2.37	2.22	6.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.771		7.21	6.67	8.1	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9043		4.37	4.45	-1.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9353		8.93	8.89	0.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6058		4.33	4.45	-2.6	50.0
13C2 PFHxA	Ave	1.172	1.233		10.5	10.0	5.2	30.0
13C2 PFDA	Ave	0.5578	0.5395		9.67	10.0	-3.3	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189890/5 Calibration Date: 10/18/2017 01:40  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.17\_537A\_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9894		169	135	24.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9653		15.4	15.0	2.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.684		46.3	45.0	2.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9138		29.8	30.0	-0.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9439		60.8	60.0	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6150		29.7	30.0	-1.1	30.0
13C2 PFHxA	Ave	1.172	1.266		10.8	10.0	8.1	30.0
13C2 PFDA	Ave	0.5578	0.5520		9.90	10.0	-1.0	30.0



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-189890/15 Calibration Date: 10/18/2017 02:28  
 Instrument ID: A8\_N Calib Start Date: 09/20/2017 02:56  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19  
 Lab File ID: 2017.10.17\_537A\_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.186		48.9	45.0	8.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9759		5.18	5.00	3.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.716		15.7	15.0	4.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8977		9.77	10.0	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9327		20.0	20.0	0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6051		9.73	10.0	-2.7	30.0
13C2 PFHxA	Ave	1.172	1.230		10.5	10.0	4.9	30.0
13C2 PFDA	Ave	0.5578	0.5529		9.91	10.0	-0.9	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 09/20/2017 02:56

Analysis Batch Number: 185329 End Date: 09/20/2017 03:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185329/4		09/20/2017 02:56	1	2017.09.19_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-185329/5		09/20/2017 03:00	1	2017.09.19_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-185329/6		09/20/2017 03:05	1	2017.09.19_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-185329/7 ICISAV		09/20/2017 03:10	1	2017.09.19_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-185329/8		09/20/2017 03:15	1	2017.09.19_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-185329/9		09/20/2017 03:19	1	2017.09.19_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:24	1		GeminiC18 3x100 3(mm)
CCVL 320-185329/11		09/20/2017 03:29	1	2017.09.19_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:34	1		GeminiC18 3x100 3(mm)
ICV 320-185329/13		09/20/2017 03:38	1	2017.09.19_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/16/2017 10:32

Analysis Batch Number: 189541 End Date: 10/16/2017 10:32

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-189541/3		10/16/2017 10:32	1	2017.10.16A_537 .003.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/16/2017 11:57

Analysis Batch Number: 189551 End Date: 10/16/2017 12:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-189551/1 CCVIS		10/16/2017 11:57	1	2017.10.16A_537 AA.010.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 12:02	1		GeminiC18 3x100 3(mm)
MB 320-188627/1-A		10/16/2017 12:06	1	2017.10.16A_537 AA.011.d	GeminiC18 3x100 3(mm)
LCS 320-188627/2-A		10/16/2017 12:11	1	2017.10.16A_537 AA.012.d	GeminiC18 3x100 3(mm)
LCSD 320-188627/3-A		10/16/2017 12:16	1	2017.10.16A_537 AA.013.d	GeminiC18 3x100 3(mm)
320-31889-1		10/16/2017 12:21	1	2017.10.16A_537 AA.014.d	GeminiC18 3x100 3(mm)
320-31889-2		10/16/2017 12:25	1	2017.10.16A_537 AA.015.d	GeminiC18 3x100 3(mm)
320-31889-3		10/16/2017 12:30	1	2017.10.16A_537 AA.016.d	GeminiC18 3x100 3(mm)
320-31889-4		10/16/2017 12:35	1	2017.10.16A_537 AA.017.d	GeminiC18 3x100 3(mm)
320-31889-5		10/16/2017 12:40	1	2017.10.16A_537 AA.018.d	GeminiC18 3x100 3(mm)
320-31889-6		10/16/2017 12:44	1	2017.10.16A_537 AA.019.d	GeminiC18 3x100 3(mm)
320-31889-7		10/16/2017 12:49	1	2017.10.16A_537 AA.020.d	GeminiC18 3x100 3(mm)
CCV 320-189551/13 CCVIS		10/16/2017 12:54	1	2017.10.16A_537 AA.021.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/16/2017 12:54

Analysis Batch Number: 189553 End Date: 10/16/2017 13:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-189553/13 CCVIS		10/16/2017 12:54	1	2017.10.16A_537 AA.021.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 12:59	1		GeminiC18 3x100 3(mm)
320-31889-8		10/16/2017 13:03	1	2017.10.16A_537 AA.022.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:08	1		GeminiC18 3x100 3(mm)
320-31889-10		10/16/2017 13:13	1	2017.10.16A_537 AA.024.d	GeminiC18 3x100 3(mm)
320-31889-11		10/16/2017 13:18	1	2017.10.16A_537 AA.025.d	GeminiC18 3x100 3(mm)
320-31889-12		10/16/2017 13:22	1	2017.10.16A_537 AA.026.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:27	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:32	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/16/2017 13:37	1		GeminiC18 3x100 3(mm)
CCV 320-189553/23 CCVIS		10/16/2017 13:41	1	2017.10.16A_537 AA.030.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/18/2017 01:36

Analysis Batch Number: 189890 End Date: 10/18/2017 02:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-189890/4		10/18/2017 01:36	1	2017.10.17_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-189890/5 CCVIS		10/18/2017 01:40	1	2017.10.17_537A 005.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 01:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 01:50	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 01:55	1		GeminiC18 3x100 3(mm)
320-31889-9		10/18/2017 01:59	1	2017.10.17_537A 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/18/2017 02:04	1		GeminiC18 3x100 3(mm)
CCV 320-189890/15 CCVIS		10/18/2017 02:28	1	2017.10.17_537A 015.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31889-1

SDG No.: \_\_\_\_\_

Batch Number: 188627 Batch Start Date: 10/10/17 09:44 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 10/16/17 08:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00022
MB 320-188627/1		537, 537				250 mL	1.00 mL	7 SU	
LCS 320-188627/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-188627/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-31889-A-1	NAWC-092617-RW-256	537, 537	T	282.58 g	28.33 g	254.3 mL	1.00 mL	7 SU	
320-31889-A-2	NAWC-092617-FRB-256	537, 537	T	275.53 g	28.01 g	247.5 mL	1.00 mL	7 SU	
320-31889-A-3	NAWC-092617-RW-354	537, 537	T	285.27 g	27.87 g	257.4 mL	1.00 mL	7 SU	
320-31889-A-4	NAWC-092617-FRB-354	537, 537	T	287.13 g	27.59 g	259.5 mL	1.00 mL	7 SU	
320-31889-A-5	NAWC-092617-RW-4784	537, 537	T	279.98 g	28.79 g	251.2 mL	1.00 mL	7 SU	
320-31889-A-6	NAWC-092617-FRB-4784	537, 537	T	276.96 g	27.07 g	249.9 mL	1.00 mL	7 SU	
320-31889-A-7	NAWC-092617-RW-120	537, 537	T	272.57 g	27.69 g	244.9 mL	1.00 mL	7 SU	
320-31889-A-8	NAWC-092617-FRB-120	537, 537	T	278.12 g	27.75 g	250.4 mL	1.00 mL	7 SU	
320-31889-A-9	NAWC-092617-RW-315	537, 537	T	281.03 g	27.71 g	253.3 mL	1.00 mL	7 SU	
320-31889-A-10	NAWC-092617-FRB-315	537, 537	T	276.33 g	27.24 g	249.1 mL	1.00 mL	7 SU	
320-31889-A-11	NAWC-092617-RW-091	537, 537	T	276.94 g	28.22 g	248.7 mL	1.00 mL	7 SU	
320-31889-A-12	NAWC-092617-FRB-091	537, 537	T	287.42 g	27.80 g	259.6 mL	1.00 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00049	LC537-SU 00051	AnalysisComment			
MB 320-188627/1		537, 537		100 uL	100 uL	ch nd			
LCS 320-188627/2		537, 537		100 uL	100 uL	ch nd			
LCSD 320-188627/3		537, 537		100 uL	100 uL	ch nd			
320-31889-A-1	NAWC-092617-RW-256	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-2	NAWC-092617-FRB-256	537, 537	T	100 uL	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.: 320-31889-1

SDG No.: \_\_\_\_\_

Batch Number: 188627 Batch Start Date: 10/10/17 09:44 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 10/16/17 08:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00049	LC537-SU 00051	AnalysisComment			
320-31889-A-3	NAWC-092617-RW-354	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-4	NAWC-092617-FRB-354	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-5	NAWC-092617-RW-4784	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-6	NAWC-092617-FRB-4784	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-7	NAWC-092617-RW-120	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-8	NAWC-092617-FRB-120	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-9	NAWC-092617-RW-315	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-10	NAWC-092617-FRB-315	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-11	NAWC-092617-RW-091	537, 537	T	100 uL	100 uL	ch nd			
320-31889-A-12	NAWC-092617-FRB-091	537, 537	T	100 uL	100 uL	ch nd			

Batch Notes	
Batch Comment	IS:1041817 BD:nights/ccb FV:ccb AL:ccb
Manifold ID	3,9
Methanol ID	1052424
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	JNS
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge ID	6357081-08
Trizma ID	SLBR4303V
Reagent Water ID	10/3/17

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.: 320-31889-1

SDG No.: \_\_\_\_\_

Batch Number: 188627 Batch Start Date: 10/10/17 09:44 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 10/16/17 08:11

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.

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Branscum, Cassie

AS 10/16/17

AS 10/17/17

Batch Open: 10/10/2017 9:44:00AM

Batch End: 10/16/2017 8:11:00AM

## Extraction of Perfluorinated Alkyl Acids

45

Batch Number: 320-188627

Method Code: 320-537\_Prep-320

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-188627/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
			1.00 mL								
2 LCS-320-188627/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
			1.00 mL								
3 LCSD-320-188627/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
			1.00 mL								
4 320-31889-A-1 (537_DOD5)	N/A (320-31889-1)	282.58 g	254.3 mL	7			10/1/17	16_Days	4	ch nd	
		28.33 g	1.00 mL								
5 320-31889-A-2 (537_DOD5)	N/A (320-31889-1)	275.53 g	247.5 mL	7			10/1/17	16_Days	4	ch nd	
		28.01 g	1.00 mL								
6 320-31889-A-3 (537_DOD5)	N/A (320-31889-1)	285.27 g	257.4 mL	7			10/1/17	16_Days	4	ch nd	
		27.87 g	1.00 mL								
7 320-31889-A-4 (537_DOD5)	N/A (320-31889-1)	287.13 g	259.5 mL	7			10/1/17	16_Days	4	ch nd	
		27.59 g	1.00 mL								
8 320-31889-A-5 (537_DOD5)	N/A (320-31889-1)	279.98 g	251.2 mL	7			10/1/17	16_Days	4	ch nd	
		28.79 g	1.00 mL								
9 320-31889-A-6 (537_DOD5)	N/A (320-31889-1)	276.96 g	249.9 mL	7			10/1/17	16_Days	4	ch nd	
		27.07 g	1.00 mL								
10 320-31889-A-7 (537_DOD5)	N/A (320-31889-1)	272.57 g	244.9 mL	7			10/1/17	16_Days	4	ch nd	
		27.69 g	1.00 mL								

RI

RI

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)









Batch Number: 320-188627

Analyst: Branscum, Cassie

Batch Open: 10/10/2017 9:44:00AM

Method Code: 320-537\_Prep-320

Batch End: 10/16/2017 8:11:00AM

11	320-31889-A-8 (537_DOD5)	N/A (320-31889-1)	278.12 g	250.4 mL	7		10/1/17	16_Days	4	ch nd	
			27.75 g	1.00 mL							
12	320-31889-A-9 (537_DOD5)	N/A (320-31889-1)	281.03 g	253.3 mL	7		10/1/17	16_Days	4	ch nd	RI 
			27.71 g	1.00 mL							
13	320-31889-A-10 (537_DOD5)	N/A (320-31889-1)	276.33 g	249.1 mL	7		10/1/17	16_Days	4	ch nd	
			27.24 g	1.00 mL							
14	320-31889-A-11 (537_DOD5)	N/A (320-31889-1)	276.94 g	248.7 mL	7		10/1/17	16_Days	4	ch nd	
			28.22 g	1.00 mL							
15	320-31889-A-12 (537_DOD5)	N/A (320-31889-1)	287.42 g	259.6 mL	7		10/1/17	16_Days	4	ch nd	
			27.80 g	1.00 mL							
16	320-31962-A-1 (537_DOD5)	N/A (320-31962-1)	285.50 g	258.5 mL	7		10/4/17	12_Days	4	ch nd	
			27.05 g	1.00 mL							
17	320-31962-B-2 (537_DOD5)	N/A (320-31962-1)	277.99 g	250.7 mL	7		10/4/17	12_Days	4	ch nd	
			27.34 g	1.00 mL							
18	320-31962-A-3 (537_DOD5)	N/A (320-31962-1)	279.70 g	252.4 mL	7		10/4/17	12_Days	4	ch nd	RI 
			27.27 g	1.00 mL							

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-188627

Analyst: Branscum, Cassie

Batch Open: 10/10/2017 9:44:00AM

Method Code: 320-537\_Prep-320

Batch End: 10/16/2017 8:11:00AM

## Batch Notes

Manifold ID 3,9

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-08

Methanol ID 1052424

Reagent Water ID 10/3/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop CCB

Analyst ID - TA Reagent Drop JNS

Witness

Analyst ID - SU Reagent Drop CCB

Analyst ID - SU Reagent Drop JNS

Witness

Analyst ID - IS Reagent Drop CCB

Analyst ID - IS Reagent Drop JNS

Witness

Batch Comment IS:1041817 BD:nights/ccb FV:ccb AL:ccb

## Comments

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-188627

Analyst: Branscum, Cassie

Batch Open: 10/10/2017 9:44:00AM

Method Code: 320-537\_Prep-320

Batch End:

## Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness	
MB 320-188627/1	LC537-SU_00051	100 uL	1.00 mL	C.B. 10-10-17	JMS 10/10/17	
LCS 320-188627/2	LC537-HSP_00022	100 uL	1.00 mL			
LCS 320-188627/2	LC537-SU_00051	100 uL	1.00 mL			
LCSD 320-188627/3	LC537-HSP_00022	100 uL	1.00 mL			
LCSD 320-188627/3	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-1	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-2	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-3	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-4	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-5	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-6	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-7	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-8	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-9	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-10	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-11	LC537-SU_00051	100 uL	1.00 mL			
320-31889-A-12	LC537-SU_00051	100 uL	1.00 mL			
320-31962-A-1	LC537-SU_00051	100 uL	1.00 mL			

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PFAS Calibration Calculations:

Initial Calibration 9/20/2017  
 Instrument A8\_N

Perfluorooctanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
4	700862	5717338	28.7	0.87955	0.8786
8.89	1684976	5904759	28.7	0.92124	0.9205
20	3635963	5478893	28.7	0.95231	0.9514
40	7143258	5418565	28.7	0.94588	0.945
60	10806665	5450221	28.7	0.94844	0.9475
80	14414630	5454650	28.7	0.94804	0.9472
Average				0.93258	0.9317
Standard Deviation				0.0283	
RSD				0.0303	
%RSD				3.03195	3

Continuing Calibration 10/16/2017 @ 11:57  
 A8\_N

Perfluorooctanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
20	3886786	5989032	28.7	0.9313	-0.043785	0.9304	-0.1

Willow Grove  
SDG 320-31889-1

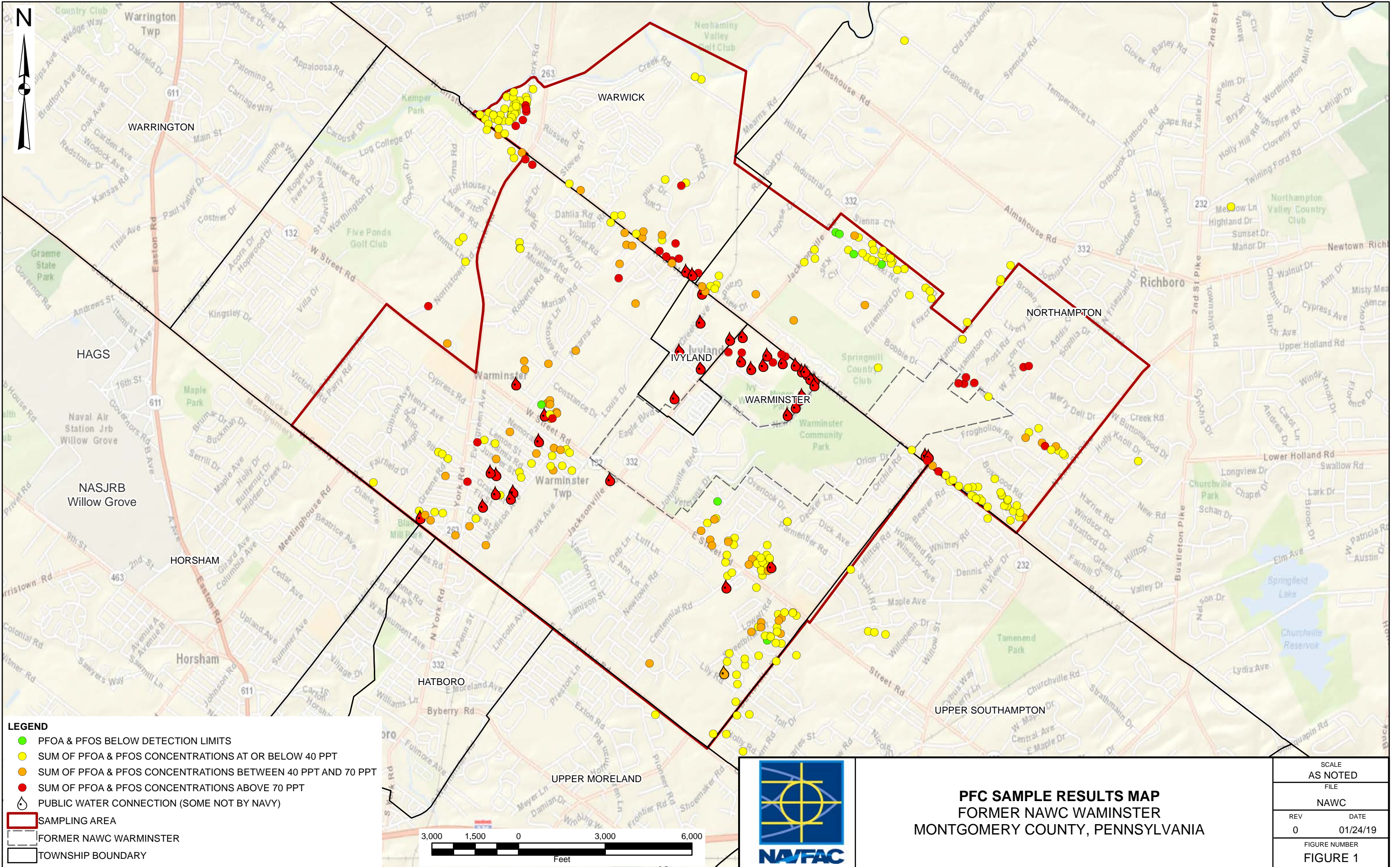
Sample Identification NAWC-092617-RW-256

Compound Perfluorohexanesulfonic acid

Compound Area	579004
Internal Standard Amount (ng)	28.7
Dilution Factor	1
Internal Standard Area	5905121
Average RRF	1.6382
Sample Volume(ml)	254.3
Volume Extract (ml)	1
Injection Volume (µl)	1
Concentration	6.7549 ug/L



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**LEGEND**

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- 👉 PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARMINSTER
- TOWNSHIP BOUNDARY



**PFC SAMPLE RESULTS MAP**  
**FORMER NAWC WARMINSTER**  
**MONTGOMERY COUNTY, PENNSYLVANIA**

SCALE AS NOTED	
FILE	
NAWC	
REV 0	DATE 01/24/19
FIGURE NUMBER	
FIGURE 1	