



**Groundwater Sample Results,
Combined Level 2 and Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Report, SDG 320-30191-1**

*Naval Air Station Willow Grove
Willow Grove, Pennsylvania*

August 2019

N00158_000749
WILLOW_GROVE_NAS
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-30191-1, NAWC WARMINSTER NAS
WILLOW GROVE PA**

08/18/2017

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-30191-1

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
8/18/2017 12:38 PM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
08/18/2017

Table of Contents

Cover Title Page	1
Data Summaries	4
Definitions	4
Case Narrative	5
Detection Summary	6
Client Sample Results	9
Default Detection Limits	17
Surrogate Summary	18
QC Sample Results	19
QC Association	22
Chronicle	24
Certification Summary	28
Method Summary	29
Sample Summary	30
Manual Integration Summary	31
Reagent Traceability	38
COAs	49
Organic Sample Data	103
LCMS	103
Method 537 DOD	103
Method 537 DOD QC Summary	104
Method 537 DOD Sample Data	125
Standards Data	275
Method 537 DOD ICAL Data	275
Method 537 DOD CCAL Data	304
Raw QC Data	371

Table of Contents

Method 537 DOD Blank Data	371
Method 537 DOD LCS/LCSD Data	381
Method 537 DOD MS/MSD Data	398
Method 537 DOD Run Logs	412
Method 537 DOD Prep Data	419
Shipping and Receiving Documents	443
Client Chain of Custody	444
Sample Receipt Checklist	446

Definitions/Glossary

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

TestAmerica Job ID: 320-30191-1

Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
Q	One or more quality control criteria failed.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
E	Result exceeded calibration range.

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
320-30191-1

Receipt

The samples were received on 7/27/2017 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8° 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: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-177640 and analytical batch 320-179727 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537: Surrogate recovery for the following samples was outside control limits: NAWC-072617-RW-349 (320-30191-6), NAWC-072617-RW-349 (320-30191-6[MS]), NAWC-072617-RW-349 (320-30191-6[MSD]) and (LCS 320-177640/2-A). Re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 537: Surrogate recovery for the following sample was outside control limits: NAWC-072617-RW-345 (320-30191-10). Re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 537: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) has E flags because it is spiked at the upper level of the calibration curve as specified in the method. (LCS 320-177651/2-A) and (LCSD 320-177651/3-A)

Method(s) 537: Surrogate recovery for the following samples was outside control limits: WGNA-072617-RW-4844 (320-30191-18) and WGNA-072617-FRB-4844 (320-30191-19). 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 320-177651.

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: 320-30191-1

Client Sample ID: NAWC-072617-RW-332A

Lab Sample ID: 320-30191-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	9.7	J	34	5.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	12	J M	17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	4.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9	J	8.5	1.6	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-RW-332B

Lab Sample ID: 320-30191-2

No Detections.

Client Sample ID: NAWC-072617-FRB-332A

Lab Sample ID: 320-30191-3

No Detections.

Client Sample ID: NAWC-072617-RW-341

Lab Sample ID: 320-30191-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	12	J	36	6.1	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J M	18	2.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9	J	9.0	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-FRB-341

Lab Sample ID: 320-30191-5

No Detections.

Client Sample ID: NAWC-072617-RW-349

Lab Sample ID: 320-30191-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	29	M	17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.7	J	8.7	1.6	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-FRB-349

Lab Sample ID: 320-30191-7

No Detections.

Client Sample ID: NAWC-072617-RW-343

Lab Sample ID: 320-30191-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	16	J	35	6.0	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	12	J M	18	2.5	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.0	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.5	J	8.8	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-FRB-343

Lab Sample ID: 320-30191-9

No Detections.

Client Sample ID: NAWC-072617-RW-345

Lab Sample ID: 320-30191-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	42		35	5.9	ng/L	1		537	Total/NA

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: 320-30191-1

Client Sample ID: NAWC-072617-RW-345 (Continued)

Lab Sample ID: 320-30191-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	42	M	17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.1	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	11		8.7	1.6	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-FRB-345

Lab Sample ID: 320-30191-11

No Detections.

Client Sample ID: NAWC-072617-DUP03

Lab Sample ID: 320-30191-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	12	J	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23	M	17	2.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.6	J	8.7	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-RW-342

Lab Sample ID: 320-30191-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	12	J	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	24	M	17	2.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-RW-332B

Lab Sample ID: 320-30191-14

No Detections.

Client Sample ID: NAWC-072617-RW-117

Lab Sample ID: 320-30191-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	31	J	34	5.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23	M	17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	16	J	26	4.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.2	J	8.5	1.6	ng/L	1		537	Total/NA

Client Sample ID: NAWC-072617-FRB-117

Lab Sample ID: 320-30191-16

No Detections.

Client Sample ID: NAWC-072617-DUP04

Lab Sample ID: 320-30191-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J	36	6.1	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J M	18	2.5	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.4	J	27	4.9	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.9	J	9.0	1.7	ng/L	1		537	Total/NA

Client Sample ID: WGNA-072617-RW-4844

Lab Sample ID: 320-30191-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	7.9	J M	33	5.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	14	J M	17	2.3	ng/L	1		537	Total/NA

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: 320-30191-1

Client Sample ID: WGNA-072617-RW-4844 (Continued)

Lab Sample ID: 320-30191-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	7.0	J	8.4	1.6	ng/L	1		537	Total/NA

Client Sample ID: WGNA-072617-FRB-4844

Lab Sample ID: 320-30191-19

No Detections.

Client Sample ID: WGNA-072617-RW-3103

Lab Sample ID: 320-30191-20

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	7.4	J	36	6.1	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	8.7	J M	18	2.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.2	J M	9.0	1.7	ng/L	1		537	Total/NA

Client Sample ID: WGNA-072617-FRB-3103

Lab Sample ID: 320-30191-21

No Detections.

Client Sample ID: WGNA-072617-DUP03

Lab Sample ID: 320-30191-22

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	7.1	J	35	6.0	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	7.7	J M	18	2.5	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.8	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3	J	8.8	1.7	ng/L	1		537	Total/NA

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: 320-30191-1

Client Sample ID: NAWC-072617-RW-332A

Lab Sample ID: 320-30191-1

Date Collected: 07/26/17 08:05

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	9.7	J	34	5.8	ng/L		08/03/17 17:23	08/16/17 12:59	1
Perfluorooctanoic acid (PFOA)	12	J M	17	2.4	ng/L		08/03/17 17:23	08/16/17 12:59	1
Perfluorononanoic acid (PFNA)	17	U M	20	6.8	ng/L		08/03/17 17:23	08/16/17 12:59	1
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	4.7	ng/L		08/03/17 17:23	08/16/17 12:59	1
Perfluoroheptanoic acid (PFHpA)	2.9	J	8.5	1.6	ng/L		08/03/17 17:23	08/16/17 12:59	1
Perfluorobutanesulfonic acid (PFBS)	31	U M	77	14	ng/L		08/03/17 17:23	08/16/17 12:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130				08/03/17 17:23	08/16/17 12:59	1
13C2 PFDA	123		70 - 130				08/03/17 17:23	08/16/17 12:59	1

Client Sample ID: NAWC-072617-RW-332B

Lab Sample ID: 320-30191-2

Date Collected: 07/26/17 08:10

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/03/17 17:23	08/16/17 13:04	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/03/17 17:23	08/16/17 13:04	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/03/17 17:23	08/16/17 13:04	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/03/17 17:23	08/16/17 13:04	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/03/17 17:23	08/16/17 13:04	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/03/17 17:23	08/16/17 13:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				08/03/17 17:23	08/16/17 13:04	1
13C2 PFDA	125		70 - 130				08/03/17 17:23	08/16/17 13:04	1

Client Sample ID: NAWC-072617-FRB-332A

Lab Sample ID: 320-30191-3

Date Collected: 07/26/17 08:00

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/03/17 17:23	08/16/17 20:12	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/03/17 17:23	08/16/17 20:12	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/03/17 17:23	08/16/17 20:12	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/03/17 17:23	08/16/17 20:12	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/03/17 17:23	08/16/17 20:12	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	15	ng/L		08/03/17 17:23	08/16/17 20:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130				08/03/17 17:23	08/16/17 20:12	1
13C2 PFDA	125		70 - 130				08/03/17 17:23	08/16/17 20:12	1

Client Sample Results

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-RW-341

Lab Sample ID: 320-30191-4

Date Collected: 07/26/17 08:35

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	12	J	36	6.1	ng/L		08/03/17 17:23	08/16/17 13:14	1
Perfluorooctanoic acid (PFOA)	11	J M	18	2.5	ng/L		08/03/17 17:23	08/16/17 13:14	1
Perfluorononanoic acid (PFNA)	18	U M	22	7.2	ng/L		08/03/17 17:23	08/16/17 13:14	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/03/17 17:23	08/16/17 13:14	1
Perfluoroheptanoic acid (PFHpA)	2.9	J	9.0	1.7	ng/L		08/03/17 17:23	08/16/17 13:14	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/03/17 17:23	08/16/17 13:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		70 - 130	08/03/17 17:23	08/16/17 13:14	1
13C2 PFDA	126		70 - 130	08/03/17 17:23	08/16/17 13:14	1

Client Sample ID: NAWC-072617-FRB-341

Lab Sample ID: 320-30191-5

Date Collected: 07/26/17 08:30

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/03/17 17:23	08/16/17 13:18	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/03/17 17:23	08/16/17 13:18	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/03/17 17:23	08/16/17 13:18	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/03/17 17:23	08/16/17 13:18	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/03/17 17:23	08/16/17 13:18	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/03/17 17:23	08/16/17 13:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130	08/03/17 17:23	08/16/17 13:18	1
13C2 PFDA	127		70 - 130	08/03/17 17:23	08/16/17 13:18	1

Client Sample ID: NAWC-072617-RW-349

Lab Sample ID: 320-30191-6

Date Collected: 07/26/17 10:35

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	17	J	35	5.9	ng/L		08/03/17 17:23	08/16/17 13:23	1
Perfluorooctanoic acid (PFOA)	29	M	17	2.4	ng/L		08/03/17 17:23	08/16/17 13:23	1
Perfluorononanoic acid (PFNA)	17	U J M	21	6.9	ng/L		08/03/17 17:23	08/16/17 13:23	1
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	4.8	ng/L		08/03/17 17:23	08/16/17 13:23	1
Perfluoroheptanoic acid (PFHpA)	6.7	J	8.7	1.6	ng/L		08/03/17 17:23	08/16/17 13:23	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/03/17 17:23	08/16/17 13:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	56	Q	70 - 130	08/03/17 17:23	08/16/17 13:23	1
13C2 PFDA	131	Q	70 - 130	08/03/17 17:23	08/16/17 13:23	1

Client Sample Results

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-FRB-349

Lab Sample ID: 320-30191-7

Date Collected: 07/26/17 10:30

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	5.9	ng/L		08/03/17 17:23	08/16/17 13:47	1
Perfluorooctanoic acid (PFOA)	7.0	U	17	2.4	ng/L		08/03/17 17:23	08/16/17 13:47	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/03/17 17:23	08/16/17 13:47	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/03/17 17:23	08/16/17 13:47	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	1.7	ng/L		08/03/17 17:23	08/16/17 13:47	1
Perfluorobutanesulfonic acid (PFBS)	31	U	79	14	ng/L		08/03/17 17:23	08/16/17 13:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		70 - 130	08/03/17 17:23	08/16/17 13:47	1
13C2 PFDA	130		70 - 130	08/03/17 17:23	08/16/17 13:47	1

Client Sample ID: NAWC-072617-RW-343

Lab Sample ID: 320-30191-8

Date Collected: 07/26/17 13:55

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	J	35	6.0	ng/L		08/03/17 17:23	08/16/17 13:52	1
Perfluorooctanoic acid (PFOA)	12	J M	18	2.5	ng/L		08/03/17 17:23	08/16/17 13:52	1
Perfluorononanoic acid (PFNA)	18	U M	21	7.0	ng/L		08/03/17 17:23	08/16/17 13:52	1
Perfluorohexanesulfonic acid (PFHxS)	5.0	J	26	4.8	ng/L		08/03/17 17:23	08/16/17 13:52	1
Perfluoroheptanoic acid (PFHpA)	3.5	J	8.8	1.7	ng/L		08/03/17 17:23	08/16/17 13:52	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/03/17 17:23	08/16/17 13:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		70 - 130	08/03/17 17:23	08/16/17 13:52	1
13C2 PFDA	125		70 - 130	08/03/17 17:23	08/16/17 13:52	1

Client Sample ID: NAWC-072617-FRB-343

Lab Sample ID: 320-30191-9

Date Collected: 07/26/17 13:50

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	5.9	ng/L		08/03/17 17:23	08/16/17 13:56	1
Perfluorooctanoic acid (PFOA)	6.9	U	17	2.4	ng/L		08/03/17 17:23	08/16/17 13:56	1
Perfluorononanoic acid (PFNA)	17	U	21	6.9	ng/L		08/03/17 17:23	08/16/17 13:56	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/03/17 17:23	08/16/17 13:56	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	1.6	ng/L		08/03/17 17:23	08/16/17 13:56	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/03/17 17:23	08/16/17 13:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130	08/03/17 17:23	08/16/17 13:56	1
13C2 PFDA	126		70 - 130	08/03/17 17:23	08/16/17 13:56	1

Client Sample Results

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-RW-345

Lab Sample ID: 320-30191-10

Date Collected: 07/26/17 15:15

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	42		35	5.9	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorooctanoic acid (PFOA)	42	M	17	2.4	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorononanoic acid (PFNA)	17	U M	21	6.9	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorohexanesulfonic acid (PFHxS)	8.1	J	26	4.8	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluoroheptanoic acid (PFHpA)	11		8.7	1.6	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/03/17 17:23	08/16/17 14:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130				08/03/17 17:23	08/16/17 14:01	1
13C2 PFDA	135	Q	70 - 130				08/03/17 17:23	08/16/17 14:01	1

Client Sample ID: NAWC-072617-FRB-345

Lab Sample ID: 320-30191-11

Date Collected: 07/26/17 15:10

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/03/17 17:23	08/16/17 14:06	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/03/17 17:23	08/16/17 14:06	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/03/17 17:23	08/16/17 14:06	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/03/17 17:23	08/16/17 14:06	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/03/17 17:23	08/16/17 14:06	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/03/17 17:23	08/16/17 14:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130				08/03/17 17:23	08/16/17 14:06	1
13C2 PFDA	120		70 - 130				08/03/17 17:23	08/16/17 14:06	1

Client Sample ID: NAWC-072617-DUP03

Lab Sample ID: 320-30191-12

Date Collected: 07/26/17 07:00

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	12	J	35	5.9	ng/L		08/03/17 17:40	08/16/17 14:34	1
Perfluorooctanoic acid (PFOA)	23	M	17	2.4	ng/L		08/03/17 17:40	08/16/17 14:34	1
Perfluorononanoic acid (PFNA)	17	U M	21	7.0	ng/L		08/03/17 17:40	08/16/17 14:34	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/03/17 17:40	08/16/17 14:34	1
Perfluoroheptanoic acid (PFHpA)	7.6	J	8.7	1.7	ng/L		08/03/17 17:40	08/16/17 14:34	1
Perfluorobutanesulfonic acid (PFBS)	31	U	79	14	ng/L		08/03/17 17:40	08/16/17 14:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		70 - 130				08/03/17 17:40	08/16/17 14:34	1
13C2 PFDA	123		70 - 130				08/03/17 17:40	08/16/17 14:34	1

Client Sample Results

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-RW-342

Lab Sample ID: 320-30191-13

Date Collected: 07/26/17 12:10

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	12	J	35	5.9	ng/L		08/03/17 17:40	08/16/17 14:39	1
Perfluorooctanoic acid (PFOA)	24	M	17	2.4	ng/L		08/03/17 17:40	08/16/17 14:39	1
Perfluorononanoic acid (PFNA)	17	U M	21	7.0	ng/L		08/03/17 17:40	08/16/17 14:39	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/03/17 17:40	08/16/17 14:39	1
Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	1.7	ng/L		08/03/17 17:40	08/16/17 14:39	1
Perfluorobutanesulfonic acid (PFBS)	31	U	79	14	ng/L		08/03/17 17:40	08/16/17 14:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		70 - 130	08/03/17 17:40	08/16/17 14:39	1
13C2 PFDA	125		70 - 130	08/03/17 17:40	08/16/17 14:39	1

Client Sample ID: NAWC-072617-RW-332B

Lab Sample ID: 320-30191-14

Date Collected: 07/26/17 12:05

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/03/17 17:40	08/16/17 14:44	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/03/17 17:40	08/16/17 14:44	1
Perfluorononanoic acid (PFNA)	18	U	21	7.2	ng/L		08/03/17 17:40	08/16/17 14:44	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/03/17 17:40	08/16/17 14:44	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	1.7	ng/L		08/03/17 17:40	08/16/17 14:44	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		08/03/17 17:40	08/16/17 14:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130	08/03/17 17:40	08/16/17 14:44	1
13C2 PFDA	125		70 - 130	08/03/17 17:40	08/16/17 14:44	1

Client Sample ID: NAWC-072617-RW-117

Lab Sample ID: 320-30191-15

Date Collected: 07/26/17 12:35

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	31	J	34	5.8	ng/L		08/03/17 17:40	08/16/17 14:48	1
Perfluorooctanoic acid (PFOA)	23	M	17	2.4	ng/L		08/03/17 17:40	08/16/17 14:48	1
Perfluorononanoic acid (PFNA)	17	U M	21	6.8	ng/L		08/03/17 17:40	08/16/17 14:48	1
Perfluorohexanesulfonic acid (PFHxS)	16	J	26	4.7	ng/L		08/03/17 17:40	08/16/17 14:48	1
Perfluoroheptanoic acid (PFHpA)	6.2	J	8.5	1.6	ng/L		08/03/17 17:40	08/16/17 14:48	1
Perfluorobutanesulfonic acid (PFBS)	31	U	77	14	ng/L		08/03/17 17:40	08/16/17 14:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130	08/03/17 17:40	08/16/17 14:48	1
13C2 PFDA	120		70 - 130	08/03/17 17:40	08/16/17 14:48	1

Client Sample Results

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-FRB-117

Lab Sample ID: 320-30191-16

Date Collected: 07/26/17 12:30

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/03/17 17:40	08/16/17 14:53	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/03/17 17:40	08/16/17 14:53	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/03/17 17:40	08/16/17 14:53	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/03/17 17:40	08/16/17 14:53	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/03/17 17:40	08/16/17 14:53	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/03/17 17:40	08/16/17 14:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130	08/03/17 17:40	08/16/17 14:53	1
13C2 PFDA	126		70 - 130	08/03/17 17:40	08/16/17 14:53	1

Client Sample ID: NAWC-072617-DUP04

Lab Sample ID: 320-30191-17

Date Collected: 07/26/17 07:00

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	17	J	36	6.1	ng/L		08/03/17 17:40	08/16/17 14:58	1
Perfluorooctanoic acid (PFOA)	13	J M	18	2.5	ng/L		08/03/17 17:40	08/16/17 14:58	1
Perfluorononanoic acid (PFNA)	18	U M	22	7.2	ng/L		08/03/17 17:40	08/16/17 14:58	1
Perfluorohexanesulfonic acid (PFHxS)	5.4	J	27	4.9	ng/L		08/03/17 17:40	08/16/17 14:58	1
Perfluoroheptanoic acid (PFHpA)	3.9	J	9.0	1.7	ng/L		08/03/17 17:40	08/16/17 14:58	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/03/17 17:40	08/16/17 14:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130	08/03/17 17:40	08/16/17 14:58	1
13C2 PFDA	124		70 - 130	08/03/17 17:40	08/16/17 14:58	1

Client Sample ID: WGNA-072617-RW-4844

Lab Sample ID: 320-30191-18

Date Collected: 07/26/17 09:35

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	7.9	J M	33	5.7	ng/L		08/03/17 17:40	08/16/17 15:03	1
Perfluorooctanoic acid (PFOA)	14	J M	17	2.3	ng/L		08/03/17 17:40	08/16/17 15:03	1
Perfluorononanoic acid (PFNA)	17	U M	20	6.7	ng/L		08/03/17 17:40	08/16/17 15:03	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	25	4.6	ng/L		08/03/17 17:40	08/16/17 15:03	1
Perfluoroheptanoic acid (PFHpA)	7.0	J	8.4	1.6	ng/L		08/03/17 17:40	08/16/17 15:03	1
Perfluorobutanesulfonic acid (PFBS)	30	U	75	13	ng/L		08/03/17 17:40	08/16/17 15:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130	08/03/17 17:40	08/16/17 15:03	1
13C2 PFDA	136	Q	70 - 130	08/03/17 17:40	08/16/17 15:03	1

Client Sample Results

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: WGNA-072617-FRB-4844

Lab Sample ID: 320-30191-19

Date Collected: 07/25/17 09:30

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.2	ng/L		08/03/17 17:40	08/16/17 15:17	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/03/17 17:40	08/16/17 15:17	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/03/17 17:40	08/16/17 15:17	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/03/17 17:40	08/16/17 15:17	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	1.7	ng/L		08/03/17 17:40	08/16/17 15:17	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/03/17 17:40	08/16/17 15:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130	08/03/17 17:40	08/16/17 15:17	1
13C2 PFDA	138	Q	70 - 130	08/03/17 17:40	08/16/17 15:17	1

Client Sample ID: WGNA-072617-RW-3103

Lab Sample ID: 320-30191-20

Date Collected: 07/26/17 11:10

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	7.4	J	36	6.1	ng/L		08/03/17 17:40	08/16/17 15:22	1
Perfluorooctanoic acid (PFOA)	8.7	J M	18	2.5	ng/L		08/03/17 17:40	08/16/17 15:22	1
Perfluorononanoic acid (PFNA)	18	U M	22	7.2	ng/L		08/03/17 17:40	08/16/17 15:22	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/03/17 17:40	08/16/17 15:22	1
Perfluoroheptanoic acid (PFHpA)	2.2	J M	9.0	1.7	ng/L		08/03/17 17:40	08/16/17 15:22	1
Perfluorobutanesulfonic acid (PFBS)	33	U	81	15	ng/L		08/03/17 17:40	08/16/17 15:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130	08/03/17 17:40	08/16/17 15:22	1
13C2 PFDA	123		70 - 130	08/03/17 17:40	08/16/17 15:22	1

Client Sample ID: WGNA-072617-FRB-3103

Lab Sample ID: 320-30191-21

Date Collected: 07/26/17 11:05

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/03/17 17:40	08/16/17 15:26	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/03/17 17:40	08/16/17 15:26	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/03/17 17:40	08/16/17 15:26	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/03/17 17:40	08/16/17 15:26	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/03/17 17:40	08/16/17 15:26	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/03/17 17:40	08/16/17 15:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130	08/03/17 17:40	08/16/17 15:26	1
13C2 PFDA	127		70 - 130	08/03/17 17:40	08/16/17 15:26	1

Client Sample Results

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: WGNA-072617-DUP03

Lab Sample ID: 320-30191-22

Date Collected: 07/26/17 07:00

Matrix: Water

Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	7.1	J	35	6.0	ng/L		08/03/17 17:40	08/16/17 15:31	1
Perfluorooctanoic acid (PFOA)	7.7	J M	18	2.5	ng/L		08/03/17 17:40	08/16/17 15:31	1
Perfluorononanoic acid (PFNA)	18	U M	21	7.0	ng/L		08/03/17 17:40	08/16/17 15:31	1
Perfluorohexanesulfonic acid (PFHxS)	4.8	J	26	4.8	ng/L		08/03/17 17:40	08/16/17 15:31	1
Perfluoroheptanoic acid (PFHpA)	2.3	J	8.8	1.7	ng/L		08/03/17 17:40	08/16/17 15:31	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/03/17 17:40	08/16/17 15:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				08/03/17 17:40	08/16/17 15:31	1
13C2 PFDA	123		70 - 130				08/03/17 17:40	08/16/17 15:31	1

Default Detection Limits

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

TestAmerica Job ID: 320-30191-1

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: 320-30191-1

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 PFD/ (70-130)
320-30191-1	NAWC-072617-RW-332A	91	123
320-30191-2	NAWC-072617-RW-332B	100	125
320-30191-3	NAWC-072617-FRB-332A	101	125
320-30191-4	NAWC-072617-RW-341	81	126
320-30191-5	NAWC-072617-FRB-341	98	127
320-30191-6	NAWC-072617-RW-349	56 Q	131 Q
320-30191-6 MS	NAWC-072617-RW-349	57 Q	130
320-30191-6 MSD	NAWC-072617-RW-349	61 Q	131 Q
320-30191-7	NAWC-072617-FRB-349	106	130
320-30191-8	NAWC-072617-RW-343	84	125
320-30191-9	NAWC-072617-FRB-343	101	126
320-30191-10	NAWC-072617-RW-345	90	135 Q
320-30191-11	NAWC-072617-FRB-345	95	120
320-30191-12	NAWC-072617-DUP03	80	123
320-30191-13	NAWC-072617-RW-342	83	125
320-30191-14	NAWC-072617-RW-332B	101	125
320-30191-15	NAWC-072617-RW-117	92	120
320-30191-16	NAWC-072617-FRB-117	101	126
320-30191-17	NAWC-072617-DUP04	88	124
320-30191-18	WGNA-072617-RW-4844	88	136 Q
320-30191-19	WGNA-072617-FRB-4844	96	138 Q
320-30191-20	WGNA-072617-RW-3103	89	123
320-30191-21	WGNA-072617-FRB-3103	98	127
320-30191-22	WGNA-072617-DUP03	89	123
LCS 320-177640/2-A	Lab Control Sample	101	133 Q
LCS 320-177651/2-A	Lab Control Sample	107	126
LCSD 320-177651/3-A	Lab Control Sample Dup	102	126
MB 320-177640/1-A	Method Blank	100	124
MB 320-177651/1-A	Method Blank	98	122

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: 320-30191-1

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

Lab Sample ID: MB 320-177640/1-A
Matrix: Water
Analysis Batch: 179727

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 177640

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		08/03/17 17:23	08/16/17 12:50	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		08/03/17 17:23	08/16/17 12:50	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		08/03/17 17:23	08/16/17 12:50	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		08/03/17 17:23	08/16/17 12:50	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		08/03/17 17:23	08/16/17 12:50	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		08/03/17 17:23	08/16/17 12:50	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	100		70 - 130	08/03/17 17:23	08/16/17 12:50	1
13C2 PFDA	124		70 - 130	08/03/17 17:23	08/16/17 12:50	1

Lab Sample ID: LCS 320-177640/2-A
Matrix: Water
Analysis Batch: 179727

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 177640

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanoic acid (PFOA)	79.9	83.8		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	77.0	99.3		ng/L		129	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	120	121		ng/L		100	70 - 130
Perfluoroheptanoic acid (PFHpA)	39.6	45.5		ng/L		115	70 - 130
Perfluorobutanesulfonic acid (PFBS)	353	343		ng/L		97	70 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	101		70 - 130
13C2 PFDA	133	Q	70 - 130

Lab Sample ID: 320-30191-6 MS
Matrix: Water
Analysis Batch: 179727

Client Sample ID: NAWC-072617-RW-349
Prep Type: Total/NA
Prep Batch: 177640

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Perfluorooctanesulfonic acid (PFOS)	17	J	136	168		ng/L		110	70 - 130
Perfluorooctanoic acid (PFOA)	29	M	68.0	102	M	ng/L		107	70 - 130
Perfluorononanoic acid (PFNA)	17	U J M	65.5	90.8	J	ng/L		139	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	102	101		ng/L		92	70 - 130
Perfluoroheptanoic acid (PFHpA)	6.7	J	33.7	43.3		ng/L		109	70 - 130
Perfluorobutanesulfonic acid (PFBS)	31	U	300	283		ng/L		94	70 - 130

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	57	Q	70 - 130
13C2 PFDA	130		70 - 130

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-30191-1

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

Lab Sample ID: 320-30191-6 MSD

Matrix: Water

Analysis Batch: 179727

Client Sample ID: NAWC-072617-RW-349

Prep Type: Total/NA

Prep Batch: 177640

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	17	J	139	178		ng/L		115		70 - 130	6	30
Perfluorooctanoic acid (PFOA)	29	M	69.4	107	M	ng/L		112		70 - 130	5	30
Perfluorononanoic acid (PFNA)	17	U J M	66.9	92.5	J	ng/L		138		70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	104	109		ng/L		98		70 - 130	8	30
Perfluoroheptanoic acid (PFHpA)	6.7	J	34.4	46.5		ng/L		116		70 - 130	7	30
Perfluorobutanesulfonic acid (PFBS)	31	U	307	304		ng/L		99		70 - 130	7	30

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	61	Q	70 - 130
13C2 PFDA	131	Q	70 - 130

Lab Sample ID: MB 320-177651/1-A

Matrix: Water

Analysis Batch: 179732

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 177651

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		08/03/17 17:40	08/16/17 14:20	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		08/03/17 17:40	08/16/17 14:20	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		08/03/17 17:40	08/16/17 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		08/03/17 17:40	08/16/17 14:20	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		08/03/17 17:40	08/16/17 14:20	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		08/03/17 17:40	08/16/17 14:20	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	98		70 - 130	08/03/17 17:40	08/16/17 14:20	1
13C2 PFDA	122		70 - 130	08/03/17 17:40	08/16/17 14:20	1

Lab Sample ID: LCS 320-177651/2-A

Matrix: Water

Analysis Batch: 179732

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 177651

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
		Result	Qualifier					
Perfluorooctanesulfonic acid (PFOS)	300	332	E	ng/L		110		70 - 130
Perfluorooctanoic acid (PFOA)	150	155		ng/L		104		70 - 130
Perfluorononanoic acid (PFNA)	144	177	E	ng/L		122		70 - 130
Perfluorohexanesulfonic acid (PFHxS)	225	211		ng/L		94		70 - 130
Perfluoroheptanoic acid (PFHpA)	74.3	87.2	E	ng/L		117		70 - 130
Perfluorobutanesulfonic acid (PFBS)	663	698		ng/L		105		70 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	107		70 - 130
13C2 PFDA	126		70 - 130

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-30191-1

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

Lab Sample ID: LCSD 320-177651/3-A
Matrix: Water
Analysis Batch: 179732

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 177651

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Prep Batch: 177651		RPD
							%Rec. Limits	RPD	
Perfluorooctanesulfonic acid (PFOS)	300	324	E	ng/L		108	70 - 130	2	30
Perfluorooctanoic acid (PFOA)	150	151		ng/L		101	70 - 130	3	30
Perfluorononanoic acid (PFNA)	144	171	E	ng/L		119	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	225	206		ng/L		91	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	74.3	84.6	E	ng/L		114	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	663	684		ng/L		103	70 - 130	2	30
Surrogate		LCS D %Recovery	LCS D Qualifier				Limits		
13C2 PFHxA		102					70 - 130		
13C2 PFDA		126					70 - 130		

QC Association Summary

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

TestAmerica Job ID: 320-30191-1

LCMS

Prep Batch: 177640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-1	NAWC-072617-RW-332A	Total/NA	Water	537	
320-30191-2	NAWC-072617-RW-332B	Total/NA	Water	537	
320-30191-3	NAWC-072617-FRB-332A	Total/NA	Water	537	
320-30191-4	NAWC-072617-RW-341	Total/NA	Water	537	
320-30191-5	NAWC-072617-FRB-341	Total/NA	Water	537	
320-30191-6	NAWC-072617-RW-349	Total/NA	Water	537	
320-30191-7	NAWC-072617-FRB-349	Total/NA	Water	537	
320-30191-8	NAWC-072617-RW-343	Total/NA	Water	537	
320-30191-9	NAWC-072617-FRB-343	Total/NA	Water	537	
320-30191-10	NAWC-072617-RW-345	Total/NA	Water	537	
320-30191-11	NAWC-072617-FRB-345	Total/NA	Water	537	
MB 320-177640/1-A	Method Blank	Total/NA	Water	537	
LCS 320-177640/2-A	Lab Control Sample	Total/NA	Water	537	
320-30191-6 MS	NAWC-072617-RW-349	Total/NA	Water	537	
320-30191-6 MSD	NAWC-072617-RW-349	Total/NA	Water	537	

Prep Batch: 177651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-12	NAWC-072617-DUP03	Total/NA	Water	537	
320-30191-13	NAWC-072617-RW-342	Total/NA	Water	537	
320-30191-14	NAWC-072617-RW-332B	Total/NA	Water	537	
320-30191-15	NAWC-072617-RW-117	Total/NA	Water	537	
320-30191-16	NAWC-072617-FRB-117	Total/NA	Water	537	
320-30191-17	NAWC-072617-DUP04	Total/NA	Water	537	
320-30191-18	WGNA-072617-RW-4844	Total/NA	Water	537	
320-30191-19	WGNA-072617-FRB-4844	Total/NA	Water	537	
320-30191-20	WGNA-072617-RW-3103	Total/NA	Water	537	
320-30191-21	WGNA-072617-FRB-3103	Total/NA	Water	537	
320-30191-22	WGNA-072617-DUP03	Total/NA	Water	537	
MB 320-177651/1-A	Method Blank	Total/NA	Water	537	
LCS 320-177651/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-177651/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 179727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-1	NAWC-072617-RW-332A	Total/NA	Water	537	177640
320-30191-2	NAWC-072617-RW-332B	Total/NA	Water	537	177640
320-30191-4	NAWC-072617-RW-341	Total/NA	Water	537	177640
320-30191-5	NAWC-072617-FRB-341	Total/NA	Water	537	177640
320-30191-6	NAWC-072617-RW-349	Total/NA	Water	537	177640
MB 320-177640/1-A	Method Blank	Total/NA	Water	537	177640
LCS 320-177640/2-A	Lab Control Sample	Total/NA	Water	537	177640
320-30191-6 MS	NAWC-072617-RW-349	Total/NA	Water	537	177640
320-30191-6 MSD	NAWC-072617-RW-349	Total/NA	Water	537	177640

Analysis Batch: 179728

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-7	NAWC-072617-FRB-349	Total/NA	Water	537	177640
320-30191-8	NAWC-072617-RW-343	Total/NA	Water	537	177640
320-30191-9	NAWC-072617-FRB-343	Total/NA	Water	537	177640
320-30191-10	NAWC-072617-RW-345	Total/NA	Water	537	177640

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-30191-1

LCMS (Continued)

Analysis Batch: 179728 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-11	NAWC-072617-FRB-345	Total/NA	Water	537	177640

Analysis Batch: 179732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-12	NAWC-072617-DUP03	Total/NA	Water	537	177651
320-30191-13	NAWC-072617-RW-342	Total/NA	Water	537	177651
320-30191-14	NAWC-072617-RW-332B	Total/NA	Water	537	177651
320-30191-15	NAWC-072617-RW-117	Total/NA	Water	537	177651
320-30191-16	NAWC-072617-FRB-117	Total/NA	Water	537	177651
320-30191-17	NAWC-072617-DUP04	Total/NA	Water	537	177651
320-30191-18	WGNA-072617-RW-4844	Total/NA	Water	537	177651
MB 320-177651/1-A	Method Blank	Total/NA	Water	537	177651
LCS 320-177651/2-A	Lab Control Sample	Total/NA	Water	537	177651
LCSD 320-177651/3-A	Lab Control Sample Dup	Total/NA	Water	537	177651

Analysis Batch: 179733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-19	WGNA-072617-FRB-4844	Total/NA	Water	537	177651
320-30191-20	WGNA-072617-RW-3103	Total/NA	Water	537	177651
320-30191-21	WGNA-072617-FRB-3103	Total/NA	Water	537	177651
320-30191-22	WGNA-072617-DUP03	Total/NA	Water	537	177651

Analysis Batch: 179920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30191-3	NAWC-072617-FRB-332A	Total/NA	Water	537	177640

Lab Chronicle

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-RW-332A

Date Collected: 07/26/17 08:05

Date Received: 07/27/17 09:20

Lab Sample ID: 320-30191-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179727	08/16/17 12:59	JRB	TAL SAC

Client Sample ID: NAWC-072617-RW-332B

Date Collected: 07/26/17 08:10

Date Received: 07/27/17 09:20

Lab Sample ID: 320-30191-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179727	08/16/17 13:04	JRB	TAL SAC

Client Sample ID: NAWC-072617-FRB-332A

Date Collected: 07/26/17 08:00

Date Received: 07/27/17 09:20

Lab Sample ID: 320-30191-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179920	08/16/17 20:12	JRB	TAL SAC

Client Sample ID: NAWC-072617-RW-341

Date Collected: 07/26/17 08:35

Date Received: 07/27/17 09:20

Lab Sample ID: 320-30191-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179727	08/16/17 13:14	JRB	TAL SAC

Client Sample ID: NAWC-072617-FRB-341

Date Collected: 07/26/17 08:30

Date Received: 07/27/17 09:20

Lab Sample ID: 320-30191-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179727	08/16/17 13:18	JRB	TAL SAC

Client Sample ID: NAWC-072617-RW-349

Date Collected: 07/26/17 10:35

Date Received: 07/27/17 09:20

Lab Sample ID: 320-30191-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179727	08/16/17 13:23	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-FRB-349

Lab Sample ID: 320-30191-7

Date Collected: 07/26/17 10:30

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179728	08/16/17 13:47	JRB	TAL SAC

Client Sample ID: NAWC-072617-RW-343

Lab Sample ID: 320-30191-8

Date Collected: 07/26/17 13:55

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179728	08/16/17 13:52	JRB	TAL SAC

Client Sample ID: NAWC-072617-FRB-343

Lab Sample ID: 320-30191-9

Date Collected: 07/26/17 13:50

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179728	08/16/17 13:56	JRB	TAL SAC

Client Sample ID: NAWC-072617-RW-345

Lab Sample ID: 320-30191-10

Date Collected: 07/26/17 15:15

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179728	08/16/17 14:01	JRB	TAL SAC

Client Sample ID: NAWC-072617-FRB-345

Lab Sample ID: 320-30191-11

Date Collected: 07/26/17 15:10

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177640	08/03/17 17:23	JER	TAL SAC
Total/NA	Analysis	537		1	179728	08/16/17 14:06	JRB	TAL SAC

Client Sample ID: NAWC-072617-DUP03

Lab Sample ID: 320-30191-12

Date Collected: 07/26/17 07:00

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179732	08/16/17 14:34	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: NAWC-072617-RW-342

Lab Sample ID: 320-30191-13

Date Collected: 07/26/17 12:10

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179732	08/16/17 14:39	JRB	TAL SAC

Client Sample ID: NAWC-072617-RW-332B

Lab Sample ID: 320-30191-14

Date Collected: 07/26/17 12:05

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179732	08/16/17 14:44	JRB	TAL SAC

Client Sample ID: NAWC-072617-RW-117

Lab Sample ID: 320-30191-15

Date Collected: 07/26/17 12:35

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179732	08/16/17 14:48	JRB	TAL SAC

Client Sample ID: NAWC-072617-FRB-117

Lab Sample ID: 320-30191-16

Date Collected: 07/26/17 12:30

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179732	08/16/17 14:53	JRB	TAL SAC

Client Sample ID: NAWC-072617-DUP04

Lab Sample ID: 320-30191-17

Date Collected: 07/26/17 07:00

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179732	08/16/17 14:58	JRB	TAL SAC

Client Sample ID: WGNA-072617-RW-4844

Lab Sample ID: 320-30191-18

Date Collected: 07/26/17 09:35

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179732	08/16/17 15:03	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: WGNA-072617-FRB-4844

Lab Sample ID: 320-30191-19

Date Collected: 07/25/17 09:30

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179733	08/16/17 15:17	JRB	TAL SAC

Client Sample ID: WGNA-072617-RW-3103

Lab Sample ID: 320-30191-20

Date Collected: 07/26/17 11:10

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179733	08/16/17 15:22	JRB	TAL SAC

Client Sample ID: WGNA-072617-FRB-3103

Lab Sample ID: 320-30191-21

Date Collected: 07/26/17 11:05

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179733	08/16/17 15:26	JRB	TAL SAC

Client Sample ID: WGNA-072617-DUP03

Lab Sample ID: 320-30191-22

Date Collected: 07/26/17 07:00

Matrix: Water

Date Received: 07/27/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			177651	08/03/17 17:40	JER	TAL SAC
Total/NA	Analysis	537		1	179733	08/16/17 15:31	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 320-30191-1

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: 320-30191-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-30191-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-30191-1	NAWC-072617-RW-332A	Water	07/26/17 08:05	07/27/17 09:20
320-30191-2	NAWC-072617-RW-332B	Water	07/26/17 08:10	07/27/17 09:20
320-30191-3	NAWC-072617-FRB-332A	Water	07/26/17 08:00	07/27/17 09:20
320-30191-4	NAWC-072617-RW-341	Water	07/26/17 08:35	07/27/17 09:20
320-30191-5	NAWC-072617-FRB-341	Water	07/26/17 08:30	07/27/17 09:20
320-30191-6	NAWC-072617-RW-349	Water	07/26/17 10:35	07/27/17 09:20
320-30191-7	NAWC-072617-FRB-349	Water	07/26/17 10:30	07/27/17 09:20
320-30191-8	NAWC-072617-RW-343	Water	07/26/17 13:55	07/27/17 09:20
320-30191-9	NAWC-072617-FRB-343	Water	07/26/17 13:50	07/27/17 09:20
320-30191-10	NAWC-072617-RW-345	Water	07/26/17 15:15	07/27/17 09:20
320-30191-11	NAWC-072617-FRB-345	Water	07/26/17 15:10	07/27/17 09:20
320-30191-12	NAWC-072617-DUP03	Water	07/26/17 07:00	07/27/17 09:20
320-30191-13	NAWC-072617-RW-342	Water	07/26/17 12:10	07/27/17 09:20
320-30191-14	NAWC-072617-RW-332B	Water	07/26/17 12:05	07/27/17 09:20
320-30191-15	NAWC-072617-RW-117	Water	07/26/17 12:35	07/27/17 09:20
320-30191-16	NAWC-072617-FRB-117	Water	07/26/17 12:30	07/27/17 09:20
320-30191-17	NAWC-072617-DUP04	Water	07/26/17 07:00	07/27/17 09:20
320-30191-18	WGNA-072617-RW-4844	Water	07/26/17 09:35	07/27/17 09:20
320-30191-19	WGNA-072617-FRB-4844	Water	07/25/17 09:30	07/27/17 09:20
320-30191-20	WGNA-072617-RW-3103	Water	07/26/17 11:10	07/27/17 09:20
320-30191-21	WGNA-072617-FRB-3103	Water	07/26/17 11:05	07/27/17 09:20
320-30191-22	WGNA-072617-DUP03	Water	07/26/17 07:00	07/27/17 09:20

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 179727

Lab Sample ID: 320-30191-1 Client Sample ID: NAWC-072617-RW-332A

Date Analyzed: 08/16/17 12:59 Lab File ID: 2017.08.16_537C_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.44	Split Peak	barnettj	08/16/17 15:33
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:31
Perfluorononanoic acid (PFNA)	2.19	Split Peak	barnettj	08/16/17 15:35

Lab Sample ID: 320-30191-4 Client Sample ID: NAWC-072617-RW-341

Date Analyzed: 08/16/17 13:14 Lab File ID: 2017.08.16_537C_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:34
Perfluorononanoic acid (PFNA)	2.18	Split Peak	barnettj	08/16/17 15:36

Lab Sample ID: 320-30191-6 Client Sample ID: NAWC-072617-RW-349

Date Analyzed: 08/16/17 13:23 Lab File ID: 2017.08.16_537C_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:37
Perfluorononanoic acid (PFNA)	2.19	Split Peak	barnettj	08/16/17 15:36

Lab Sample ID: 320-30191-6 MS Client Sample ID: NAWC-072617-RW-349 MS

Date Analyzed: 08/16/17 13:28 Lab File ID: 2017.08.16_537C_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.96	Isomers	barnettj	08/16/17 15:38

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 179727

Lab Sample ID: 320-30191-6 MSD Client Sample ID: NAWC-072617-RW-349 MSD

Date Analyzed: 08/16/17 13:33 Lab File ID: 2017.08.16_537C_012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.94	Isomers	barnettj	08/16/17 15:39

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 179728

Lab Sample ID: 320-30191-8 Client Sample ID: NAWC-072617-RW-343

Date Analyzed: 08/16/17 13:52 Lab File ID: 2017.08.16_537C_016.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.94	Isomers	barnettj	08/16/17 15:40
Perfluorononanoic acid (PFNA)	2.18	Split Peak	barnettj	08/16/17 15:41

Lab Sample ID: 320-30191-10 Client Sample ID: NAWC-072617-RW-345

Date Analyzed: 08/16/17 14:01 Lab File ID: 2017.08.16_537C_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:41
Perfluorononanoic acid (PFNA)	2.18	Split Peak	barnettj	08/16/17 15:42

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 179732

Lab Sample ID: 320-30191-12 Client Sample ID: NAWC-072617-DUP03

Date Analyzed: 08/16/17 14:34 Lab File ID: 2017.08.16_537C_025.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:44
Perfluorononanoic acid (PFNA)	2.19	Split Peak	barnettj	08/16/17 15:45

Lab Sample ID: 320-30191-13 Client Sample ID: NAWC-072617-RW-342

Date Analyzed: 08/16/17 14:39 Lab File ID: 2017.08.16_537C_026.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:45
Perfluorononanoic acid (PFNA)	2.19	Split Peak	barnettj	08/16/17 15:46

Lab Sample ID: 320-30191-15 Client Sample ID: NAWC-072617-RW-117

Date Analyzed: 08/16/17 14:48 Lab File ID: 2017.08.16_537C_028.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:46
Perfluorononanoic acid (PFNA)	2.19	Split Peak	barnettj	08/16/17 15:47

Lab Sample ID: 320-30191-17 Client Sample ID: NAWC-072617-DUP04

Date Analyzed: 08/16/17 14:58 Lab File ID: 2017.08.16_537C_030.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.94	Isomers	barnettj	08/16/17 15:48
Perfluorononanoic acid (PFNA)	2.18	Split Peak	barnettj	08/16/17 15:48

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 179732

Lab Sample ID: 320-30191-18 Client Sample ID: WGNA-072617-RW-4844

Date Analyzed: 08/16/17 15:03 Lab File ID: 2017.08.16_537C_031.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.95	Isomers	barnettj	08/16/17 15:49
Perfluorooctanesulfonic acid (PFOS)	2.18	Baseline	barnettj	08/16/17 15:48
Perfluorononanoic acid (PFNA)	2.19	Split Peak	barnettj	08/16/17 15:49

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 179733

Lab Sample ID: 320-30191-20 Client Sample ID: WGNA-072617-RW-3103

Date Analyzed: 08/16/17 15:22 Lab File ID: 2017.08.16_537C_035.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.75	Missed Peak	barnettj	08/16/17 15:57
Perfluorooctanoic acid (PFOA)	1.94	Isomers	barnettj	08/16/17 15:57
Perfluorononanoic acid (PFNA)	2.17	Wrong peak	barnettj	08/16/17 15:59

Lab Sample ID: 320-30191-22 Client Sample ID: WGNA-072617-DUP03

Date Analyzed: 08/16/17 15:31 Lab File ID: 2017.08.16_537C_037.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.94	Isomers	barnettj	08/16/17 16:00
Perfluorononanoic acid (PFNA)	2.17	Wrong peak	barnettj	08/16/17 16:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 179920

Lab Sample ID: CCV 320-179920/1 CCVIS Client Sample ID: _____

Date Analyzed: 08/16/17 19:48 Lab File ID: 2017.08.16_537D_052.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Isomers	barnettj	08/18/17 09:46

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-30191-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
LC537-HSP_00017	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutane Sulfonate	1656.41 ng/mL		
							Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL		
							Perfluorononanoic acid (PFNA)	361.125 ng/mL		
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL		
.LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutane Sulfonate	88.3417 ug/mL		
							Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL		
							LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
							LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
							LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
							LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
..LC537-PFOS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFOS_00002	0.1034 g	Perfluorobutane Sulfonate	2007.77 ug/mL		
							Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL		
...LC537_PFOS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g		
		Perfluorobutanesulfonic acid (PFBS)		1 g/g						
..LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL		
							...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V	
..LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL		
							...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V	
..LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537 PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL		
							...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F	
..LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537 PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL		
							...LC537 PFOA_00002	11/04/18	Fluka, Lot SZBD308XV	
..LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL		
							...LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV	
LC537-ICV_00028	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.: 320-30191-1

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
LC537-ICV_00028	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
.LC537ICIM_00019	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
LC537-IS_00046	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-30191-1

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.: 320-30191-1

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
LC537-L2_00020	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-PFHxA_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.: 320-30191-1

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
..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
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00023	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.: 320-30191-1

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
LC537-L4_00020	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.: 320-30191-1

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-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
...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.: 320-30191-1

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
LC537-L5_00024	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.: 320-30191-1

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
LC537-L6_00020	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.: 320-30191-1

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	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00013	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-MSP_00021	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	200 uL	Perfluorobutane Sulfonate	883.417 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	883.417 ng/mL
							Perfluoroheptanoic acid (PFHpA)	99 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	300.607 ng/mL
							Perfluorononanoic acid (PFNA)	192.6 ng/mL
							Perfluorooctanoic acid (PFOA)	199.8 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	400.329 ng/mL
.LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutane Sulfonate	88.3417 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-30191-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
..LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutane Sulfonate	2007.77 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
...LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
...LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
...LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537 PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
...LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
..LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537 PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
...LC537 PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
...LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-SU_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

Reagent

LC537_PFB_00002

#: 4/1/15 SPV

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

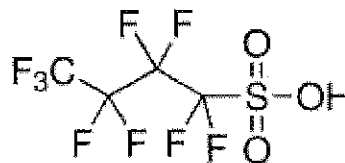
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:

Nonafluorobutane-1-sulfonic acid - 97%

Product Number: 562629
Batch Number: MKBP8842V
Brand: ALDRICH
CAS Number: 375-73-5
MDL Number: MFCD01320794
Formula: C₄HF₉O₃S
Formula Weight: 300.10 g/mol
Storage Temperature: Store at 2 - 8 °C
Quality Release Date: 11 OCT 2013



PFBS

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

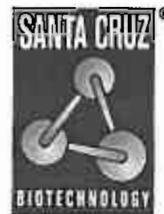
Jamie Gleason, Manager
 Quality Control
 Milwaukee, Wisconsin US

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

Reagent

LC537_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

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

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

This document has been electronically generated and does not require a signature.

Order our products online www.alfa.com

ThermoFisher
SCIENTIFIC

Reagent

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: C₆F₁₃KO₃S

Formula Weight: 438.20

Quality Release Date: 20 JUN 2013

PFH₁₃S-K

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

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

$$MW_{corr} = \frac{(k_{form}) - (k) + (H)}{438.20 (k_{form})} = \frac{(438.20 - 39.10 + 1.01)}{438.20 (k_{form})} = 0.91307 \text{ (anion form)}$$

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

stw 4/1/15

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

Reagent

LC537_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%

PFH₁₃S-K
 $C_6F_{13}SO_3K$ 438.201
 $C_6F_{13}SO_3H$ 400.111
 MW correction = $\frac{400.11}{438.201} = 0.91307$ PFH₁₃S
 CAS# 355-46-4

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

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

Reagent

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

LC537_PFN2_00002

P: 6.14.17 SKW

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

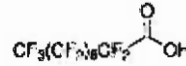
Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Perfluorononanoic acid - 97%

Product Number: 394459
Batch Number: MKCC0699
Brand: ALDRICH
CAS Number: 375-95-1
MDL Number: MFCD00039605
Formula: C9HF17O2
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

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

Reagent

LC537_PFOA_00002

3/21/15

SIGMA-ALDRICH

CERTIFICATE OF ANALYSIS

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

Seelze, 13.11.2013/505378/13/24029
Order-No.:
Customer-No.:
Order-Code:
Quantity:
Production Date: 04.Nov.2013
Expiry Date: 04.Nov.2018

Article/Product: 33824	Batch : SZBD308XV	PFOA
Pentadecafluorooctanoic acid OEKANAL®		

Reference Material (RM)

1. General Information

Formula: C₈H_F15O₂
CAS-No.: [335-67-1]
Usage : PFOA

Molar mass: 414.07 g/Mole
Recomm. storage temp.: roomtemp.

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

2. Batch Analysis

identity (GC-MS)
Assay (GCMS)
Date of Analysis

complying
99.4 %
13.Nov.2013

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

This document was produced electronically and is valid without a signature

GC/MS-Method

Analytical Department

Article: Pentadecafluorooctanoic acid OEKANAL

Article-No.: 33824

Batch: SZBD308XV

Column: XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df

Injector: Split mode

Injection: approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)

Inj.-temp.: 280°C

Oven-temp.: 40°C (for 2 min) to 320°C (6°C/min) hold for 2 min

Split: 1:100

Flow: 1 ml He/min (Constant flow mode)

Detector: MSD

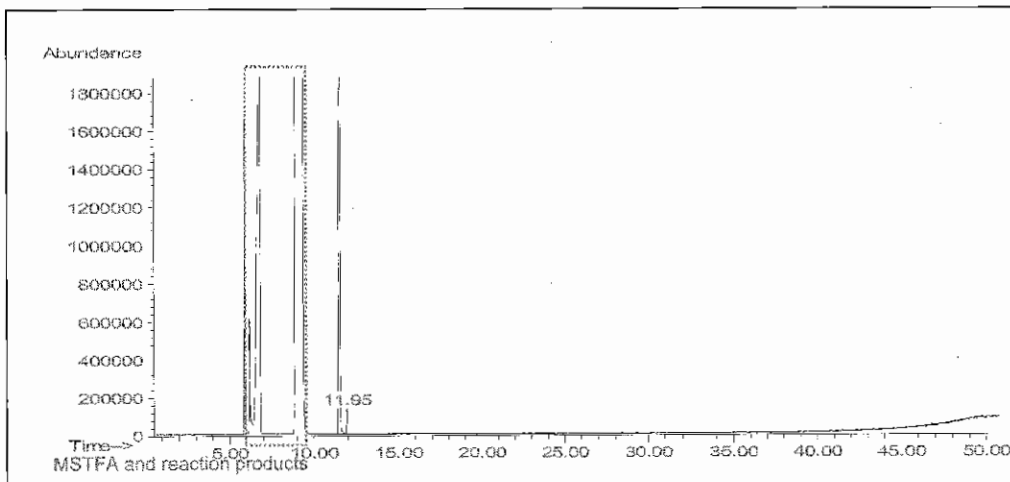
Mass range: 10-600 amu (Scan mode)

Evaluation: Purity: Total Ion Chromatogram
(MSTFA and reaction products blinded out in report)

Identity: Mass spectrum complies

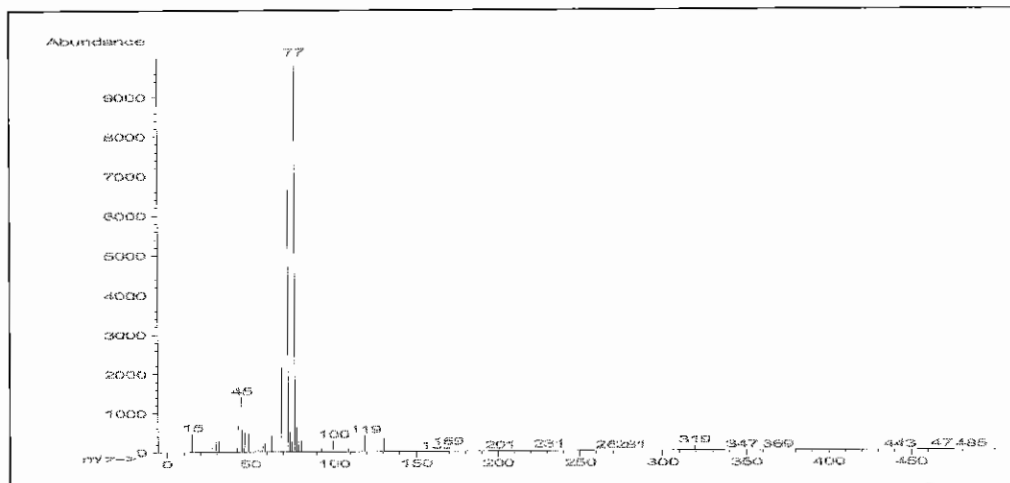
Operator: Ahrens / 2013-11-13

Total Ion Chromatogram:



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

Mass spectrum (rt = 11.54 min):



Reagent

LC537_PFOA_00003

C: 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

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%

This document has been electronically generated and does not require a signature.

Order our products online www.alfa.com

ThermoFisher
SCIENTIFIC

Reagent

LC537_PFOs_00002

F: 4/115 SV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.08.2012/419060/12/17583
Order-No.:
Customer-No.:
Order-Code:
Quantity:
Production Date: 09.Aug.2012
Expiry Date: 09.Aug.2017 - ex date

Article/Product: 33829	Batch : SZBC222XV
Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®	
	PFOS-K ⁺

Reference Material (RM)

1. General Information

Formula: C8F17KO3S
CAS-No.: [2795-39-3]
Usage : PFOS

Molar mass: 538.22 g/Mole
Recomm. storage temp.: roomtemp.

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

2. Batch Analysis

Identity	complying
Assay (LC-MS)	98 %
Date of Analysis	10.Aug.2012

P/W-correction:

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

Purity = 91.66%

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_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

Heptafluorooctanesulfonic acid potassium salt OEKANAL[®]

Reference Material (RM)

1. General Information

Formula: C₈F₁₇KO₃S

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

Usage : PFOS

Molar mass: 538.22 g/Mole

Recomm. storage temp.: roomtemp.

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

2. Batch Analysis

Identity

Assay (LC-MS)

Date of Analysis

complying

98 %

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

LC537_PFOs2_00002

R: 6.14.17 SKV

Certificate of Analysis

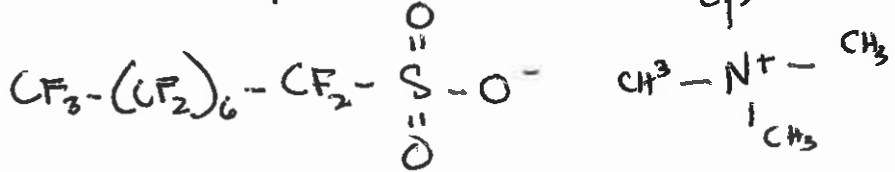
Product Name: HEPTADECAFLUOROOCATANESULFONIC ACID TETRAETHYLAMMONIUM SALT
 98 %
Product Number: 365289
Batch Number: BCBQ0108V
Brand: Aldrich
CAS Number: 56773-42-3
Formula: $CF_3(CF_2)_6CF_2SO_3N(C_2H_5)_4$
Formula Weight: 629.37
Quality Release Date: 11 JUN 2015

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 = 77.87%



	$C_8 F_{17} SO_3^+ H$	$C_8 H_{20} N$
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

LCM2PFOA_00007

P: 5/11/17 SKV



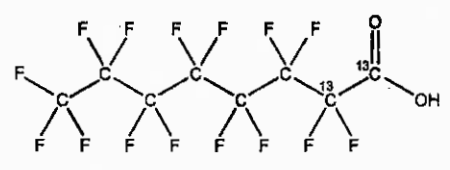
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid

LOT NUMBER: M2PFOA0216

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₆O₂
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%¹³C
(1,2-¹³C₂)

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:

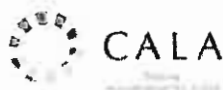
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

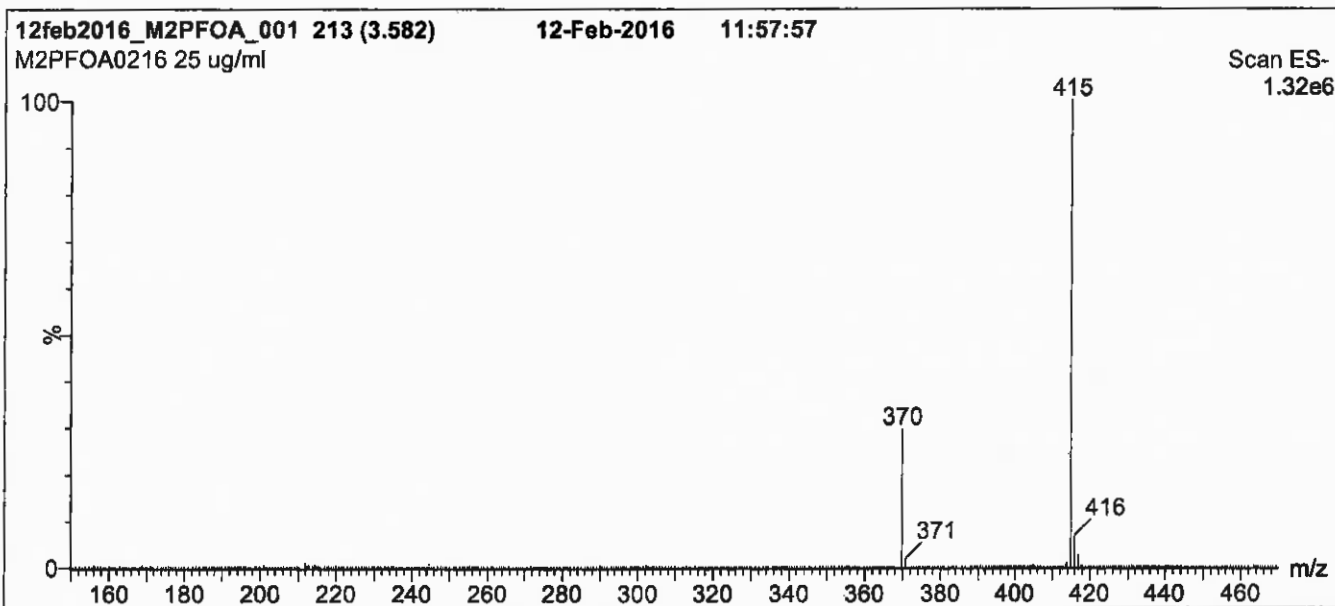
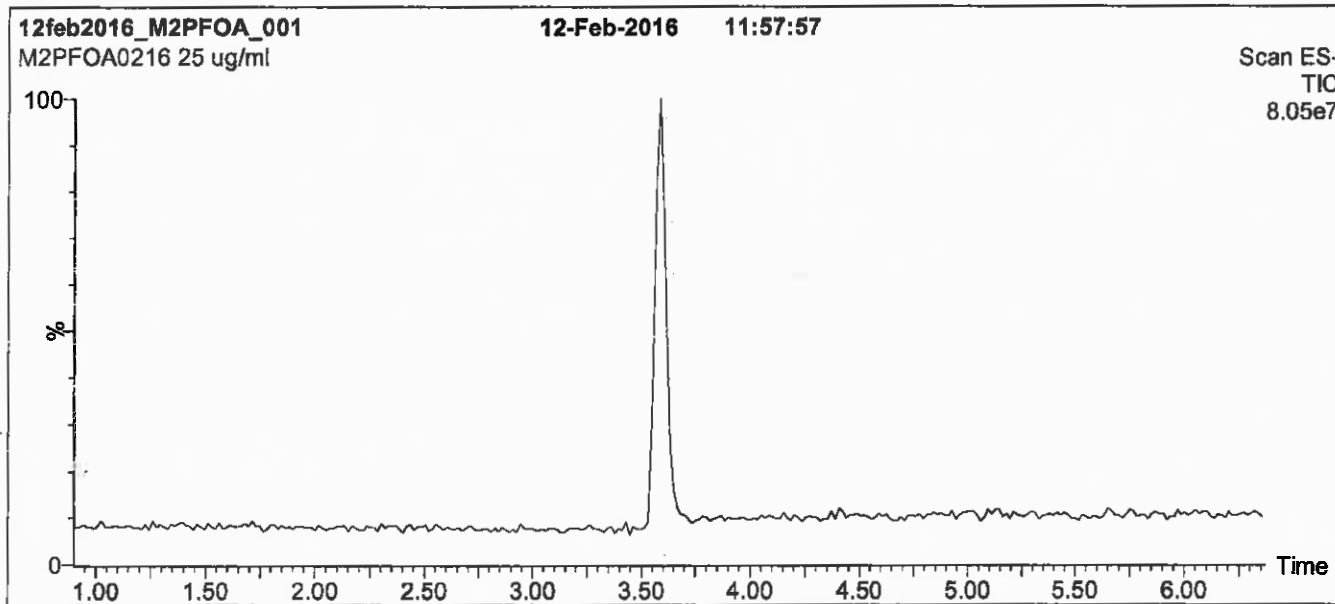
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

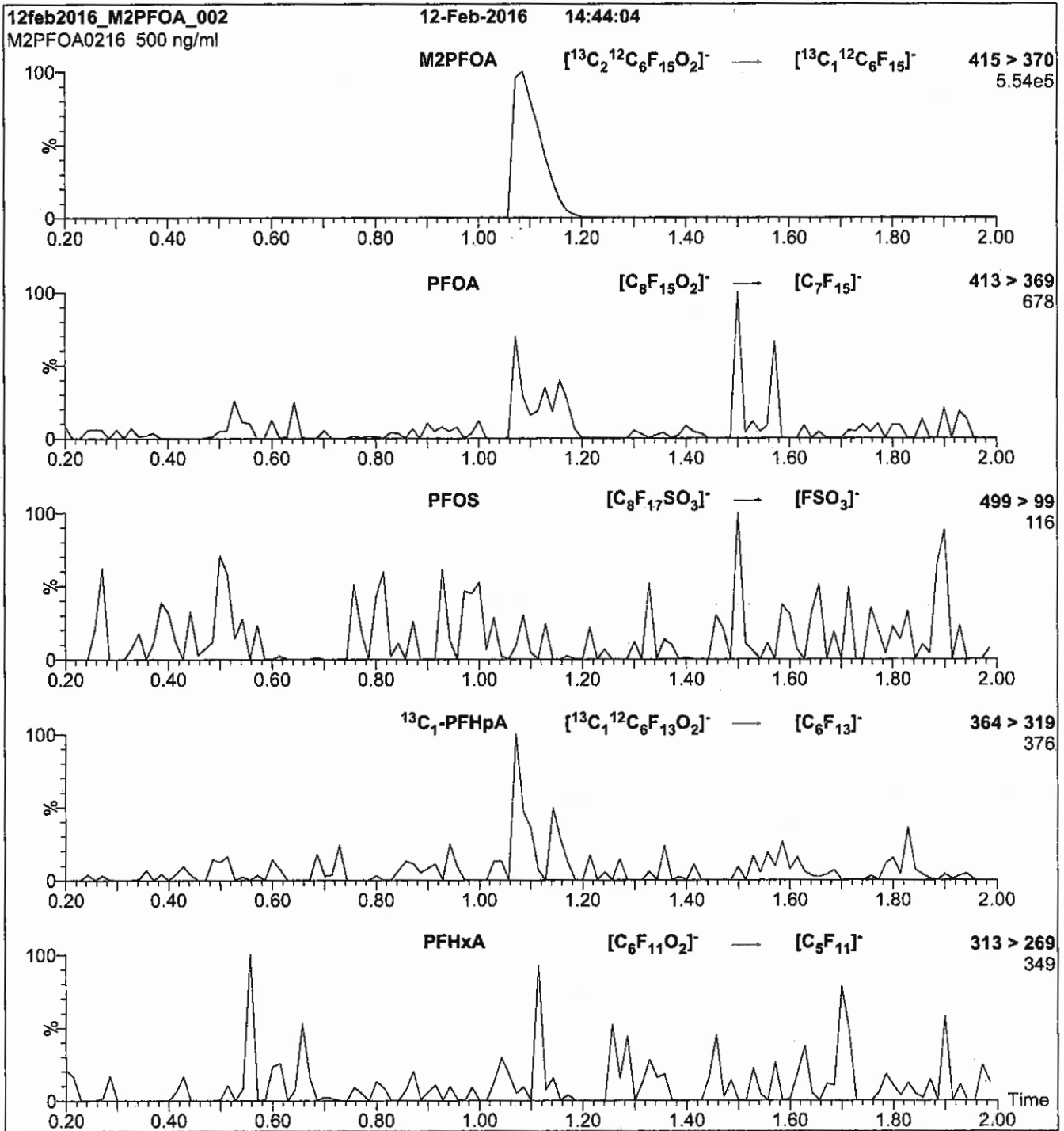
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H₂O

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 a

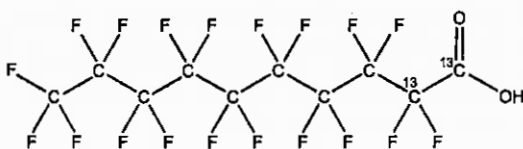


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0916
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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

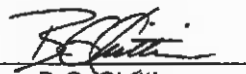
DOCUMENTATION/ DATA ATTACHED:

- 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 ¹³C₁-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.

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.

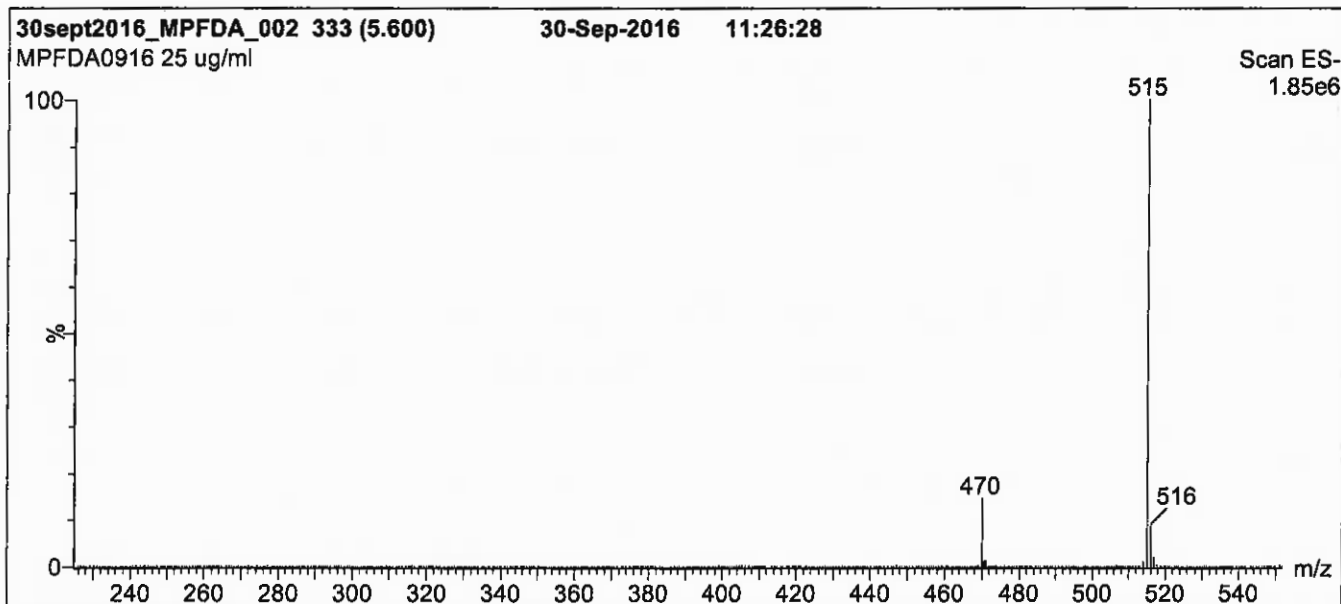
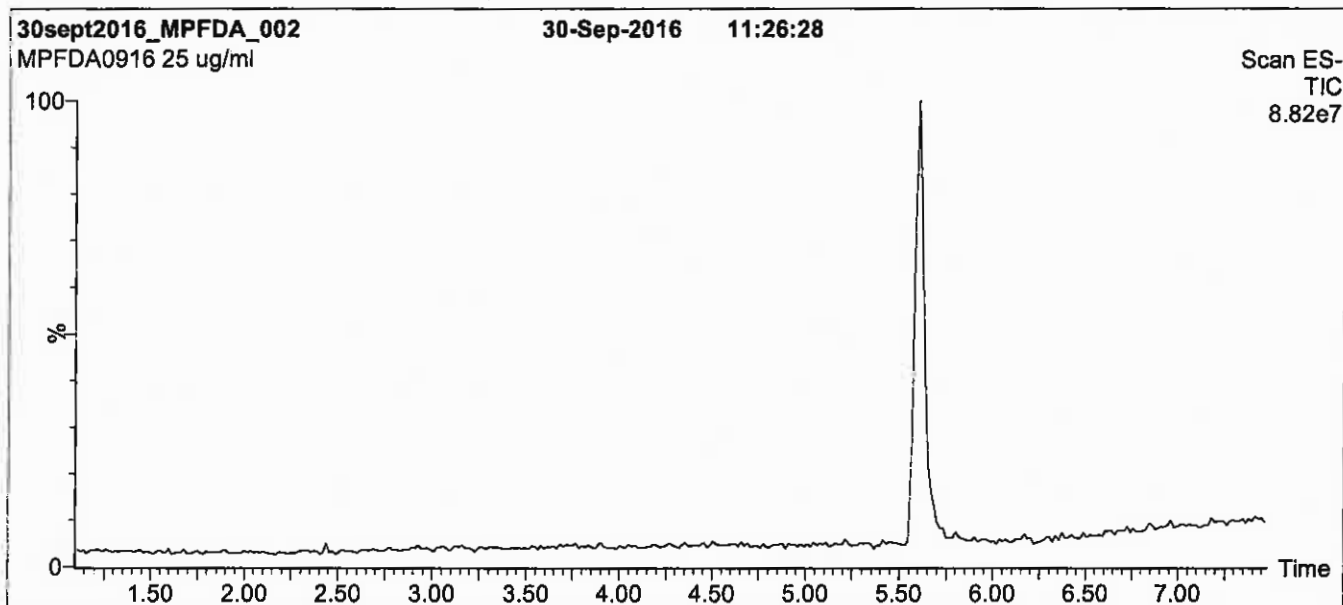
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

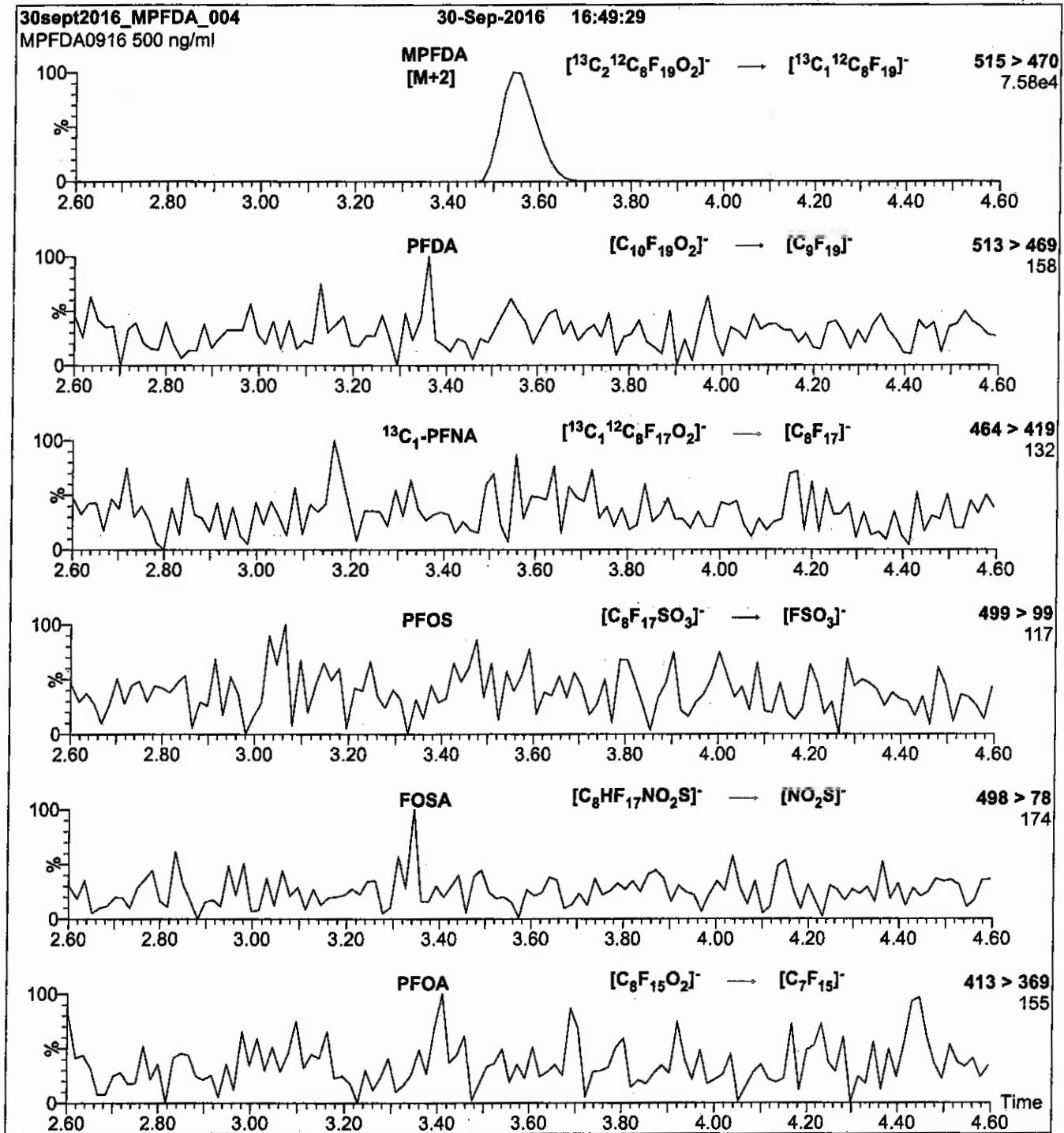
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHxA_00013

R: SBC 12/21/16



814258
ID: LCMPFHxA_00013
Exp: 04/08/21 Ppdt. SBC
13C2-Perfluorohexanoic ac



WELLINGTON LABORATORIES

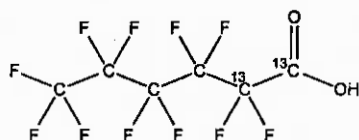
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid

LOT NUMBER: MPFHxA0416

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

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

ISOTOPIC PURITY: ≥99%¹³C
(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy) 04/08/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim

Date: 04/29/2016
(mm/dd/yyyy)

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

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.

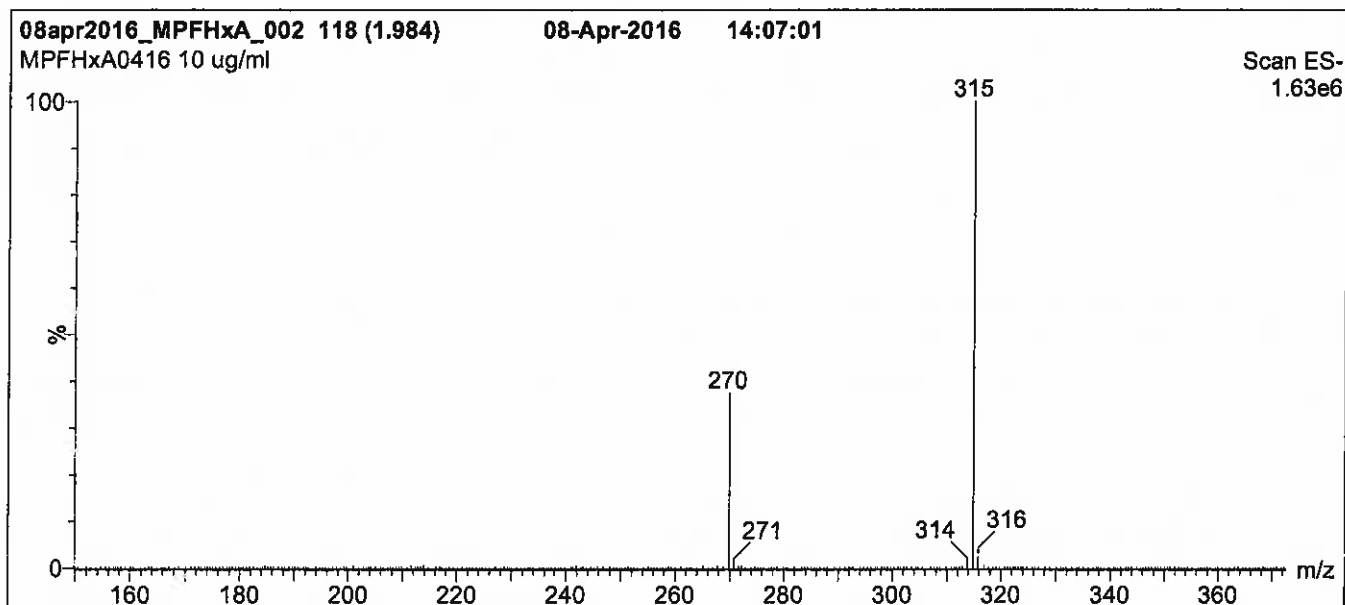
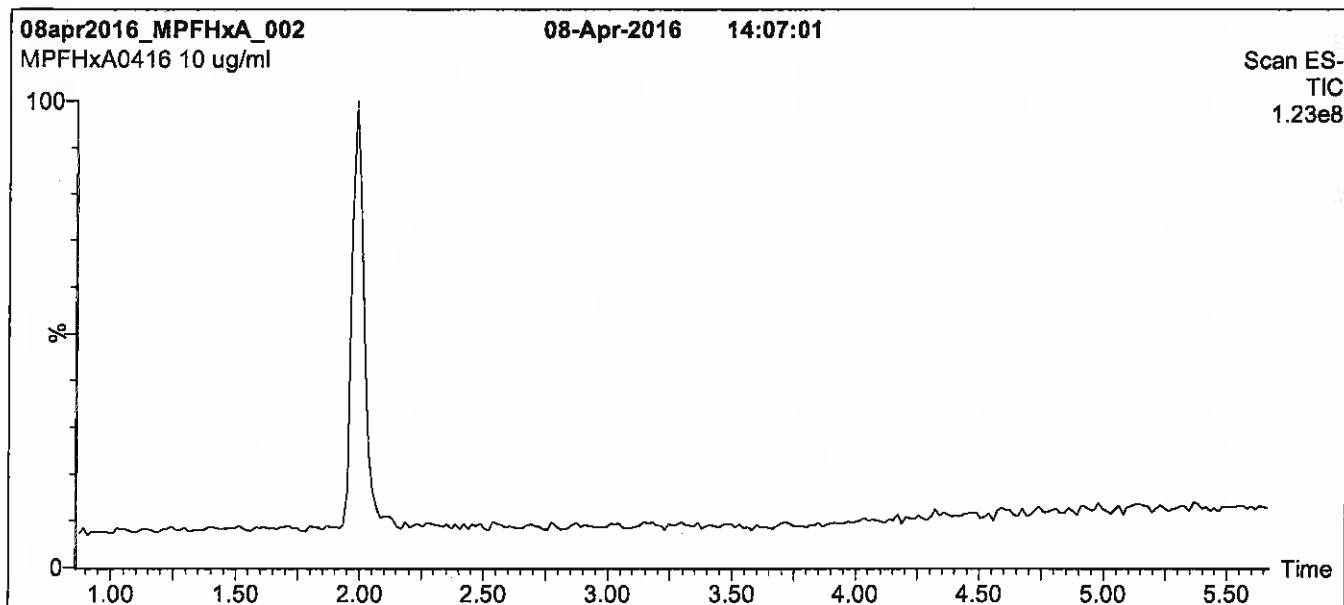
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

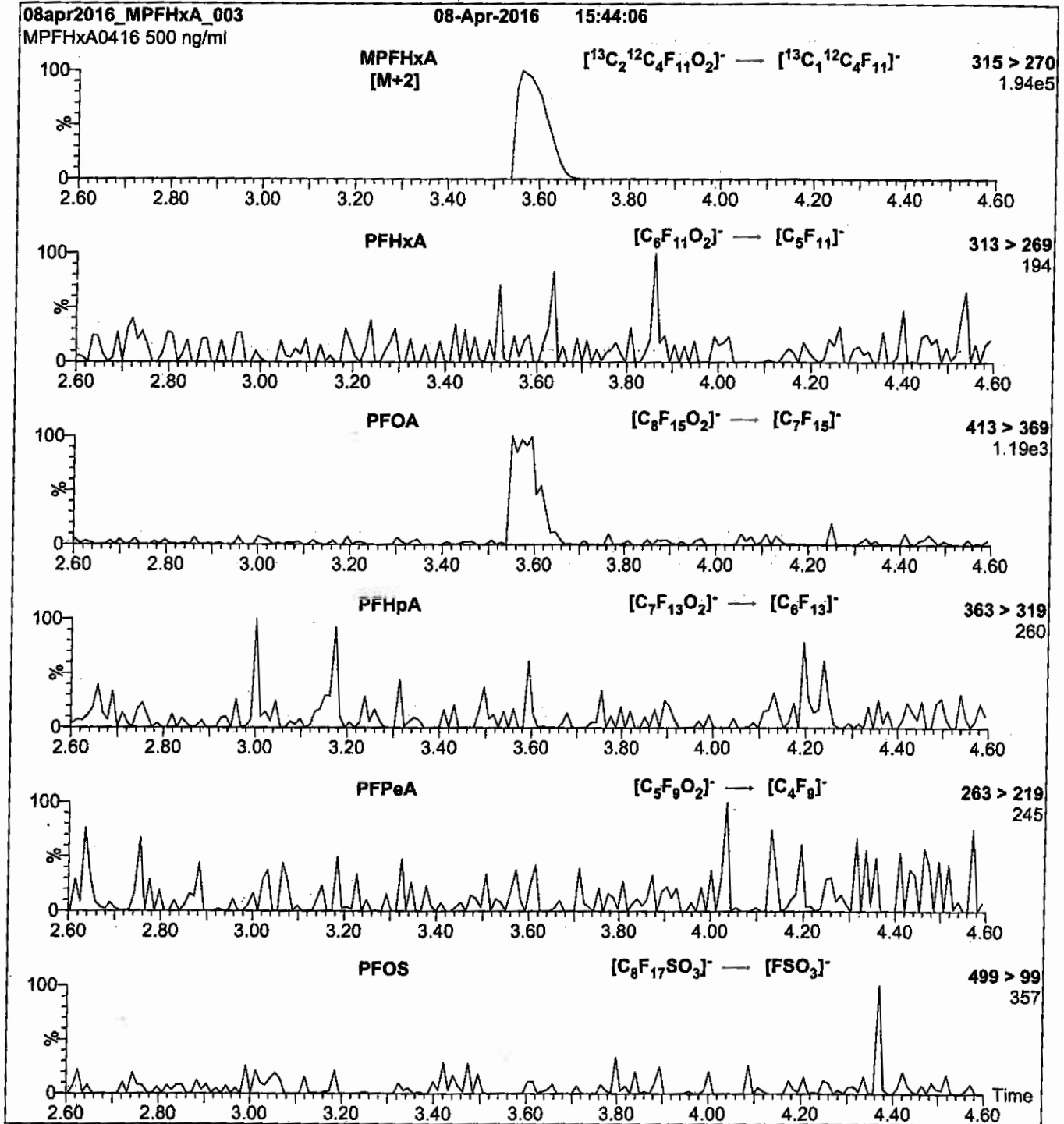
Flow: 300 μl/min

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 μ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-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

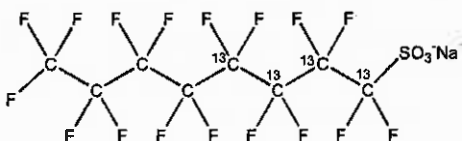


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0816
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **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% ¹³C
LAST TESTED: (mm/dd/yyyy) 08/03/2016 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 08/03/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 08/05/2016
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

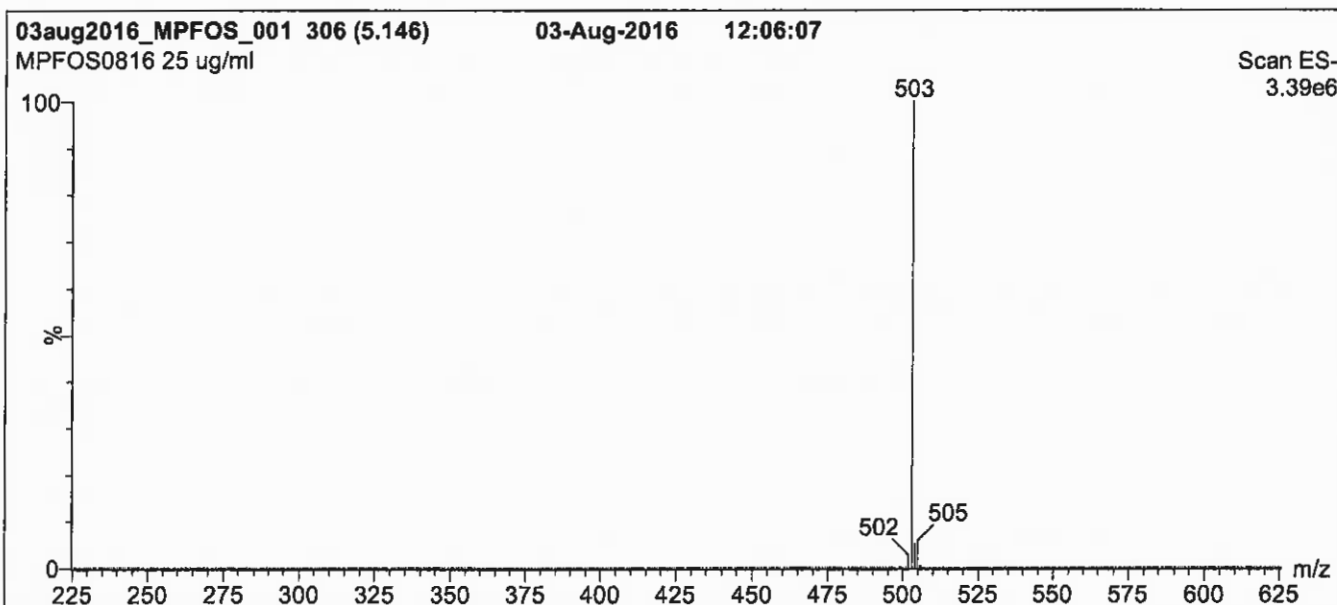
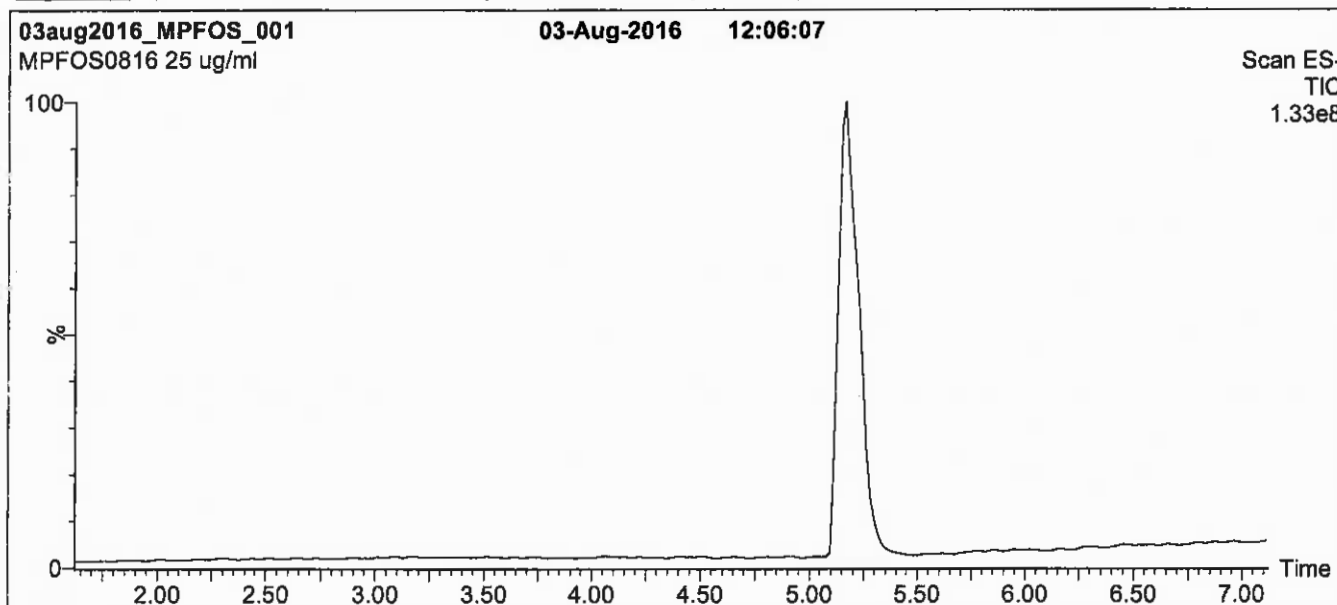
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

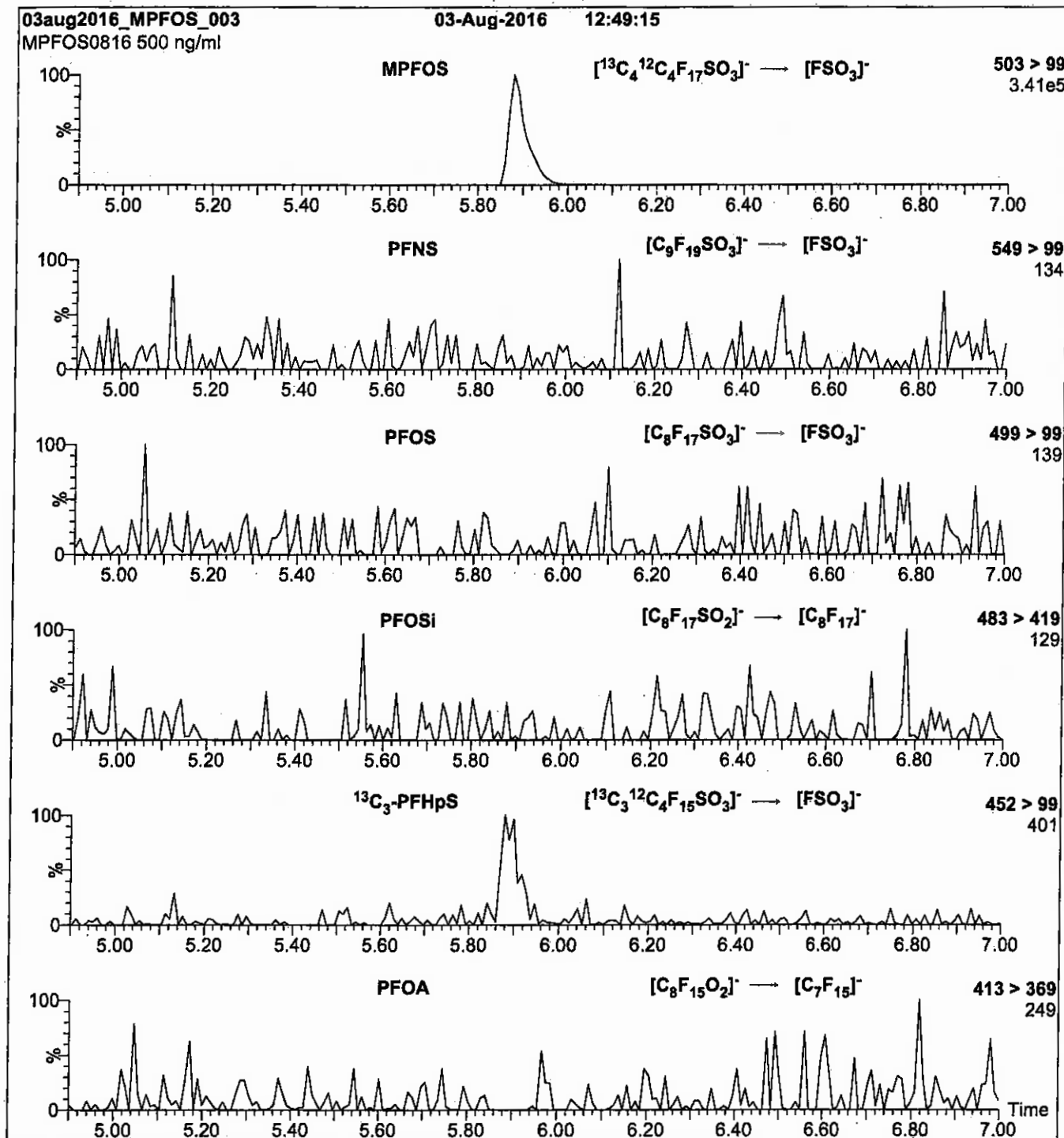
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCMPFOS_00021

r: 5/5/17 SKV

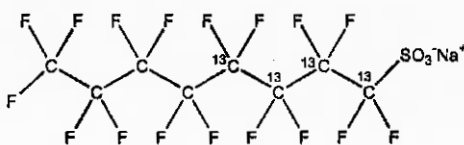


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



<u>MOLECULAR FORMULA:</u>	¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na	<u>MOLECULAR WEIGHT:</u>	526.08
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	<u>SOLVENT(S):</u>	Methanol
<u>CHEMICAL PURITY:</u>	>98%	<u>ISOTOPIC PURITY:</u>	≥99% ¹³ C (1,2,3,4- ¹³ C ₄)
<u>LAST TESTED:</u> (mm/dd/yyyy)	12/12/2016		
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	12/12/2021		
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place		


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 12/14/2016
(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.

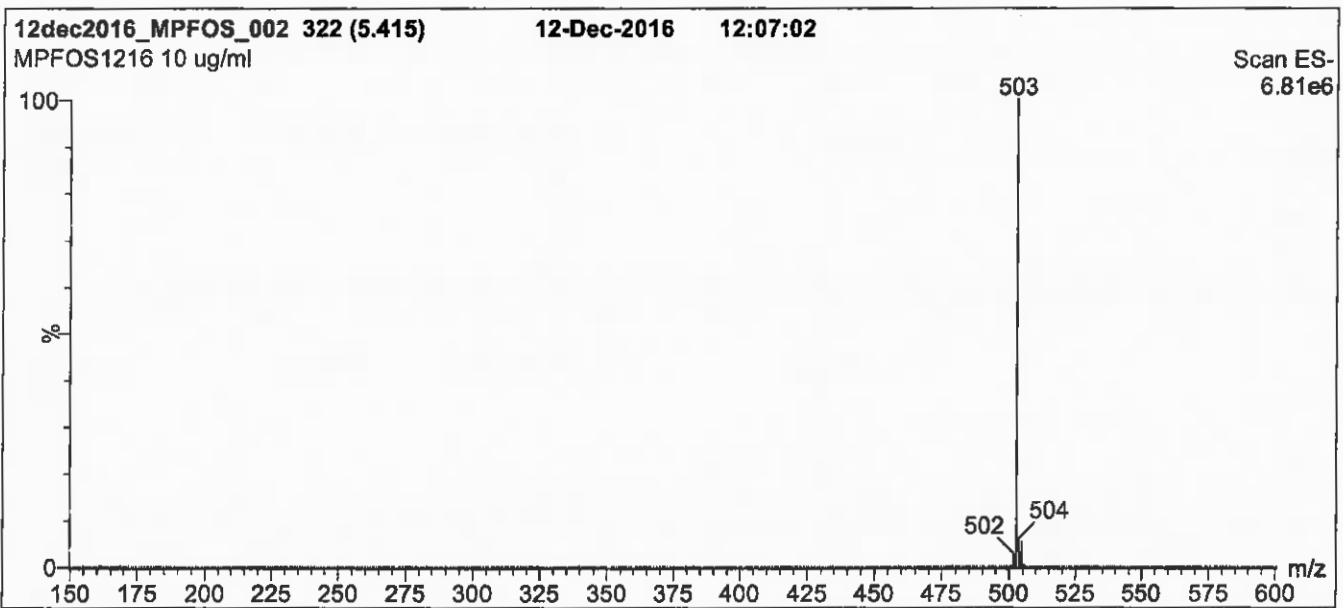
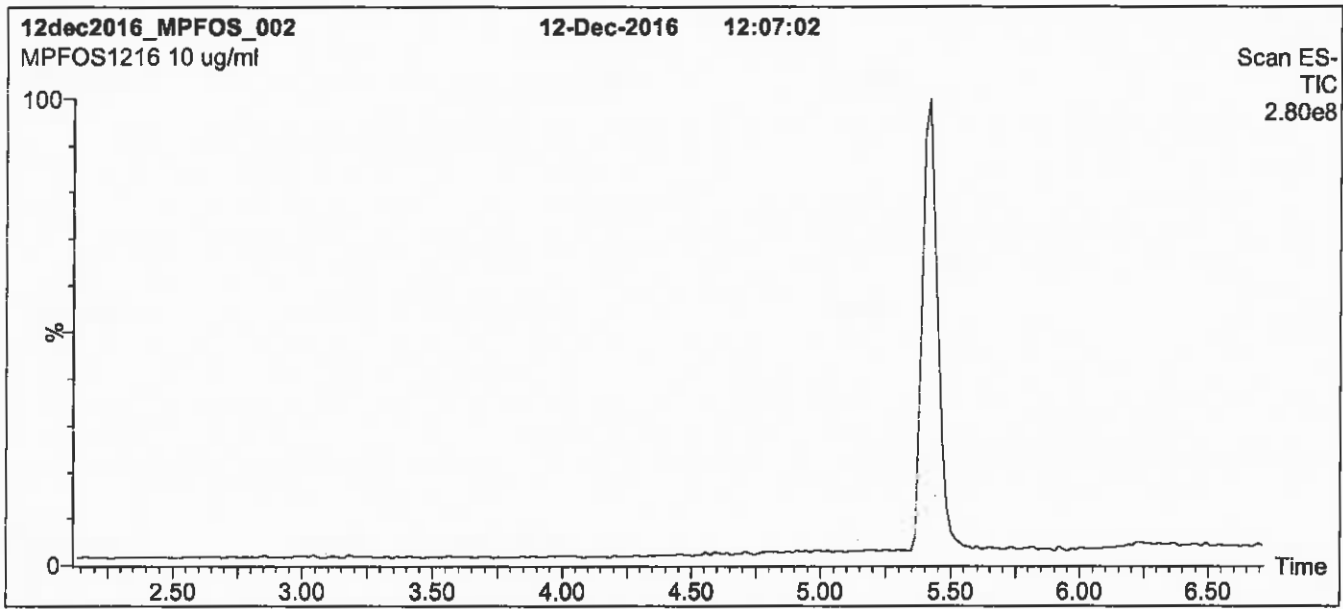
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc 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

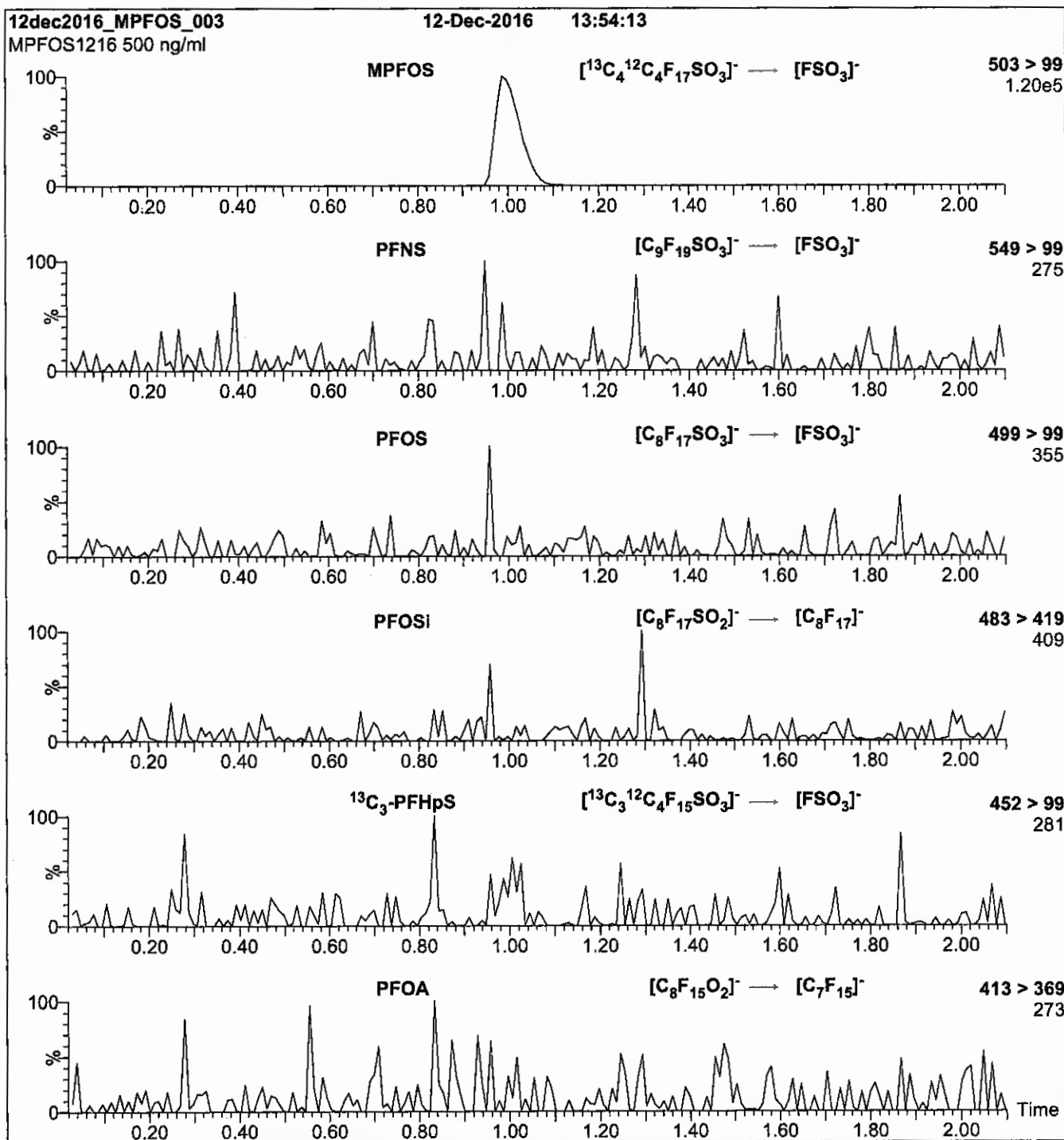
Flow: 300 μ l/min

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 μl (500 ng/ml MPFOS)

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

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

MS Parameters

Collision Gas (mbar) = 3.35e-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.: 320-30191-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-072617-RW-332 A	320-30191-1	91	123
NAWC-072617-RW-332 B	320-30191-2	100	125
NAWC-072617-FRB-33 2A	320-30191-3	101	125
NAWC-072617-RW-341	320-30191-4	81	126
NAWC-072617-FRB-34 1	320-30191-5	98	127
NAWC-072617-RW-349	320-30191-6	56 Q	131 Q
NAWC-072617-FRB-34 9	320-30191-7	106	130
NAWC-072617-RW-343	320-30191-8	84	125
NAWC-072617-FRB-34 3	320-30191-9	101	126
NAWC-072617-RW-345	320-30191-10	90	135 Q
NAWC-072617-FRB-34 5	320-30191-11	95	120
NAWC-072617-DUP03	320-30191-12	80	123
NAWC-072617-RW-342	320-30191-13	83	125
NAWC-072617-RW-332 B	320-30191-14	101	125
NAWC-072617-RW-117	320-30191-15	92	120
NAWC-072617-FRB-11 7	320-30191-16	101	126
NAWC-072617-DUP04	320-30191-17	88	124
WGNA-072617-RW-484 4	320-30191-18	88	136 Q
WGNA-072617-FRB-48 44	320-30191-19	96	138 Q
WGNA-072617-RW-310 3	320-30191-20	89	123
WGNA-072617-FRB-31 03	320-30191-21	98	127
WGNA-072617-DUP03	320-30191-22	89	123
	MB 320-177640/1-A	100	124
	MB 320-177651/1-A	98	122
	LCS 320-177640/2-A	101	133 Q
	LCS 320-177651/2-A	107	126
	LCSD 320-177651/3-A	102	126

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-072617-RW-349 MS	320-30191-6 MS	57 Q	130
NAWC-072617-RW-349 MSD	320-30191-6 MSD	61 Q	131 Q

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.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_004.d
 Lab ID: LCS 320-177640/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	160	184	115	70-130	
Perfluorooctanoic acid (PFOA)	79.9	83.8	105	70-130	
Perfluorononanoic acid (PFNA)	77.0	99.3	129	70-130	
Perfluorohexanesulfonic acid (PFHxS)	120	121	100	70-130	
Perfluoroheptanoic acid (PFHpA)	39.6	45.5	115	70-130	
Perfluorobutanesulfonic acid (PFBS)	353	343	97	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_023.d
 Lab ID: LCS 320-177651/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	300	332	110	70-130	E
Perfluorooctanoic acid (PFOA)	150	155	104	70-130	
Perfluorononanoic acid (PFNA)	144	177	122	70-130	E
Perfluorohexanesulfonic acid (PFHxS)	225	211	94	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	87.2	117	70-130	E
Perfluorobutanesulfonic acid (PFBS)	663	698	105	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.: 320-30191-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_024.d

Lab ID: LCSD 320-177651/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	300	324	108	2	30	70-130	E
Perfluorooctanoic acid (PFOA)	150	151	101	3	30	70-130	
Perfluorononanoic acid (PFNA)	144	171	119	3	30	70-130	E
Perfluorohexanesulfonic acid (PFHxS)	225	206	91	3	30	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	84.6	114	3	30	70-130	E
Perfluorobutanesulfonic acid (PFBS)	663	684	103	2	30	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_011.d
 Lab ID: 320-30191-6 MS Client ID: NAWC-072617-RW-349 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	136	17 J	168	110	70-130	
Perfluorooctanoic acid (PFOA)	68.0	29	102	107	70-130	M
Perfluorononanoic acid (PFNA)	65.5	17 U	90.8	139	70-130	J
Perfluorohexanesulfonic acid (PFHxS)	102	7.2 J	101	92	70-130	
Perfluoroheptanoic acid (PFHpA)	33.7	6.7 J	43.3	109	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	31 U	283	94	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_012.d
 Lab ID: 320-30191-6 MSD Client ID: NAWC-072617-RW-349 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	139	178	115	6	30	70-130	
Perfluorooctanoic acid (PFOA)	69.4	107	112	5	30	70-130	M
Perfluorononanoic acid (PFNA)	66.9	92.5	138	2	30	70-130	J
Perfluorohexanesulfonic acid (PFHxS)	104	109	98	8	30	70-130	
Perfluoroheptanoic acid (PFHpA)	34.4	46.5	116	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	307	304	99	7	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.: 320-30191-1
 SDG No.: _____
 Lab File ID: 2017.08.16_537C_003.d Lab Sample ID: MB 320-177640/1-A
 Matrix: Water Date Extracted: 08/03/2017 17:23
 Instrument ID: A8_N Date Analyzed: 08/16/2017 12:50
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-177640/2-A	2017.08.16_537C 004.d	08/16/2017 12:55
NAWC-072617-RW-332A	320-30191-1	2017.08.16_537C 005.d	08/16/2017 12:59
NAWC-072617-RW-332B	320-30191-2	2017.08.16_537C 006.d	08/16/2017 13:04
NAWC-072617-RW-341	320-30191-4	2017.08.16_537C 008.d	08/16/2017 13:14
NAWC-072617-FRB-341	320-30191-5	2017.08.16_537C 009.d	08/16/2017 13:18
NAWC-072617-RW-349	320-30191-6	2017.08.16_537C 010.d	08/16/2017 13:23
NAWC-072617-RW-349 MS	320-30191-6 MS	2017.08.16_537C 011.d	08/16/2017 13:28
NAWC-072617-RW-349 MSD	320-30191-6 MSD	2017.08.16_537C 012.d	08/16/2017 13:33
NAWC-072617-FRB-349	320-30191-7	2017.08.16_537C 015.d	08/16/2017 13:47
NAWC-072617-RW-343	320-30191-8	2017.08.16_537C 016.d	08/16/2017 13:52
NAWC-072617-FRB-343	320-30191-9	2017.08.16_537C 017.d	08/16/2017 13:56
NAWC-072617-RW-345	320-30191-10	2017.08.16_537C 018.d	08/16/2017 14:01
NAWC-072617-FRB-345	320-30191-11	2017.08.16_537C 019.d	08/16/2017 14:06
NAWC-072617-FRB-332A	320-30191-3	2017.08.16_537D 057.d	08/16/2017 20:12

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab File ID: 2017.08.16_537C_022.d Lab Sample ID: MB 320-177651/1-A
 Matrix: Water Date Extracted: 08/03/2017 17:40
 Instrument ID: A8_N Date Analyzed: 08/16/2017 14:20
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-177651/2-A	2017.08.16_537C_023.d	08/16/2017 14:25
	LCSD 320-177651/3-A	2017.08.16_537C_024.d	08/16/2017 14:29
NAWC-072617-DUP03	320-30191-12	2017.08.16_537C_025.d	08/16/2017 14:34
NAWC-072617-RW-342	320-30191-13	2017.08.16_537C_026.d	08/16/2017 14:39
NAWC-072617-RW-332B	320-30191-14	2017.08.16_537C_027.d	08/16/2017 14:44
NAWC-072617-RW-117	320-30191-15	2017.08.16_537C_028.d	08/16/2017 14:48
NAWC-072617-FRB-117	320-30191-16	2017.08.16_537C_029.d	08/16/2017 14:53
NAWC-072617-DUP04	320-30191-17	2017.08.16_537C_030.d	08/16/2017 14:58
WGNA-072617-RW-4844	320-30191-18	2017.08.16_537C_031.d	08/16/2017 15:03
WGNA-072617-FRB-4844	320-30191-19	2017.08.16_537C_034.d	08/16/2017 15:17
WGNA-072617-RW-3103	320-30191-20	2017.08.16_537C_035.d	08/16/2017 15:22
WGNA-072617-FRB-3103	320-30191-21	2017.08.16_537C_036.d	08/16/2017 15:26
WGNA-072617-DUP03	320-30191-22	2017.08.16_537C_037.d	08/16/2017 15:31

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	2250916	1.95	5850602	2.21		
UPPER LIMIT	3376374	2.45	8775903	2.71		
LOWER LIMIT	1125458	1.45	2925301	1.71		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-179319/9		2177935	1.94	5998180	2.20	
ICV 320-179319/11		1980065	1.94	5824653	2.19	
CCVL 320-179695/4		2440436	1.99	6032262	2.21	
CCV 320-179727/1 CCVIS		2038727	1.95	5758922	2.18	
MB 320-177640/1-A		2039484	1.96	5859519	2.19	
LCS 320-177640/2-A		2195855	1.95	6260681	2.18	
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18	
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18	
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17	
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18	
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18	
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18	
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17	
CCV 320-179727/13 CCVIS		1866257	1.95	5698459	2.18	
CCV 320-179728/13 CCVIS		1866257	1.95	5698459	2.18	
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17	
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17	
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17	
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17	
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17	
CCV 320-179728/20 CCVIS		1760639	1.94	5486673	2.17	
CCV 320-179732/20 CCVIS		1760639	1.94	5486673	2.17	
MB 320-177651/1-A		1954348	1.94	5738380	2.17	
LCS 320-177651/2-A		1889531	1.95	5624637	2.18	
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18	
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18	
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17	

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.: 320-30191-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	2250916	1.95	5850602	2.21		
UPPER LIMIT	3376374	2.45	8775903	2.71		
LOWER LIMIT	1125458	1.45	2925301	1.71		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17	
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18	
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17	
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17	
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18	
CCV 320-179732/32 CCVIS		1839473	1.94	5667758	2.18	
CCV 320-179733/32 CCVIS		1839473	1.94	5667758	2.18	
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17	
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17	
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17	
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17	
CCV 320-179733/38 CCVIS		1857646	1.94	5657569	2.17	
CCV 320-179920/1 CCVIS		1811420	1.93	5562915	2.16	
320-30191-3	NAWC-072617-FRB-332A	1923676	1.93	5905224	2.16	
CCV 320-179920/13 CCVIS		1854955	1.94	5653051	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179727/1 Date Analyzed: 08/16/2017 12:40
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_001 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2038727	1.95	5758922	2.18		
UPPER LIMIT	2854218	2.45	8062491	2.68		
LOWER LIMIT	1427109	1.45	4031245	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177640/1-A		2039484	1.96	5859519	2.19	
LCS 320-177640/2-A		2195855	1.95	6260681	2.18	
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18	
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18	
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17	
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18	
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18	
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18	
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179727/13 Date Analyzed: 08/16/2017 13:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1866257	1.95	5698459	2.18		
UPPER LIMIT	2612760	2.45	7977843	2.68		
LOWER LIMIT	1306380	1.45	3988921	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177640/1-A		2039484	1.96	5859519	2.19	
LCS 320-177640/2-A		2195855	1.95	6260681	2.18	
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18	
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18	
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17	
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18	
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18	
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18	
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179728/13 Date Analyzed: 08/16/2017 13:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1866257	1.95	5698459	2.18		
UPPER LIMIT	2612760	2.45	7977843	2.68		
LOWER LIMIT	1306380	1.45	3988921	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17	
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17	
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17	
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17	
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179728/20 Date Analyzed: 08/16/2017 14:10
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1760639	1.94	5486673	2.17		
UPPER LIMIT	2464895	2.44	7681342	2.67		
LOWER LIMIT	1232447	1.44	3840671	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17	
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17	
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17	
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17	
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179732/20 Date Analyzed: 08/16/2017 14:10
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1760639	1.94	5486673	2.17		
UPPER LIMIT	2464895	2.44	7681342	2.67		
LOWER LIMIT	1232447	1.44	3840671	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177651/1-A		1954348	1.94	5738380	2.17	
LCS 320-177651/2-A		1889531	1.95	5624637	2.18	
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18	
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18	
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17	
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17	
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18	
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17	
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17	
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179732/32 Date Analyzed: 08/16/2017 15:07
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1839473	1.94	5667758	2.18		
UPPER LIMIT	2575262	2.44	7934861	2.68		
LOWER LIMIT	1287631	1.44	3967431	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177651/1-A		1954348	1.94	5738380	2.17	
LCS 320-177651/2-A		1889531	1.95	5624637	2.18	
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18	
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18	
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17	
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17	
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18	
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17	
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17	
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179733/32 Date Analyzed: 08/16/2017 15:07
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1839473	1.94	5667758	2.18		
UPPER LIMIT	2575262	2.44	7934861	2.68		
LOWER LIMIT	1287631	1.44	3967431	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17	
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17	
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17	
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179733/38 Date Analyzed: 08/16/2017 15:36
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_038 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1857646	1.94	5657569	2.17		
UPPER LIMIT	2600704	2.44	7920597	2.67		
LOWER LIMIT	1300352	1.44	3960298	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17	
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17	
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17	
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179920/1 Date Analyzed: 08/16/2017 19:48
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537D_052 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1811420	1.93	5562915	2.16		
UPPER LIMIT	2535988	2.43	7788081	2.66		
LOWER LIMIT	1267994	1.43	3894041	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-3	NAWC-072617-FRB-332A		1923676	1.93	5905224	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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179920/13 Date Analyzed: 08/16/2017 20:45
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537D_064 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1854955	1.94	5653051	2.17		
UPPER LIMIT	2596937	2.44	7914271	2.67		
LOWER LIMIT	1298469	1.44	3957136	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-3	NAWC-072617-FRB-332A		1923676	1.93	5905224	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 I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-332A Lab Sample ID: 320-30191-1
 Matrix: Water Lab File ID: 2017.08.16_537C_005.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 292.9(mL) Date Analyzed: 08/16/2017 12:59
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.7	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	12	J M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U M	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	123		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d
 Lims ID: 320-30191-A-1-A
 Client ID: NAWC-072617-RW-332A
 Sample Type: Client
 Inject. Date: 16-Aug-2017 12:59:51 ALS Bottle#: 13 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:32:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	93710	0.3892		5.1	M
298.90 > 99.00	1.442	1.453	-0.011	1.000	59063		1.59(0.00-0.00)	11.3	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1970692	9.12		5006	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	670422	2.10		73.0	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	147837	0.8549		6.9	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	633320	3.46		32.3	M
413.00 > 169.00	1.950	1.955	-0.005	1.000	359138		1.76(0.00-0.00)	272	M
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2020164	10.0		5226	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.185	2.177	0.008	1.000	560752	2.84		132	
499.00 > 99.00	2.177	2.177	0.0	0.997	93699		5.98(0.00-0.00)	65.6	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		6134523	28.7		3017	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	54460	0.4759		2.6	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1459377	12.3		5491	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d

Injection Date: 16-Aug-2017 12:59:51

Instrument ID: A8_N

Lims ID: 320-30191-A-1-A

Lab Sample ID: 320-30191-1

Client ID: NAWC-072617-RW-332A

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

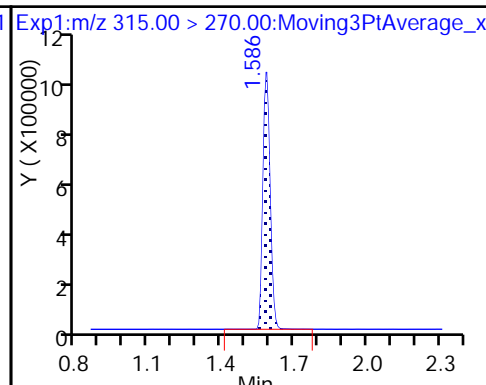
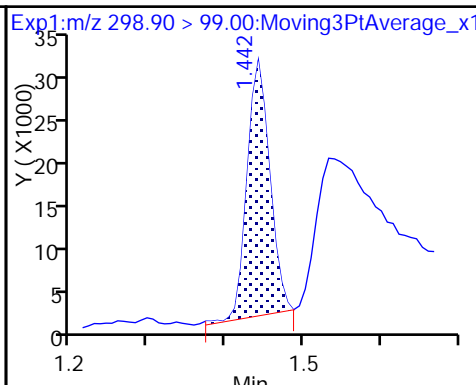
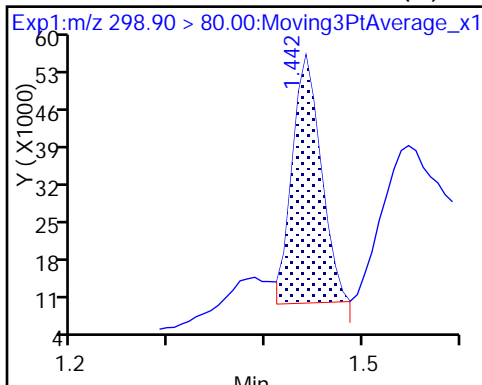
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid

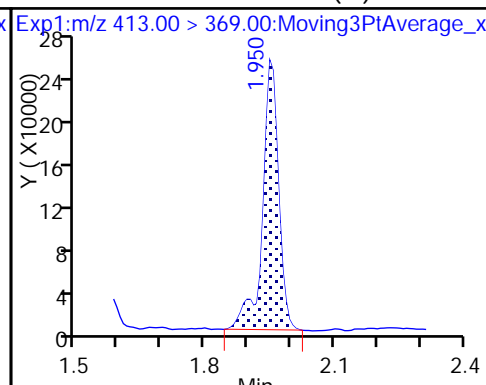
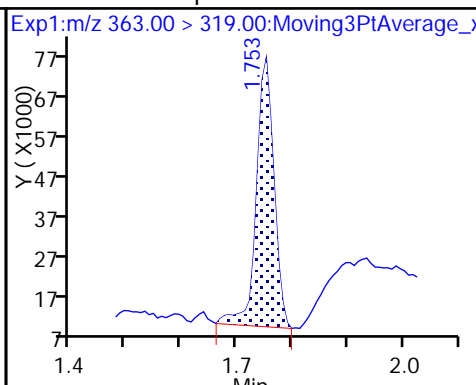
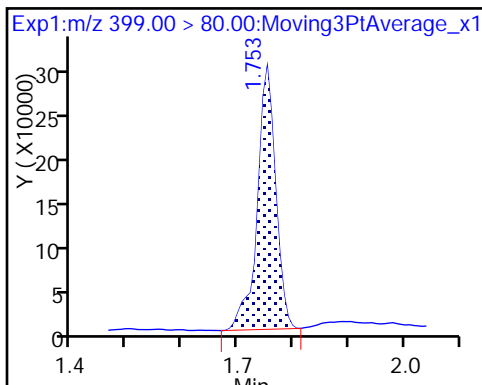
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

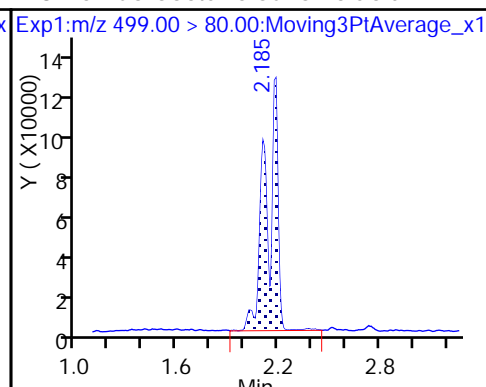
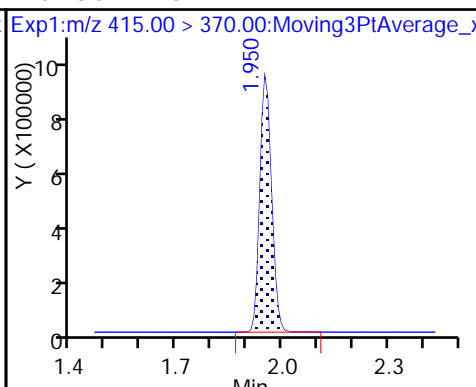
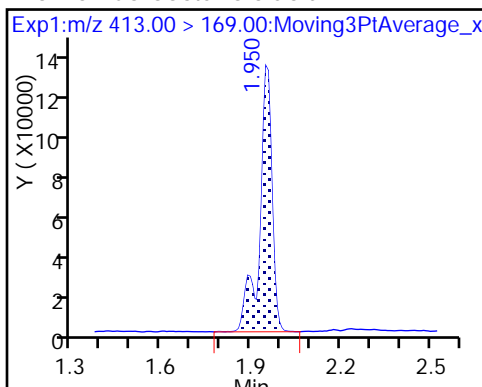
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

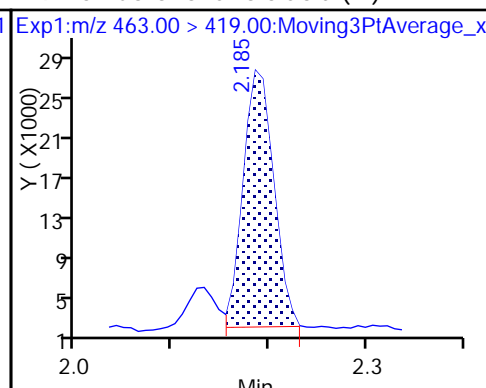
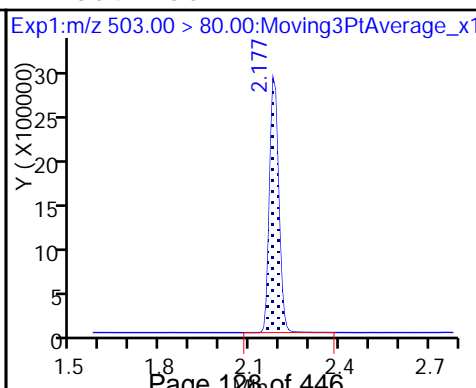
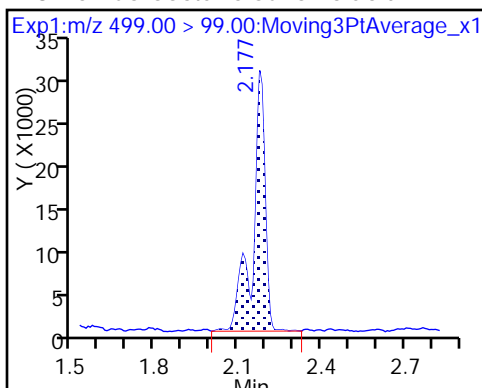
8 Perfluorooctane sulfonic acid



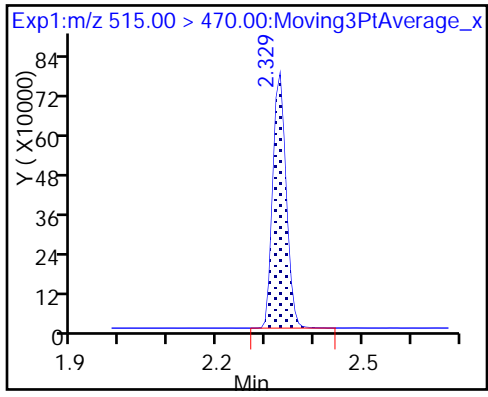
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d
 Lims ID: 320-30191-A-1-A
 Client ID: NAWC-072617-RW-332A
 Sample Type: Client
 Inject. Date: 16-Aug-2017 12:59:51 ALS Bottle#: 13 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:32:22

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.12	91.23
\$ 10 13C2 PFDA	10.0	12.3	122.93

TestAmerica Sacramento

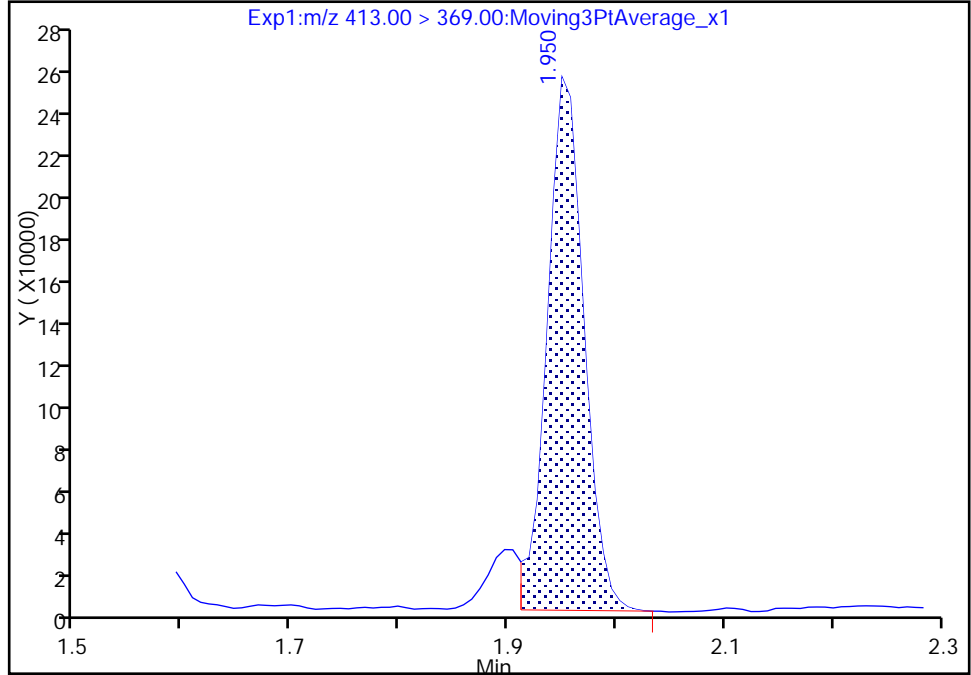
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d
Injection Date: 16-Aug-2017 12:59:51 Instrument ID: A8_N
Lims ID: 320-30191-A-1-A Lab Sample ID: 320-30191-1
Client ID: NAWC-072617-RW-332A
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

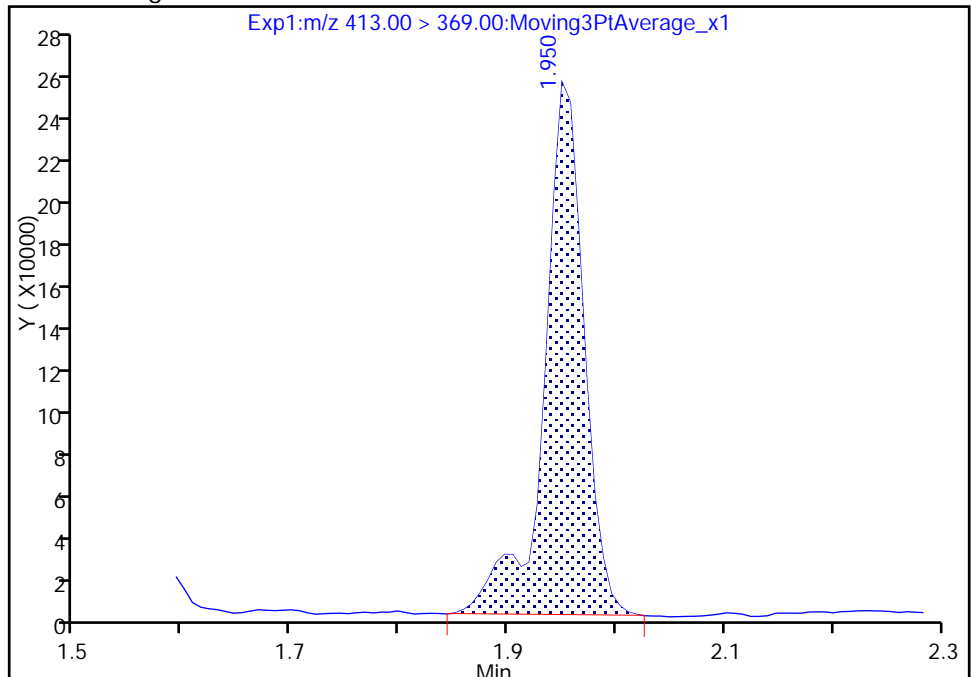
RT: 1.95
Area: 579704
Amount: 3.164393
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 633320
Amount: 3.457063
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:31:56
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

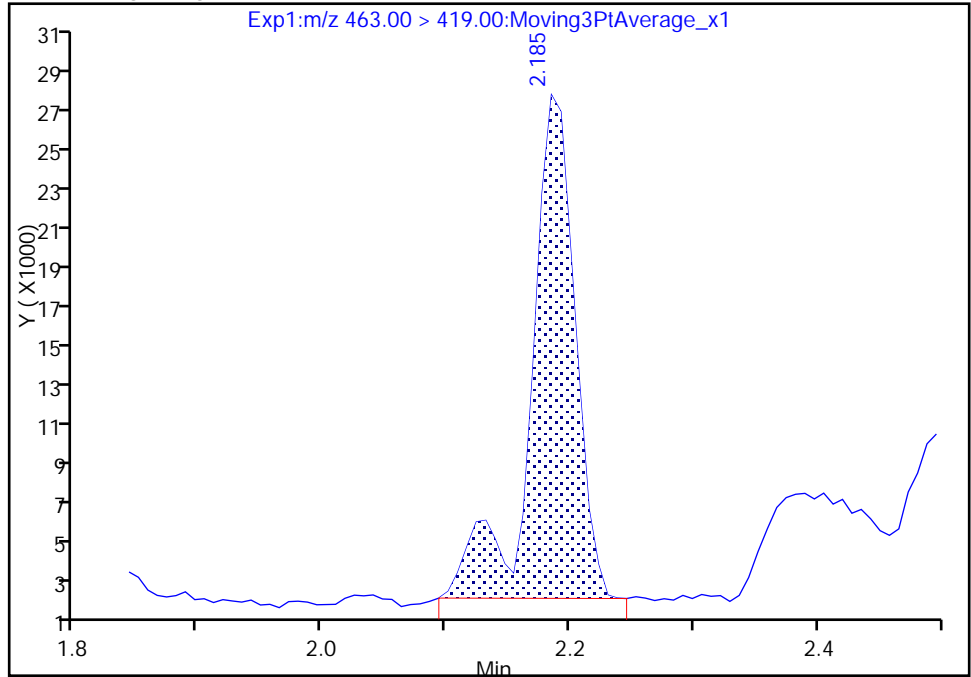
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d
Injection Date: 16-Aug-2017 12:59:51 Instrument ID: A8_N
Lims ID: 320-30191-A-1-A Lab Sample ID: 320-30191-1
Client ID: NAWC-072617-RW-332A
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 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

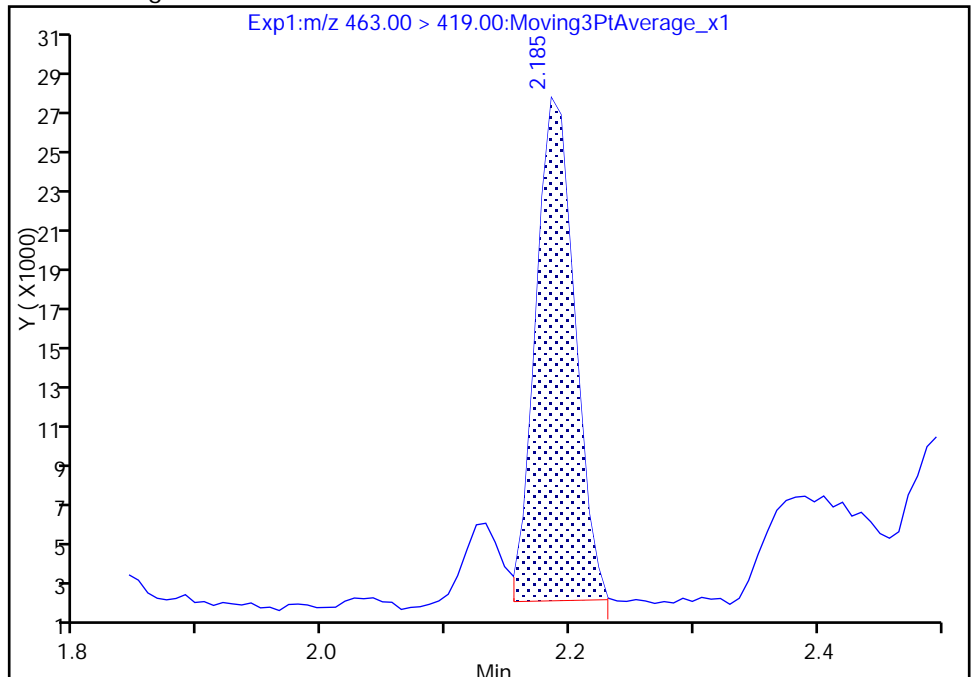
RT: 2.19
Area: 62415
Amount: 0.545389
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 54460
Amount: 0.475877
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:35:36
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

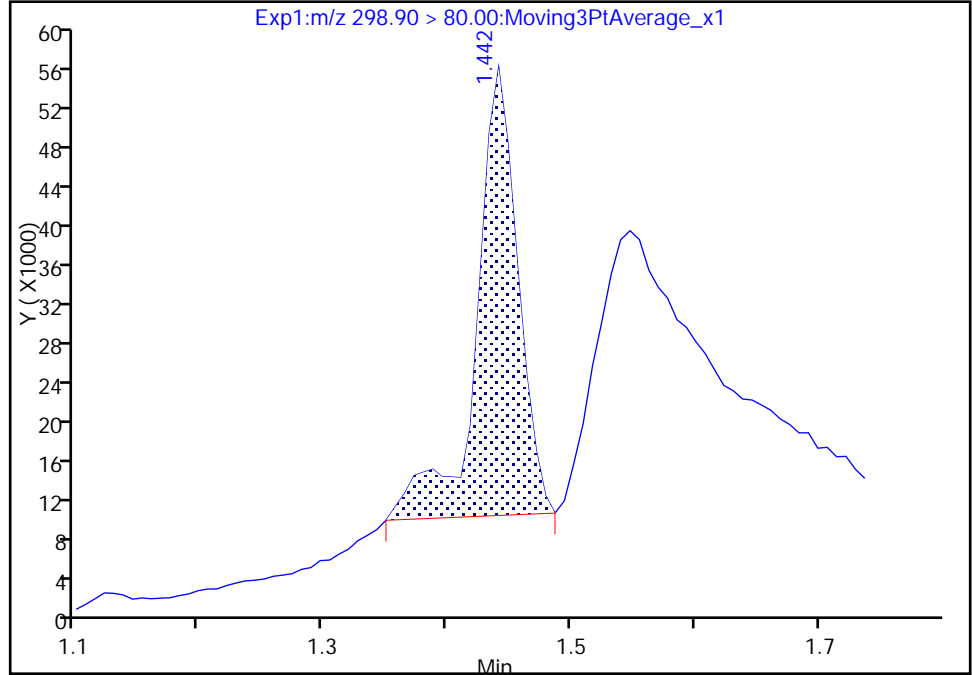
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d
Injection Date: 16-Aug-2017 12:59:51 Instrument ID: A8_N
Lims ID: 320-30191-A-1-A Lab Sample ID: 320-30191-1
Client ID: NAWC-072617-RW-332A
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

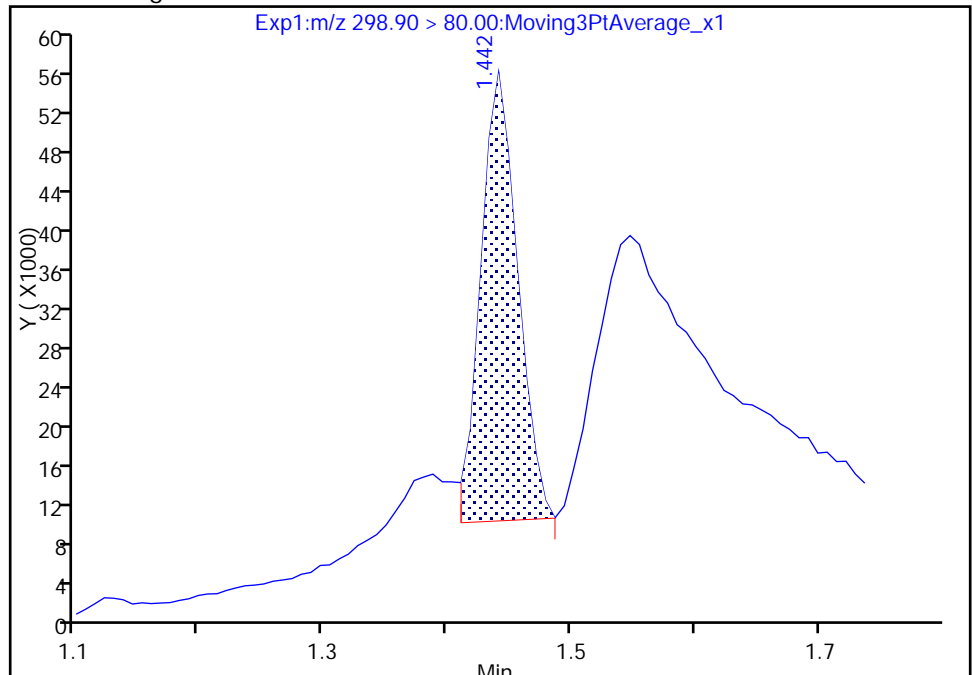
RT: 1.44
Area: 106409
Amount: 0.441974
Amount Units: ng/ml

Processing Integration Results



RT: 1.44
Area: 93710
Amount: 0.389187
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:33:16
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-332B Lab Sample ID: 320-30191-2
 Matrix: Water Lab File ID: 2017.08.16_537C_006.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 285.6(mL) Date Analyzed: 08/16/2017 13:04
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	125		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_006.d
 Lims ID: 320-30191-A-2-A
 Client ID: NAWC-072617-RW-332B
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:04:37 ALS Bottle#: 14 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.586	1.582	0.004	1.000	2279913	10.0	5272	
* 6 13C2-PFOA	415.00 > 370.00	1.950	1.955	-0.005		2127356	10.0	6262	
* 7 13C4 PFOS	503.00 > 80.00	2.177	2.205	-0.028		6059329	28.7	5484	
\$ 10 13C2 PFDA	515.00 > 470.00	2.329	2.354	-0.025	1.000	1563492	12.5	5610	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_006.d

Injection Date: 16-Aug-2017 13:04:37

Instrument ID: A8_N

Lims ID: 320-30191-A-2-A

Lab Sample ID: 320-30191-2

Client ID: NAWC-072617-RW-332B

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 6

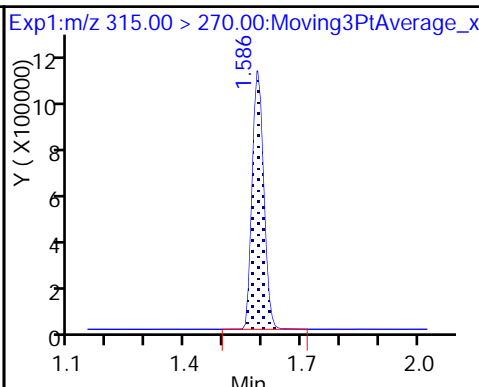
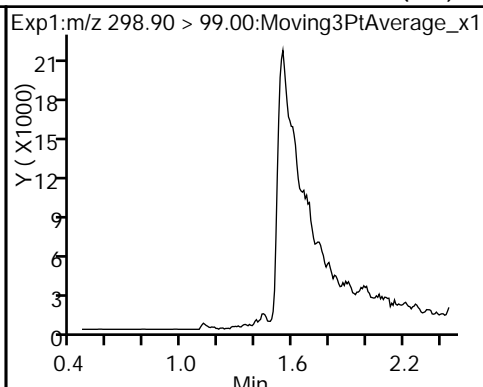
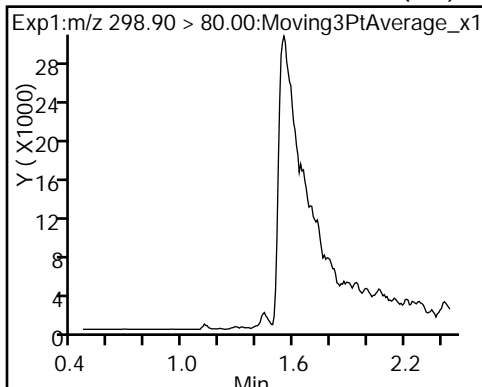
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

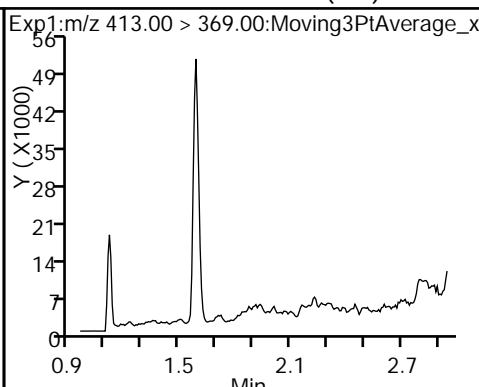
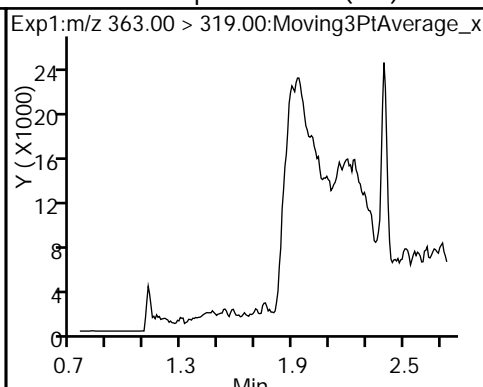
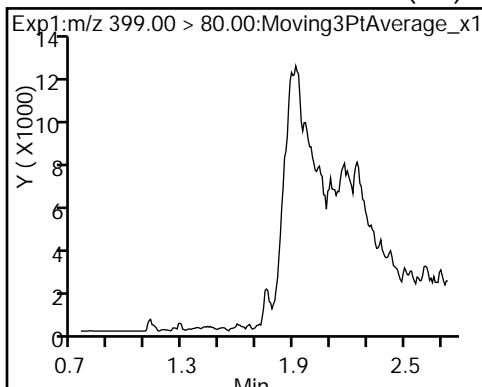
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

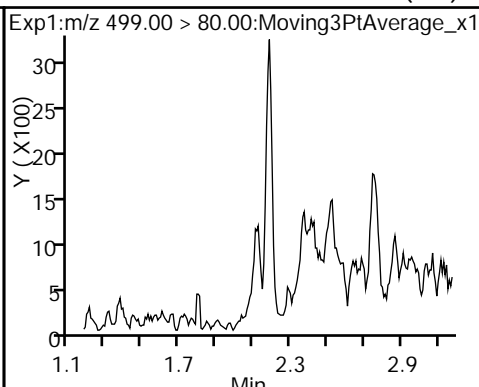
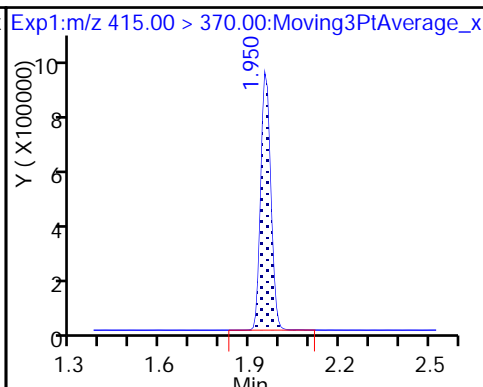
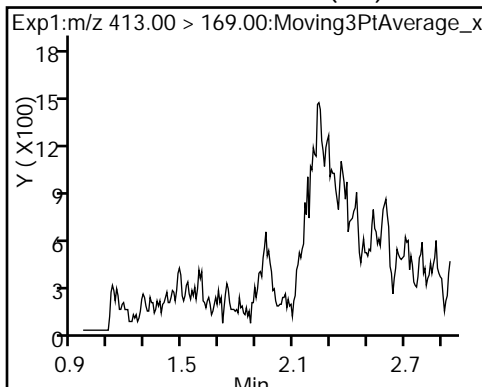
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

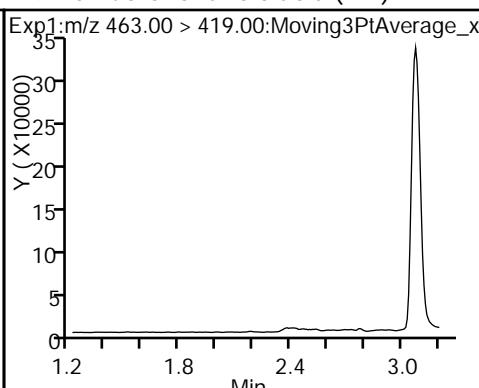
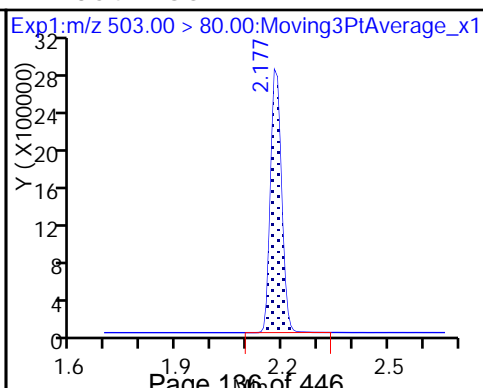
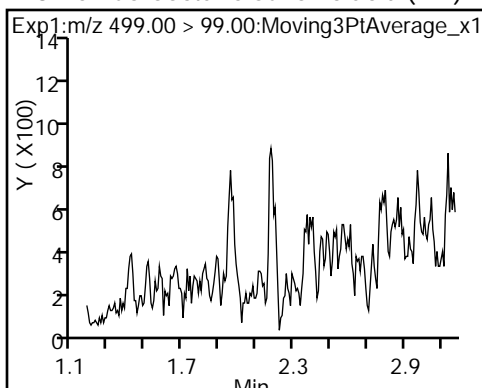
8 Perfluorooctane sulfonic acid (ND)



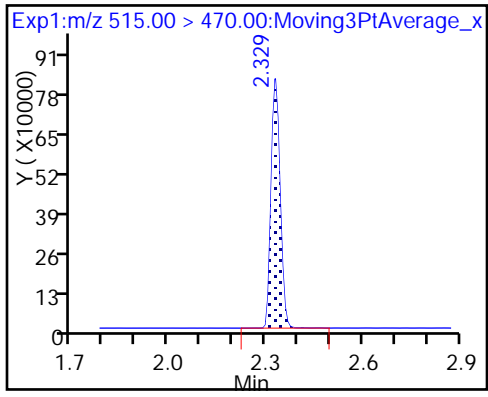
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_006.d
 Lims ID: 320-30191-A-2-A
 Client ID: NAWC-072617-RW-332B
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:04:37 ALS Bottle#: 14 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.0	100.23
\$ 10 13C2 PFDA	10.0	12.5	125.06

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-332A Lab Sample ID: 320-30191-3
 Matrix: Water Lab File ID: 2017.08.16_537D_057.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 277.4 (mL) Date Analyzed: 08/16/2017 20:12
 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.: 179920 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_057.d
 Lims ID: 320-30191-A-3-A
 Client ID: NAWC-072617-FRB-332A
 Sample Type: Client
 Inject. Date: 16-Aug-2017 20:12:09 ALS Bottle#: 15 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:45:03 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.571	1.582	-0.012	1.000	2067967	10.1	6444	
* 6 13C2-PFOA	415.00 > 370.00	1.927	1.955	-0.028		1923676	10.0	6165	
* 7 13C4 PFOS	503.00 > 80.00	2.155	2.205	-0.050		5905224	28.7	4755	
\$ 10 13C2 PFDA	515.00 > 470.00	2.314	2.354	-0.040	1.000	1417020	12.5	6032	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_057.d

Injection Date: 16-Aug-2017 20:12:09

Instrument ID: A8_N

Lims ID: 320-30191-A-3-A

Lab Sample ID: 320-30191-3

Client ID: NAWC-072617-FRB-332A

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 6

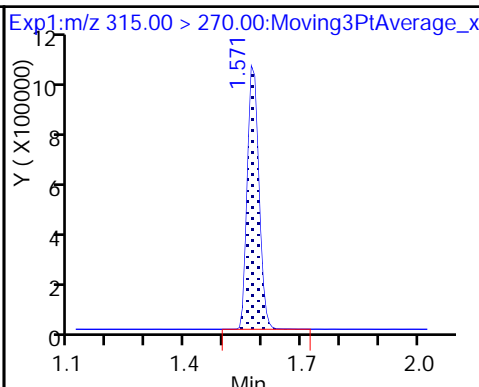
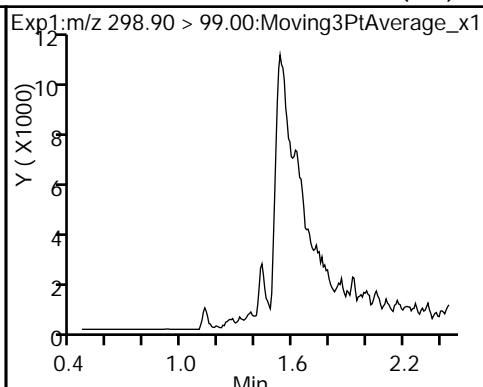
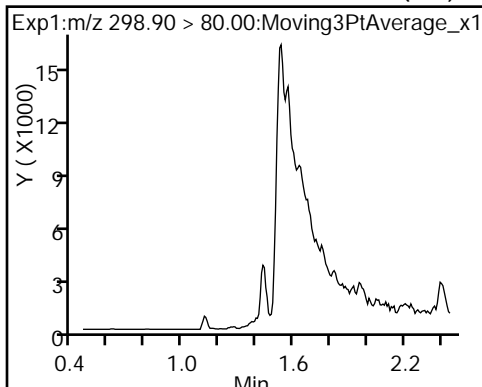
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

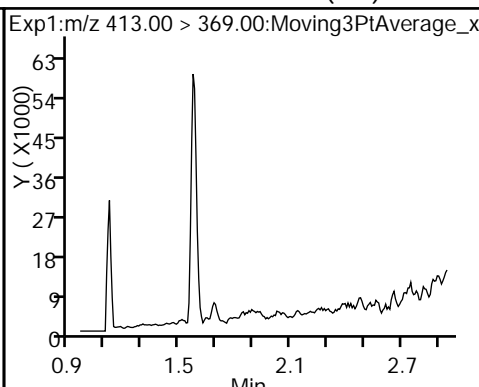
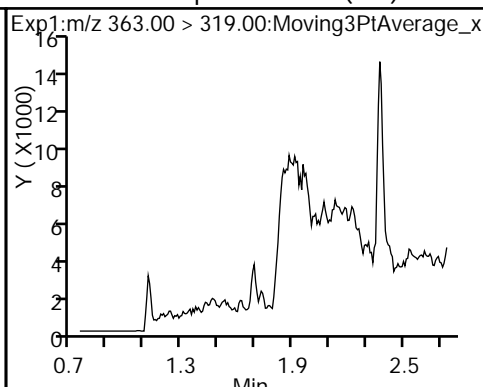
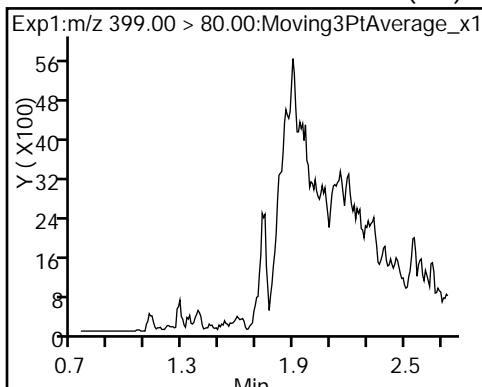
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

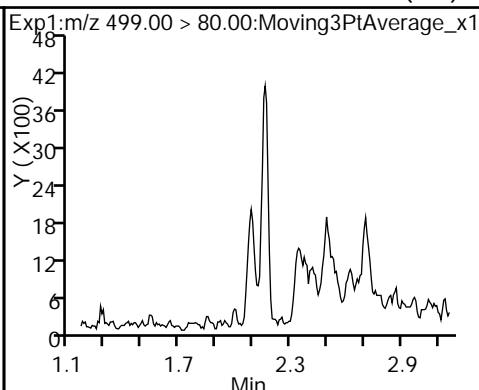
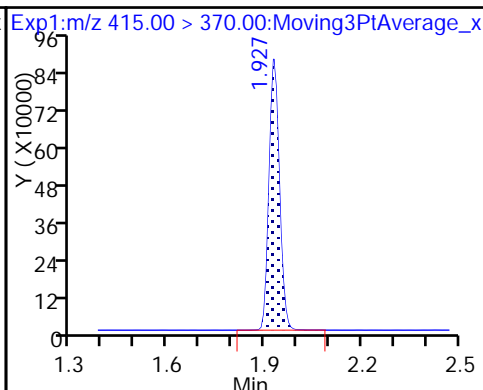
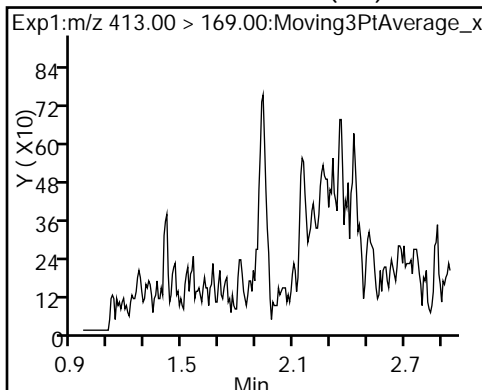
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

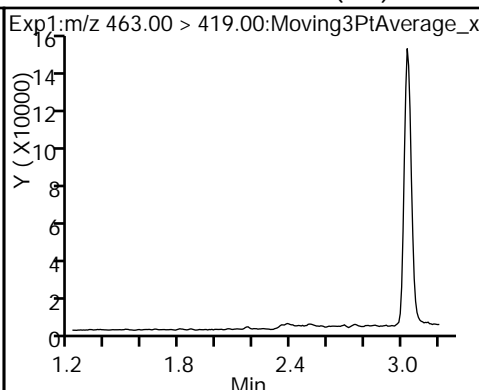
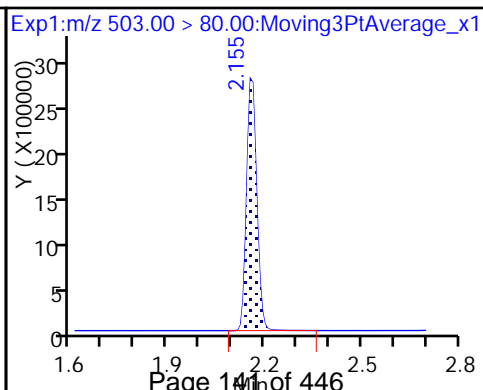
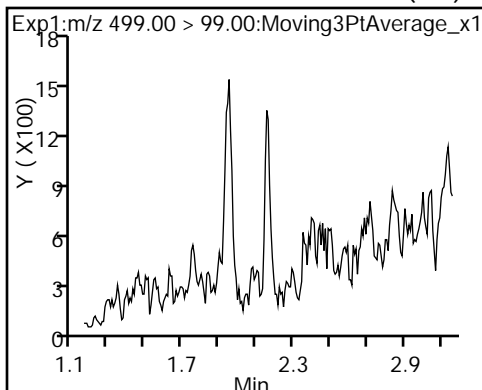
8 Perfluorooctane sulfonic acid (ND)



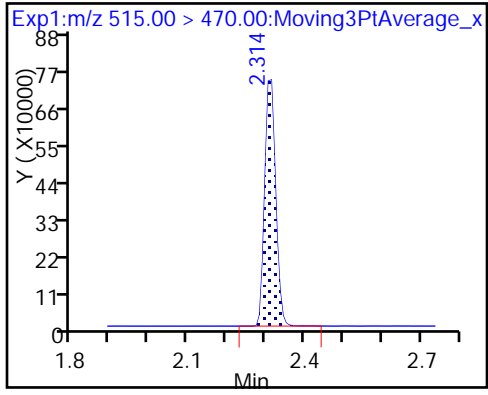
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_057.d
 Lims ID: 320-30191-A-3-A
 Client ID: NAWC-072617-FRB-332A
 Sample Type: Client
 Inject. Date: 16-Aug-2017 20:12:09 ALS Bottle#: 15 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:45:03 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	100.54
\$ 10 13C2 PFDA	10.0	12.5	125.35

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-341 Lab Sample ID: 320-30191-4
 Matrix: Water Lab File ID: 2017.08.16_537C_008.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 278.5 (mL) Date Analyzed: 08/16/2017 13:14
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	11	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d
 Lims ID: 320-30191-A-4-A
 Client ID: NAWC-072617-RW-341
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:14:06 ALS Bottle#: 16 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:35:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	239412	1.00		31.7	
298.90 > 99.00	1.434	1.453	-0.019	0.995	154065		1.55(0.00-0.00)	31.7	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	1875254	8.13		4531	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	296718	0.9342		39.7	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	148183	0.8023		8.9	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	604741	3.09		30.5	M
413.00 > 169.00	1.942	1.955	-0.013	0.996	372158		1.62(0.00-0.00)	324	M
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		2157461	10.0		6031	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	674874	3.44		193	
499.00 > 99.00	2.177	2.177	0.0	1.000	105681		6.39(0.00-0.00)	72.5	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		6097174	28.7		3743	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	45485	0.3722		2.3	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1594651	12.6		6474	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d

Injection Date: 16-Aug-2017 13:14:06

Instrument ID: A8_N

Lims ID: 320-30191-A-4-A

Lab Sample ID: 320-30191-4

Client ID: NAWC-072617-RW-341

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

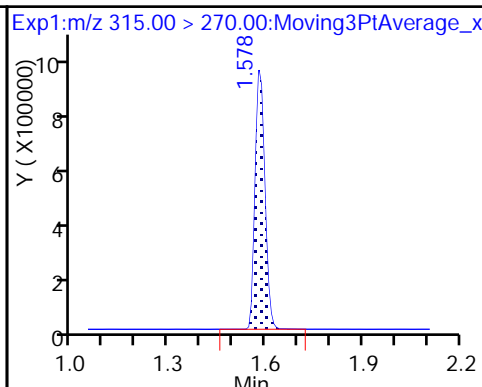
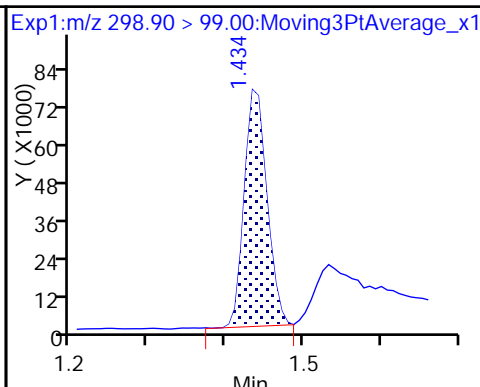
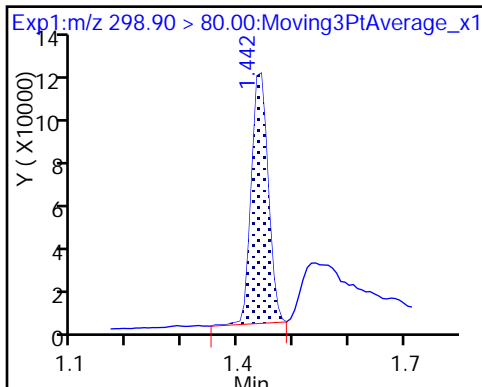
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

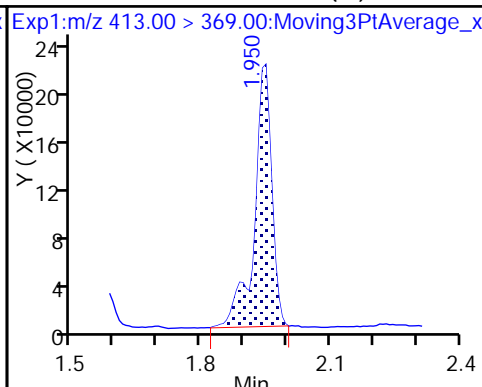
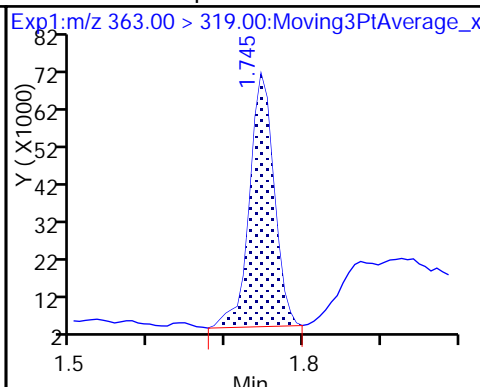
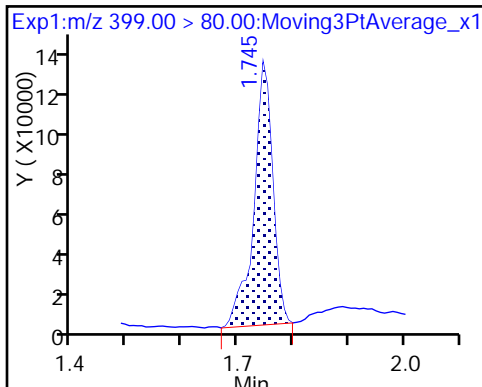
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

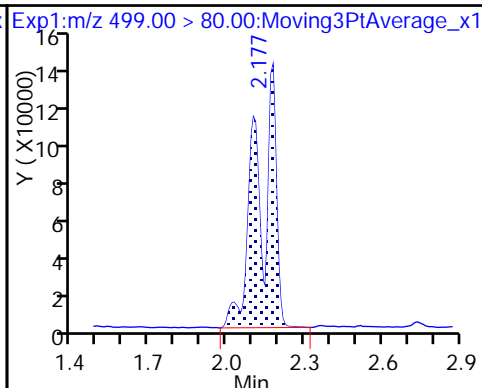
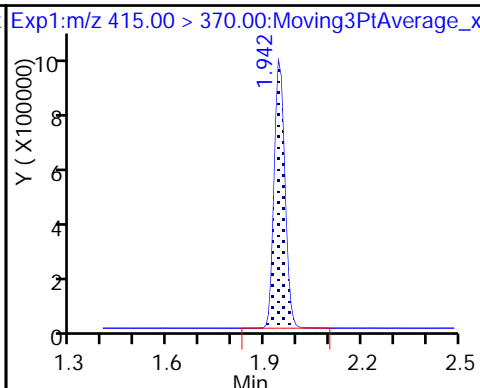
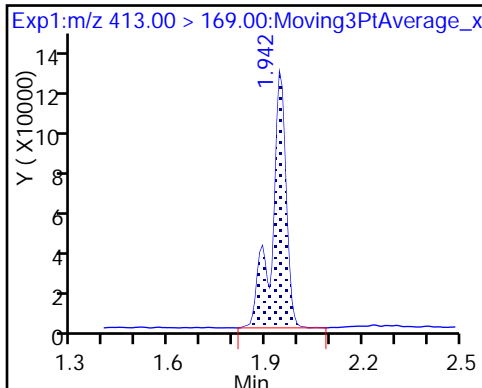
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

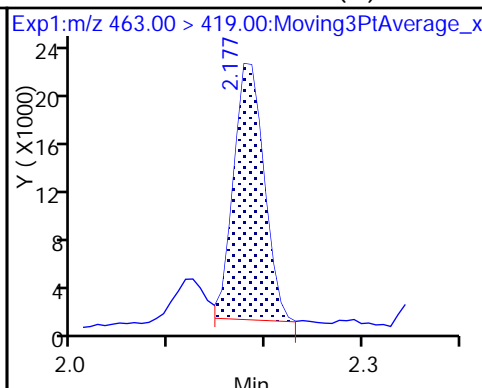
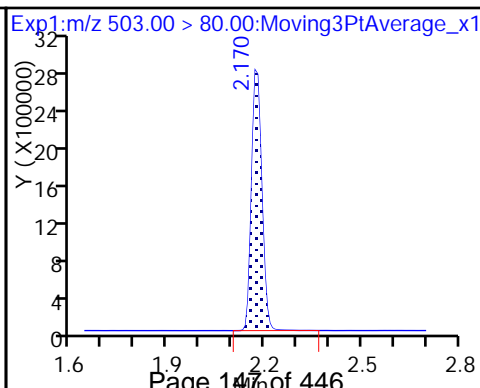
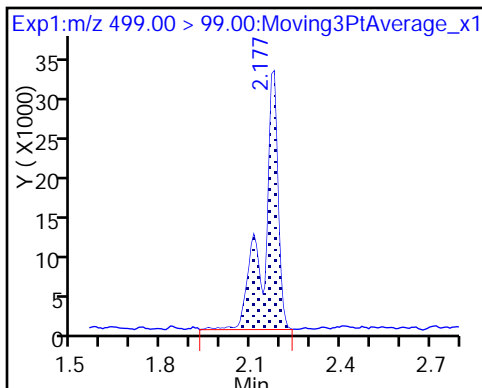
8 Perfluorooctane sulfonic acid



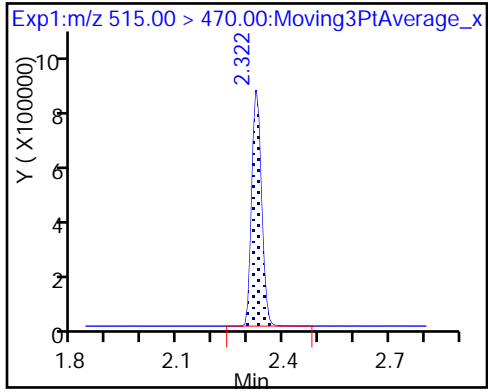
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d
 Lims ID: 320-30191-A-4-A
 Client ID: NAWC-072617-RW-341
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:14:06 ALS Bottle#: 16 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:35:05

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.13	81.29
\$ 10 13C2 PFDA	10.0	12.6	125.77

TestAmerica Sacramento

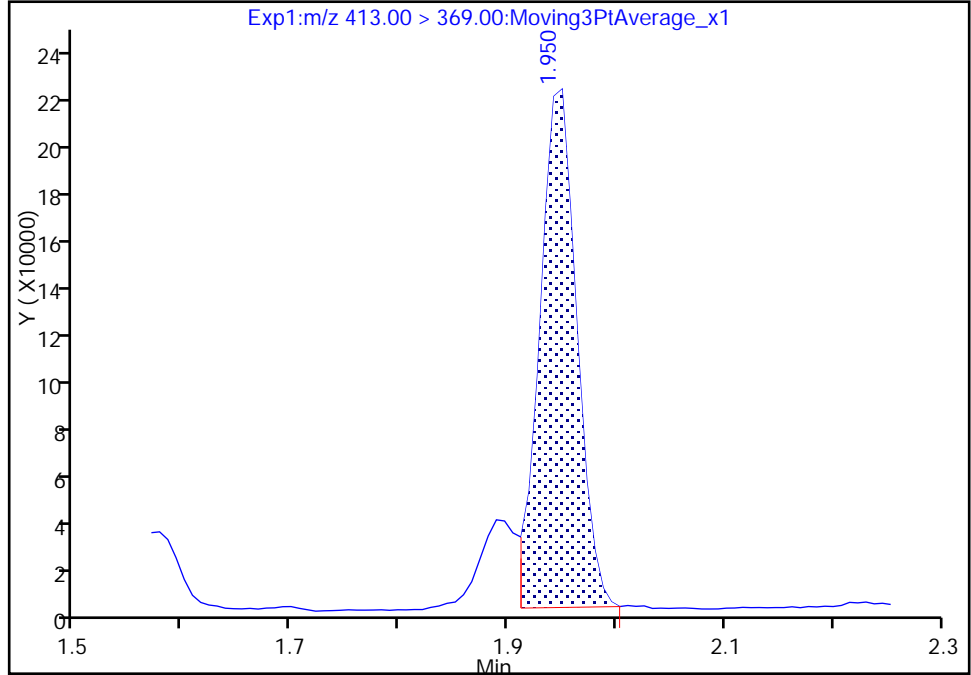
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d
Injection Date: 16-Aug-2017 13:14:06 Instrument ID: A8_N
Lims ID: 320-30191-A-4-A Lab Sample ID: 320-30191-4
Client ID: NAWC-072617-RW-341
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

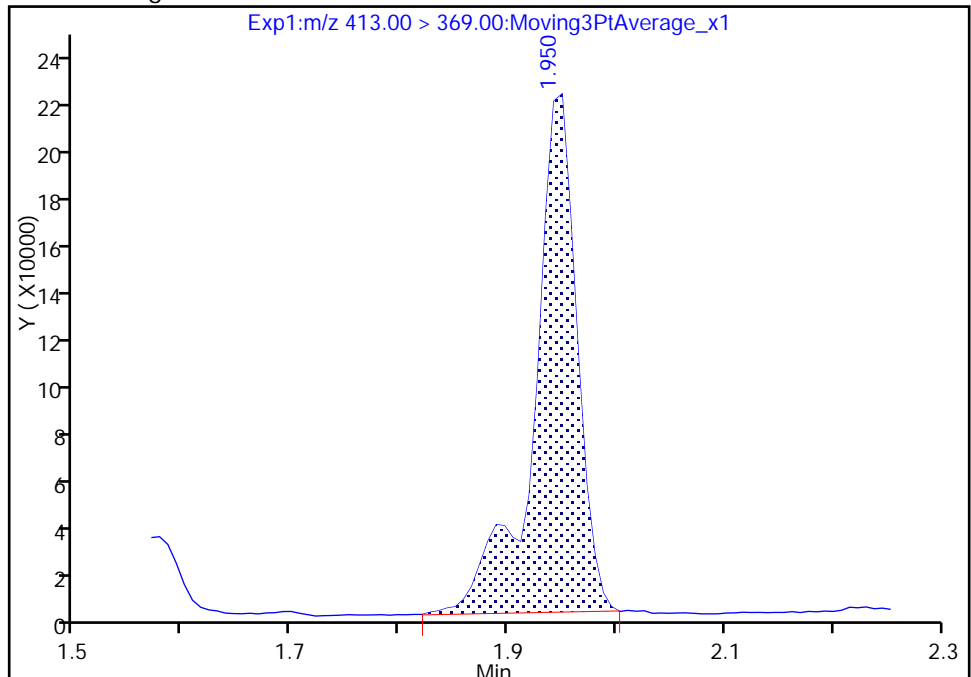
RT: 1.95
Area: 514663
Amount: 2.630575
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 604741
Amount: 3.090987
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:34:40
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

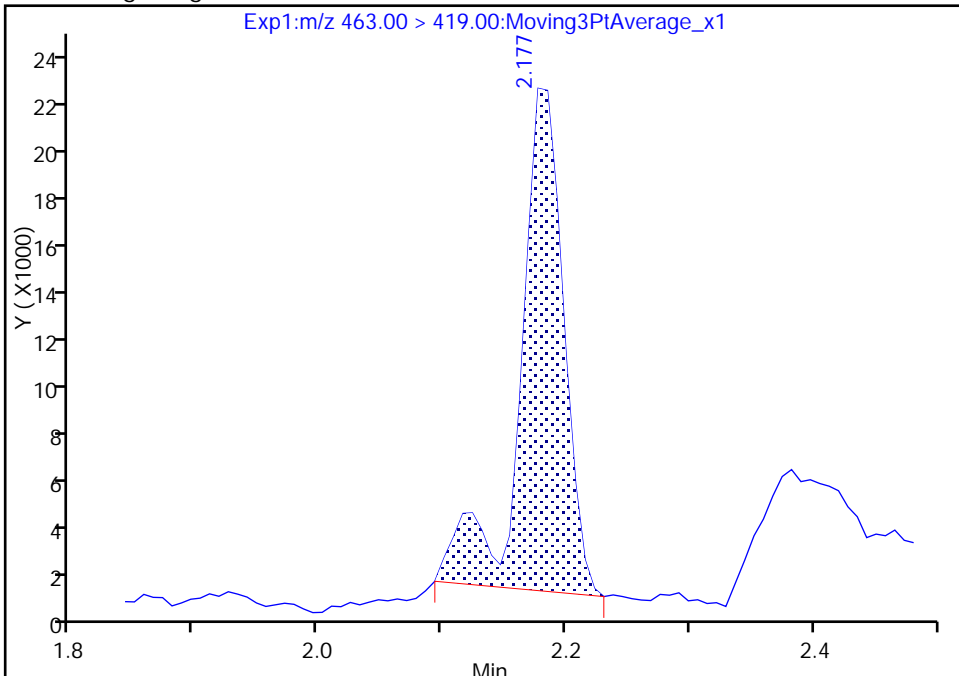
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d
Injection Date: 16-Aug-2017 13:14:06 Instrument ID: A8_N
Lims ID: 320-30191-A-4-A Lab Sample ID: 320-30191-4
Client ID: NAWC-072617-RW-341
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 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

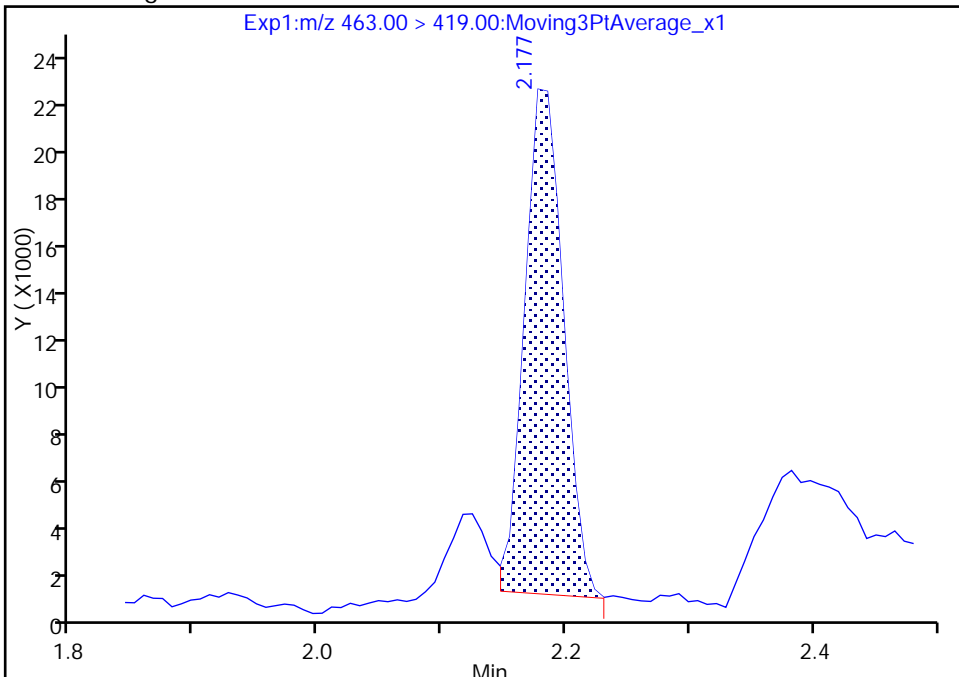
RT: 2.18
Area: 50916
Amount: 0.416596
Amount Units: ng/ml

Processing Integration Results



RT: 2.18
Area: 45485
Amount: 0.372159
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-341 Lab Sample ID: 320-30191-5
 Matrix: Water Lab File ID: 2017.08.16_537C_009.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 284.6(mL) Date Analyzed: 08/16/2017 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_009.d
 Lims ID: 320-30191-A-5-A
 Client ID: NAWC-072617-FRB-341
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:18:51 ALS Bottle#: 17 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.586	1.582	0.004	1.000	2092596	9.78	5404	
* 6 13C2-PFOA	415.00 > 370.00	1.942	1.955	-0.013		2000116	10.0	5306	
* 7 13C4 PFOS	503.00 > 80.00	2.177	2.205	-0.028		5653808	28.7	4917	
\$ 10 13C2 PFDA	515.00 > 470.00	2.322	2.354	-0.032	1.000	1498467	12.7	5551	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_009.d

Injection Date: 16-Aug-2017 13:18:51

Instrument ID: A8_N

Lims ID: 320-30191-A-5-A

Lab Sample ID: 320-30191-5

Client ID: NAWC-072617-FRB-341

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

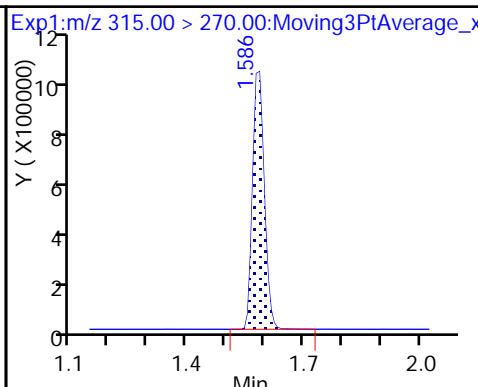
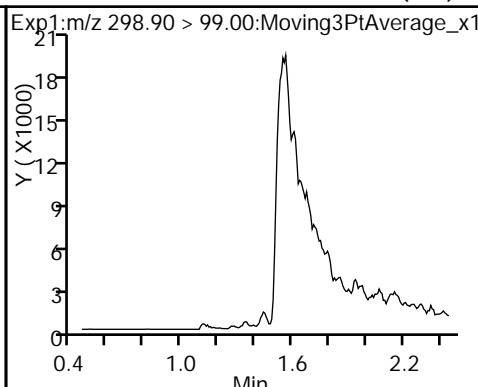
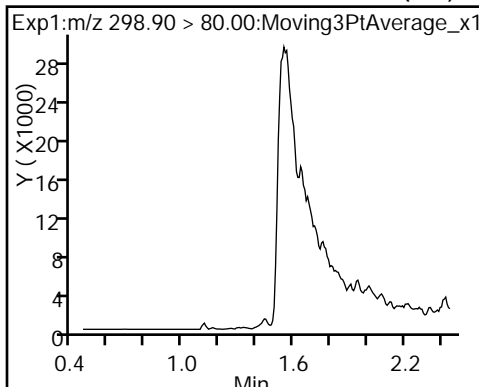
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

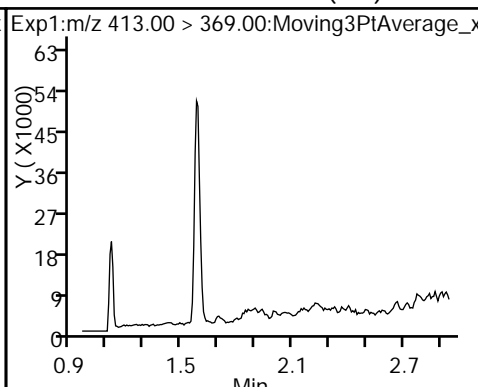
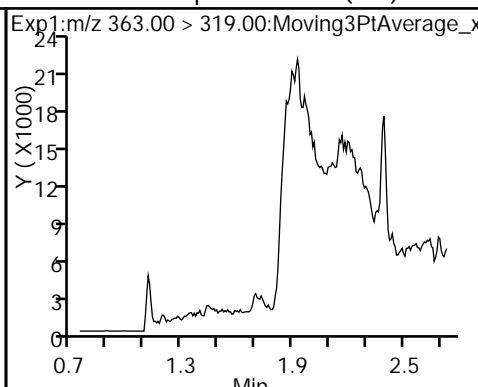
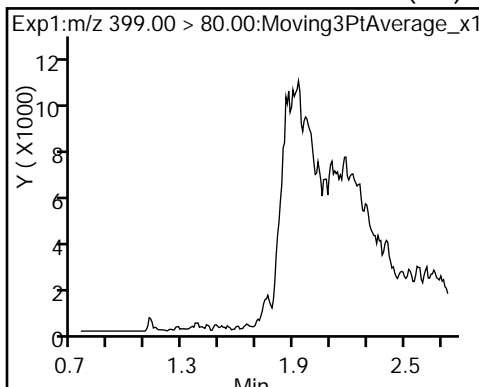
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

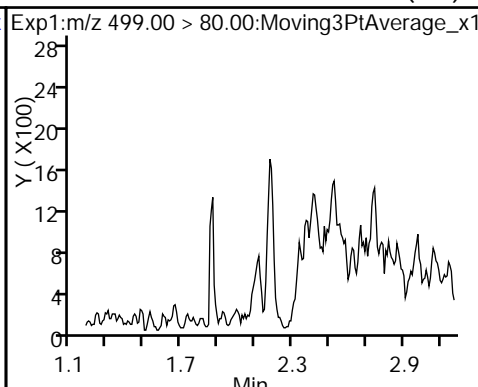
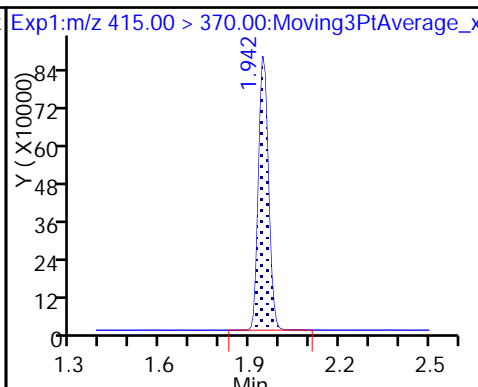
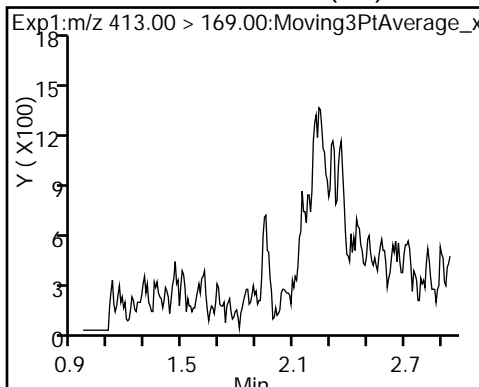
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

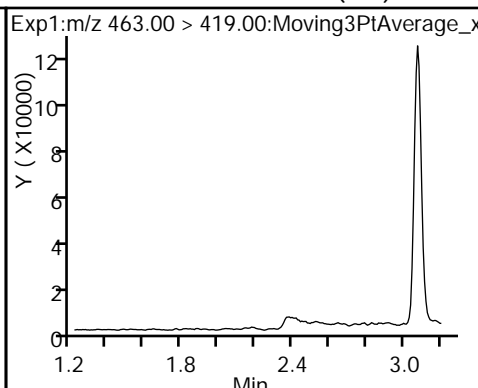
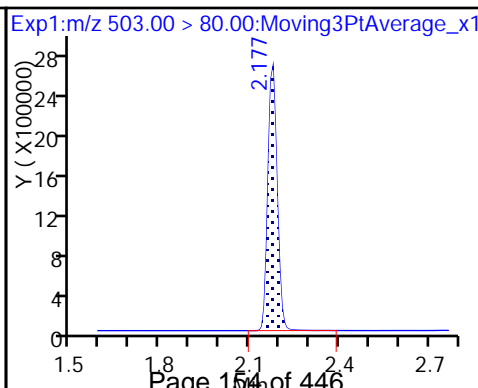
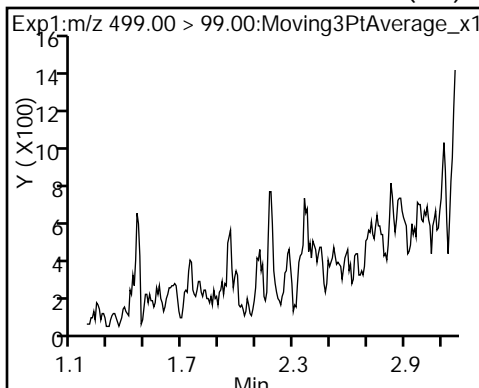
8 Perfluorooctane sulfonic acid (ND)



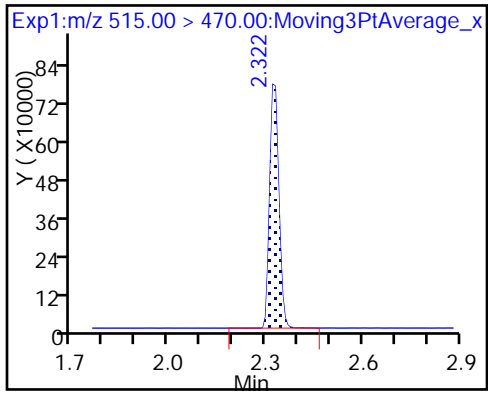
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_009.d
 Lims ID: 320-30191-A-5-A
 Client ID: NAWC-072617-FRB-341
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:18:51 ALS Bottle#: 17 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.78	97.85
\$ 10 13C2 PFDA	10.0	12.7	127.49

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-349 Lab Sample ID: 320-30191-6
 Matrix: Water Lab File ID: 2017.08.16_537C_010.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 288.9(mL) Date Analyzed: 08/16/2017 13:23
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	29	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U J M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	56	Q	70-130
STL00996	13C2 PFDA	131	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d
 Lims ID: 320-30191-A-6-A
 Client ID: NAWC-072617-RW-349
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:23:34 ALS Bottle#: 18 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:37:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	156204	0.6459		24.8	
298.90 > 99.00	1.442	1.453	-0.011	1.000	104846		1.49(0.00-0.00)	27.3	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1257109	5.60		3128	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	664619	2.07		88.7	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	348227	1.94		20.2	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1605758	8.43		93.3	M
413.00 > 169.00	1.950	1.955	-0.005	1.000	915586		1.75(0.00-0.00)	796	M
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2100574	10.0		5631	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	994043	5.01		301	
499.00 > 99.00	2.177	2.177	0.0	1.000	164762		6.03(0.00-0.00)	122	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		6164558	28.7		4114	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	82805	0.6959		4.4	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1617398	13.1		5988	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d

Injection Date: 16-Aug-2017 13:23:34

Instrument ID: A8_N

Lims ID: 320-30191-A-6-A

Lab Sample ID: 320-30191-6

Client ID: NAWC-072617-RW-349

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

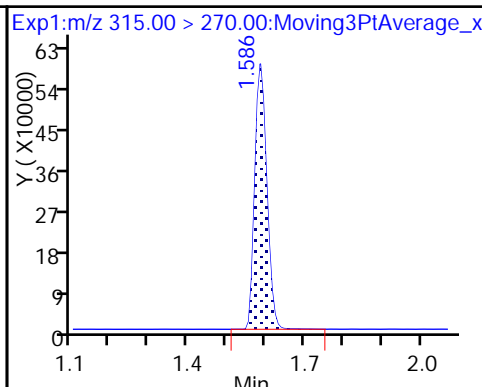
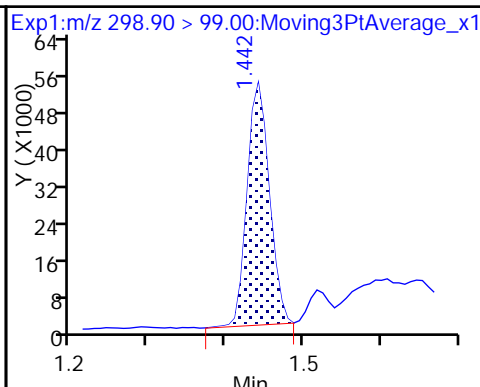
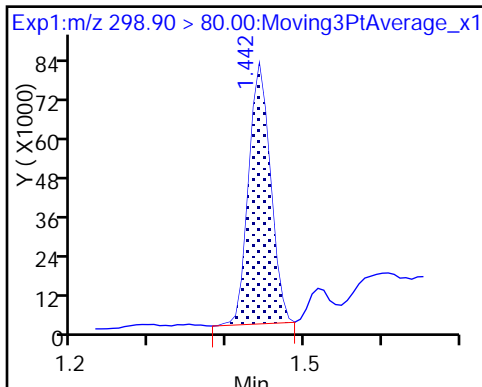
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

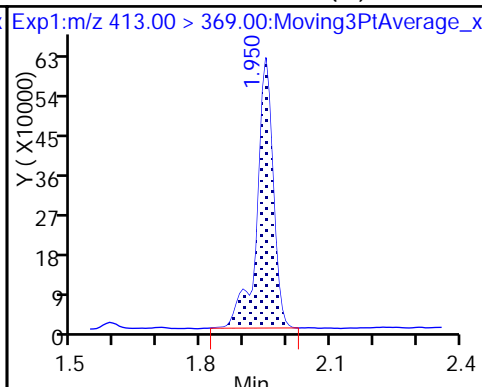
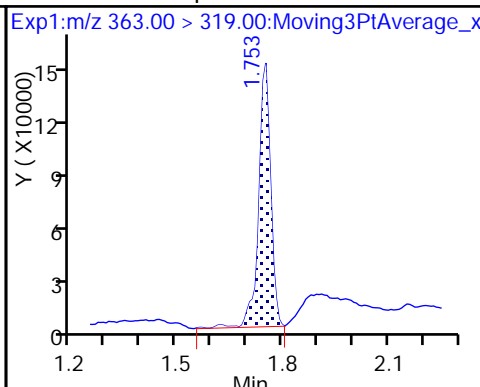
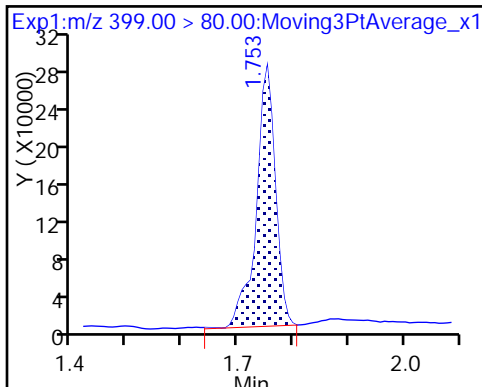
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

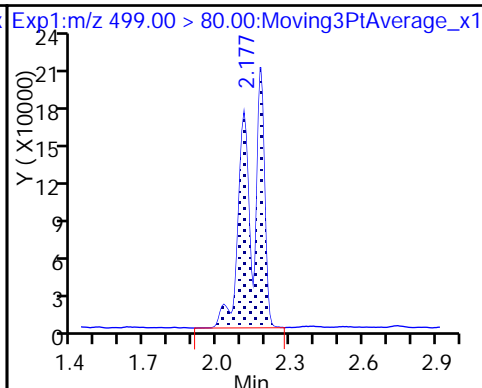
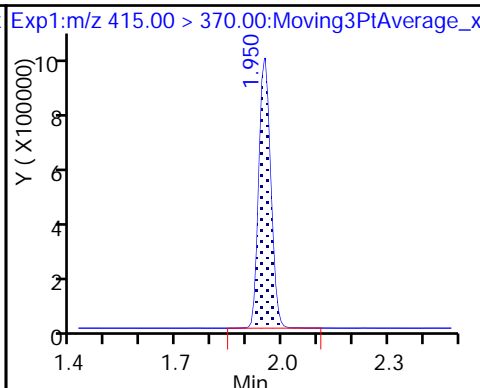
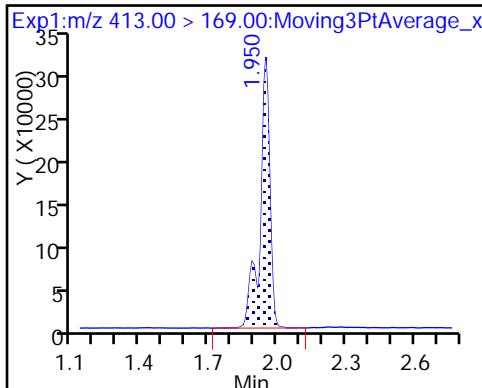
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

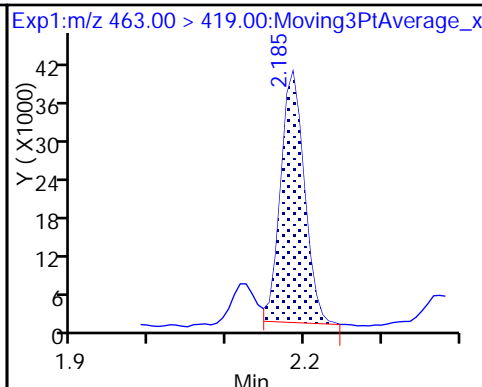
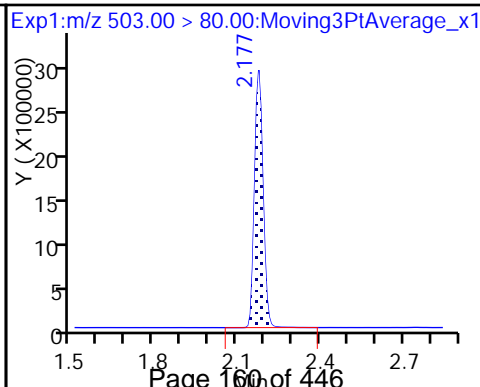
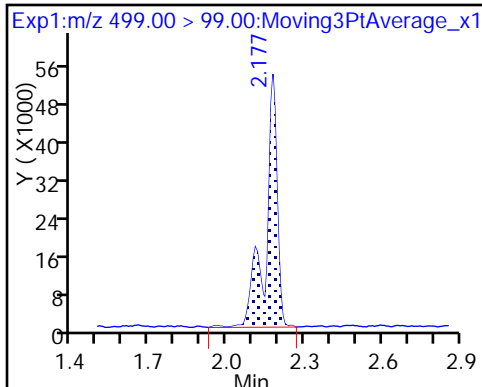
8 Perfluorooctane sulfonic acid



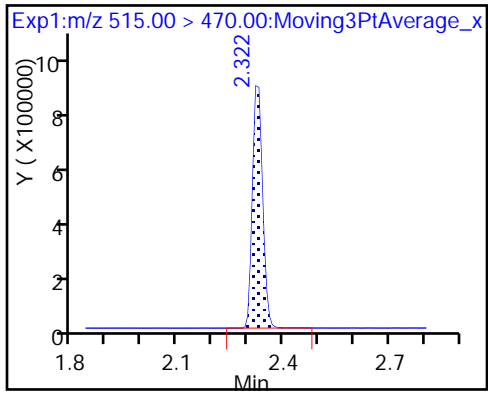
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d
 Lims ID: 320-30191-A-6-A
 Client ID: NAWC-072617-RW-349
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:23:34 ALS Bottle#: 18 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:37:33

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	5.60	55.97
\$ 10 13C2 PFDA	10.0	13.1	131.02

TestAmerica Sacramento

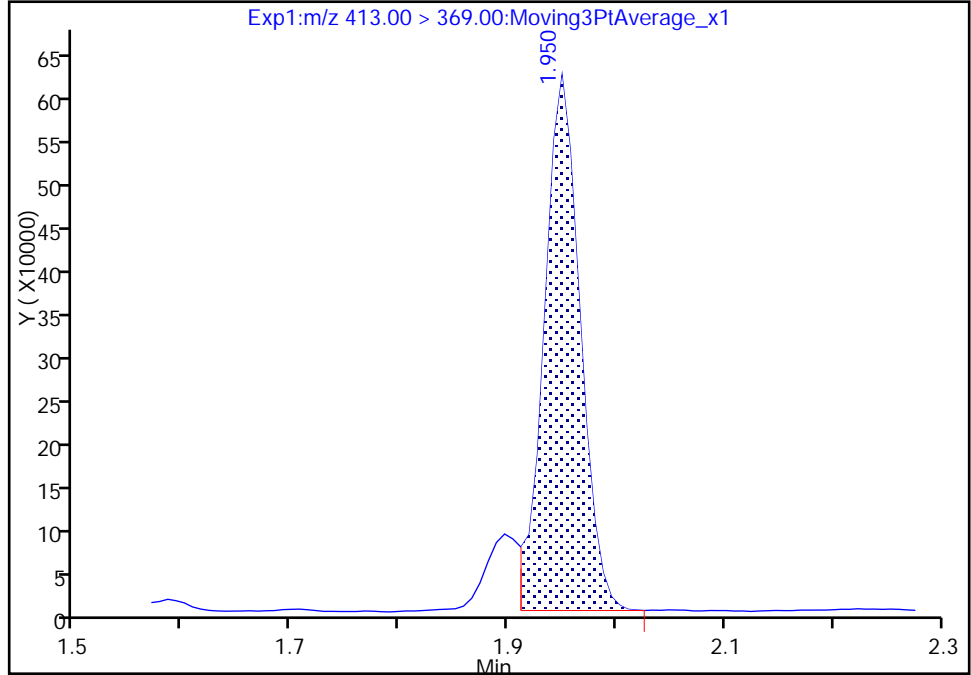
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d
Injection Date: 16-Aug-2017 13:23:34 Instrument ID: A8_N
Lims ID: 320-30191-A-6-A Lab Sample ID: 320-30191-6
Client ID: NAWC-072617-RW-349
Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

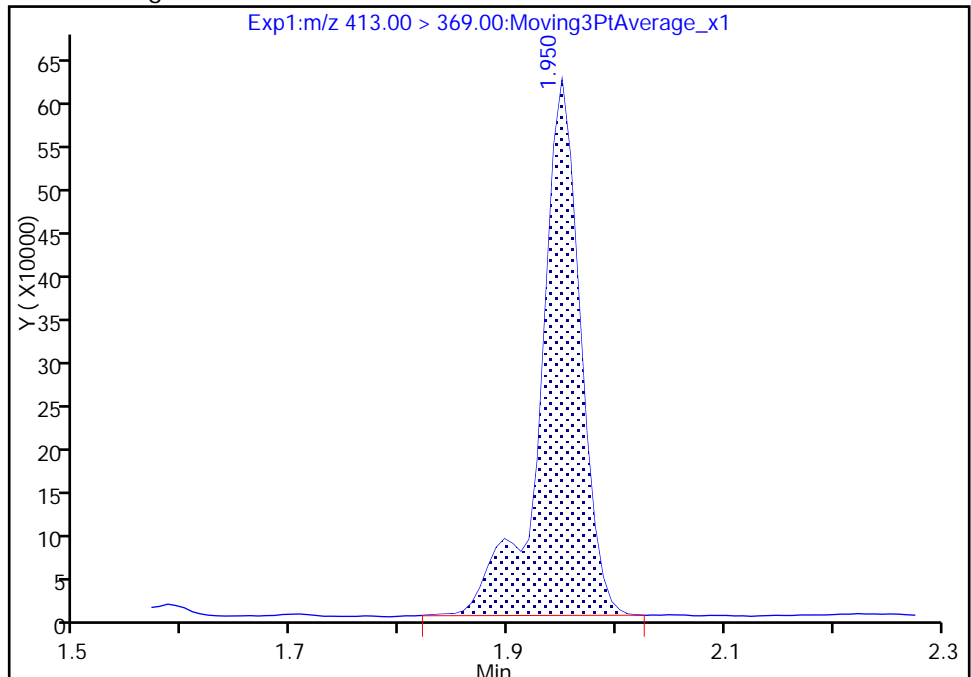
RT: 1.95
Area: 1422250
Amount: 7.466355
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 1605758
Amount: 8.429713
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:37:15
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

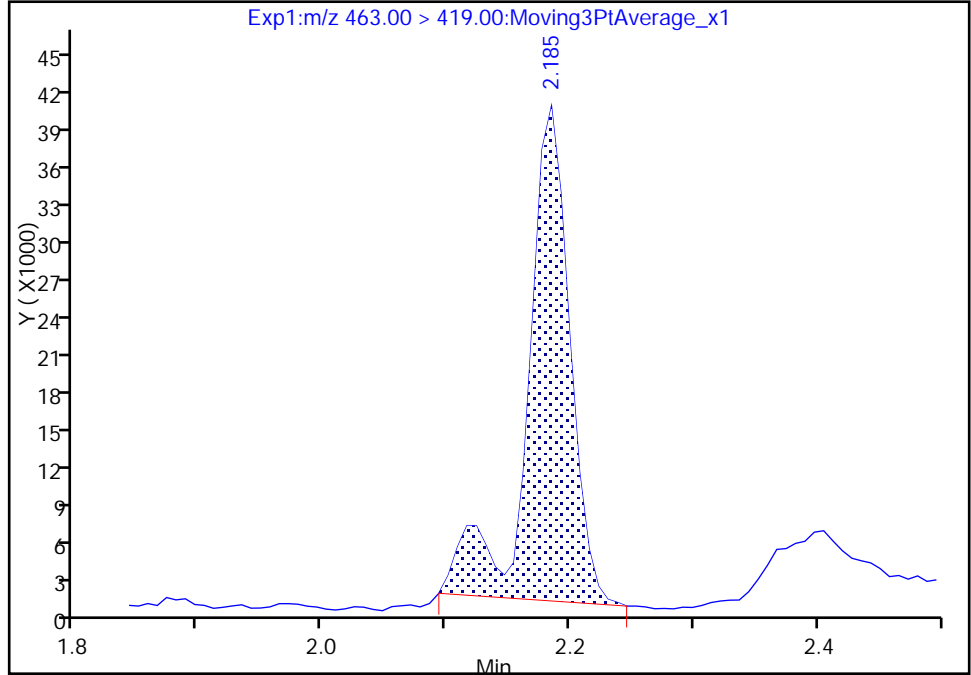
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d
Injection Date: 16-Aug-2017 13:23:34 Instrument ID: A8_N
Lims ID: 320-30191-A-6-A Lab Sample ID: 320-30191-6
Client ID: NAWC-072617-RW-349
Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 10
Injection Vol: 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

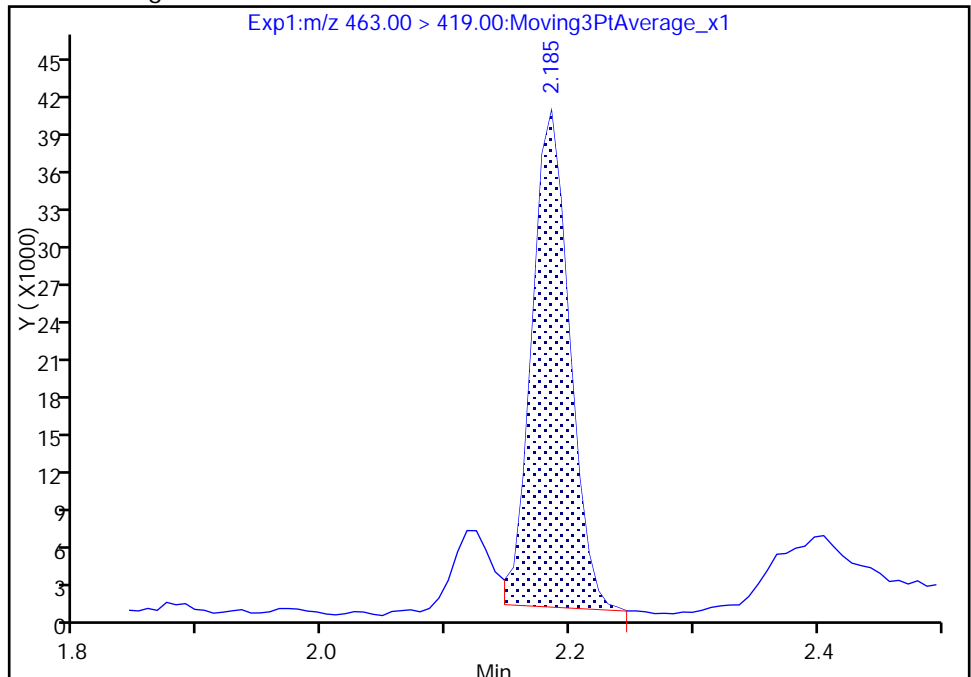
RT: 2.19
Area: 93073
Amount: 0.782149
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 82805
Amount: 0.695861
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-349 Lab Sample ID: 320-30191-7
 Matrix: Water Lab File ID: 2017.08.16_537C_015.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 286.5 (mL) Date Analyzed: 08/16/2017 13:47
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	130		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_015.d
 Lims ID: 320-30191-A-7-A
 Client ID: NAWC-072617-FRB-349
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:47:16 ALS Bottle#: 21 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.586	1.582	0.004	1.000	2197562	10.6	5940	
* 6 13C2-PFOA	415.00 > 370.00	1.950	1.955	-0.005		1940120	10.0	5264	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		5962050	28.7	5507	
\$ 10 13C2 PFDA	515.00 > 470.00	2.322	2.354	-0.032	1.000	1483236	13.0	6359	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_015.d

Injection Date: 16-Aug-2017 13:47:16

Instrument ID: A8_N

Lims ID: 320-30191-A-7-A

Lab Sample ID: 320-30191-7

Client ID: NAWC-072617-FRB-349

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 15

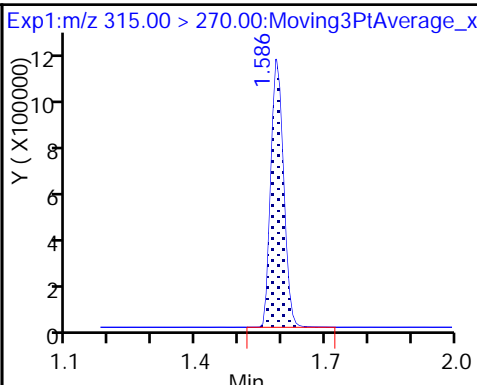
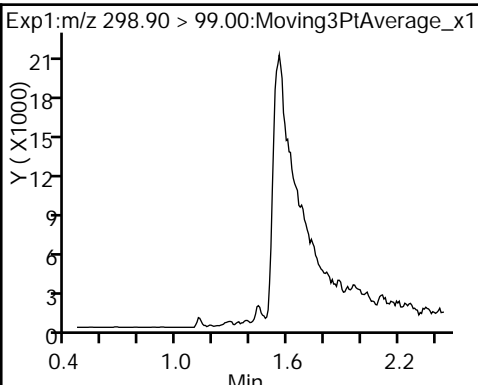
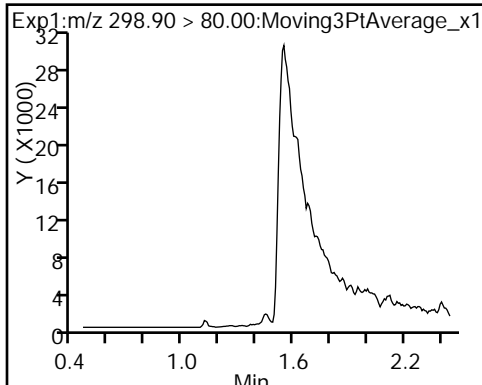
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

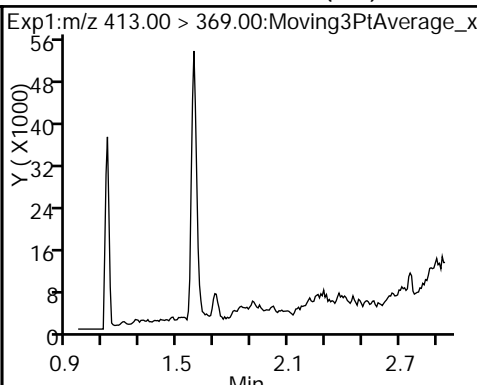
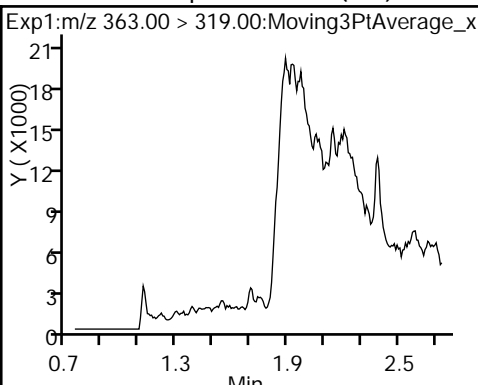
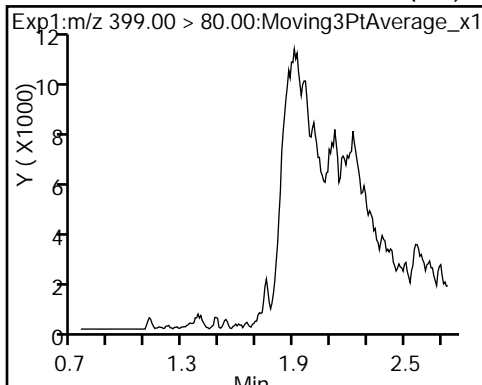
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

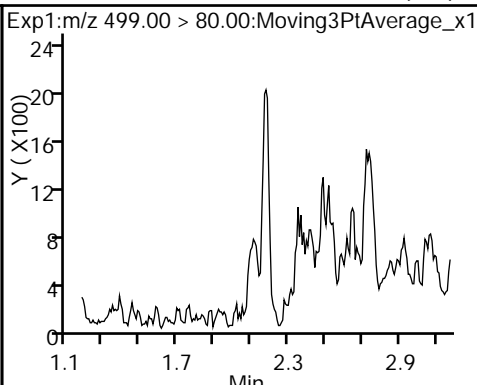
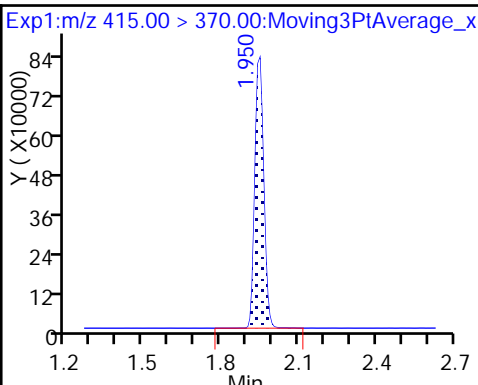
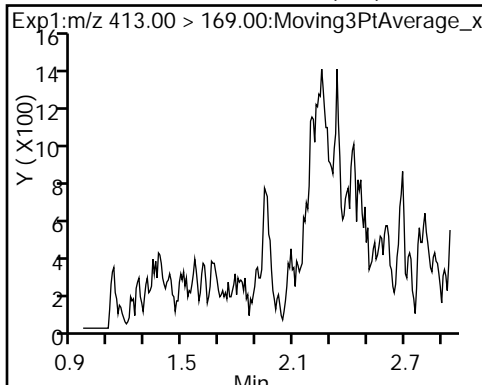
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

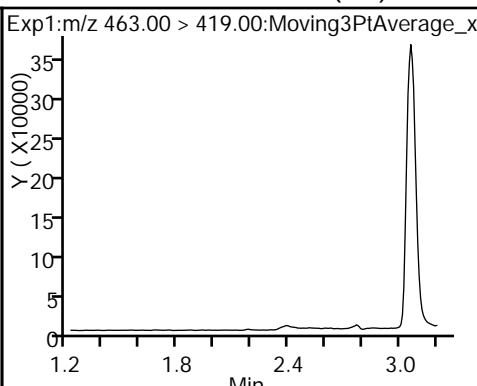
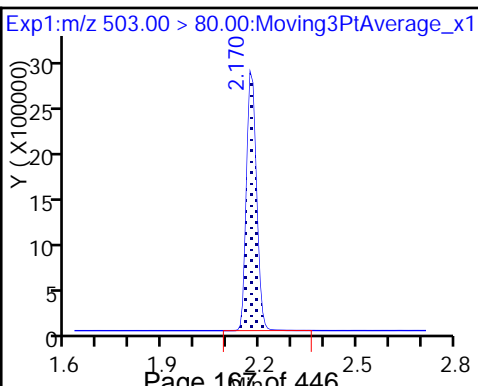
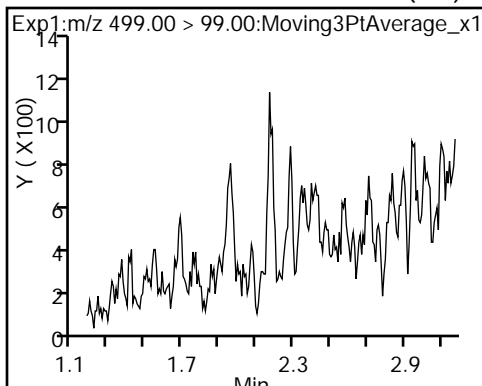
8 Perfluorooctane sulfonic acid (ND)



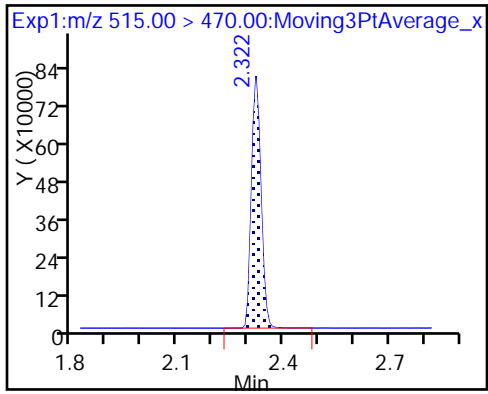
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_015.d
 Lims ID: 320-30191-A-7-A
 Client ID: NAWC-072617-FRB-349
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:47:16 ALS Bottle#: 21 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.6	105.93
\$ 10 13C2 PFDA	10.0	13.0	130.09

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-343 Lab Sample ID: 320-30191-8
 Matrix: Water Lab File ID: 2017.08.16_537C_016.d
 Analysis Method: 537 Date Collected: 07/26/2017 13:55
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 283.7(mL) Date Analyzed: 08/16/2017 13:52
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	12	J M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.0	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	125		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d
 Lims ID: 320-30191-A-8-A
 Client ID: NAWC-072617-RW-343
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:52:03 ALS Bottle#: 22 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:41:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	414978	1.76		54.4	
298.90 > 99.00	1.442	1.453	-0.011	1.000	261719		1.59(0.00-0.00)	55.4	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1692373	8.40		4556	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	447268	1.43		58.4	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	161926	1.00		10.7	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	591420	3.46		29.8	M
413.00 > 169.00	1.942	1.955	-0.013	1.000	353408		1.67(0.00-0.00)	351	M
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1885325	10.0		5750	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	899962	4.64		319	
499.00 > 99.00	2.170	2.177	-0.007	1.000	157234		5.72(0.00-0.00)	116	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		6016316	28.7		3653	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	81452	0.7626		3.0	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1386776	12.5		6150	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d

Injection Date: 16-Aug-2017 13:52:03

Instrument ID: A8_N

Lims ID: 320-30191-A-8-A

Lab Sample ID: 320-30191-8

Client ID: NAWC-072617-RW-343

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

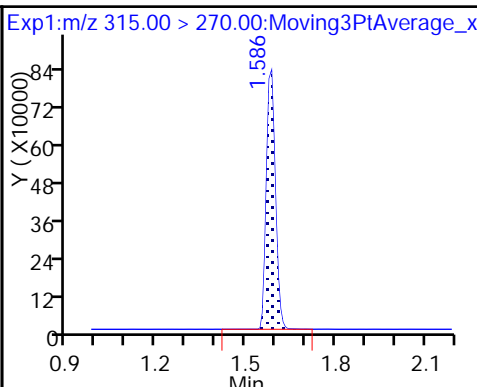
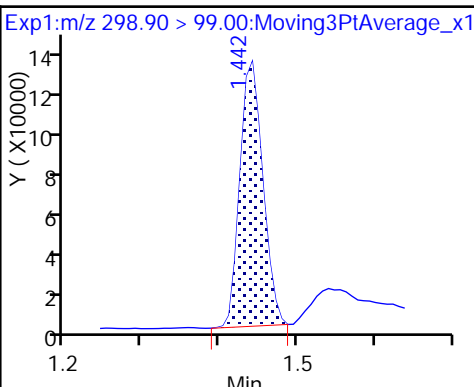
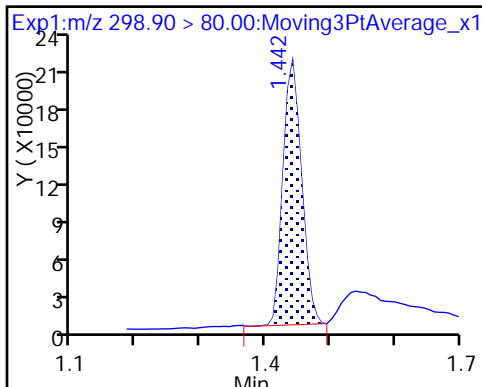
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

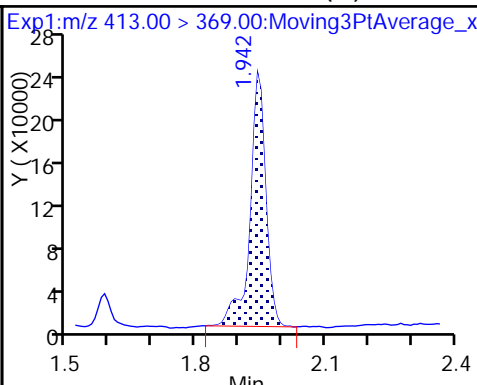
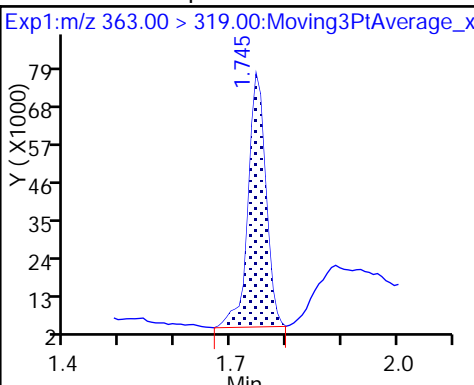
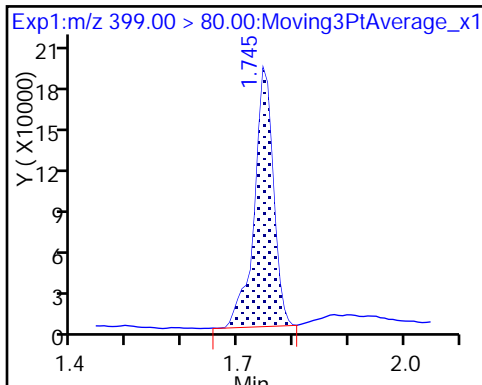
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

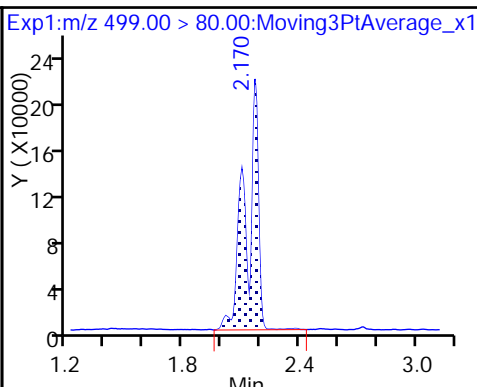
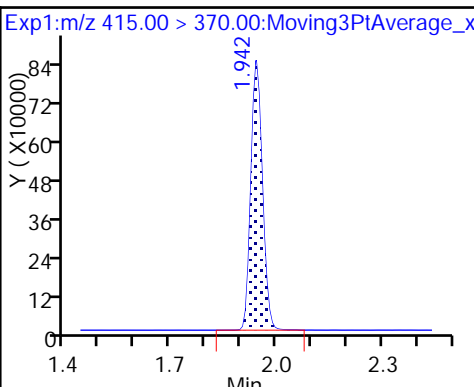
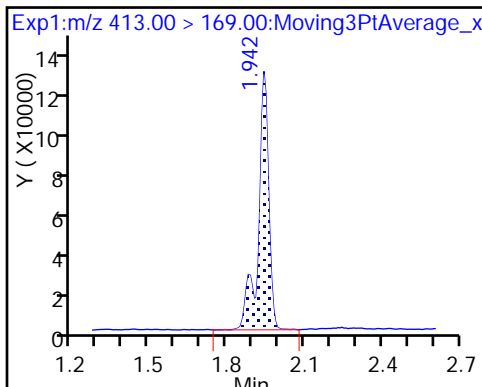
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

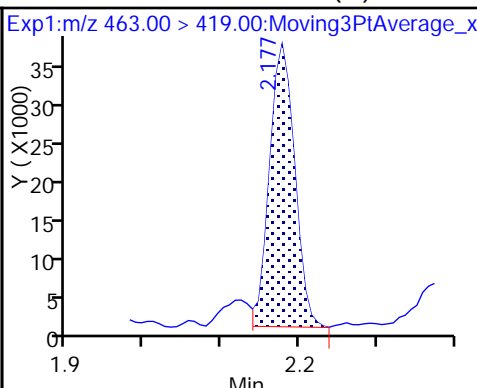
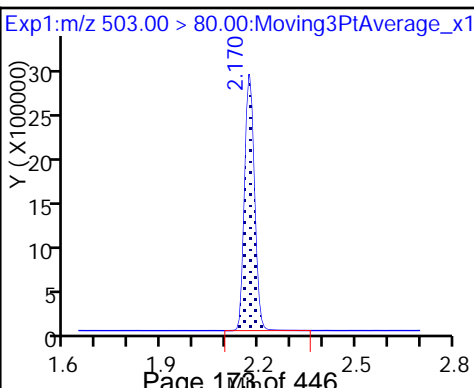
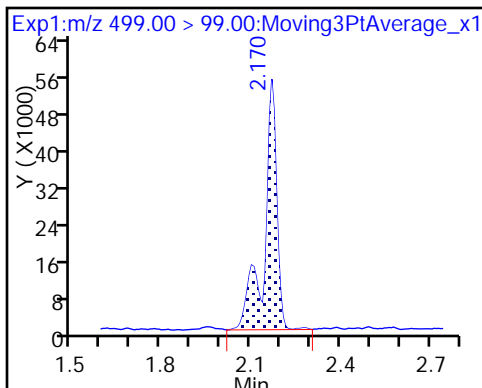
8 Perfluorooctane sulfonic acid



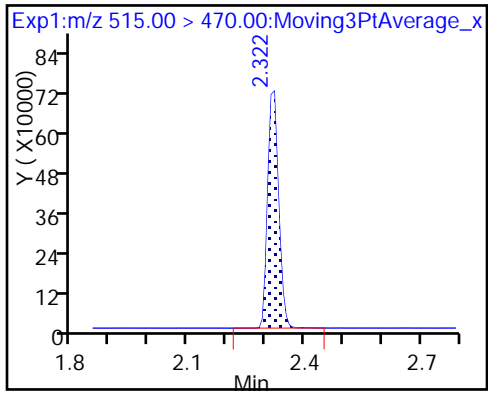
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d
 Lims ID: 320-30191-A-8-A
 Client ID: NAWC-072617-RW-343
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:52:03 ALS Bottle#: 22 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:41:16

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.40	83.95
\$ 10 13C2 PFDA	10.0	12.5	125.17

TestAmerica Sacramento

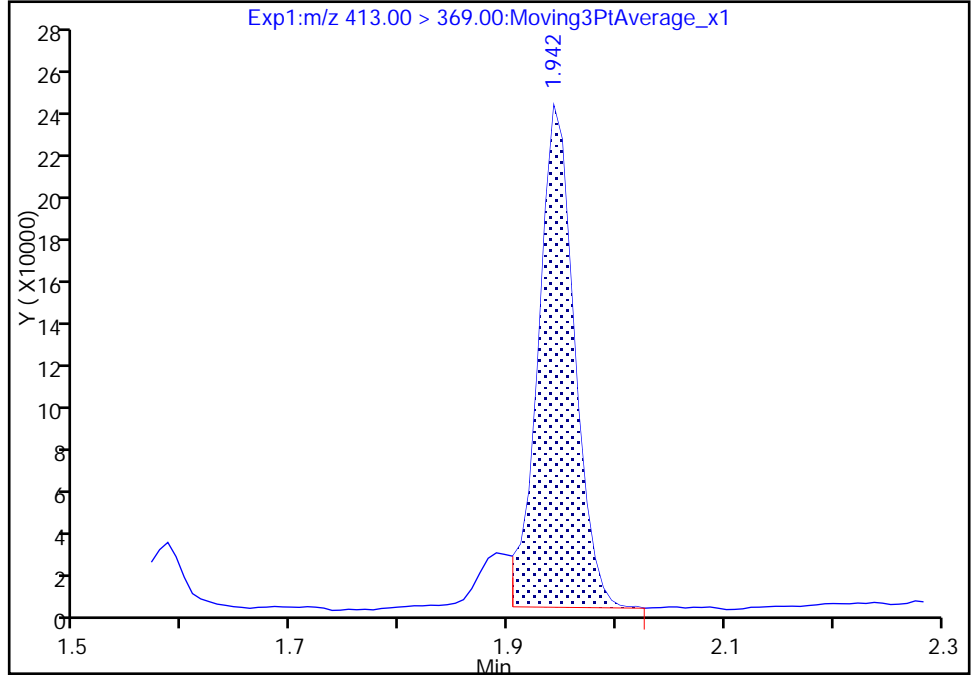
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d
Injection Date: 16-Aug-2017 13:52:03 Instrument ID: A8_N
Lims ID: 320-30191-A-8-A Lab Sample ID: 320-30191-8
Client ID: NAWC-072617-RW-343
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

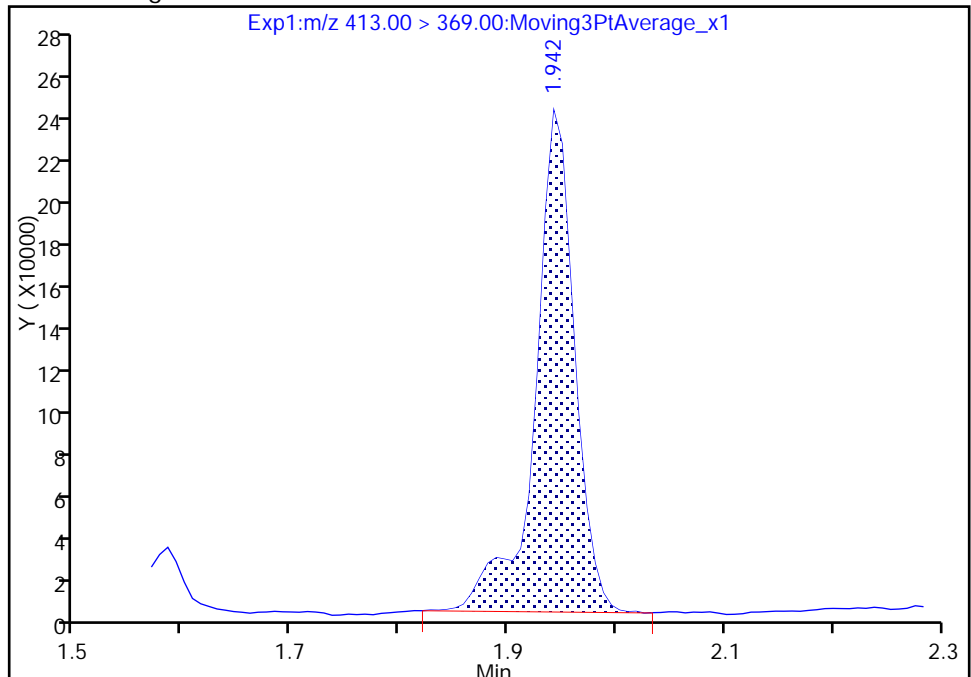
RT: 1.94
Area: 540085
Amount: 3.158978
Amount Units: ng/ml

Processing Integration Results



RT: 1.94
Area: 591420
Amount: 3.459238
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:40:45
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

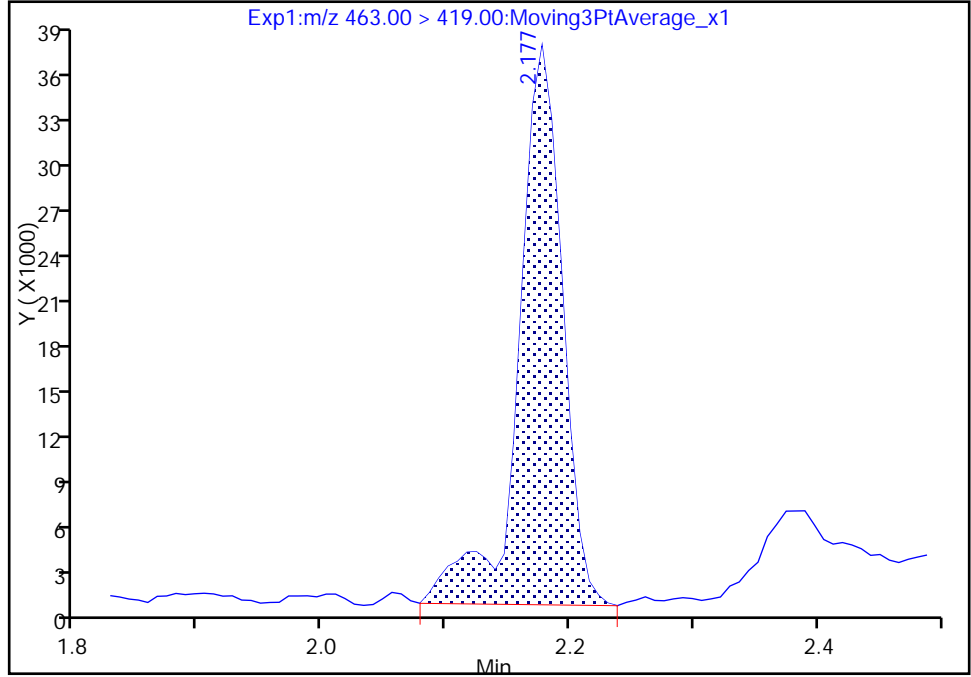
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d
Injection Date: 16-Aug-2017 13:52:03 Instrument ID: A8_N
Lims ID: 320-30191-A-8-A Lab Sample ID: 320-30191-8
Client ID: NAWC-072617-RW-343
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 16
Injection Vol: 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

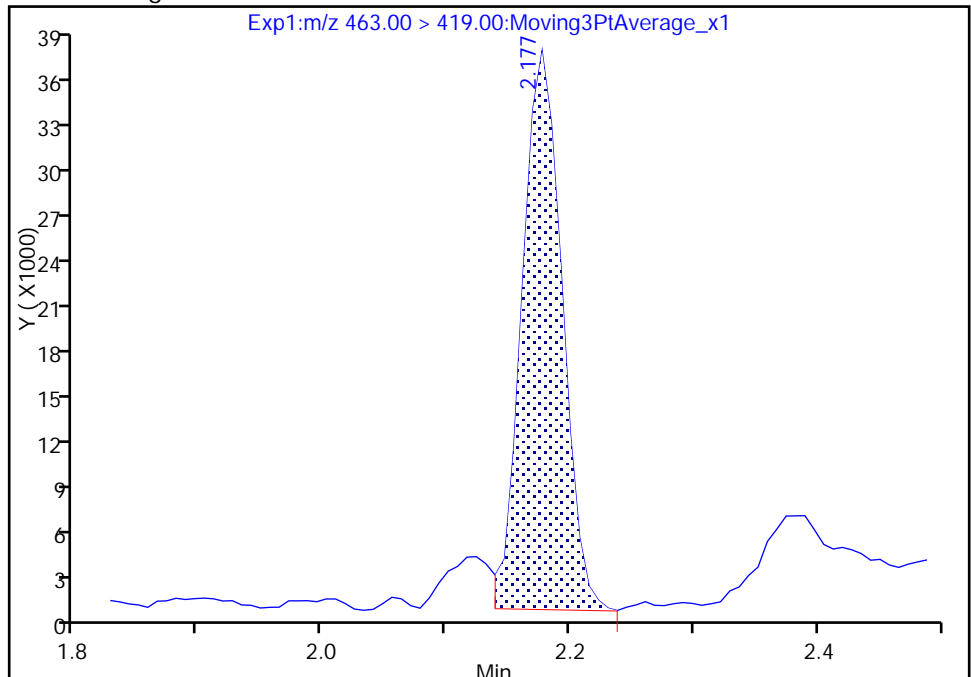
RT: 2.18
Area: 89799
Amount: 0.840793
Amount Units: ng/ml

Processing Integration Results



RT: 2.18
Area: 81452
Amount: 0.762640
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:41:08
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-343 Lab Sample ID: 320-30191-9
 Matrix: Water Lab File ID: 2017.08.16_537C_017.d
 Analysis Method: 537 Date Collected: 07/26/2017 13:50
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 288.4 (mL) Date Analyzed: 08/16/2017 13:56
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	U	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_017.d
 Lims ID: 320-30191-A-9-A
 Client ID: NAWC-072617-FRB-343
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:56:47 ALS Bottle#: 23 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.586	1.582	0.004	1.000	2115842	10.1	5632	
* 6 13C2-PFOA	415.00 > 370.00	1.950	1.955	-0.005		1958218	10.0	6036	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		5829271	28.7	5162	
\$ 10 13C2 PFDA	515.00 > 470.00	2.322	2.354	-0.032	1.000	1452023	12.6	7005	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_017.d

Injection Date: 16-Aug-2017 13:56:47

Instrument ID: A8_N

Lims ID: 320-30191-A-9-A

Lab Sample ID: 320-30191-9

Client ID: NAWC-072617-FRB-343

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 17

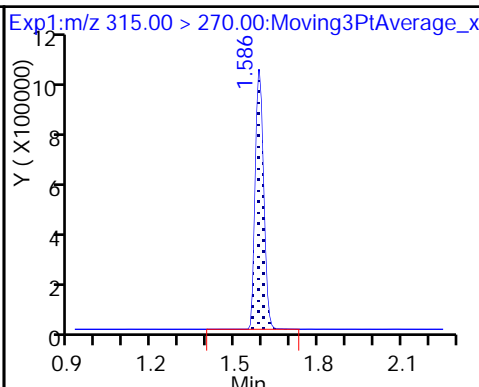
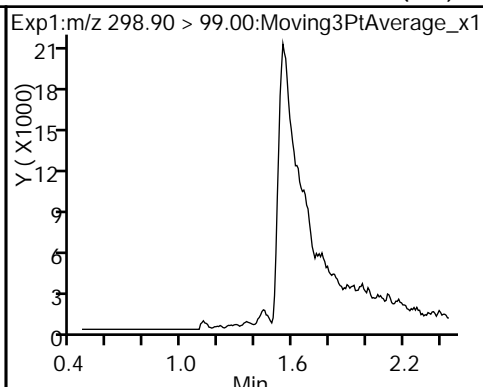
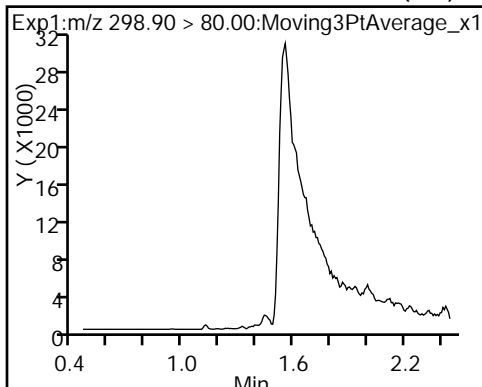
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

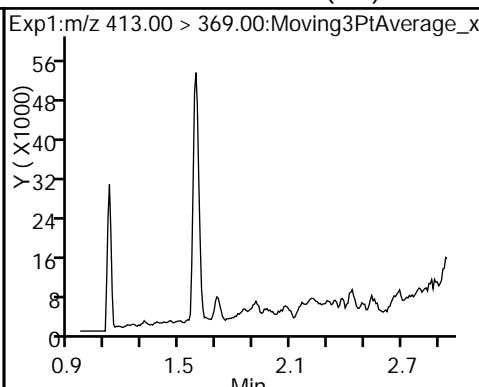
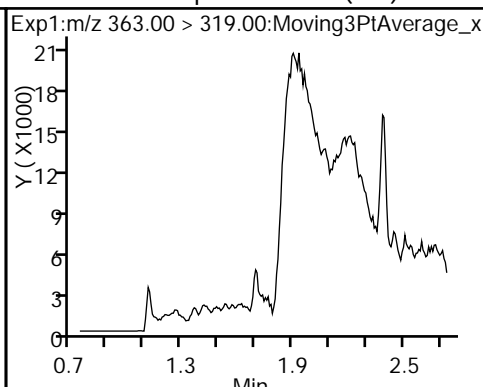
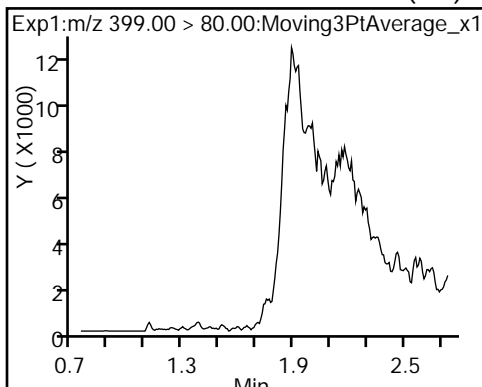
Method: 537_A8_N

Limit Group: LC 537 ICAL

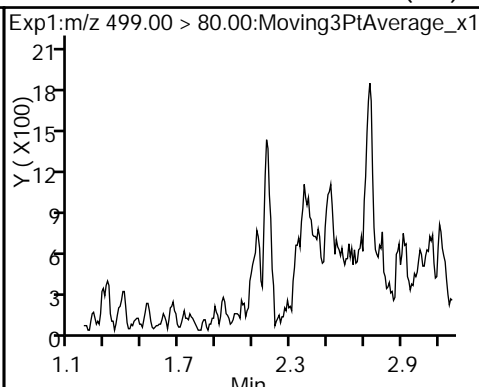
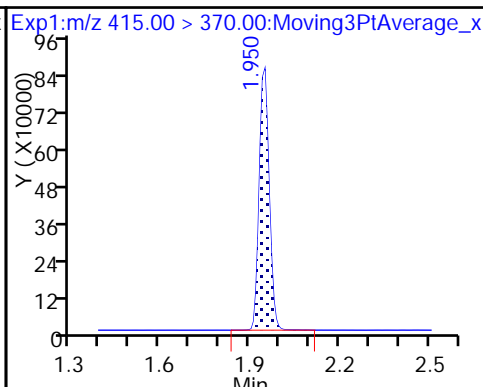
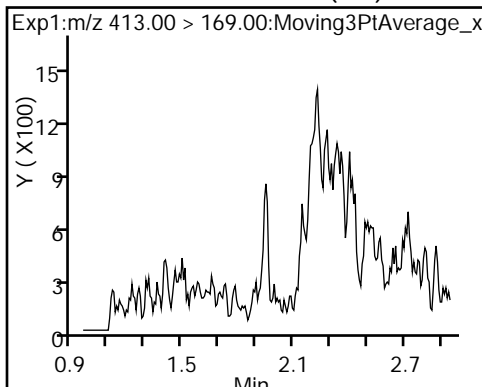
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



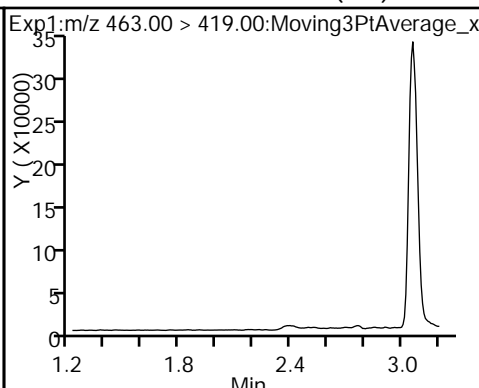
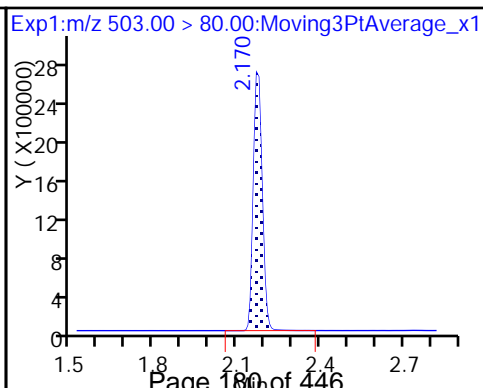
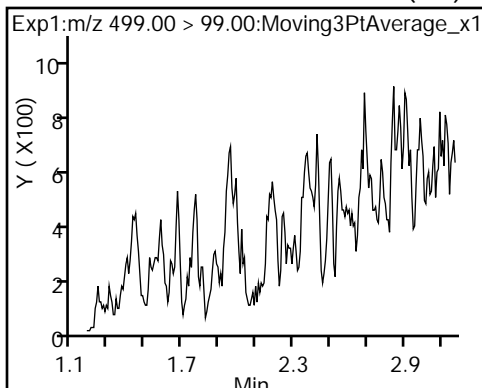
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) 5 Perfluorooctanoic acid (ND)



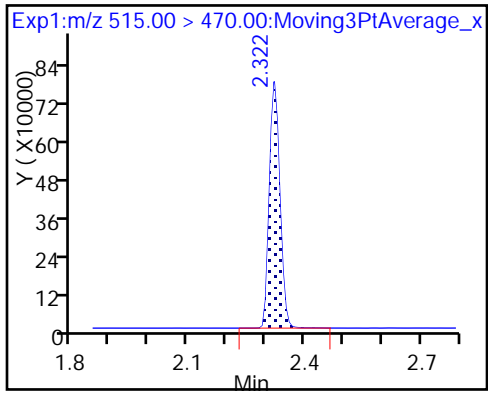
5 Perfluorooctanoic acid (ND) * 6 13C2-PFOA 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_017.d
 Lims ID: 320-30191-A-9-A
 Client ID: NAWC-072617-FRB-343
 Sample Type: Client
 Inject. Date: 16-Aug-2017 13:56:47 ALS Bottle#: 23 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	101.05
\$ 10 13C2 PFDA	10.0	12.6	126.18

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-345 Lab Sample ID: 320-30191-10
 Matrix: Water Lab File ID: 2017.08.16_537C_018.d
 Analysis Method: 537 Date Collected: 07/26/2017 15:15
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 289(mL) Date Analyzed: 08/16/2017 14:01
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42		35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	42	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	135	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d
 Lims ID: 320-30191-A-10-A
 Client ID: NAWC-072617-RW-345
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:01:31 ALS Bottle#: 24 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:42:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	395919	1.68		54.1	
298.90 > 99.00	1.442	1.453	-0.011	1.000	248493		1.59(0.00-0.00)	53.8	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1840376	8.96		4776	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	734626	2.35		83.0	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	517395	3.15		18.3	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	2114996	12.1		110	M
413.00 > 169.00	1.950	1.955	-0.005	1.000	1202535		1.76(0.00-0.00)	1122	M
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1920128	10.0		5956	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	2363589	12.2		113	
499.00 > 99.00	2.170	2.177	-0.007	1.000	367442		6.43(0.00-0.00)	239	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		6011521	28.7		3154	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	146516	1.35		5.1	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1525570	13.5		7614	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d

Injection Date: 16-Aug-2017 14:01:31

Instrument ID: A8_N

Lims ID: 320-30191-A-10-A

Lab Sample ID: 320-30191-10

Client ID: NAWC-072617-RW-345

Operator ID: SACINSTLCMS01

ALS Bottle#: 24

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

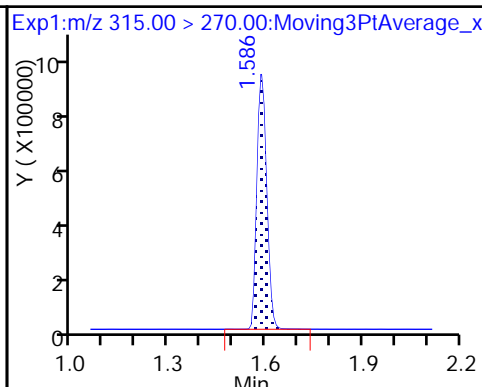
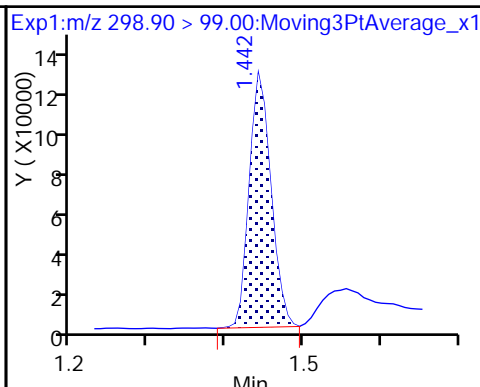
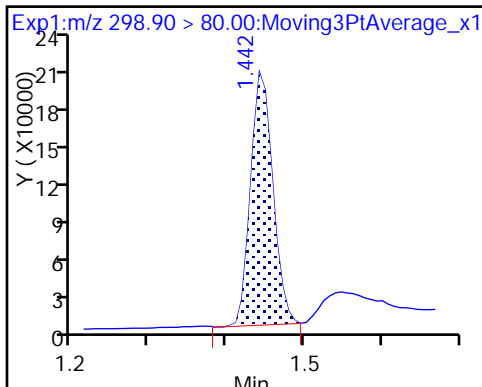
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

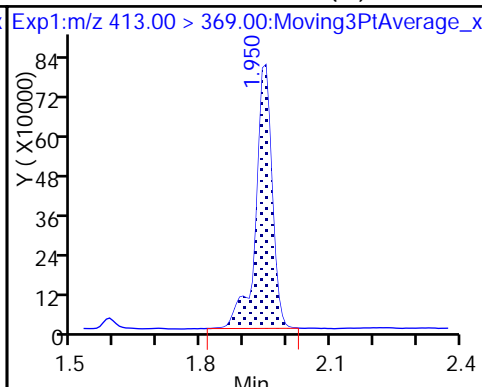
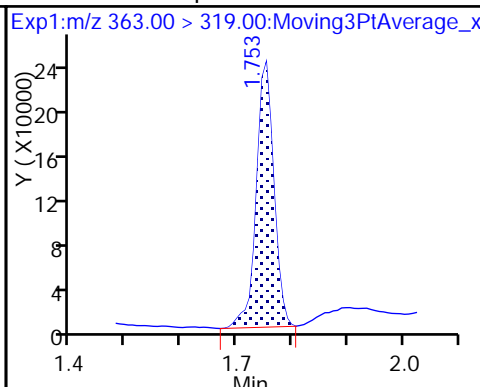
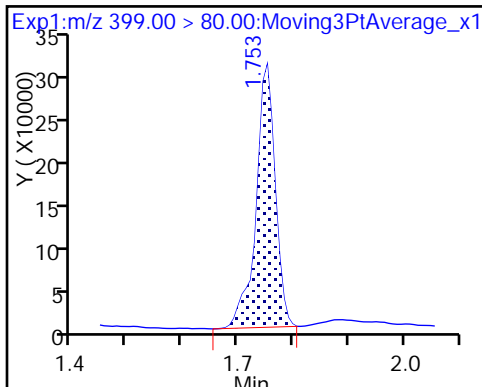
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

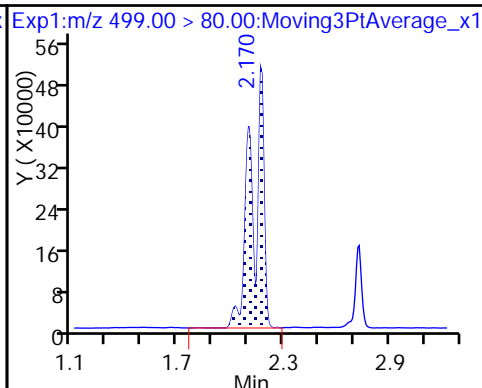
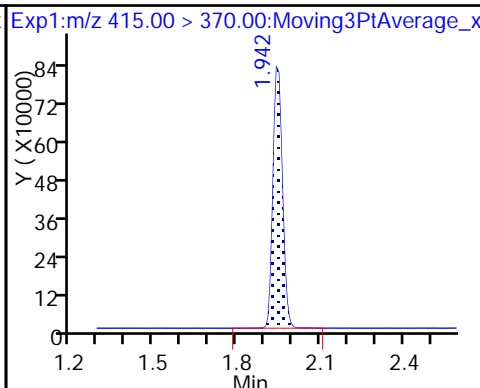
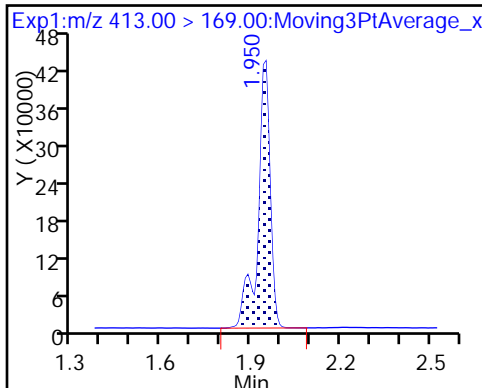
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

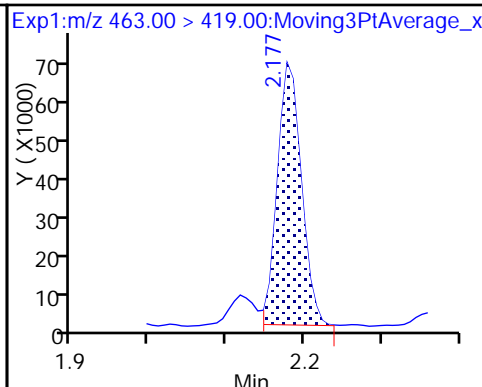
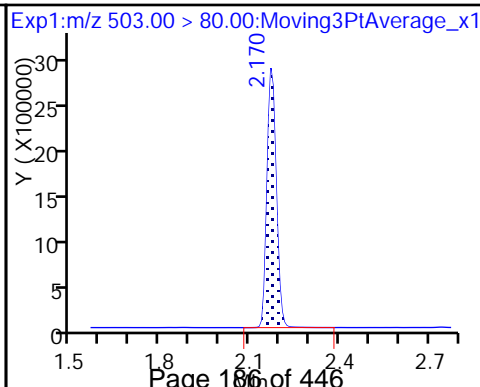
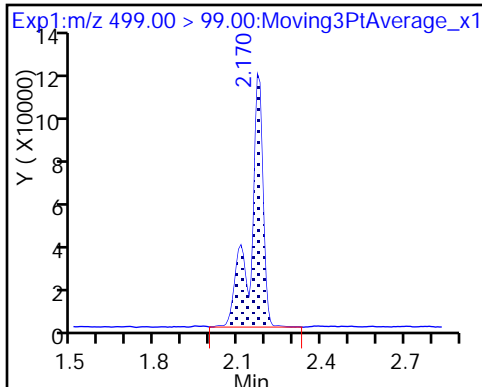
8 Perfluorooctane sulfonic acid



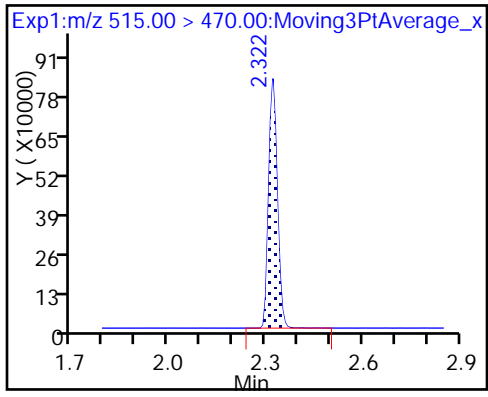
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d
 Lims ID: 320-30191-A-10-A
 Client ID: NAWC-072617-RW-345
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:01:31 ALS Bottle#: 24 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:42:33

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.96	89.64
\$ 10 13C2 PFDA	10.0	13.5	135.20

TestAmerica Sacramento

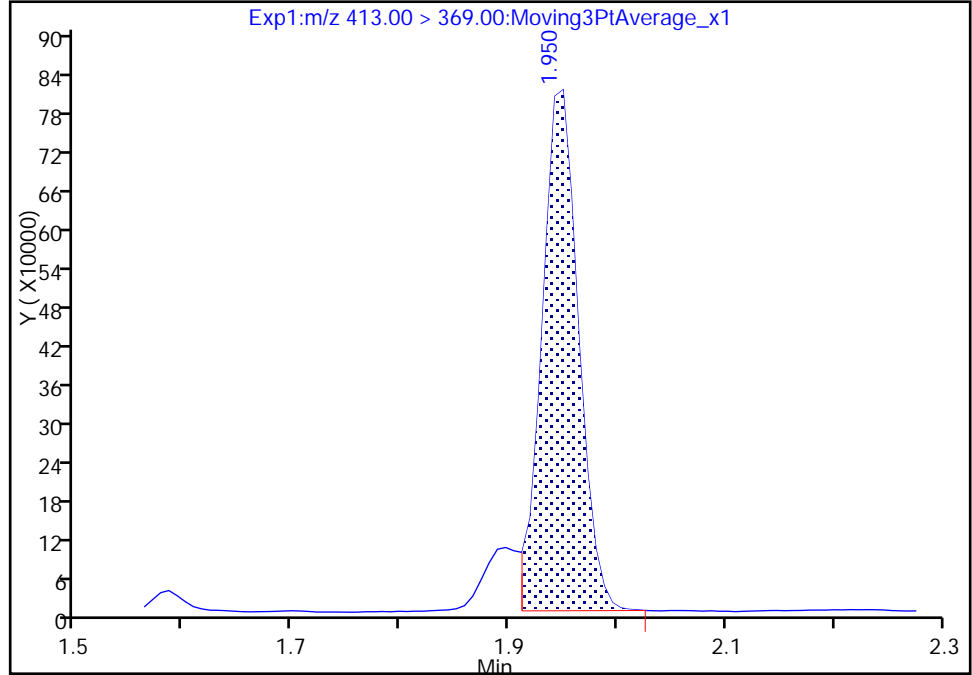
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d
Injection Date: 16-Aug-2017 14:01:31 Instrument ID: A8_N
Lims ID: 320-30191-A-10-A Lab Sample ID: 320-30191-10
Client ID: NAWC-072617-RW-345
Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

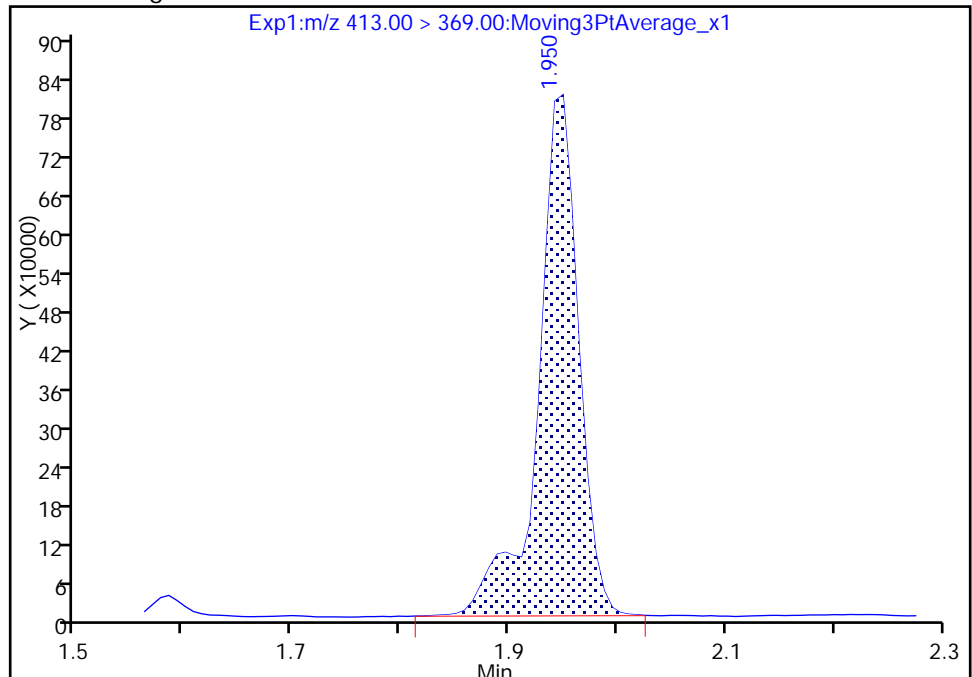
RT: 1.95
Area: 1884577
Amount: 10.823168
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 2114996
Amount: 12.146469
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:41:59
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

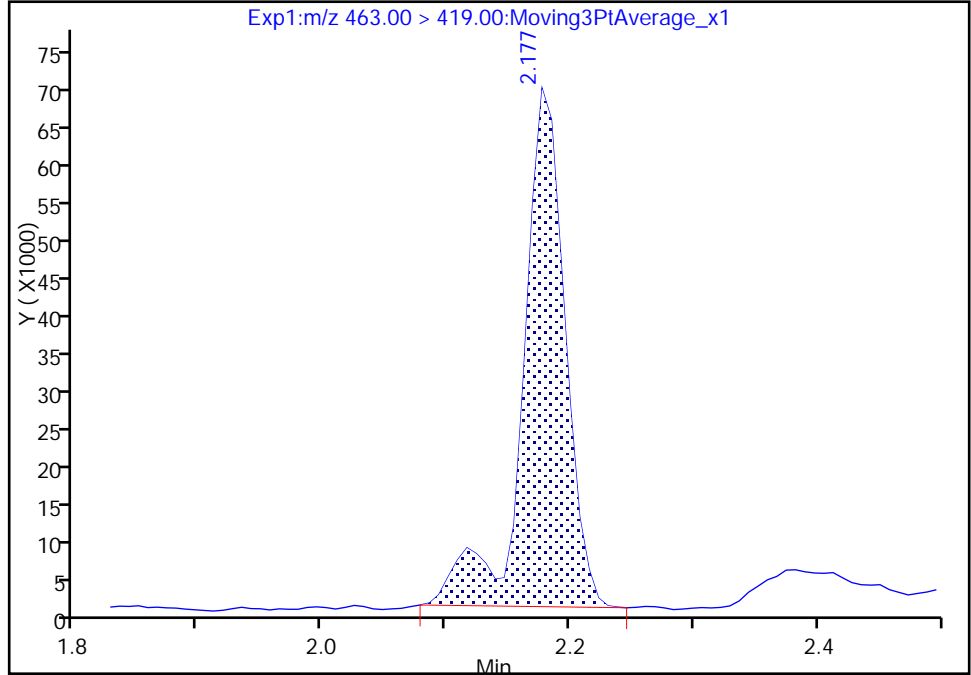
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d
Injection Date: 16-Aug-2017 14:01:31 Instrument ID: A8_N
Lims ID: 320-30191-A-10-A Lab Sample ID: 320-30191-10
Client ID: NAWC-072617-RW-345
Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 18
Injection Vol: 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

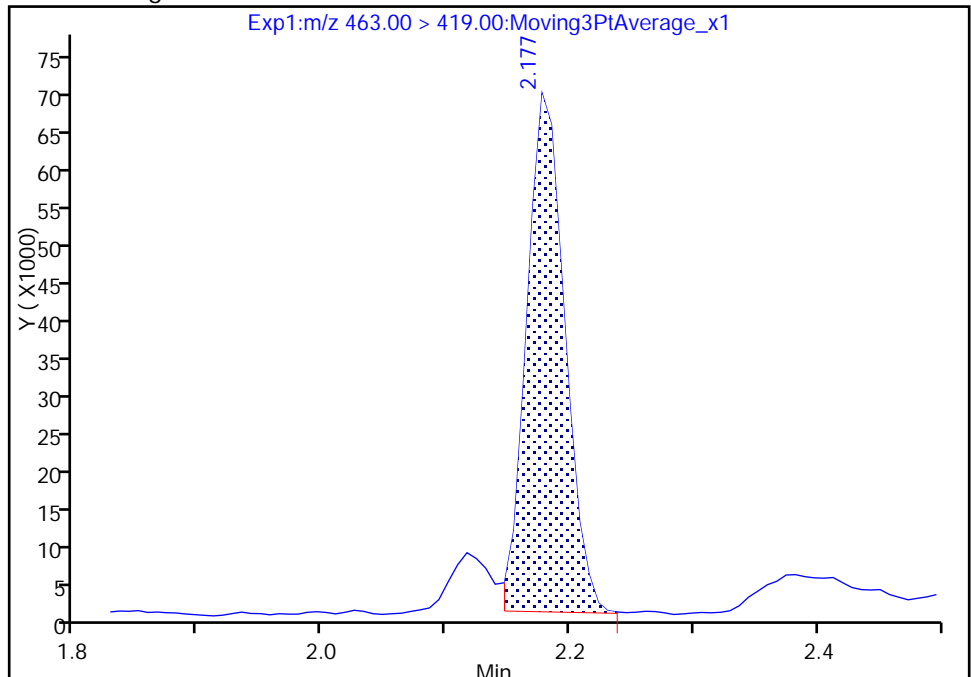
RT: 2.18
Area: 163104
Amount: 1.499472
Amount Units: ng/ml

Processing Integration Results



RT: 2.18
Area: 146516
Amount: 1.346972
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:42:26
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-345 Lab Sample ID: 320-30191-11
 Matrix: Water Lab File ID: 2017.08.16_537C_019.d
 Analysis Method: 537 Date Collected: 07/26/2017 15:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 285.2 (mL) Date Analyzed: 08/16/2017 14:06
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	120		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_019.d
 Lims ID: 320-30191-A-11-A
 Client ID: NAWC-072617-FRB-345
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:06:15 ALS Bottle#: 25 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:56:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.586	1.582	0.004	1.000	1936699	9.52	5317	
* 6 13C2-PFOA	415.00 > 370.00	1.950	1.955	-0.005		1902168	10.0	5912	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		5793398	28.7	4871	
\$ 10 13C2 PFDA	515.00 > 470.00	2.322	2.354	-0.032	1.000	1341650	12.0	5973	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_019.d

Injection Date: 16-Aug-2017 14:06:15

Instrument ID: A8_N

Lims ID: 320-30191-A-11-A

Lab Sample ID: 320-30191-11

Client ID: NAWC-072617-FRB-345

Operator ID: SACINSTLCMS01

ALS Bottle#: 25

Worklist Smp#: 19

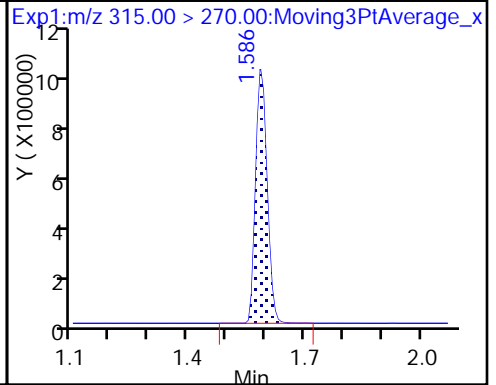
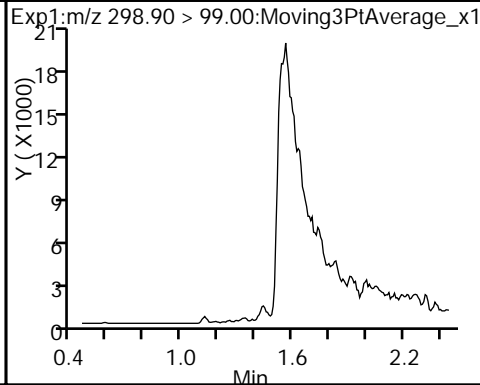
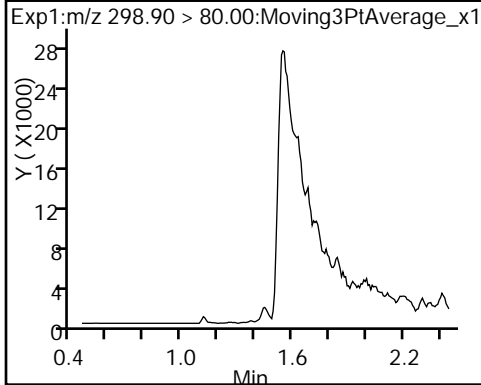
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

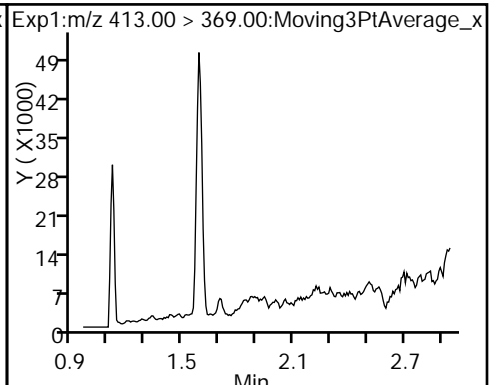
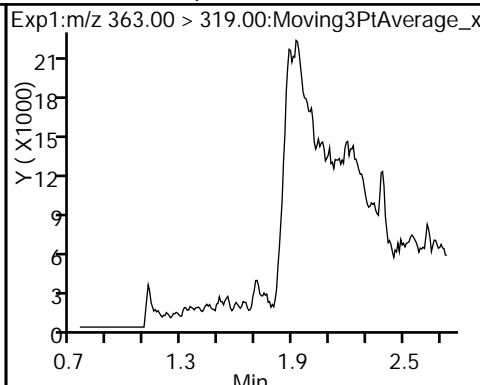
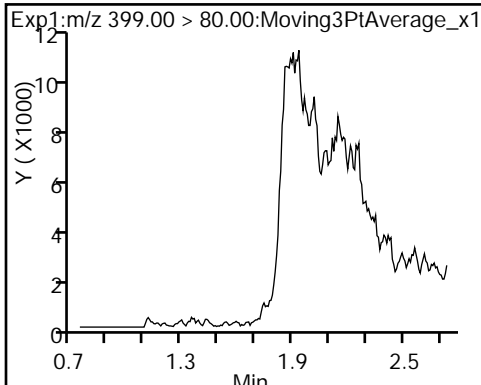
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

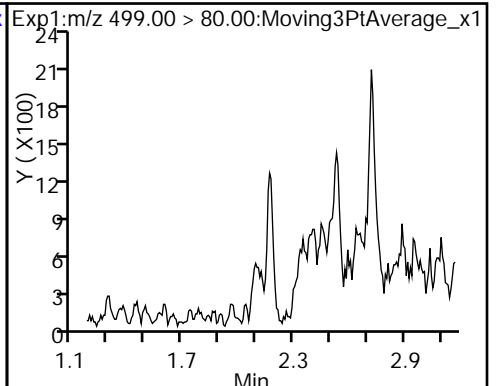
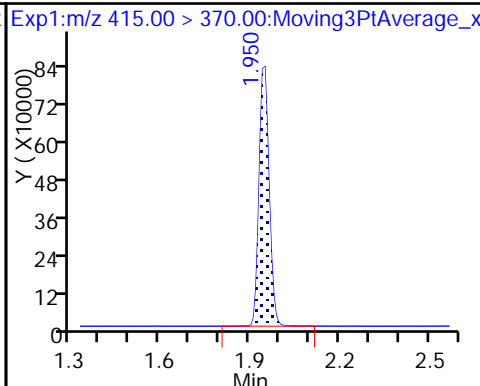
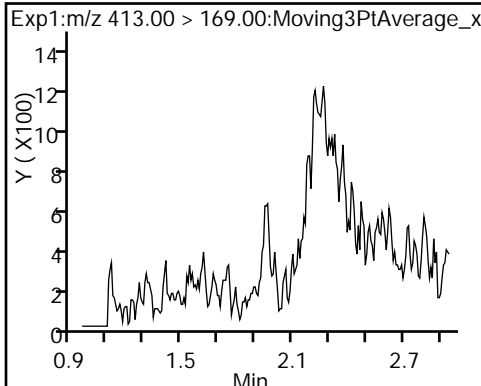
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

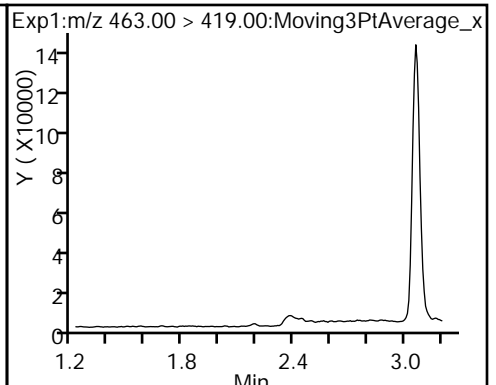
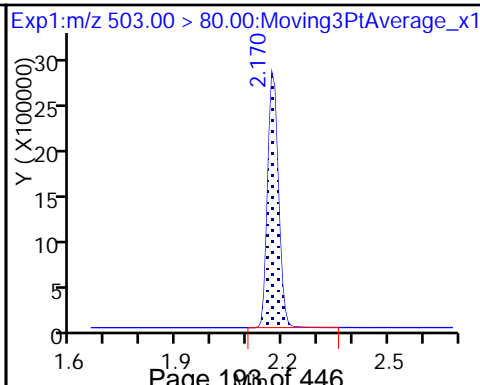
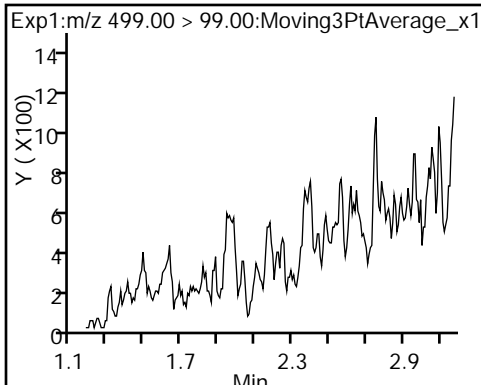
8 Perfluorooctane sulfonic acid (ND)



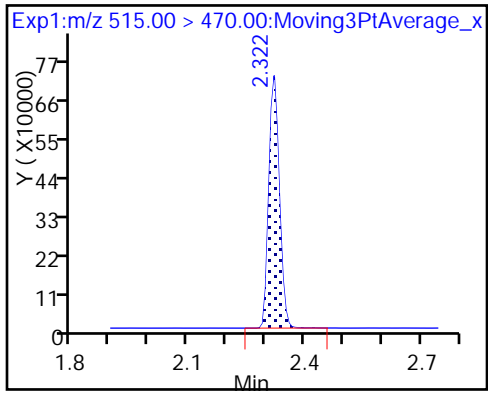
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_019.d
 Lims ID: 320-30191-A-11-A
 Client ID: NAWC-072617-FRB-345
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:06:15 ALS Bottle#: 25 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:56:29

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.52	95.22
\$ 10 13C2 PFDA	10.0	12.0	120.02

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-DUP03 Lab Sample ID: 320-30191-12
 Matrix: Water Lab File ID: 2017.08.16_537C_025.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 286.3(mL) Date Analyzed: 08/16/2017 14:34
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	123		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d
 Lims ID: 320-30191-A-12-A
 Client ID: NAWC-072617-DUP03
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:34:40 ALS Bottle#: 29 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:45:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	637344	2.74		77.0	
298.90 > 99.00	1.442	1.453	-0.011	1.000	402227		1.58(0.00-0.00)	82.8	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1656304	7.96		4419	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	305932	0.9865		35.7	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	364500	2.19		23.2	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1182908	6.70		61.2	M
413.00 > 169.00	1.950	1.955	-0.005	1.000	628477		1.88(0.00-0.00)	648	M
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1945840	10.0		5603	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	665311	3.47		170	
499.00 > 99.00	2.177	2.177	0.0	1.000	121000		5.50(0.00-0.00)	78.3	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5952793	28.7		2886	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	176574	1.60		16.0	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1402770	12.3		5706	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d

Injection Date: 16-Aug-2017 14:34:40

Instrument ID: A8_N

Lims ID: 320-30191-A-12-A

Lab Sample ID: 320-30191-12

Client ID: NAWC-072617-DUP03

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

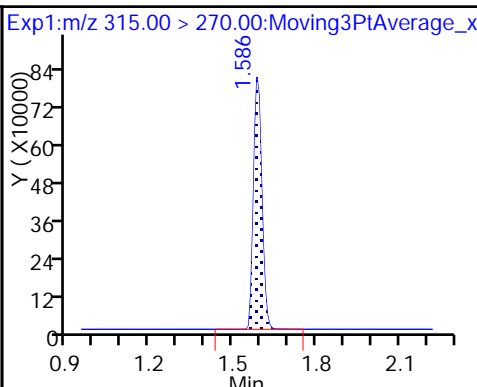
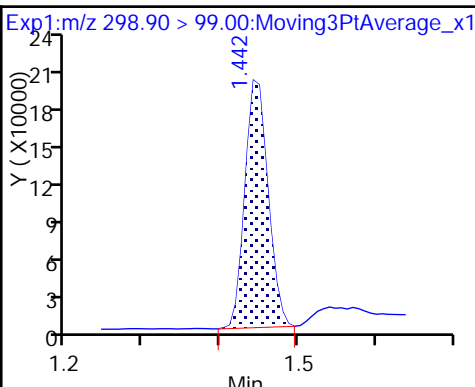
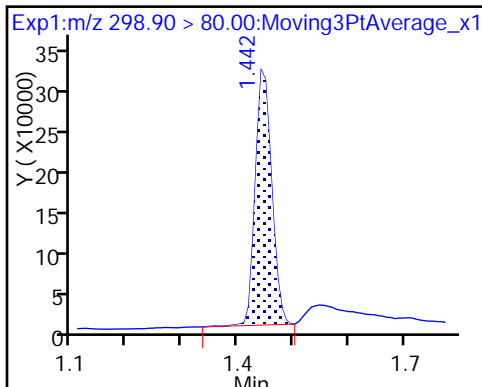
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

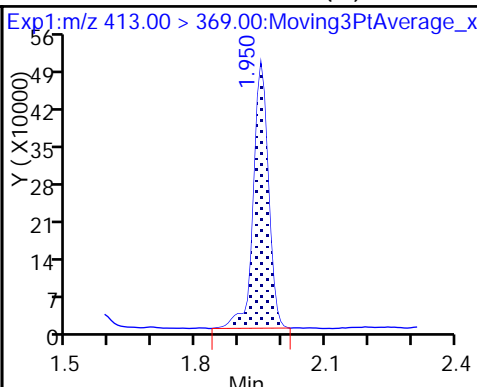
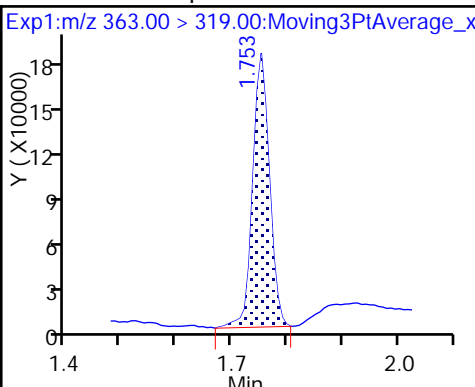
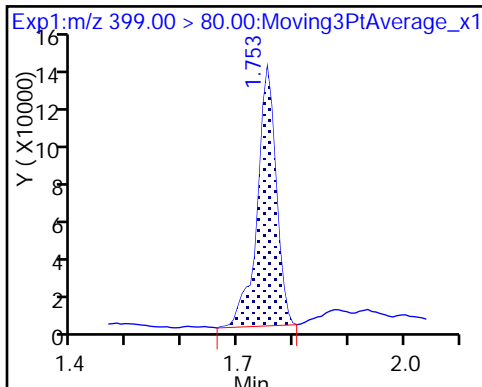
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

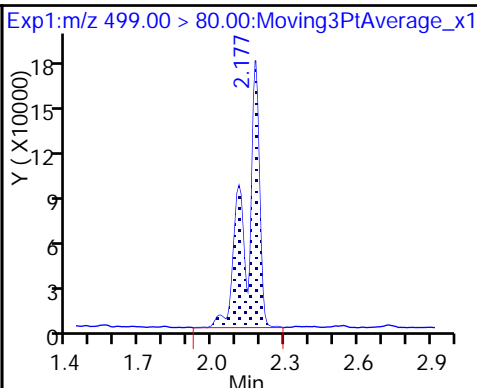
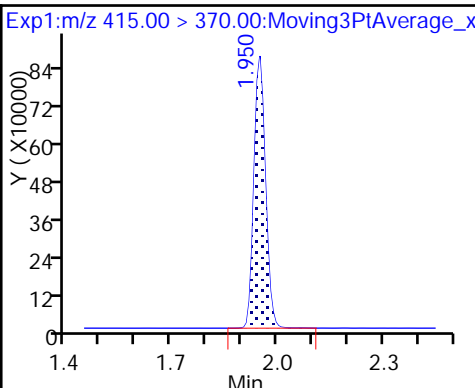
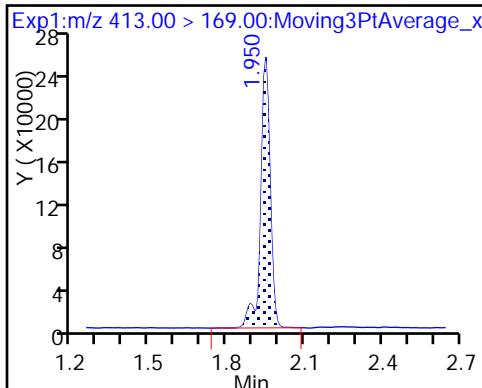
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

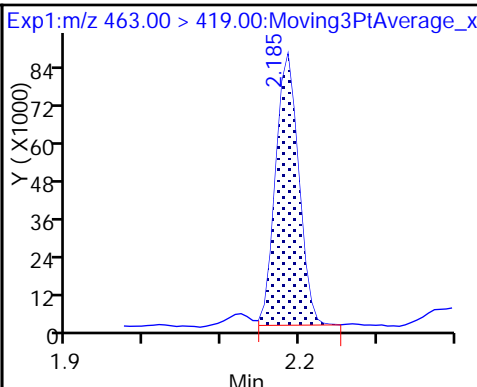
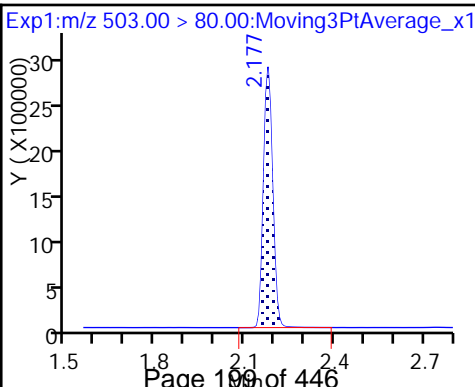
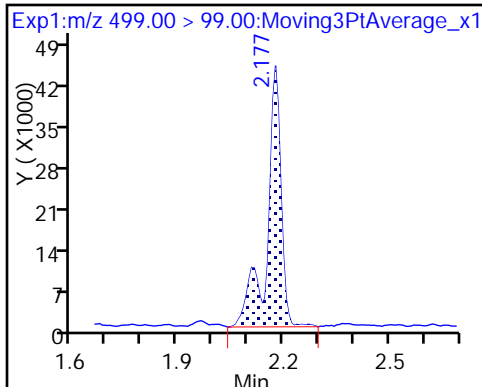
8 Perfluorooctane sulfonic acid



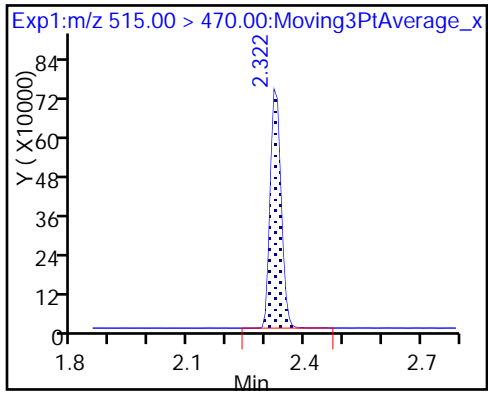
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d
 Lims ID: 320-30191-A-12-A
 Client ID: NAWC-072617-DUP03
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:34:40 ALS Bottle#: 29 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:45:27

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.96	79.61
\$ 10 13C2 PFDA	10.0	12.3	122.67

TestAmerica Sacramento

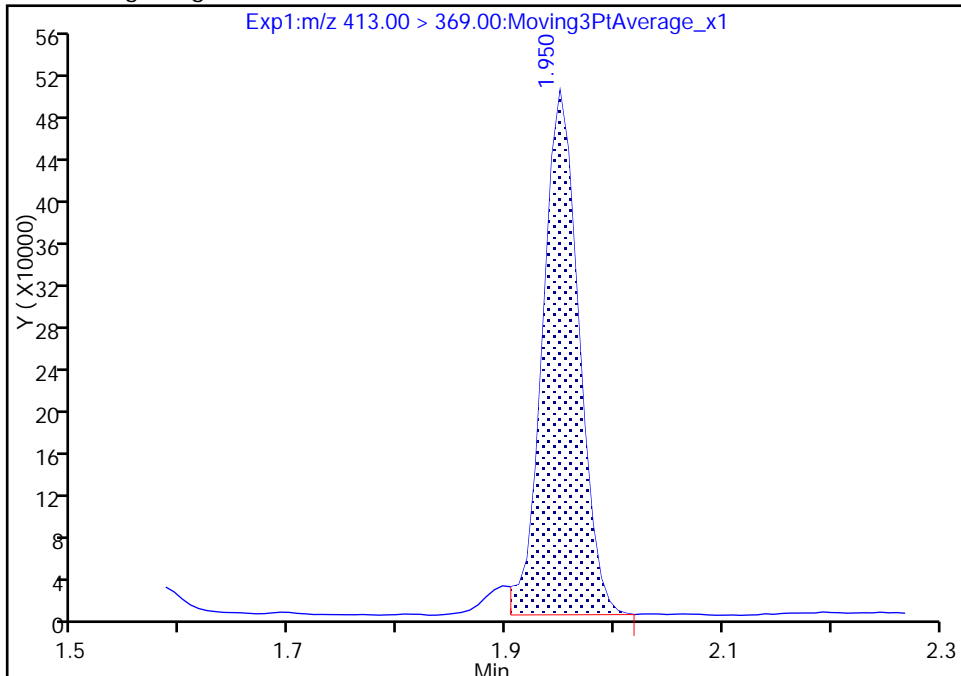
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d
Injection Date: 16-Aug-2017 14:34:40 Instrument ID: A8_N
Lims ID: 320-30191-A-12-A Lab Sample ID: 320-30191-12
Client ID: NAWC-072617-DUP03
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

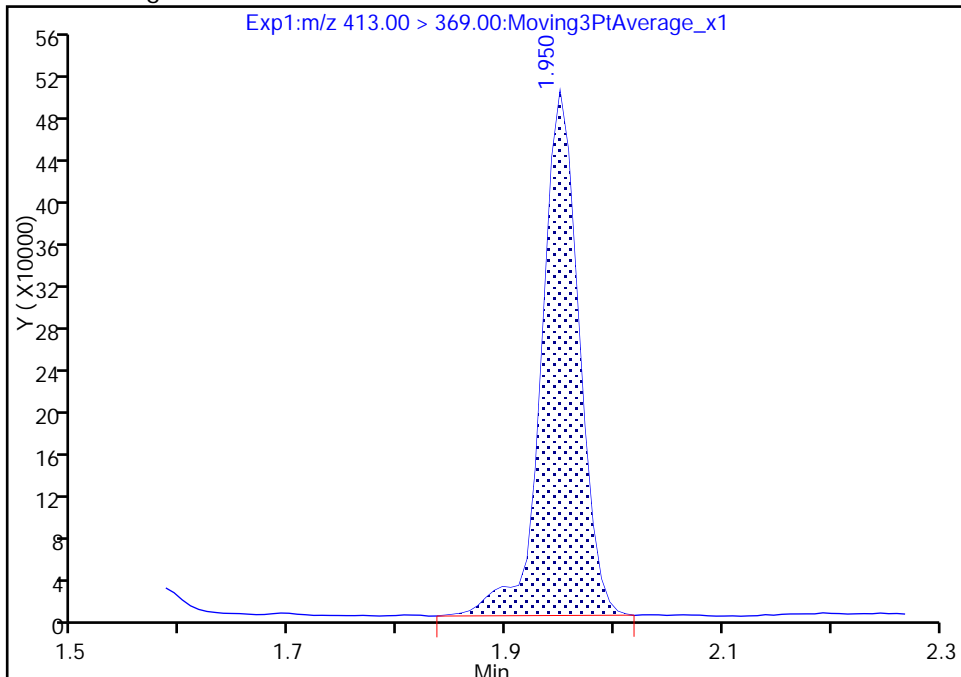
RT: 1.95
Area: 1138699
Amount: 6.453161
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 1182908
Amount: 6.703699
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

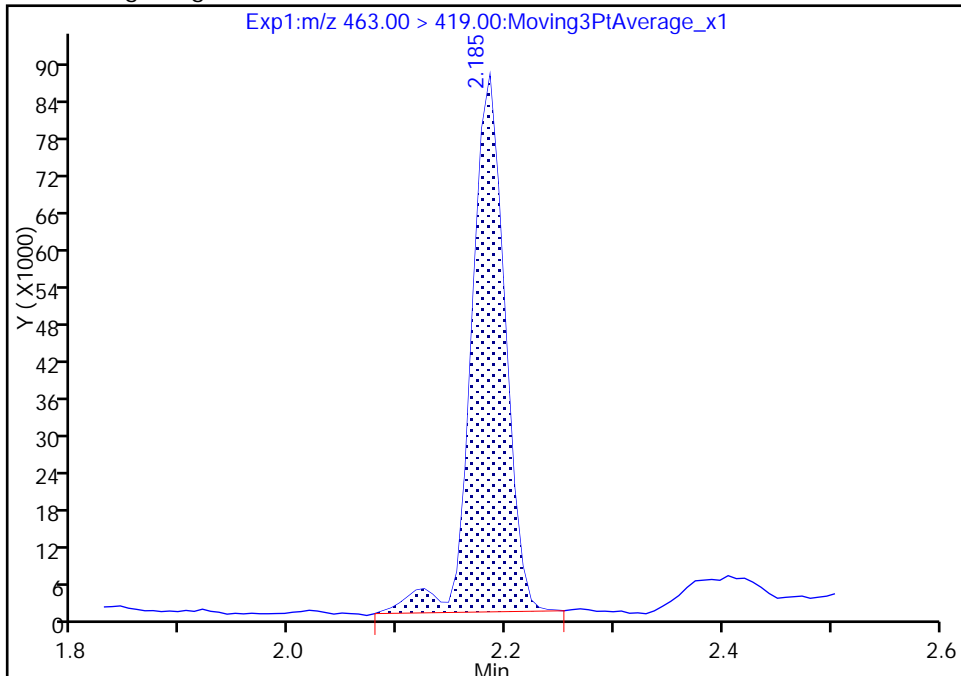
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d
Injection Date: 16-Aug-2017 14:34:40 Instrument ID: A8_N
Lims ID: 320-30191-A-12-A Lab Sample ID: 320-30191-12
Client ID: NAWC-072617-DUP03
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 25
Injection Vol: 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

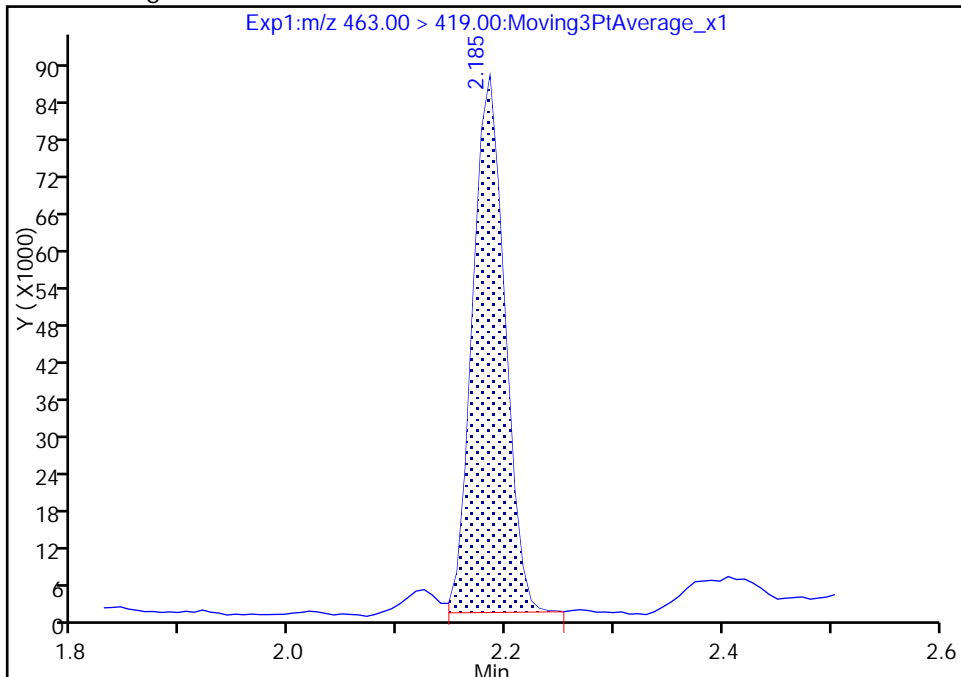
RT: 2.19
Area: 185131
Amount: 1.679484
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 176574
Amount: 1.601856
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:45:21
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-342 Lab Sample ID: 320-30191-13
 Matrix: Water Lab File ID: 2017.08.16_537C_026.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 286.4 (mL) Date Analyzed: 08/16/2017 14:39
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	125		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d
 Lims ID: 320-30191-A-13-A
 Client ID: NAWC-072617-RW-342
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:39:26 ALS Bottle#: 30 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:46:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	616732	2.71		83.0	
298.90 > 99.00	1.442	1.453	-0.011	1.000	382305		1.61(0.00-0.00)	80.4	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1645374	8.33		4219	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	297873	0.9826		34.9	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	379056	2.40		24.3	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1152760	6.89		57.5	M
413.00 > 169.00	1.942	1.955	-0.013	0.996	629646		1.83(0.00-0.00)	649	M
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1846233	10.0		5141	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	630690	3.37		173	
499.00 > 99.00	2.170	2.177	-0.007	0.997	122826		5.13(0.00-0.00)	73.2	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5819124	28.7		2883	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	164911	1.58		4.5	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1355132	12.5		6344	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d

Injection Date: 16-Aug-2017 14:39:26

Instrument ID: A8_N

Lims ID: 320-30191-A-13-A

Lab Sample ID: 320-30191-13

Client ID: NAWC-072617-RW-342

Operator ID: SACINSTLCMS01

ALS Bottle#: 30

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

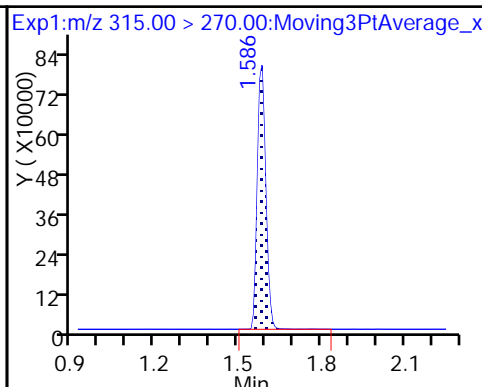
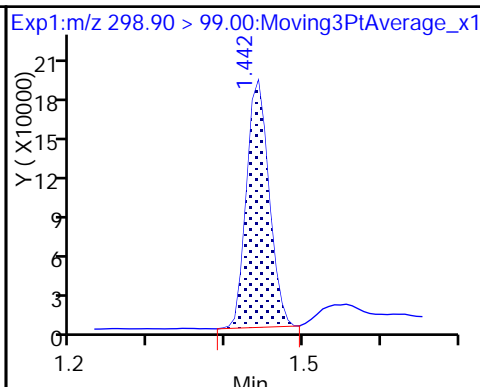
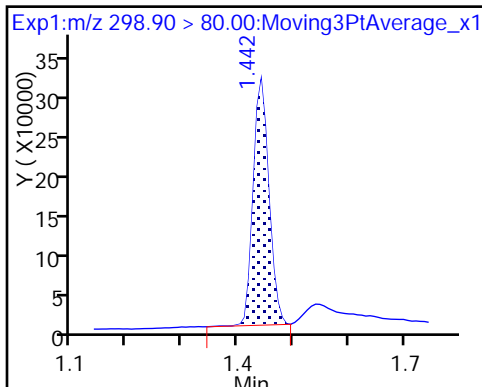
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

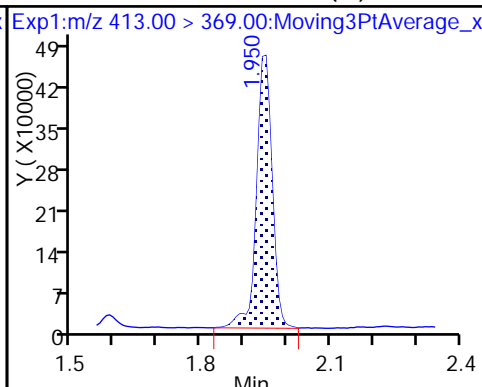
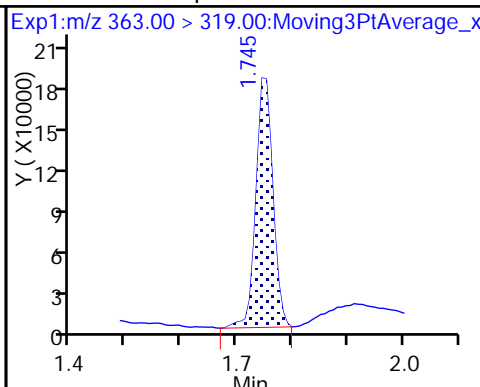
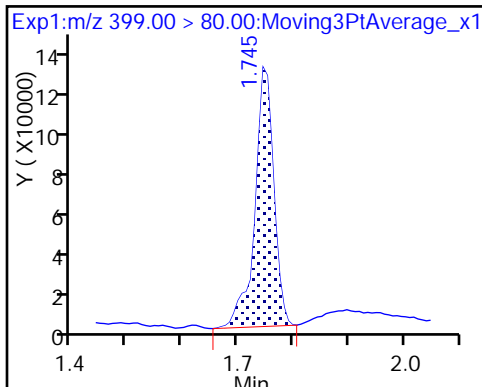
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

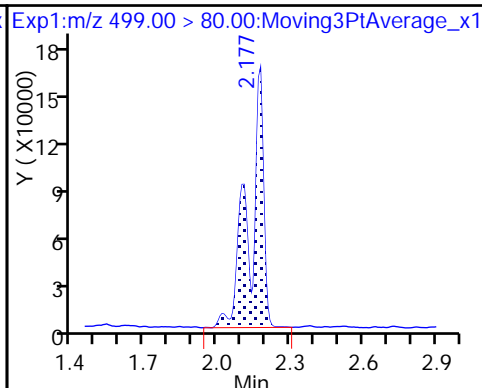
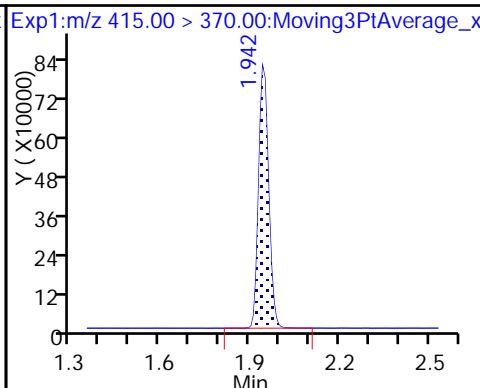
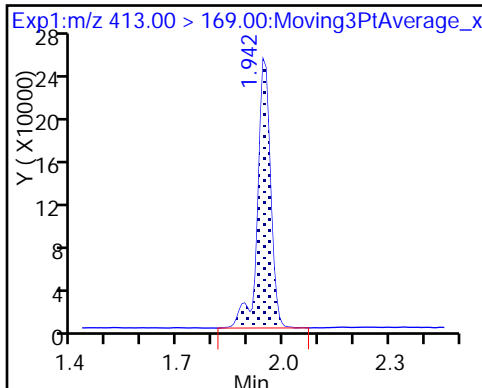
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

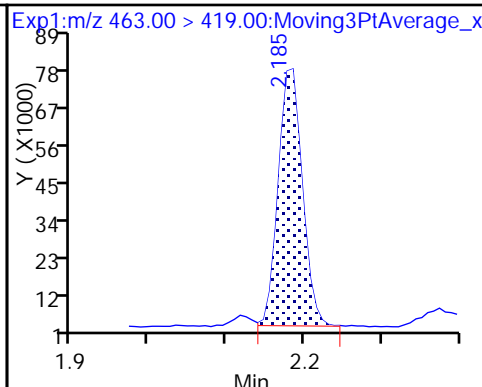
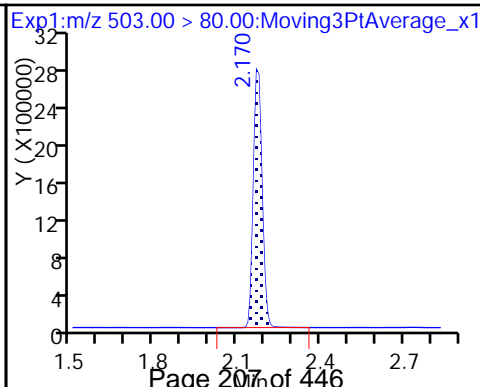
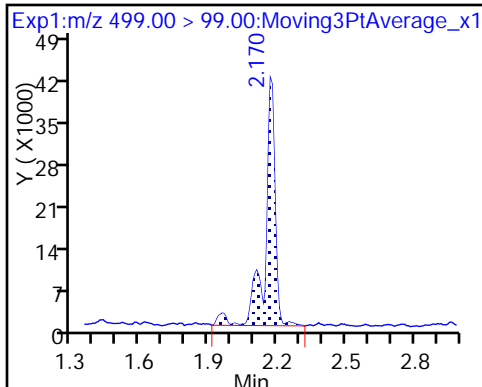
8 Perfluorooctane sulfonic acid



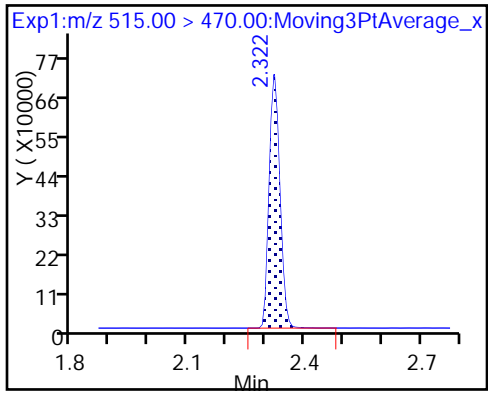
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d
 Lims ID: 320-30191-A-13-A
 Client ID: NAWC-072617-RW-342
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:39:26 ALS Bottle#: 30 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:46:18

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.33	83.35
\$ 10 13C2 PFDA	10.0	12.5	124.90

TestAmerica Sacramento

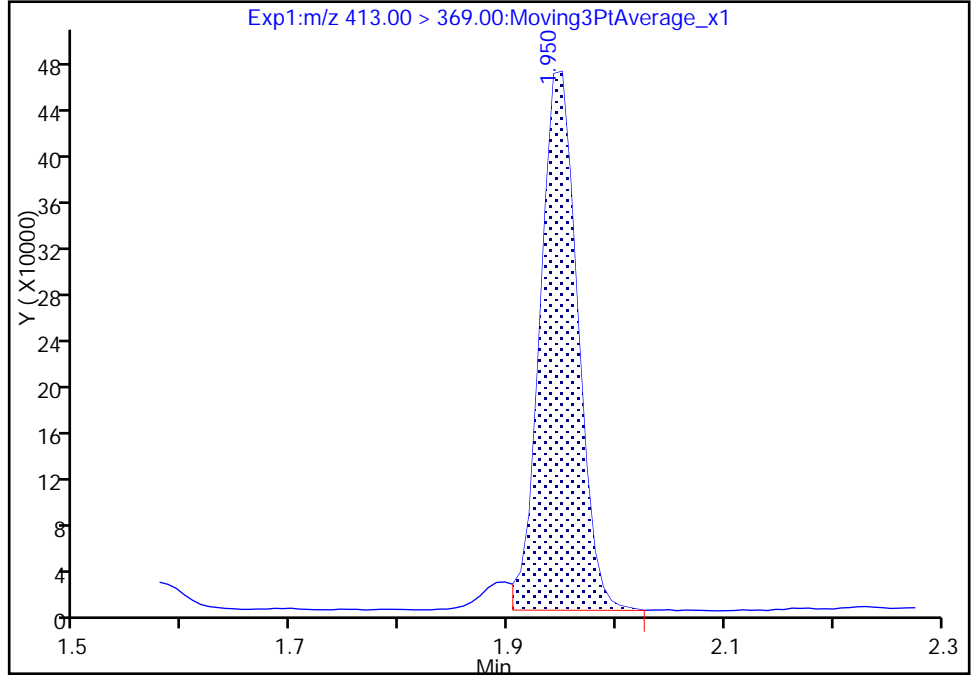
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d
Injection Date: 16-Aug-2017 14:39:26 Instrument ID: A8_N
Lims ID: 320-30191-A-13-A Lab Sample ID: 320-30191-13
Client ID: NAWC-072617-RW-342
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

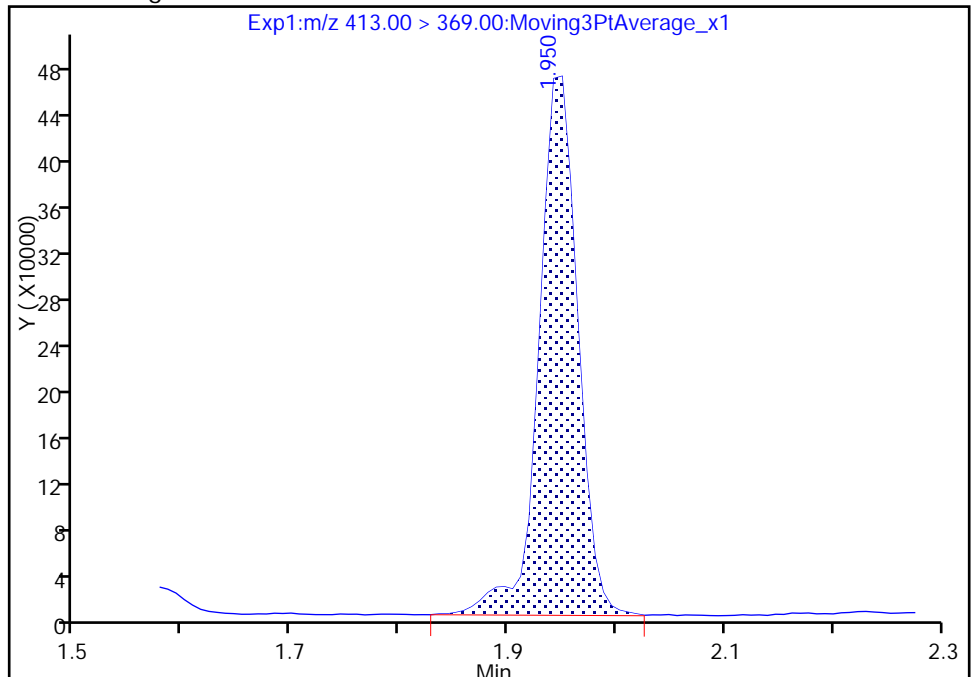
RT: 1.95
Area: 1103572
Amount: 6.591509
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 1152760
Amount: 6.885303
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:45:53
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

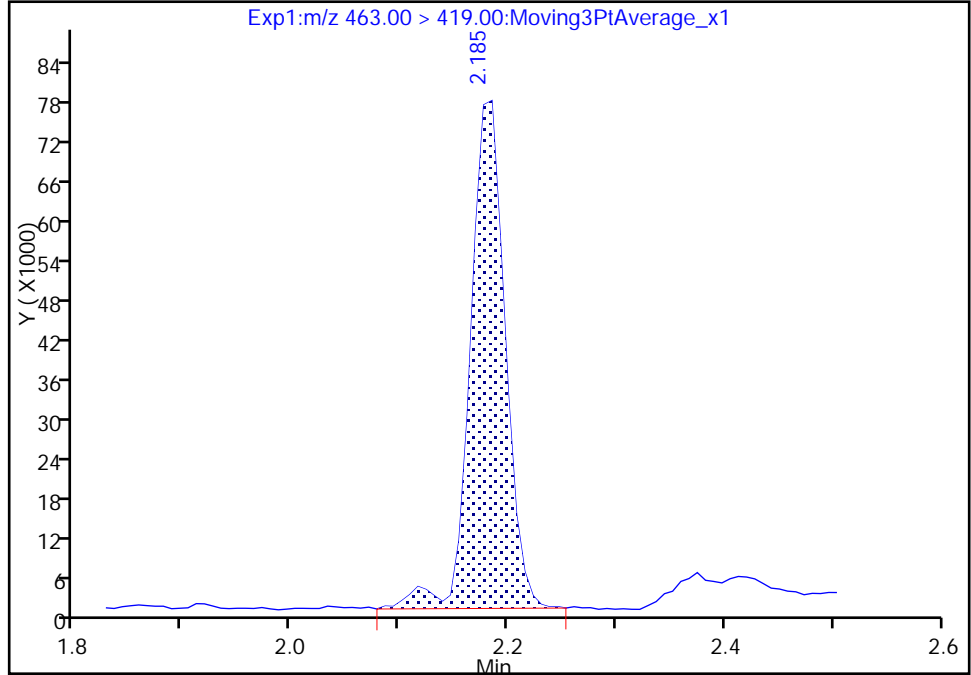
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d
Injection Date: 16-Aug-2017 14:39:26 Instrument ID: A8_N
Lims ID: 320-30191-A-13-A Lab Sample ID: 320-30191-13
Client ID: NAWC-072617-RW-342
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 26
Injection Vol: 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

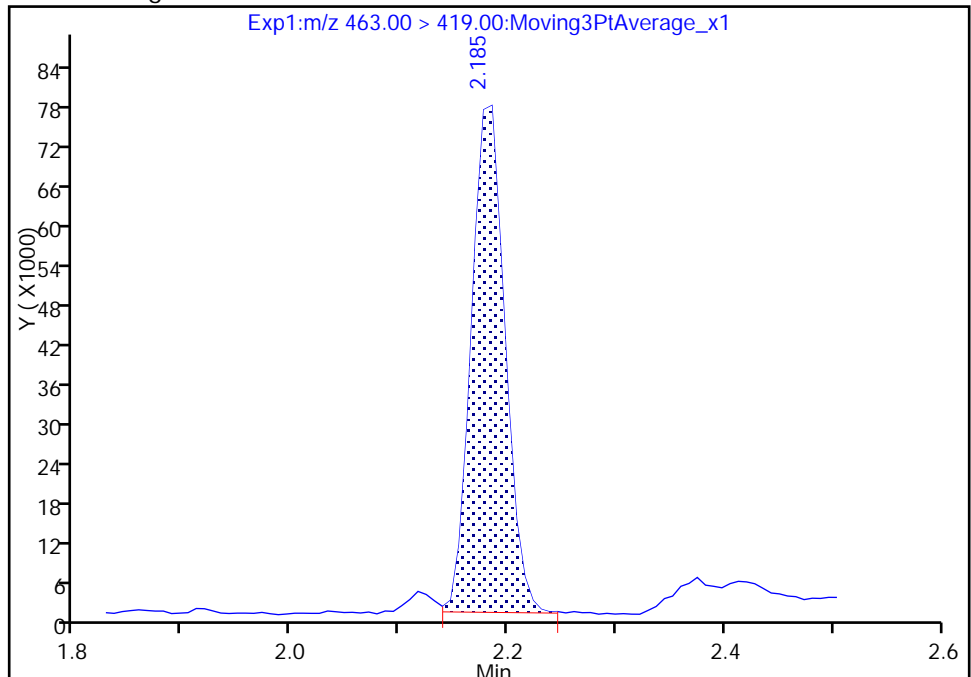
RT: 2.19
Area: 171538
Amount: 1.640128
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 164911
Amount: 1.576765
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:46:10
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-332B Lab Sample ID: 320-30191-14
 Matrix: Water Lab File ID: 2017.08.16_537C_027.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 279.6(mL) Date Analyzed: 08/16/2017 14:44
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_027.d
 Lims ID: 320-30191-A-14-A
 Client ID: NAWC-072617-RW-332B
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:44:09 ALS Bottle#: 31 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.586	1.582	0.004	1.000	2290154	10.1	5638	
* 6 13C2-PFOA	415.00 > 370.00	1.942	1.955	-0.013		2111823	10.0	6175	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		6443289	28.7	4976	
\$ 10 13C2 PFDA	515.00 > 470.00	2.322	2.354	-0.032	1.000	1547521	12.5	6992	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_027.d

Injection Date: 16-Aug-2017 14:44:09

Instrument ID: A8_N

Lims ID: 320-30191-A-14-A

Lab Sample ID: 320-30191-14

Client ID: NAWC-072617-RW-332B

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 27

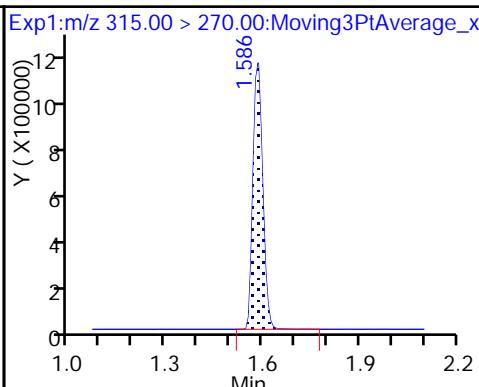
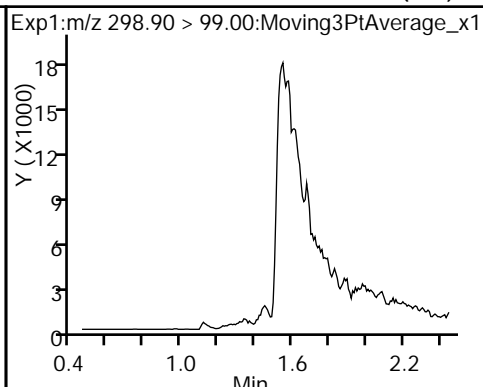
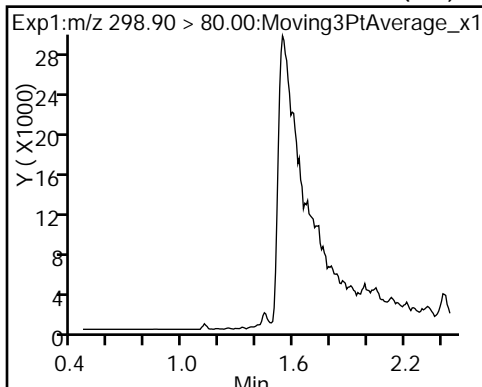
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

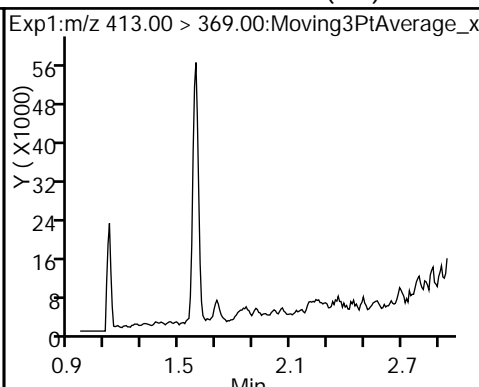
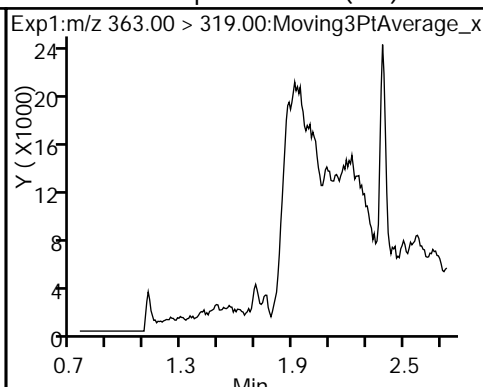
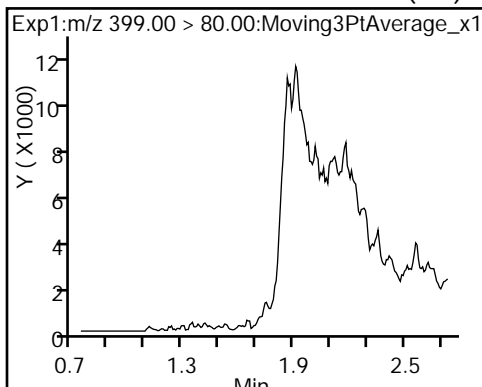
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

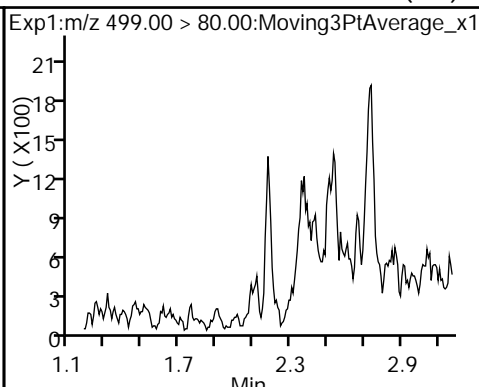
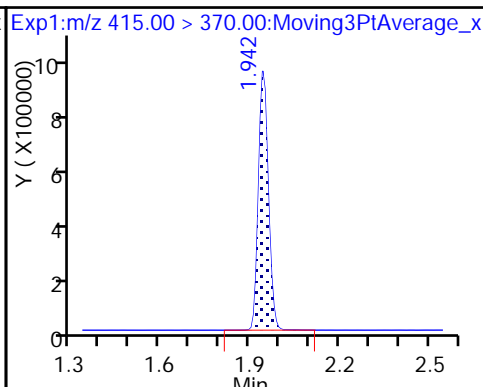
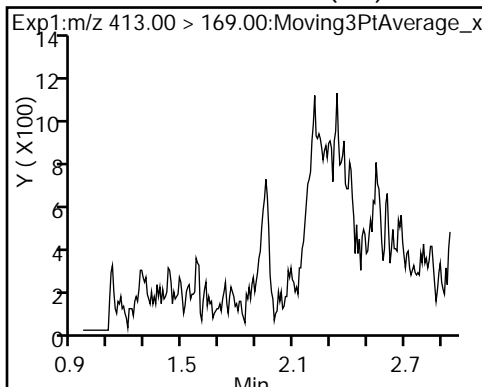
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

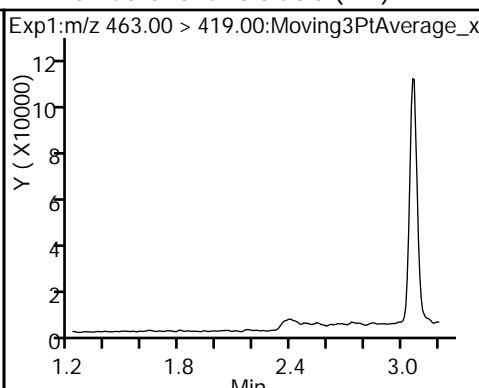
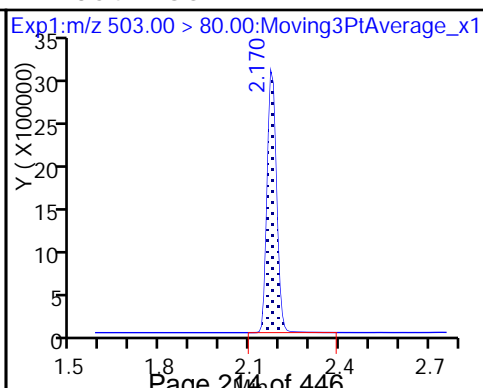
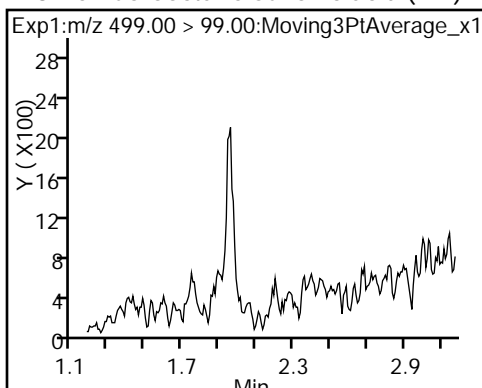
8 Perfluorooctane sulfonic acid (ND)



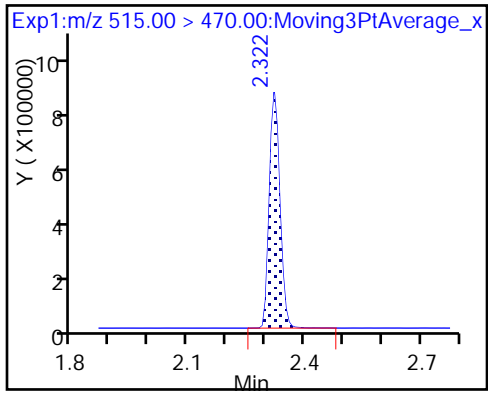
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_027.d
 Lims ID: 320-30191-A-14-A
 Client ID: NAWC-072617-RW-332B
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:44:09 ALS Bottle#: 31 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	101.42
\$ 10 13C2 PFDA	10.0	12.5	124.69

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-117 Lab Sample ID: 320-30191-15
 Matrix: Water Lab File ID: 2017.08.16_537C_028.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 292.6(mL) Date Analyzed: 08/16/2017 14:48
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	120		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d
 Lims ID: 320-30191-A-15-A
 Client ID: NAWC-072617-RW-117
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:48:53 ALS Bottle#: 32 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-15-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:47:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	210724	0.9375		22.3	
298.90 > 99.00	1.442	1.453	-0.011	1.000	143688		1.47(0.00-0.00)	29.2	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1871625	9.24		5028	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	1419754	4.75		153	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	292492	1.80		19.3	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1150260	6.70		55.7	M
413.00 > 169.00	1.950	1.955	-0.005	1.000	669358		1.72(0.00-0.00)	638	M
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1893783	10.0		5899	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	1678623	9.09		455	
499.00 > 99.00	2.177	2.177	0.0	1.000	314357		5.34(0.00-0.00)	204	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5733136	28.7		2679	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	104831	0.9772		3.2	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1335686	12.0		5864	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d

Injection Date: 16-Aug-2017 14:48:53

Instrument ID: A8_N

Lims ID: 320-30191-A-15-A

Lab Sample ID: 320-30191-15

Client ID: NAWC-072617-RW-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

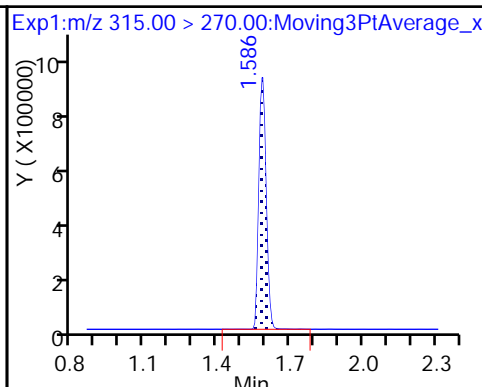
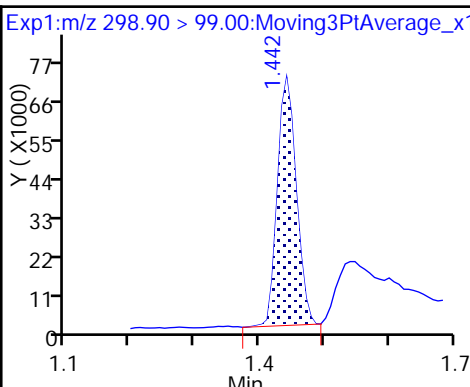
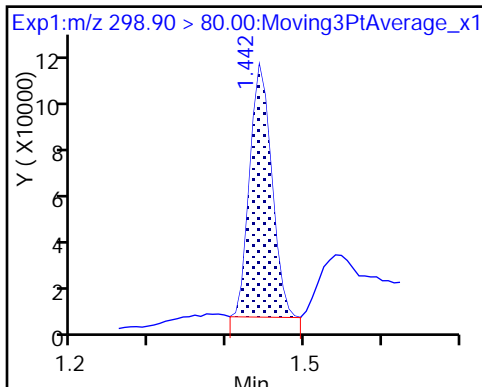
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

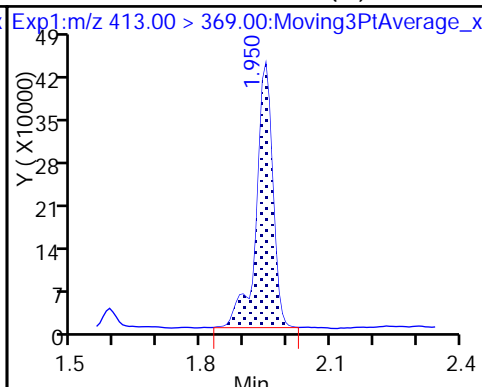
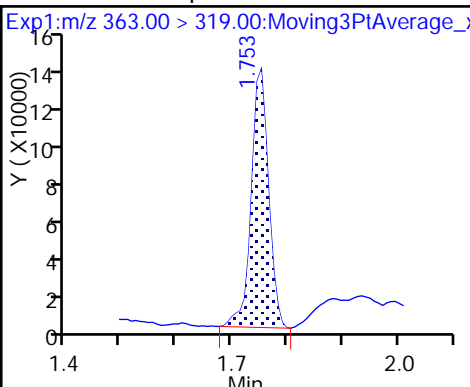
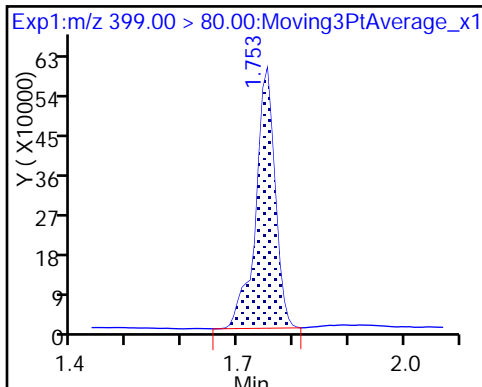
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

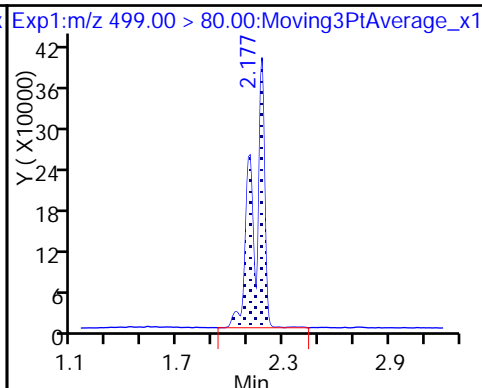
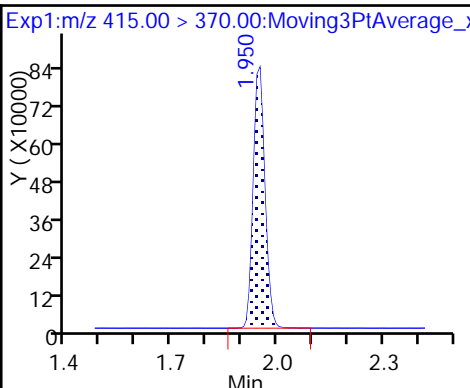
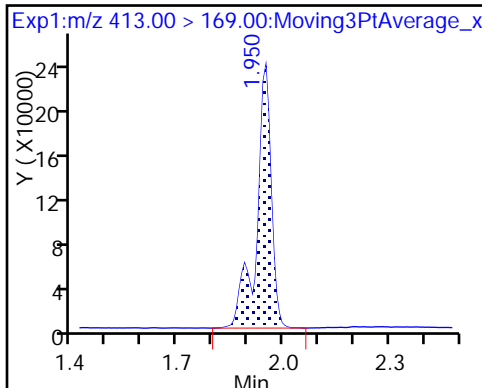
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

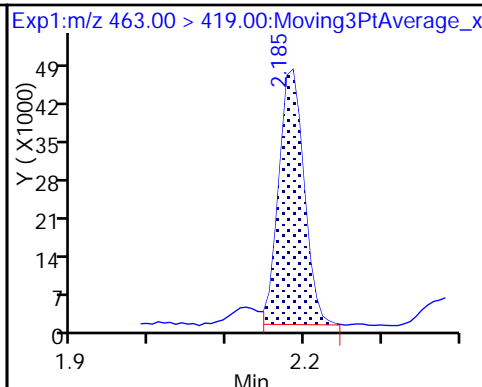
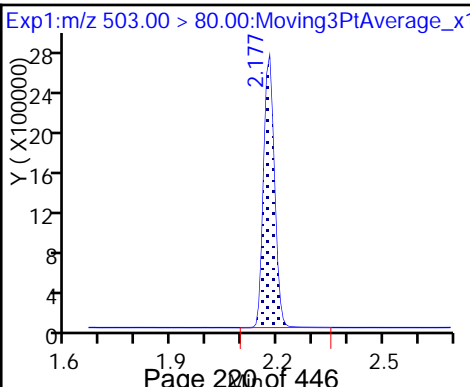
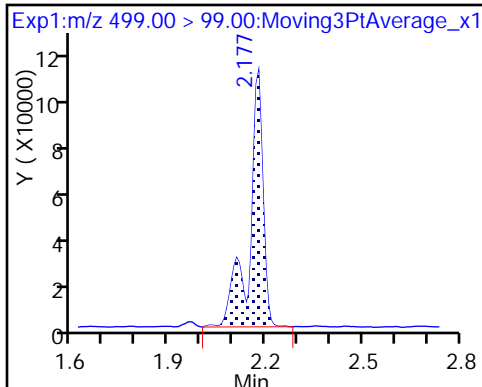
8 Perfluorooctane sulfonic acid



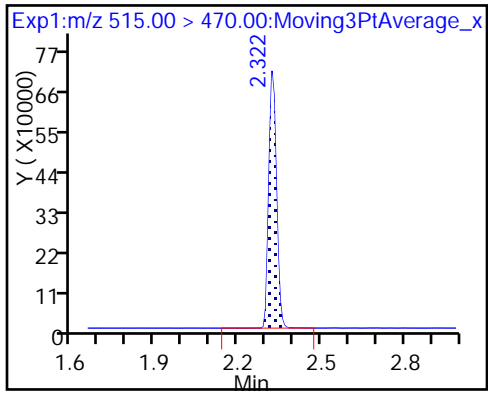
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d
 Lims ID: 320-30191-A-15-A
 Client ID: NAWC-072617-RW-117
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:48:53 ALS Bottle#: 32 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-15-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:47:26

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.24	92.43
\$ 10 13C2 PFDA	10.0	12.0	120.02

TestAmerica Sacramento

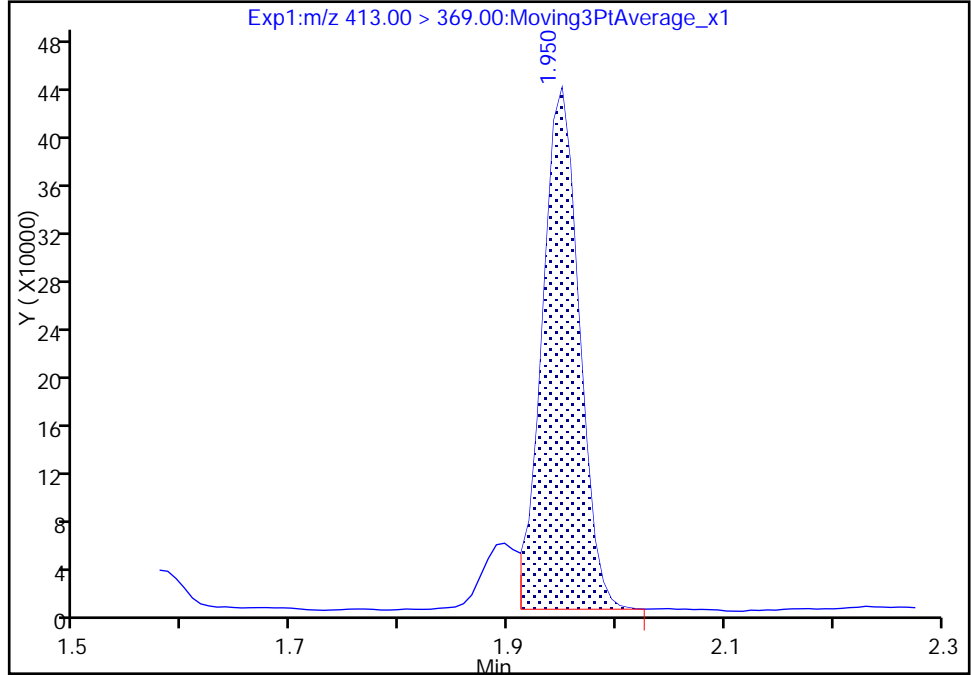
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d
Injection Date: 16-Aug-2017 14:48:53 Instrument ID: A8_N
Lims ID: 320-30191-A-15-A Lab Sample ID: 320-30191-15
Client ID: NAWC-072617-RW-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

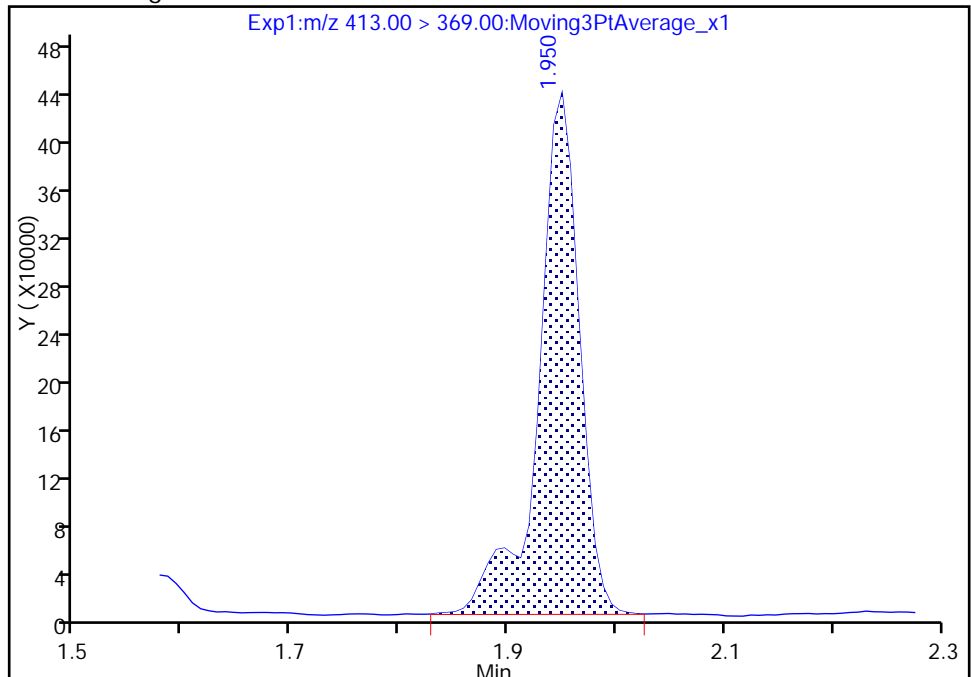
RT: 1.95
Area: 1023395
Amount: 5.959142
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 1150260
Amount: 6.697867
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:46:59
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

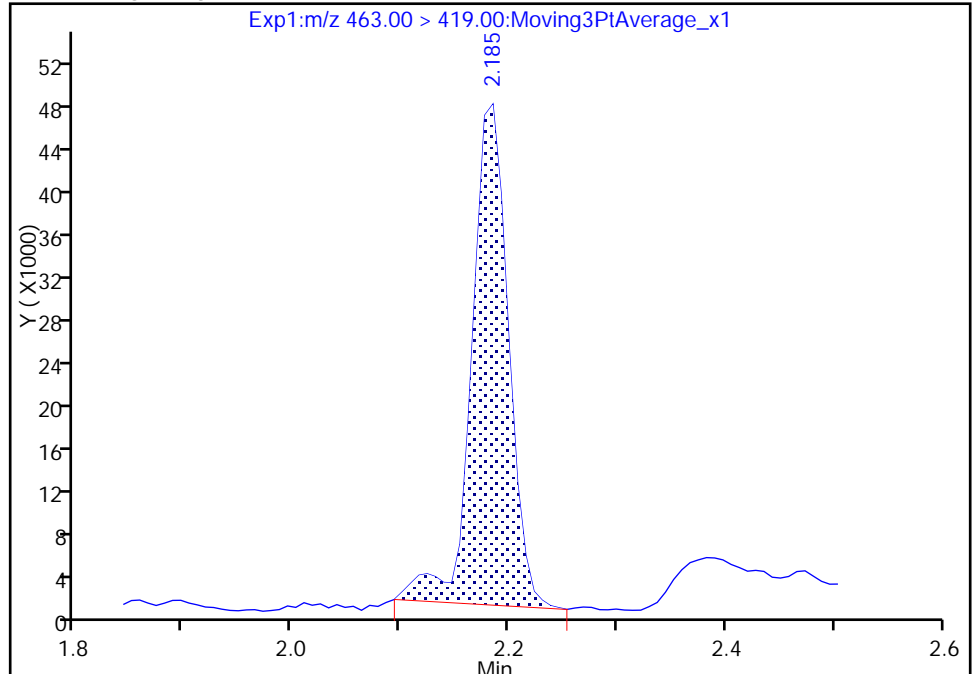
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d
Injection Date: 16-Aug-2017 14:48:53 Instrument ID: A8_N
Lims ID: 320-30191-A-15-A Lab Sample ID: 320-30191-15
Client ID: NAWC-072617-RW-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 28
Injection Vol: 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

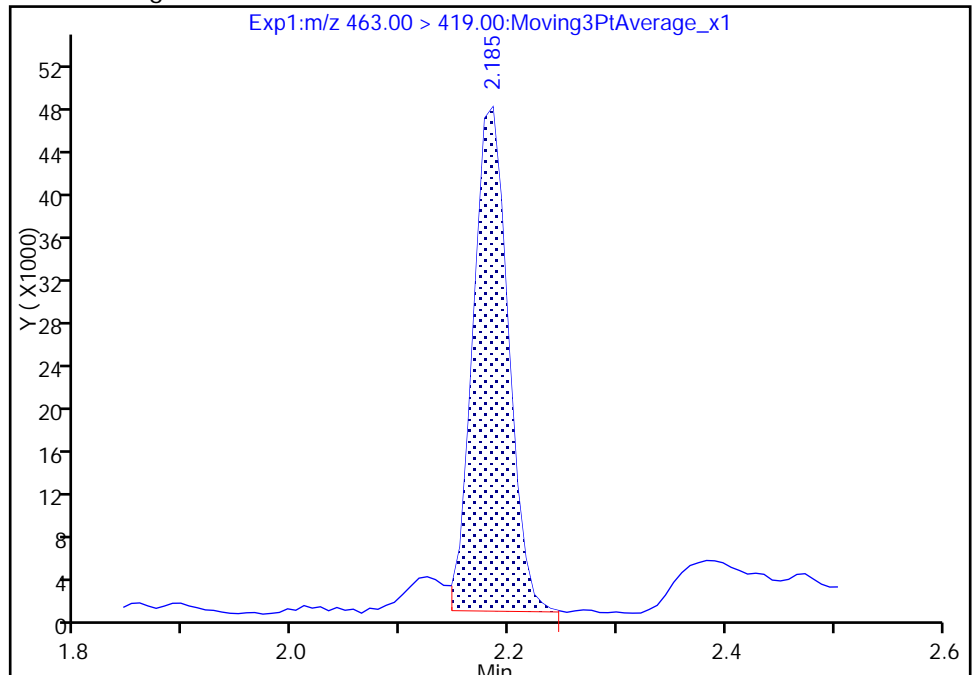
RT: 2.19
Area: 109059
Amount: 1.016565
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 104831
Amount: 0.977155
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:47:19
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-117 Lab Sample ID: 320-30191-16
 Matrix: Water Lab File ID: 2017.08.16_537C_029.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 278.9(mL) Date Analyzed: 08/16/2017 14:53
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_029.d
 Lims ID: 320-30191-A-16-A
 Client ID: NAWC-072617-FRB-117
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:53:38 ALS Bottle#: 33 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-16-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.586	1.582	0.004	1.000	2139755	10.1	6075	
* 6 13C2-PFOA	415.00 > 370.00	1.942	1.955	-0.013		1975032	10.0	5676	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		5809268	28.7	4709	
\$ 10 13C2 PFDA	515.00 > 470.00	2.322	2.354	-0.032	1.000	1464082	12.6	6944	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_029.d

Injection Date: 16-Aug-2017 14:53:38

Instrument ID: A8_N

Lims ID: 320-30191-A-16-A

Lab Sample ID: 320-30191-16

Client ID: NAWC-072617-FRB-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 29

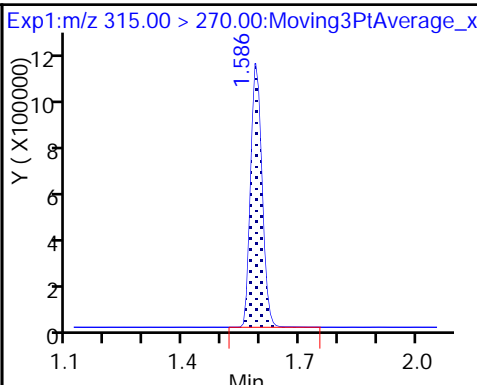
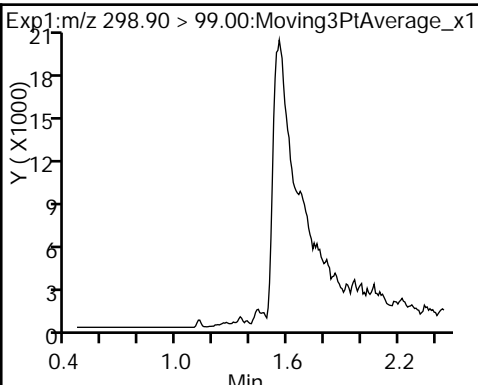
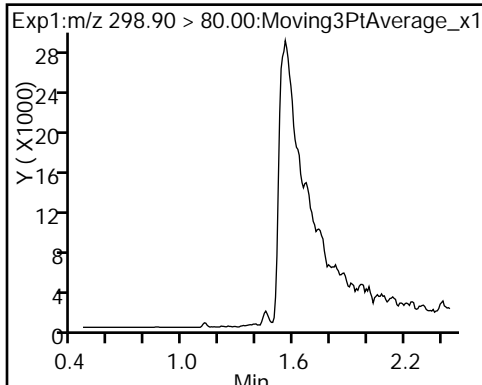
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

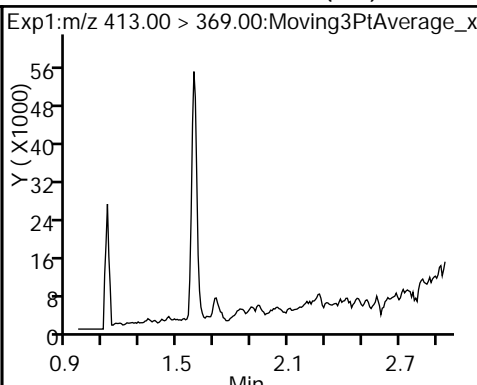
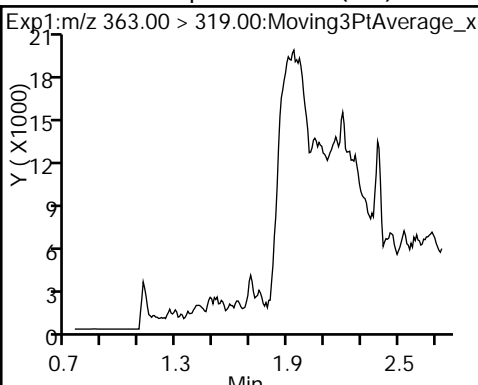
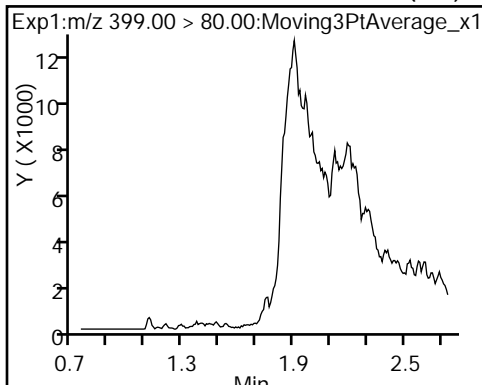
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

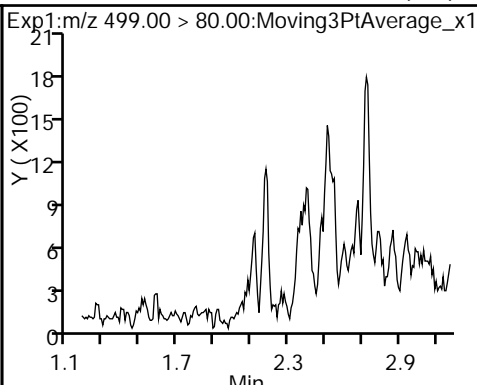
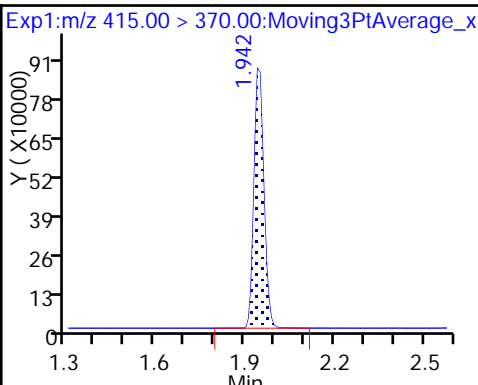
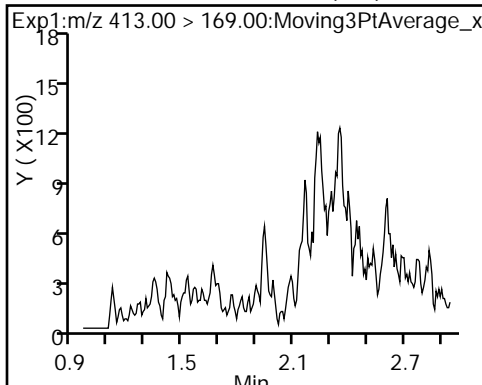
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

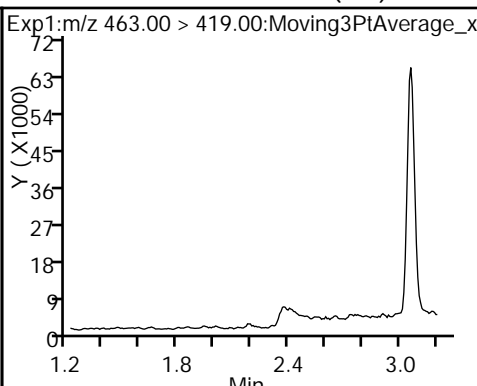
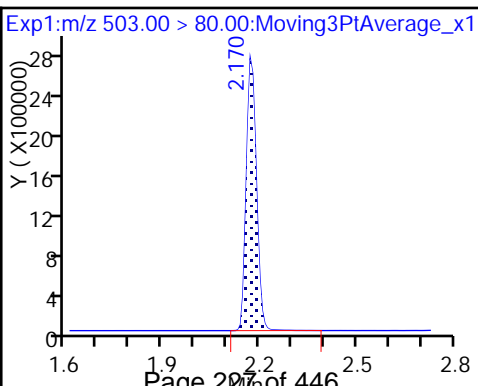
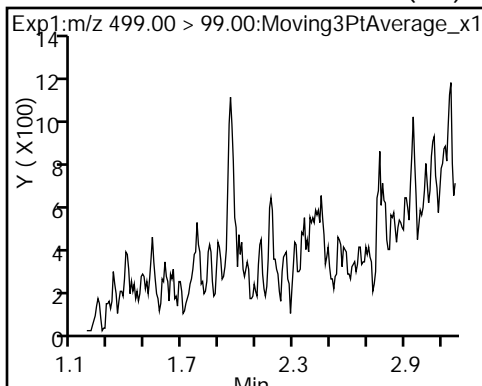
8 Perfluorooctane sulfonic acid (ND)



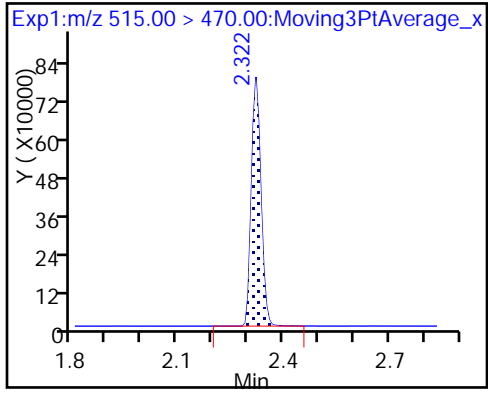
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_029.d
 Lims ID: 320-30191-A-16-A
 Client ID: NAWC-072617-FRB-117
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:53:38 ALS Bottle#: 33 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-16-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	101.32
\$ 10 13C2 PFDA	10.0	12.6	126.14

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-DUP04 Lab Sample ID: 320-30191-17
 Matrix: Water Lab File ID: 2017.08.16_537C_030.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 279(mL) Date Analyzed: 08/16/2017 14:58
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	13	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.4	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	124		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d
 Lims ID: 320-30191-A-17-A
 Client ID: NAWC-072617-DUP04
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:58:23 ALS Bottle#: 34 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:48:29

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	1.453	-0.019	1.000	411243	1.82		54.7	
298.90 > 99.00	1.434	1.453	-0.019	1.000	265238		1.55(0.00-0.00)	55.0	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	1785586	8.81		5003	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	453496	1.51		58.4	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	177932	1.10		12.0	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	629145	3.66		33.2	M
413.00 > 169.00	1.942	1.955	-0.013	1.000	373375		1.69(0.00-0.00)	385	M
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1896096	10.0		5313	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	877583	4.73		294	
499.00 > 99.00	2.170	2.177	-0.007	1.000	155344		5.65(0.00-0.00)	104	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5765134	28.7		3392	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	78089	0.7270		2.9	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1379385	12.4		6355	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d

Injection Date: 16-Aug-2017 14:58:23

Instrument ID: A8_N

Lims ID: 320-30191-A-17-A

Lab Sample ID: 320-30191-17

Client ID: NAWC-072617-DUP04

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 30

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

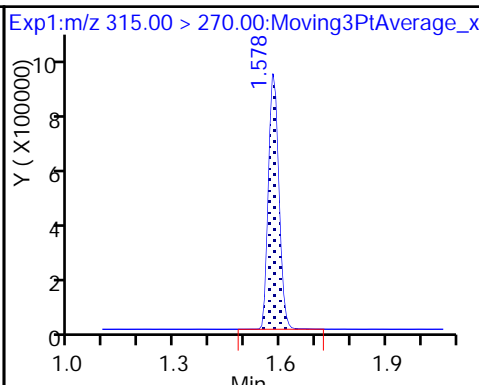
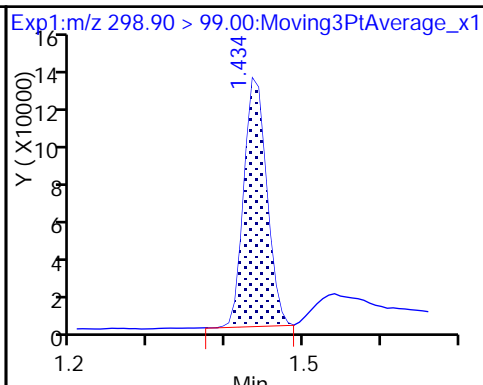
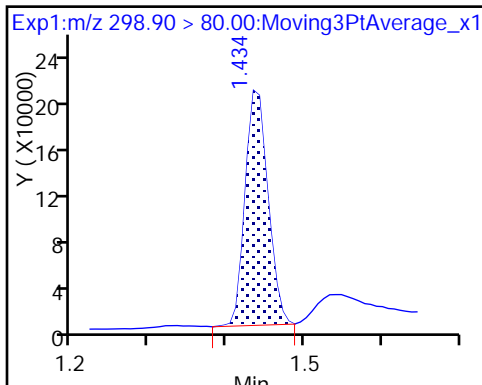
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

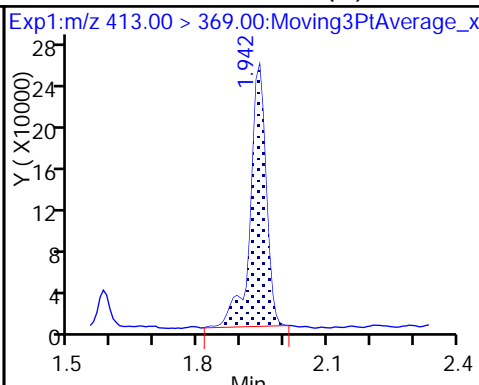
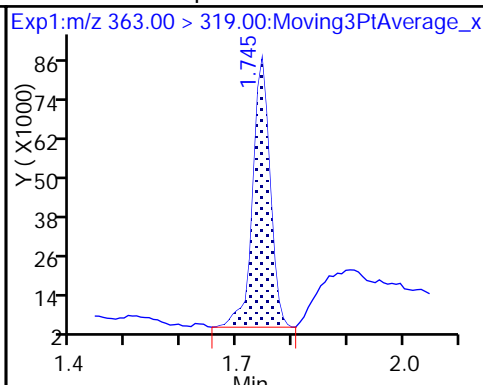
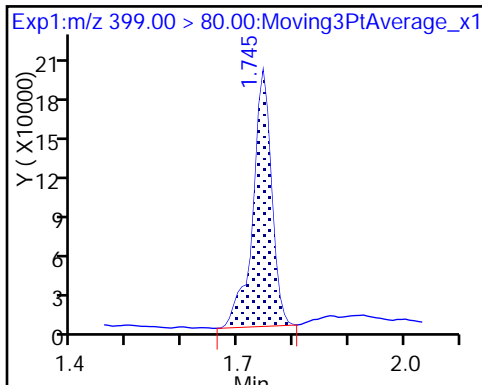
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

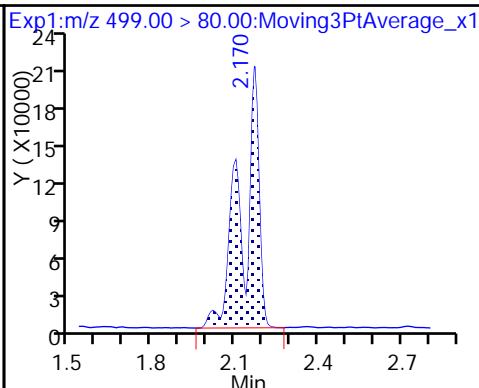
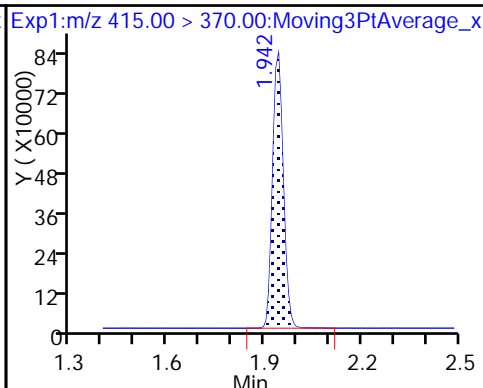
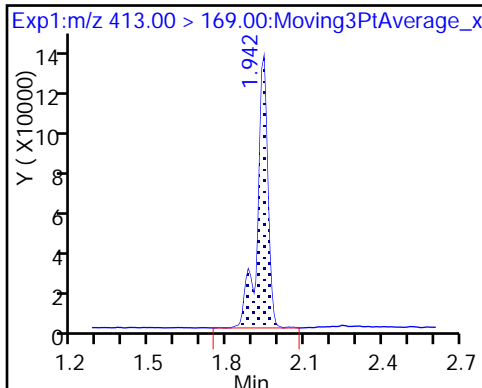
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

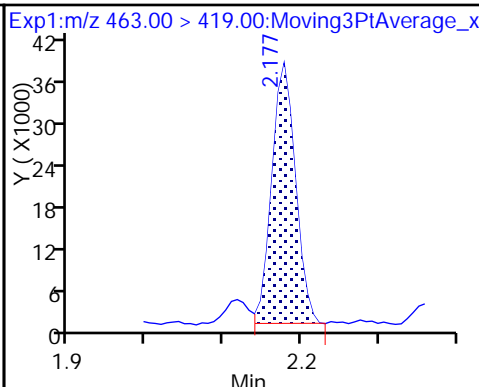
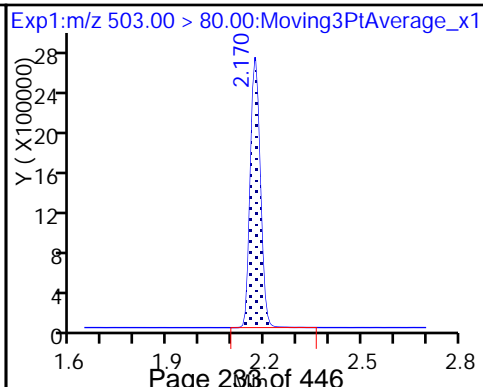
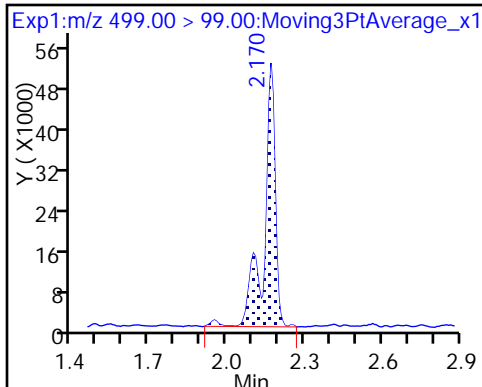
8 Perfluorooctane sulfonic acid



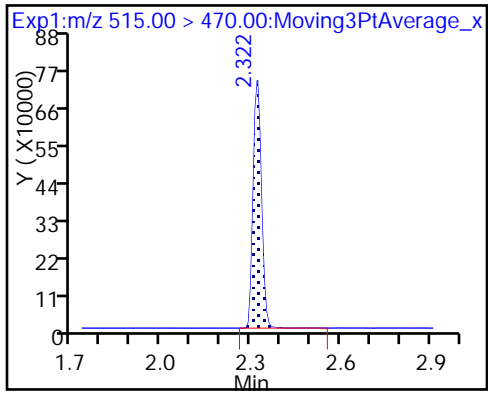
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d
 Lims ID: 320-30191-A-17-A
 Client ID: NAWC-072617-DUP04
 Sample Type: Client
 Inject. Date: 16-Aug-2017 14:58:23 ALS Bottle#: 34 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:48:29

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.81	88.07
\$ 10 13C2 PFDA	10.0	12.4	123.79

TestAmerica Sacramento

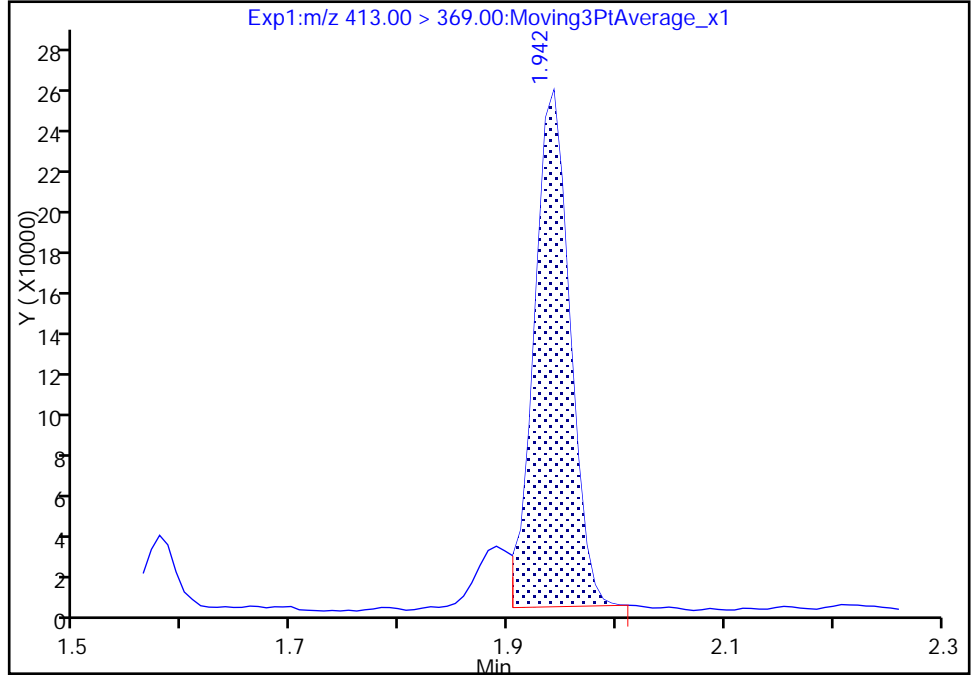
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d
Injection Date: 16-Aug-2017 14:58:23 Instrument ID: A8_N
Lims ID: 320-30191-A-17-A Lab Sample ID: 320-30191-17
Client ID: NAWC-072617-DUP04
Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

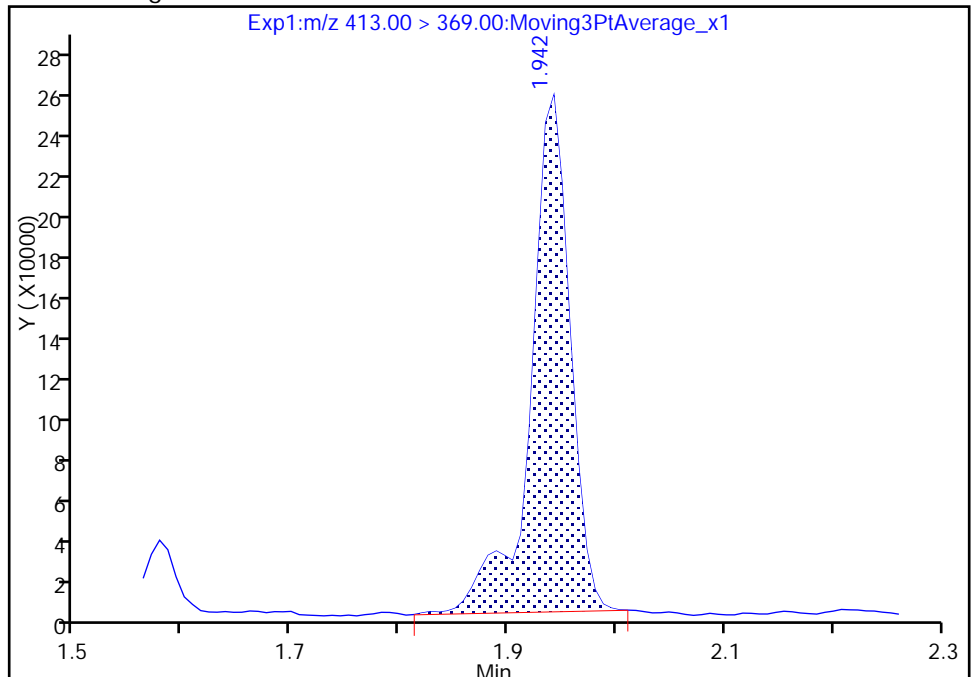
RT: 1.94
Area: 562884
Amount: 3.273628
Amount Units: ng/ml

Processing Integration Results



RT: 1.94
Area: 629145
Amount: 3.658989
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:48:04
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

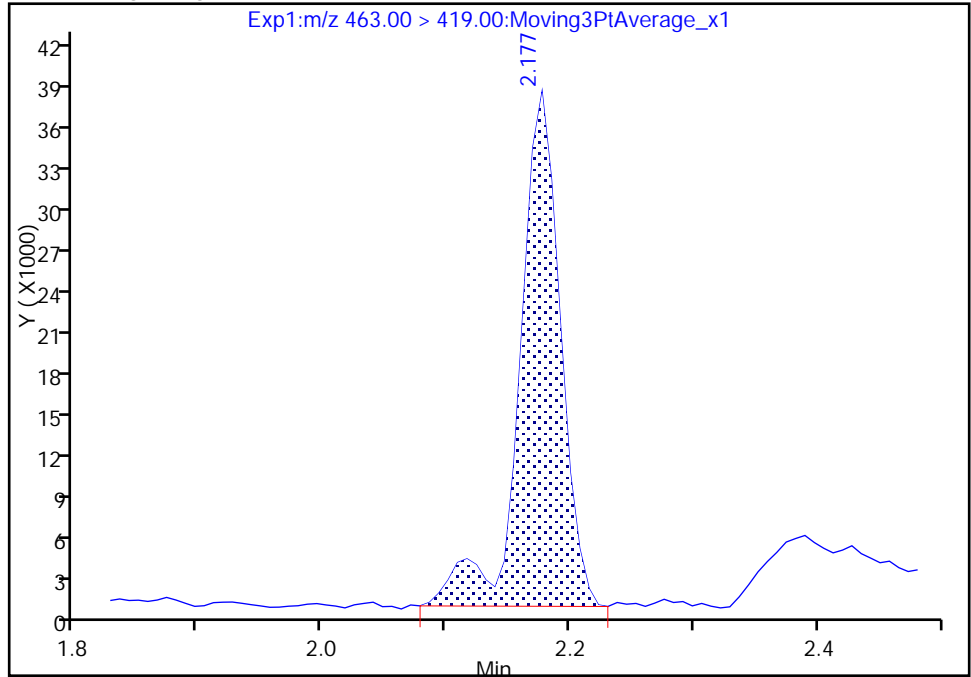
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d
Injection Date: 16-Aug-2017 14:58:23 Instrument ID: A8_N
Lims ID: 320-30191-A-17-A Lab Sample ID: 320-30191-17
Client ID: NAWC-072617-DUP04
Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 30
Injection Vol: 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

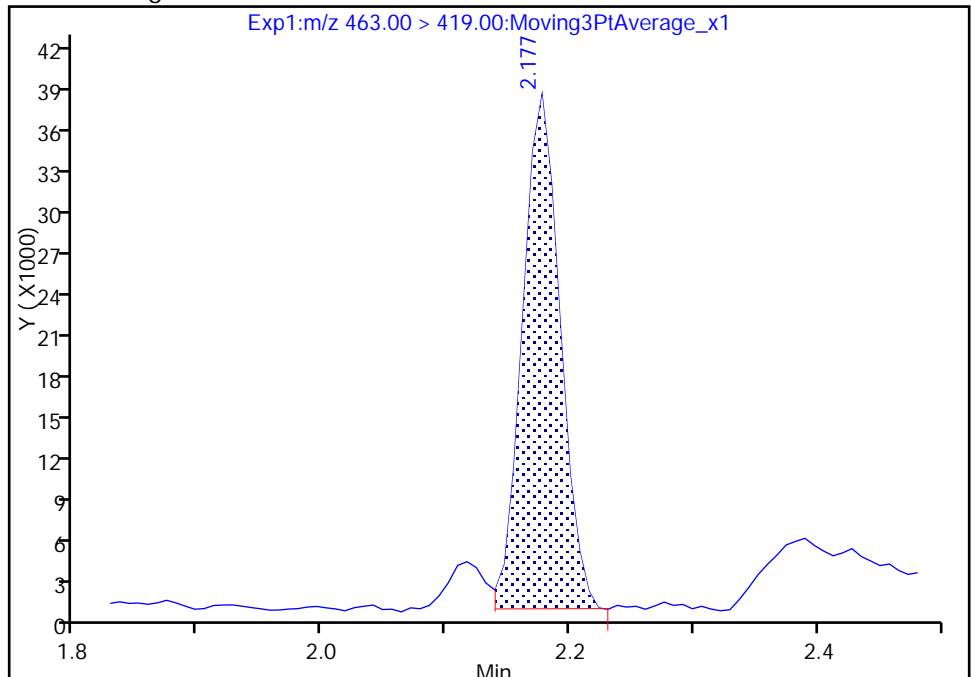
RT: 2.18
Area: 85134
Amount: 0.792586
Amount Units: ng/ml

Processing Integration Results



RT: 2.18
Area: 78089
Amount: 0.726998
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:48:23
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-RW-4844 Lab Sample ID: 320-30191-18
 Matrix: Water Lab File ID: 2017.08.16_537C_031.d
 Analysis Method: 537 Date Collected: 07/26/2017 09:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 298.7(mL) Date Analyzed: 08/16/2017 15:03
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.9	J M	33	13	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J M	17	6.7	2.3
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	20	17	6.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	8.4	3.3	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U	75	30	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	136	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d
 Lims ID: 320-30191-A-18-A
 Client ID: WGNA-072617-RW-4844
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:03:07 ALS Bottle#: 35 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-18-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:49:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	249452	1.10		20.6	
298.90 > 99.00	1.449	1.453	-0.004	1.000	156304		1.60(0.00-0.00)	30.6	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1759566	8.76		4764	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	187614	0.6208		18.5	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	337313	2.10		21.2	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	736843	4.33		38.2	M
413.00 > 169.00	1.950	1.955	-0.005	1.000	402529		1.83(0.00-0.00)	401	M
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1878429	10.0		6521	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	438305	2.35		104	M
499.00 > 99.00	2.177	2.177	0.0	1.000	76592		5.72(0.00-0.00)	59.0	M
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5801526	28.7		1963	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	121074	1.14		3.8	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1499531	13.6		6345	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d

Injection Date: 16-Aug-2017 15:03:07

Instrument ID: A8_N

Lims ID: 320-30191-A-18-A

Lab Sample ID: 320-30191-18

Client ID: WGNA-072617-RW-4844

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 31

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

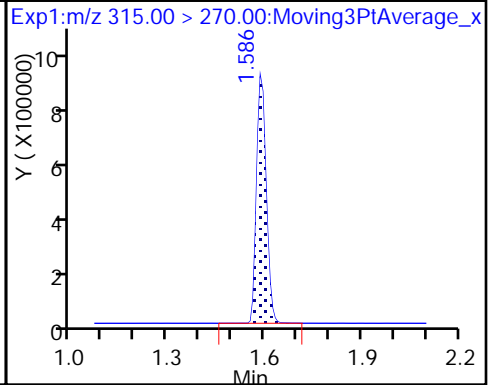
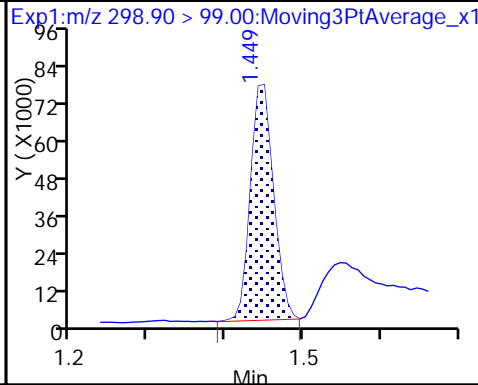
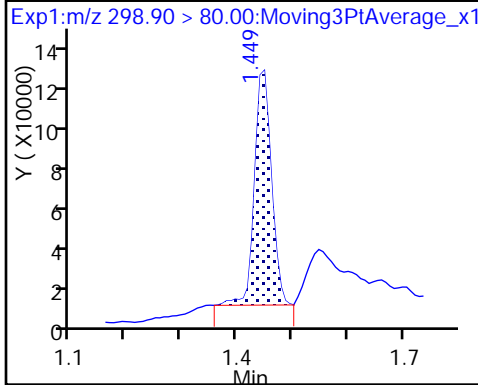
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

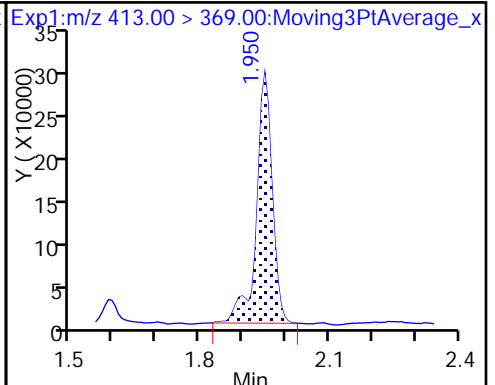
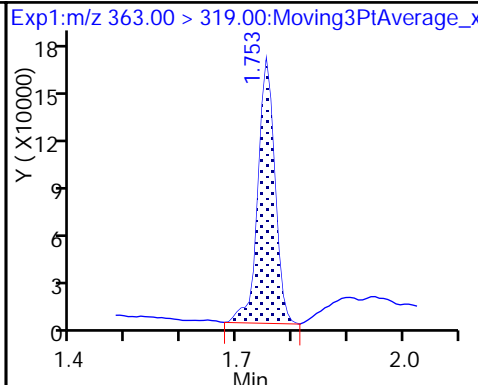
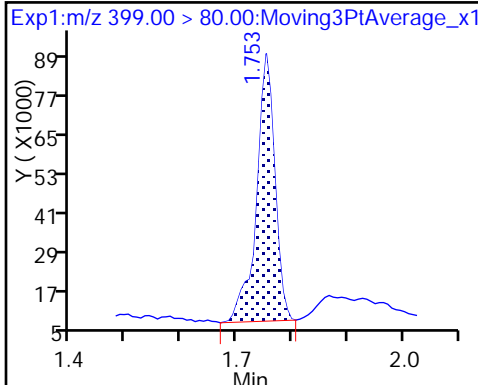
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

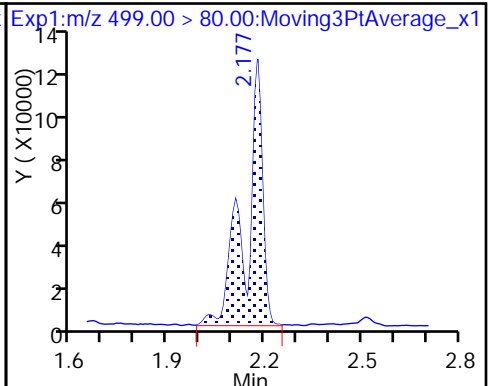
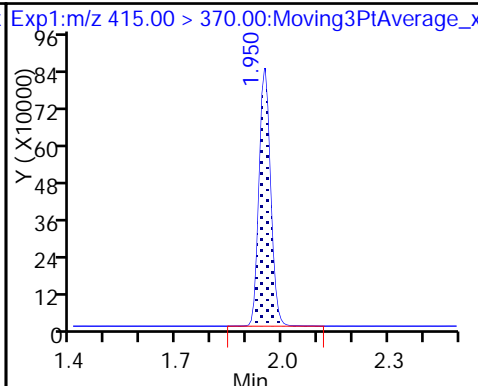
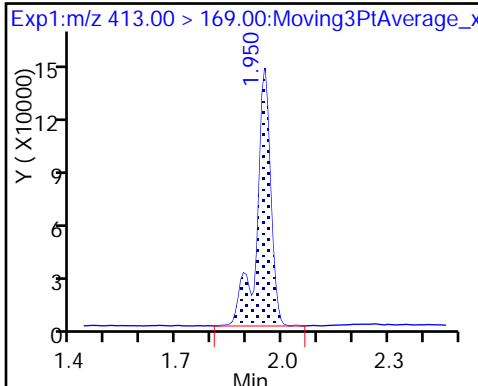
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

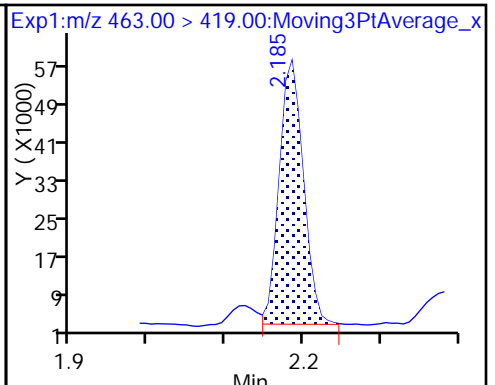
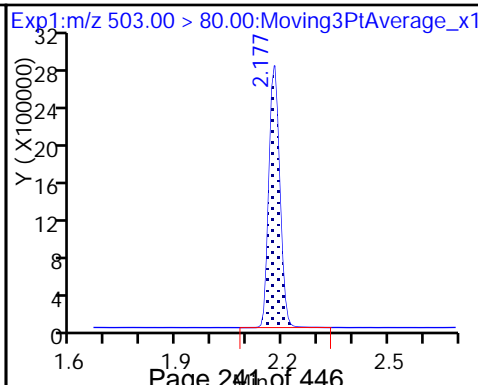
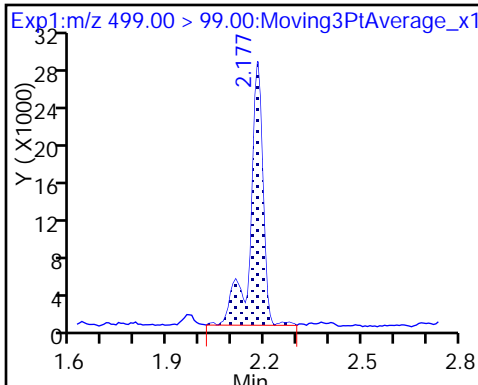
8 Perfluorooctane sulfonic acid (M)



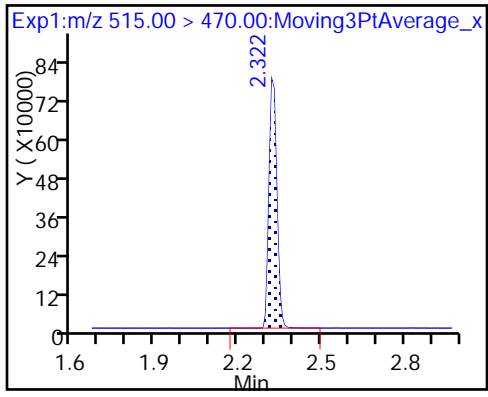
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d
 Lims ID: 320-30191-A-18-A
 Client ID: WGNA-072617-RW-4844
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:03:07 ALS Bottle#: 35 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-18-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:49:43

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.76	87.60
\$ 10 13C2 PFDA	10.0	13.6	135.84

TestAmerica Sacramento

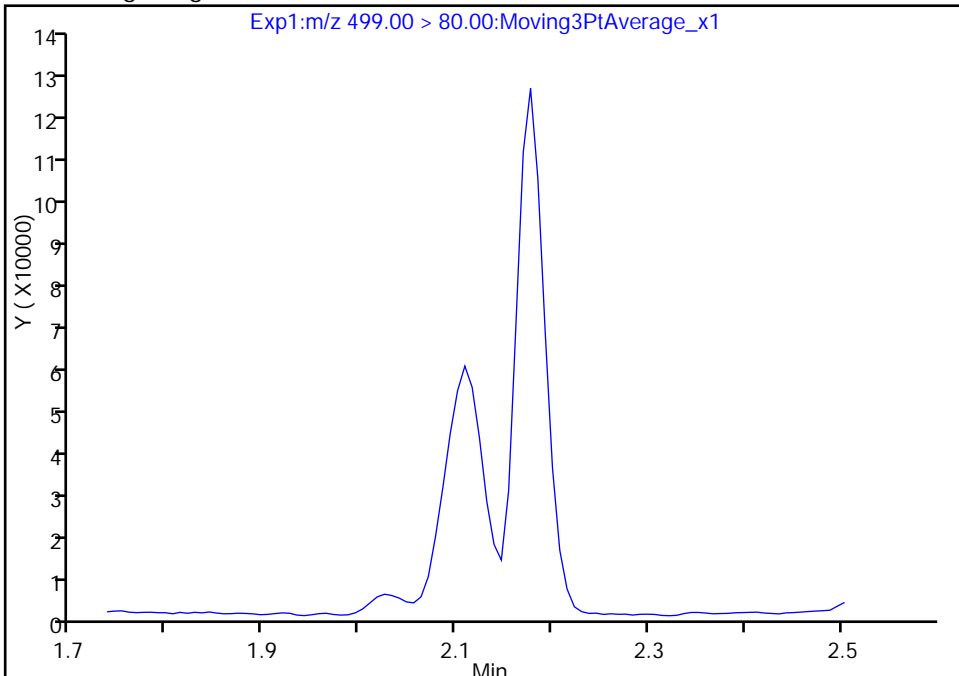
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d
Injection Date: 16-Aug-2017 15:03:07 Instrument ID: A8_N
Lims ID: 320-30191-A-18-A Lab Sample ID: 320-30191-18
Client ID: WGNA-072617-RW-4844
Operator ID: SACINSTLCMS01 ALS Bottle#: 35 Worklist Smp#: 31
Injection Vol: 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

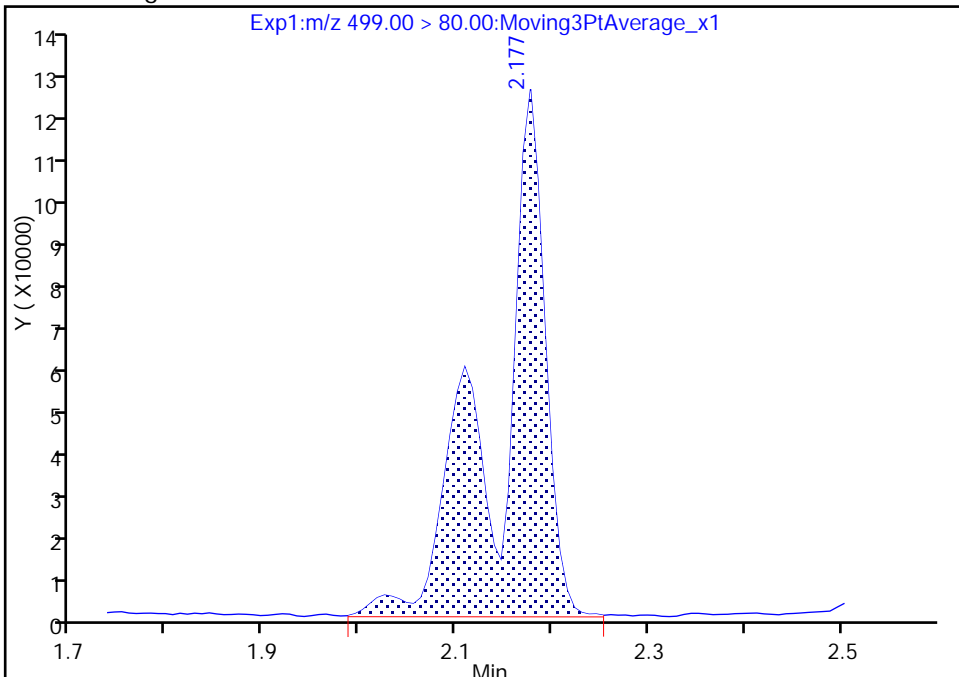
Not Detected
Expected RT: 2.18

Processing Integration Results



RT: 2.18
Area: 438305
Amount: 2.345938
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:48:35
Audit Action: Assigned Compound ID

TestAmerica Sacramento

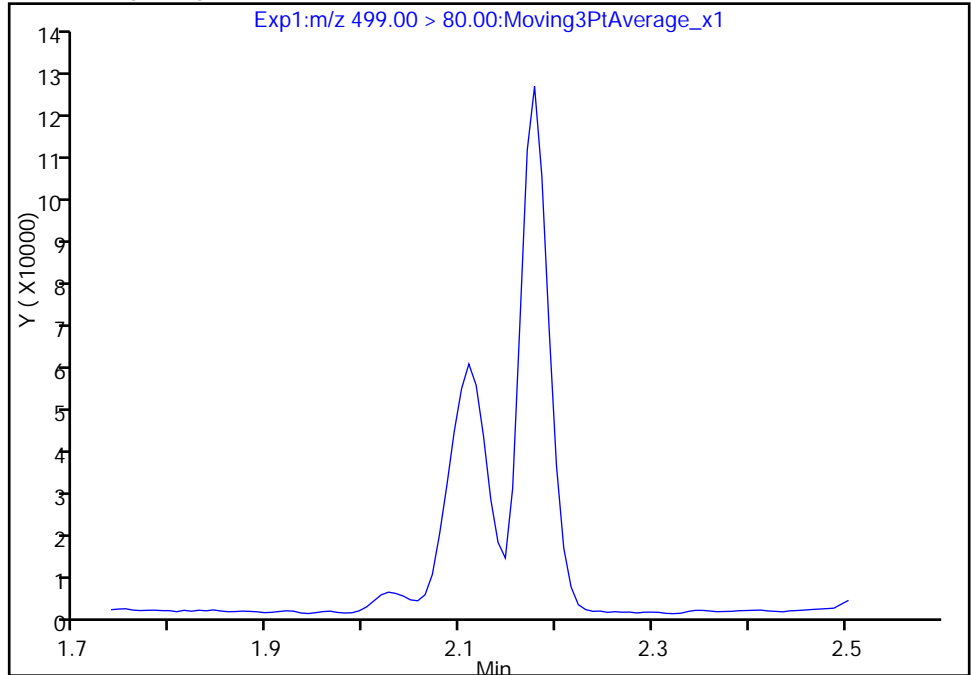
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d
Injection Date: 16-Aug-2017 15:03:07 Instrument ID: A8_N
Lims ID: 320-30191-A-18-A Lab Sample ID: 320-30191-18
Client ID: WGNA-072617-RW-4844
Operator ID: SACINSTLCMS01 ALS Bottle#: 35 Worklist Smp#: 31
Injection Vol: 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

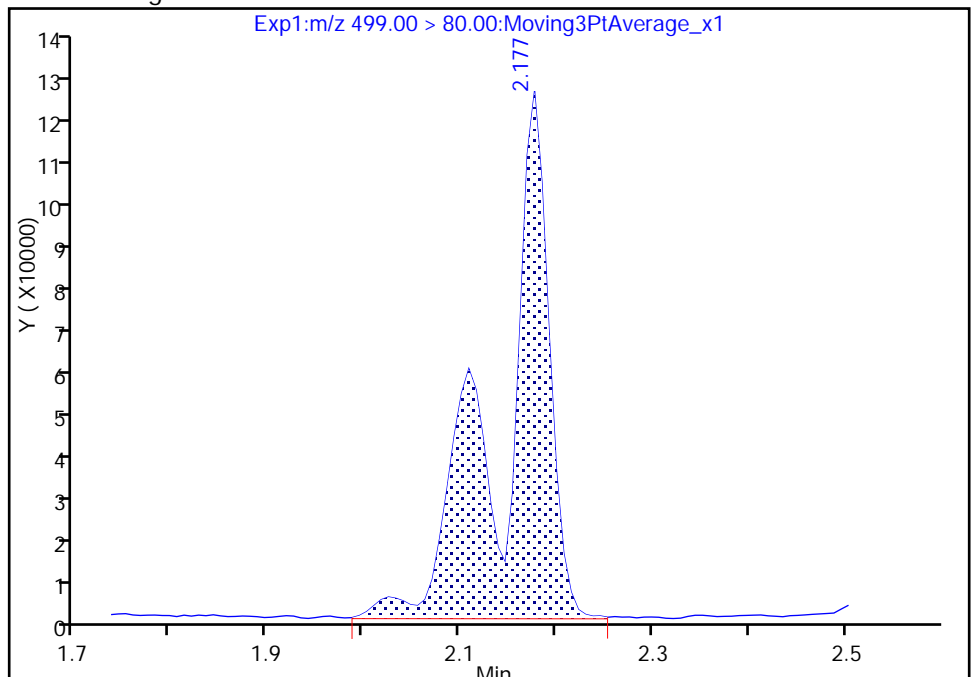
Not Detected
Expected RT: 2.18

Processing Integration Results



RT: 2.18
Area: 438305
Amount: 2.345938
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:48:51

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

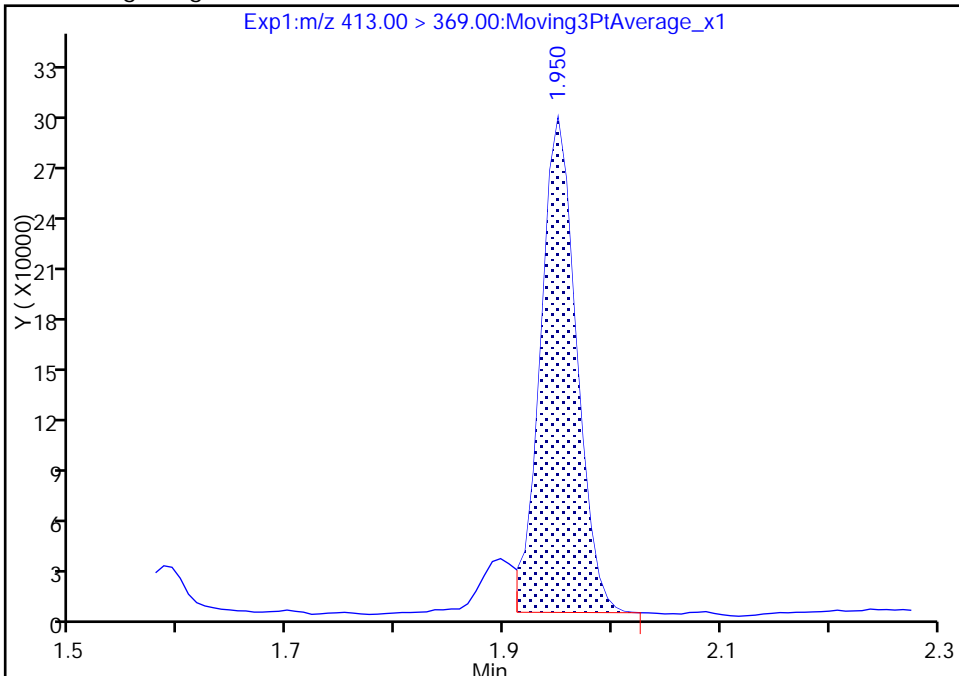
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d
Injection Date: 16-Aug-2017 15:03:07 Instrument ID: A8_N
Lims ID: 320-30191-A-18-A Lab Sample ID: 320-30191-18
Client ID: WGNA-072617-RW-4844
Operator ID: SACINSTLCMS01 ALS Bottle#: 35 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

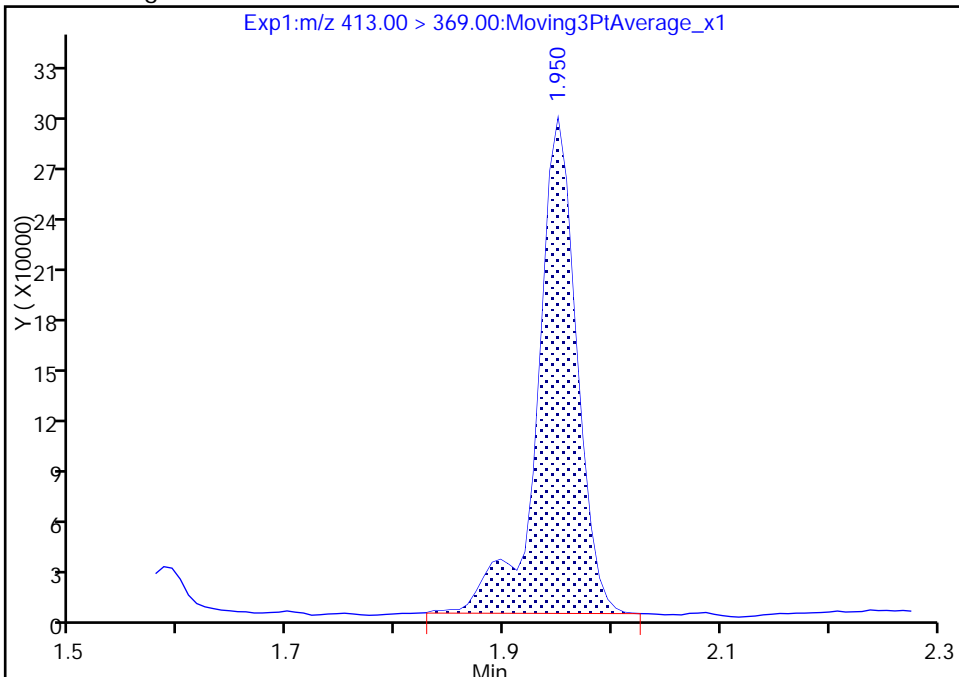
RT: 1.95
Area: 668523
Amount: 3.924572
Amount Units: ng/ml

Processing Integration Results



RT: 1.95
Area: 736843
Amount: 4.325645
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:49:12
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

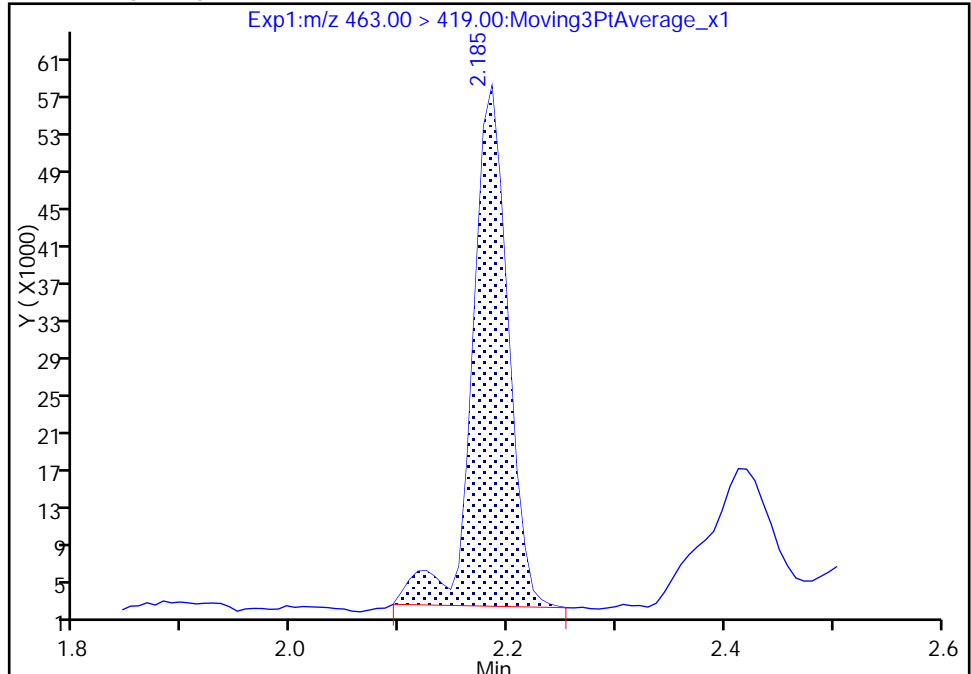
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d
Injection Date: 16-Aug-2017 15:03:07 Instrument ID: A8_N
Lims ID: 320-30191-A-18-A Lab Sample ID: 320-30191-18
Client ID: WGNA-072617-RW-4844
Operator ID: SACINSTLCMS01 ALS Bottle#: 35 Worklist Smp#: 31
Injection Vol: 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

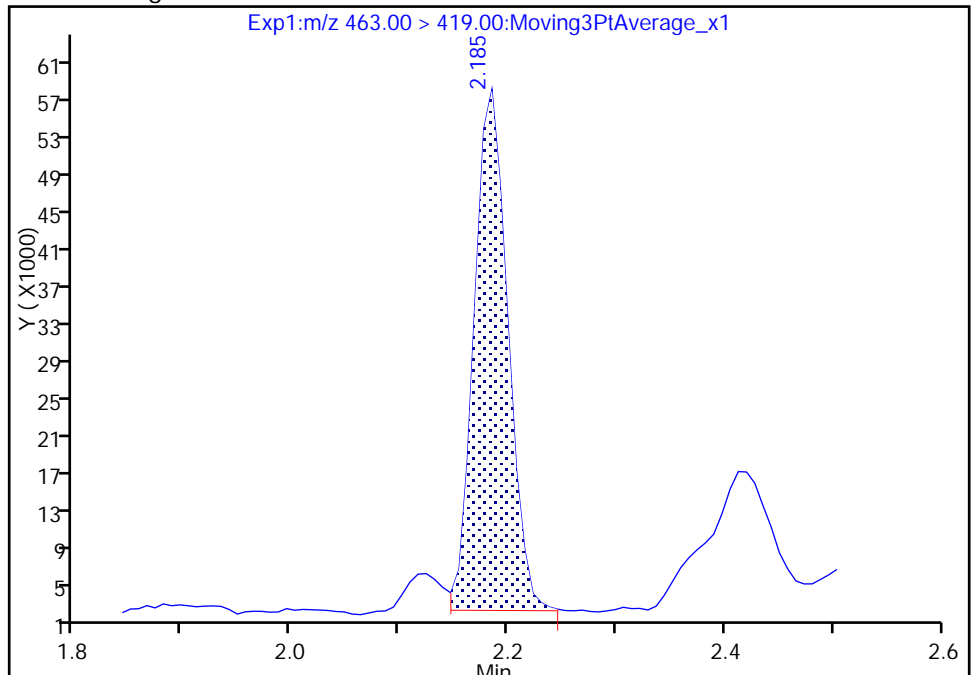
RT: 2.19
Area: 128365
Amount: 1.206301
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 121074
Amount: 1.137784
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:49:37
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-FRB-4844 Lab Sample ID: 320-30191-19
 Matrix: Water Lab File ID: 2017.08.16_537C_034.d
 Analysis Method: 537 Date Collected: 07/25/2017 09:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 276 (mL) Date Analyzed: 08/16/2017 15:17
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	138	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_034.d
 Lims ID: 320-30191-A-19-A
 Client ID: WGNA-072617-FRB-4844
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:17:21 ALS Bottle#: 36 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-19-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.578	1.582	-0.004	1.000	2176592	9.59	6184	
* 6 13C2-PFOA	415.00 > 370.00	1.942	1.955	-0.013		2122046	10.0	6620	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		6209142	28.7	4396	
\$ 10 13C2 PFDA	515.00 > 470.00	2.322	2.354	-0.032	1.000	1727062	13.8	8083	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_034.d

Injection Date: 16-Aug-2017 15:17:21

Instrument ID: A8_N

Lims ID: 320-30191-A-19-A

Lab Sample ID: 320-30191-19

Client ID: WGNA-072617-FRB-4844

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 34

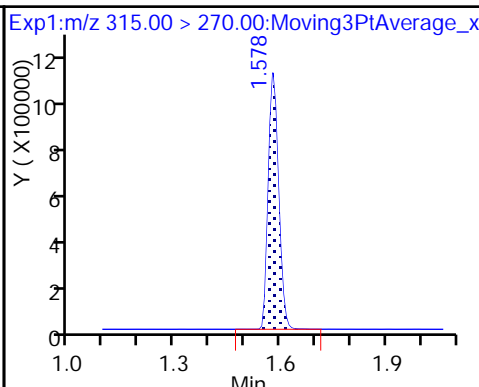
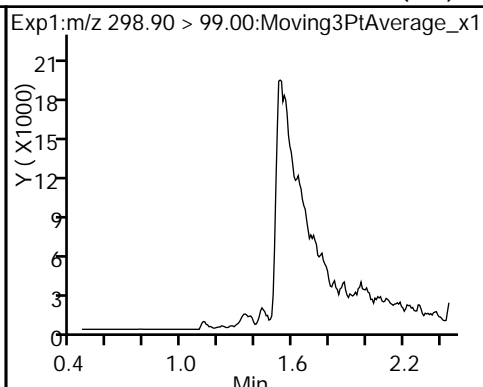
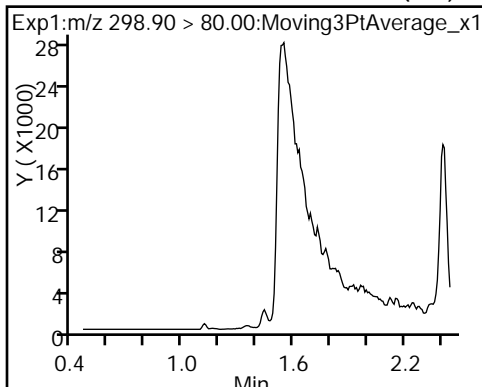
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

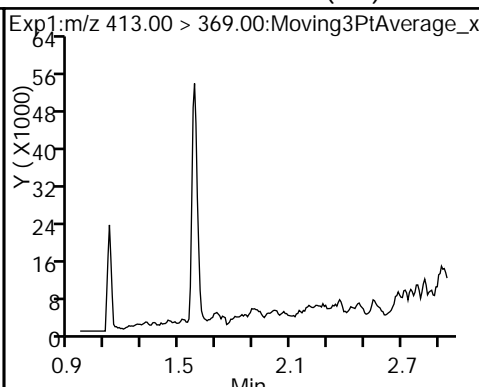
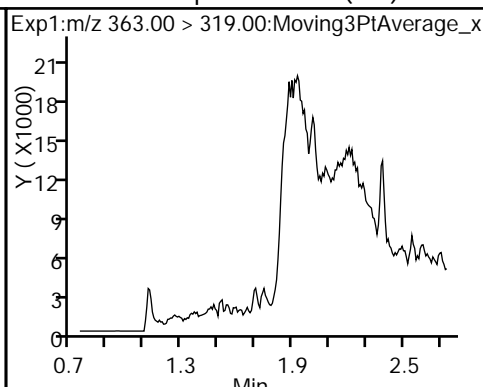
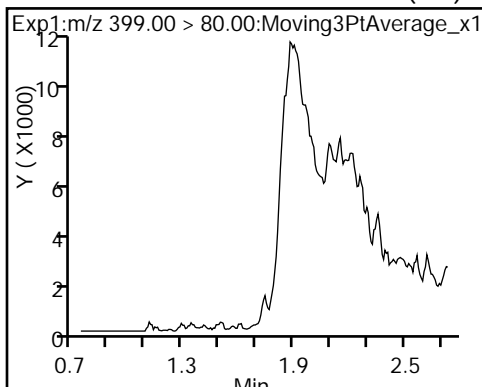
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

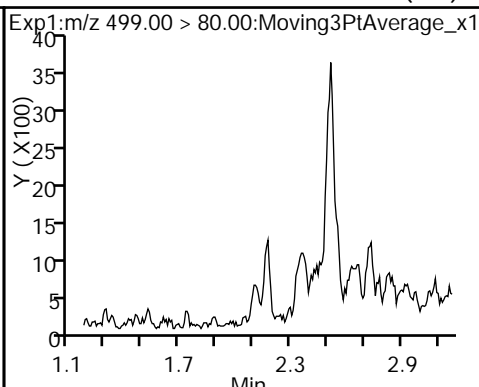
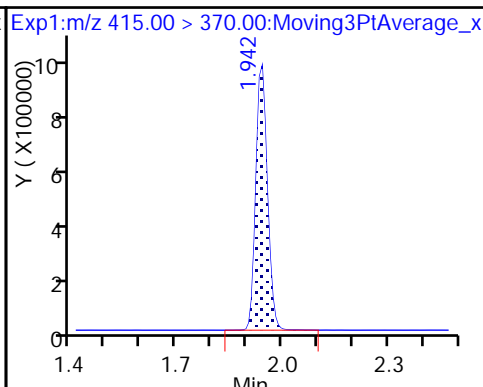
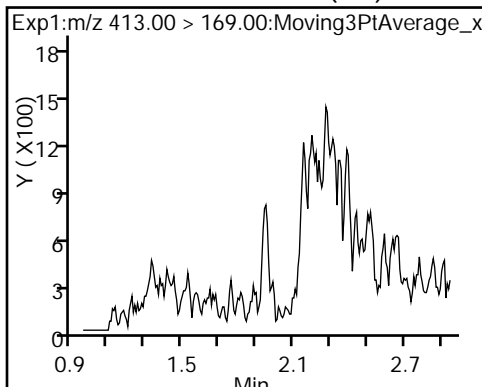
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

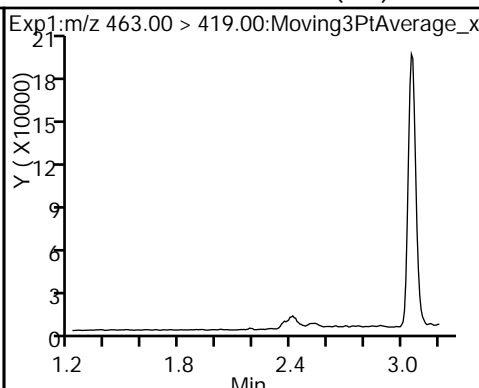
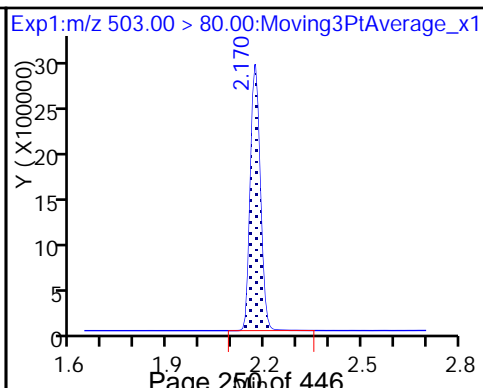
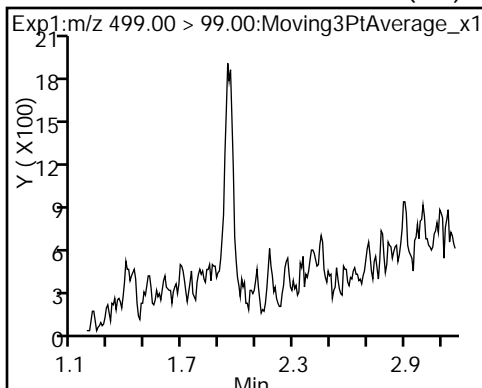
8 Perfluorooctane sulfonic acid (ND)



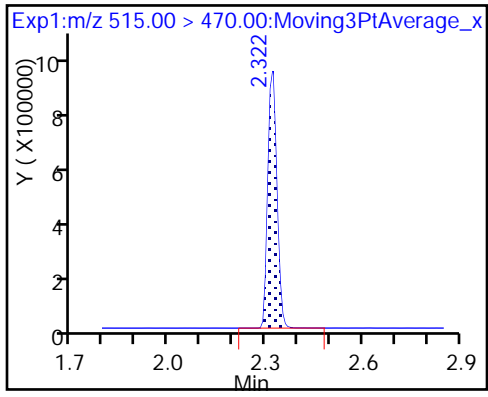
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_034.d
 Lims ID: 320-30191-A-19-A
 Client ID: WGNA-072617-FRB-4844
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:17:21 ALS Bottle#: 36 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-19-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.59	95.93
\$ 10 13C2 PFDA	10.0	13.8	138.49

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-RW-3103 Lab Sample ID: 320-30191-20
 Matrix: Water Lab File ID: 2017.08.16_537C_035.d
 Analysis Method: 537 Date Collected: 07/26/2017 11:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 276.6(mL) Date Analyzed: 08/16/2017 15:22
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.4	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	8.7	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.2	J M	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d
 Lims ID: 320-30191-A-20-A
 Client ID: WGNA-072617-RW-3103
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:22:05 ALS Bottle#: 37 Worklist Smp#: 35
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-20-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:57:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.453	-0.019	1.000	206800	0.9234		28.1	
298.90 > 99.00	1.434	1.453	-0.019	1.000	142863		1.45(0.00-0.00)	30.6	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	1815202	8.92		5165	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	405512	1.36		52.8	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	100353	0.6158		7.1	M
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	413729	2.40		21.0	M
413.00 > 169.00	1.942	1.955	-0.013	1.000	242167		1.71(0.00-0.00)	243	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1903761	10.0		5632	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	374006	2.03		148	
499.00 > 99.00	2.170	2.177	-0.007	1.000	65019		5.75(0.00-0.00)	46.5	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5711717	28.7		3933	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.213	-0.043	1.000	24945	0.2313		0.8	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.354	-0.040	1.000	1378376	12.3		6702	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d

Injection Date: 16-Aug-2017 15:22:05

Instrument ID: A8_N

Lims ID: 320-30191-A-20-A

Lab Sample ID: 320-30191-20

Client ID: WGNA-072617-RW-3103

Operator ID: SACINSTLCMS01

ALS Bottle#: 37

Worklist Smp#: 35

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

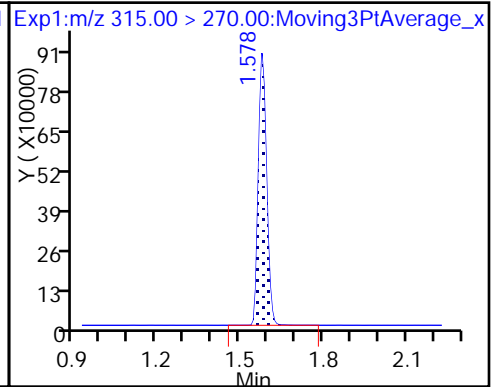
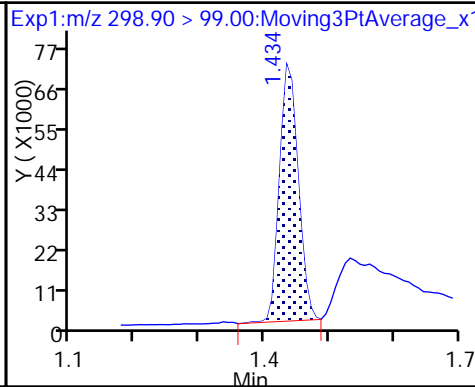
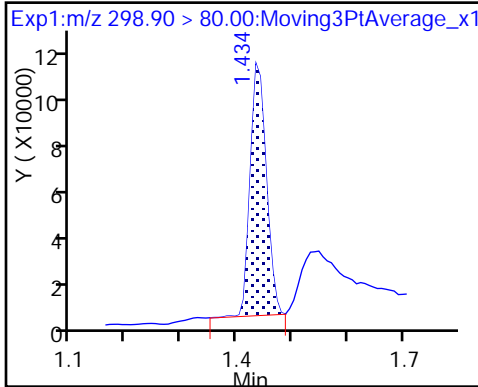
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

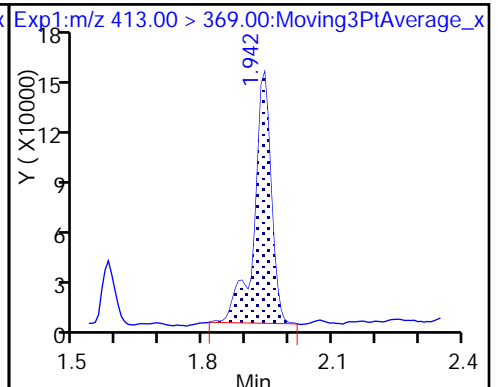
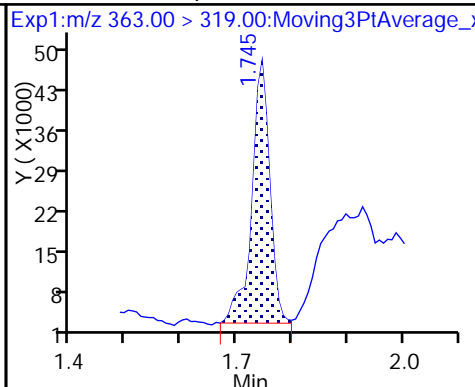
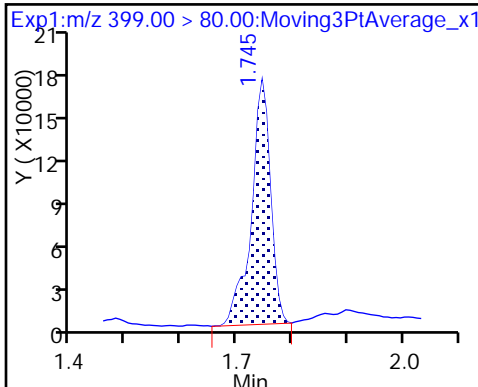
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

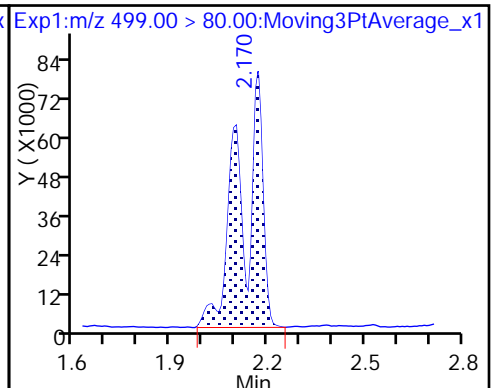
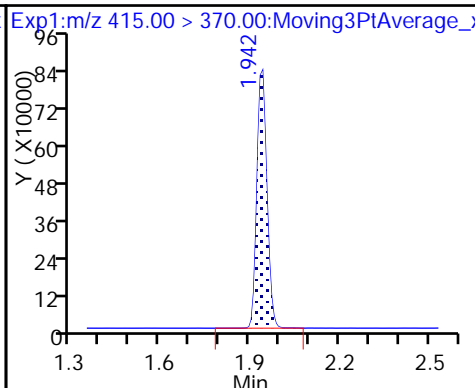
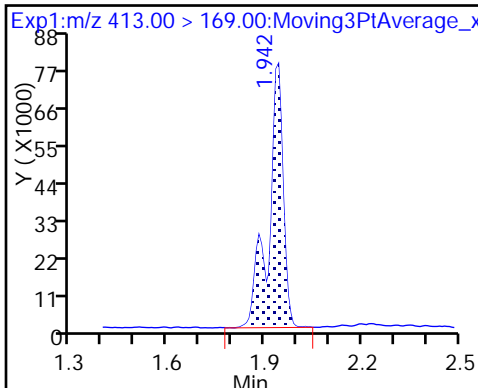
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

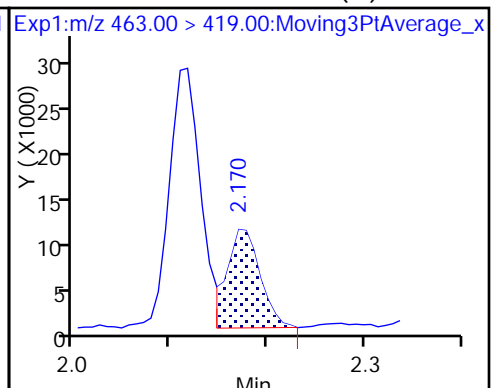
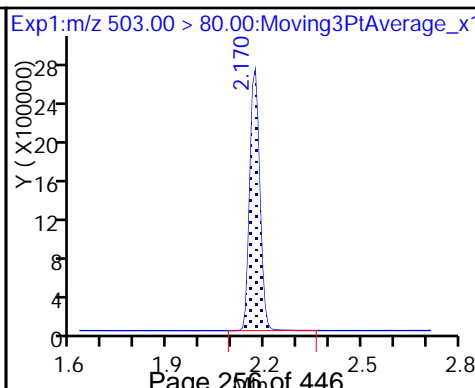
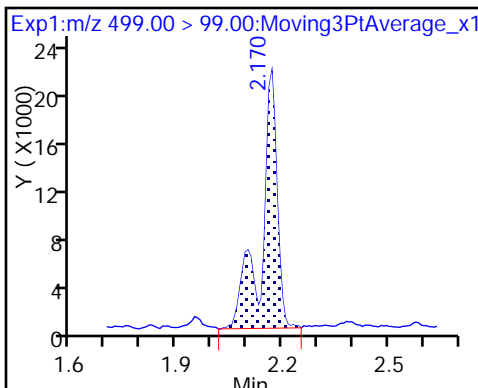
8 Perfluorooctane sulfonic acid



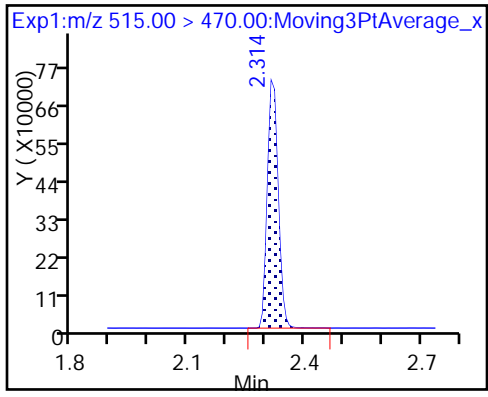
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d
 Lims ID: 320-30191-A-20-A
 Client ID: WGNA-072617-RW-3103
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:22:05 ALS Bottle#: 37 Worklist Smp#: 35
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-20-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:57:10

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.92	89.17
\$ 10 13C2 PFDA	10.0	12.3	123.20

TestAmerica Sacramento

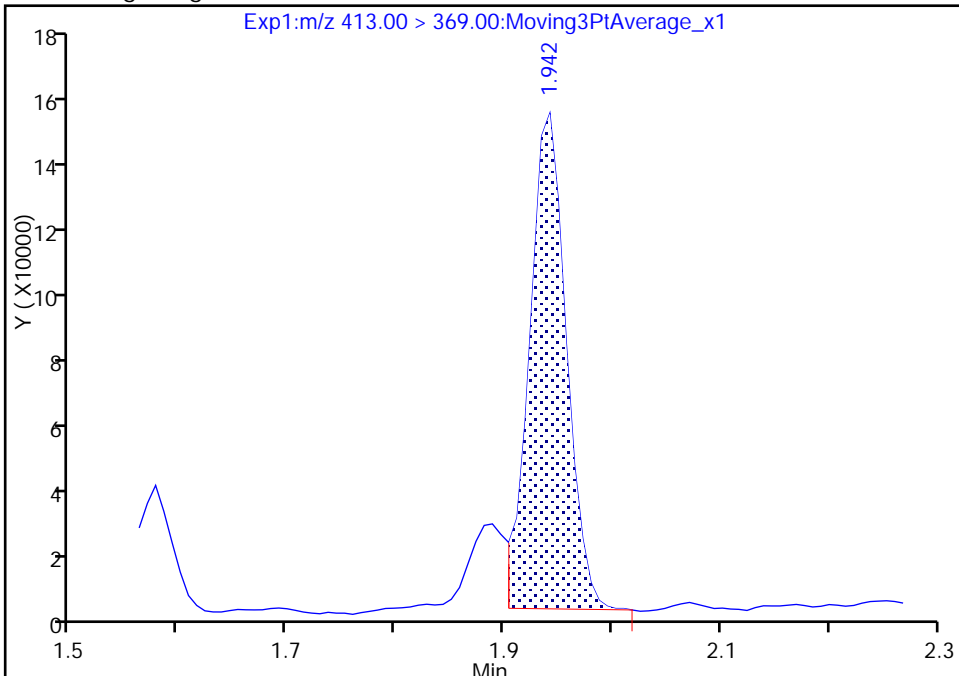
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d
Injection Date: 16-Aug-2017 15:22:05 Instrument ID: A8_N
Lims ID: 320-30191-A-20-A Lab Sample ID: 320-30191-20
Client ID: WGNA-072617-RW-3103
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

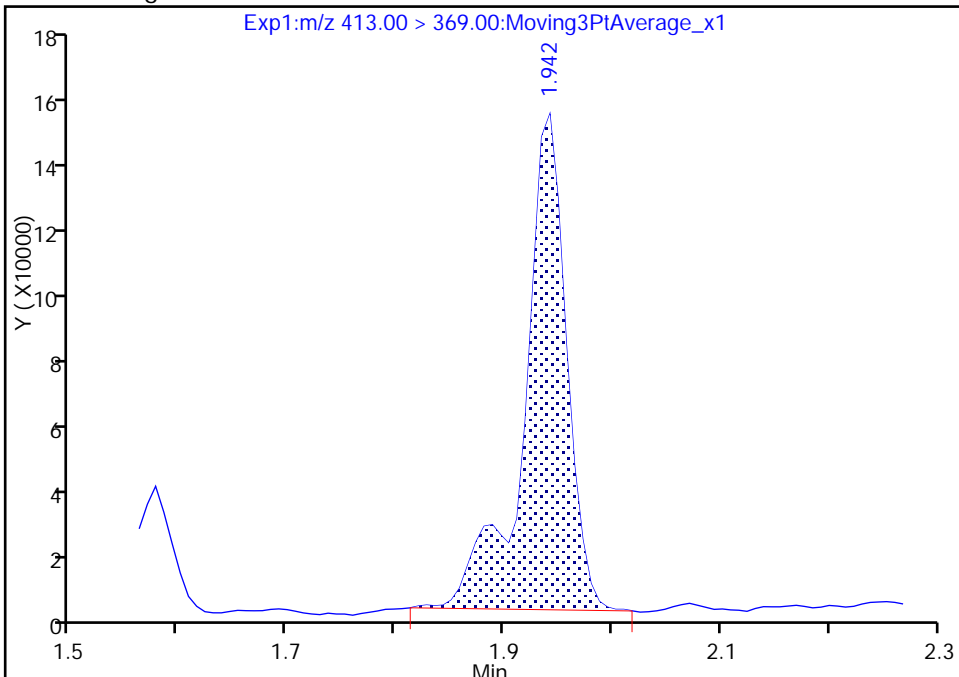
RT: 1.94
Area: 354771
Amount: 2.054974
Amount Units: ng/ml

Processing Integration Results



RT: 1.94
Area: 413729
Amount: 2.396482
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:57:54
Audit Action: Manually Integrated

TestAmerica Sacramento

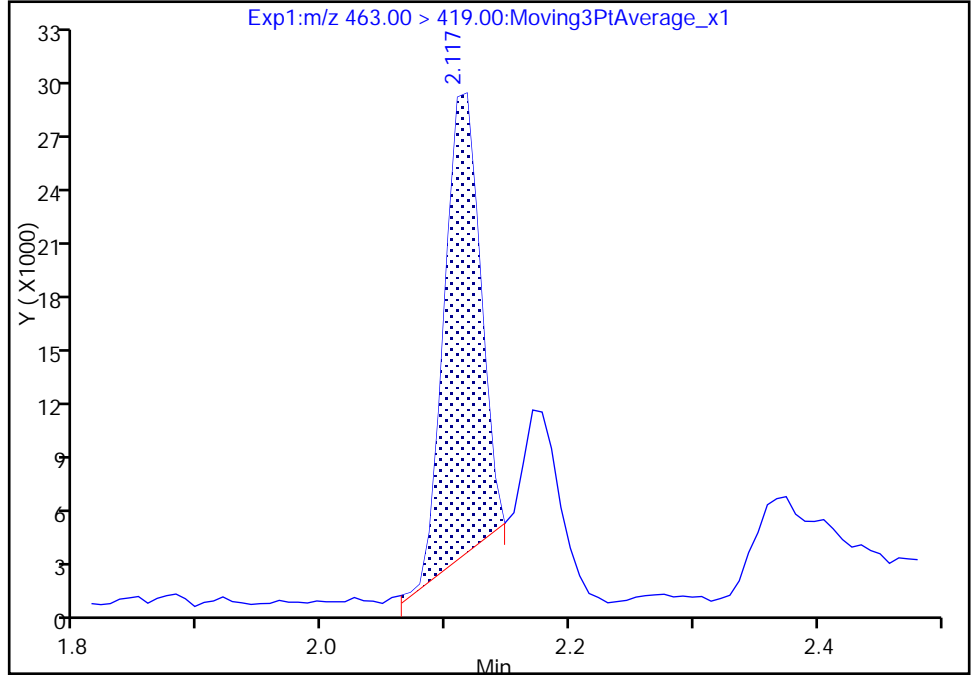
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d
Injection Date: 16-Aug-2017 15:22:05 Instrument ID: A8_N
Lims ID: 320-30191-A-20-A Lab Sample ID: 320-30191-20
Client ID: WGNA-072617-RW-3103
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 35
Injection Vol: 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

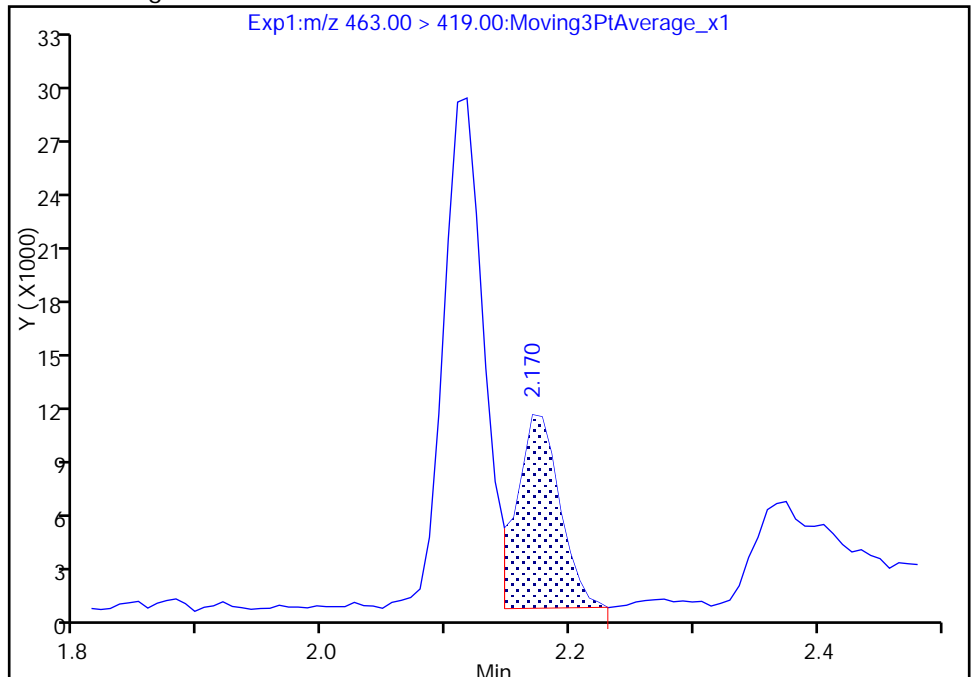
RT: 2.12
Area: 50899
Amount: 0.471955
Amount Units: ng/ml

Processing Integration Results



RT: 2.17
Area: 24945
Amount: 0.231300
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:59:06
Audit Action: Manually Integrated

Audit Reason: Wrong peak

TestAmerica Sacramento

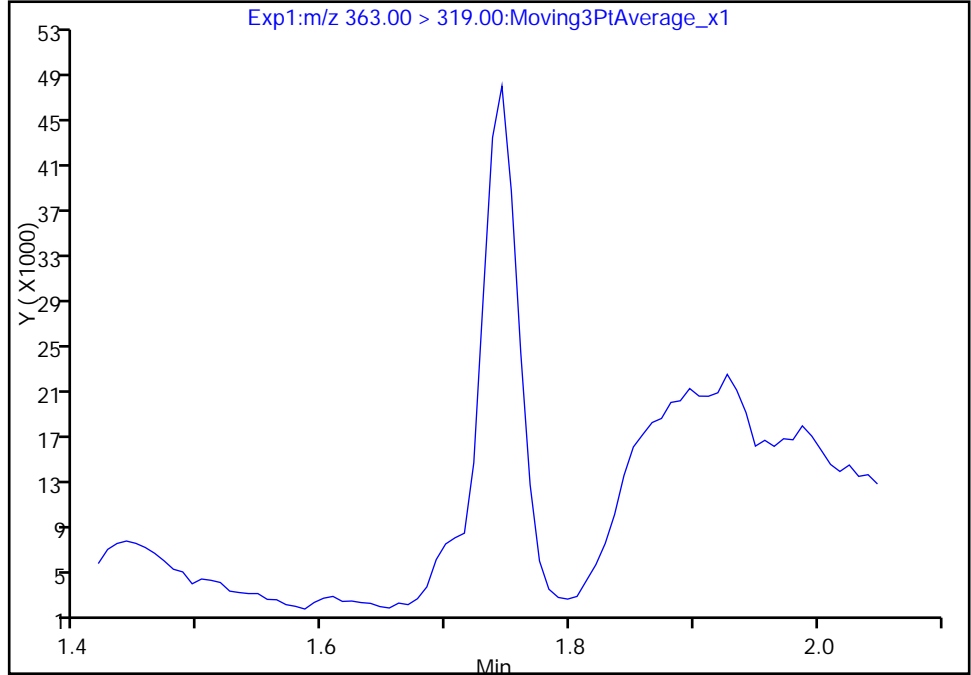
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d
Injection Date: 16-Aug-2017 15:22:05 Instrument ID: A8_N
Lims ID: 320-30191-A-20-A Lab Sample ID: 320-30191-20
Client ID: WGNA-072617-RW-3103
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

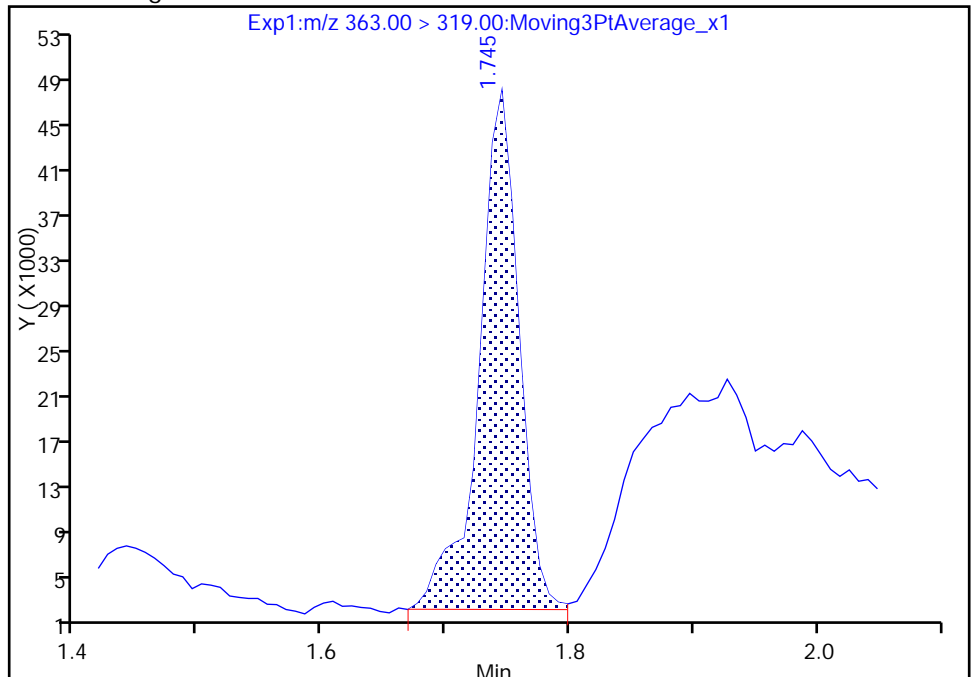
Not Detected
Expected RT: 1.74

Processing Integration Results



Manual Integration Results

RT: 1.75
Area: 100353
Amount: 0.615778
Amount Units: ng/ml



Reviewer: barnettj, 16-Aug-2017 15:57:31
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-FRB-3103 Lab Sample ID: 320-30191-21
 Matrix: Water Lab File ID: 2017.08.16_537C_036.d
 Analysis Method: 537 Date Collected: 07/26/2017 11:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 285.1(mL) Date Analyzed: 08/16/2017 15:26
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_036.d
 Lims ID: 320-30191-A-21-A
 Client ID: WGNA-072617-FRB-3103
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:26:51 ALS Bottle#: 38 Worklist Smp#: 36
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-21-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.578	1.582	-0.004	1.000	2105874	9.77	5543	
* 6 13C2-PFOA	415.00 > 370.00	1.942	1.955	-0.013		2016088	10.0	6117	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		5922386	28.7	4925	
\$ 10 13C2 PFDA	515.00 > 470.00	2.314	2.354	-0.040	1.000	1508168	12.7	6881	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_036.d

Injection Date: 16-Aug-2017 15:26:51

Instrument ID: A8_N

Lims ID: 320-30191-A-21-A

Lab Sample ID: 320-30191-21

Client ID: WGNA-072617-FRB-3103

Operator ID: SACINSTLCMS01

ALS Bottle#: 38

Worklist Smp#: 36

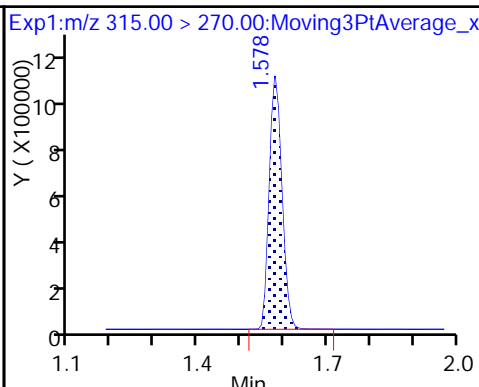
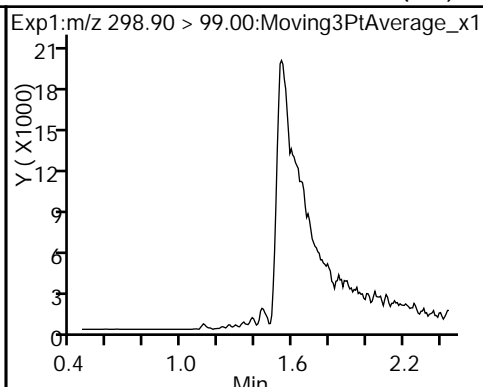
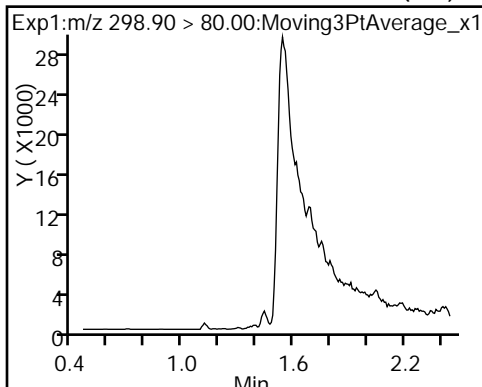
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

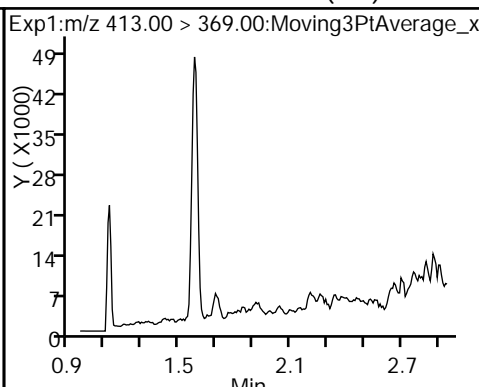
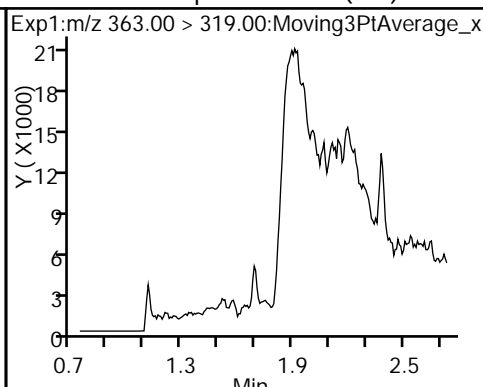
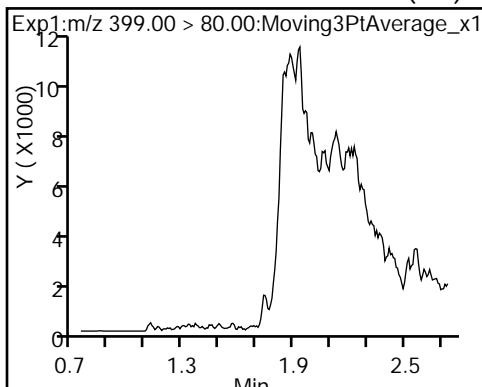
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

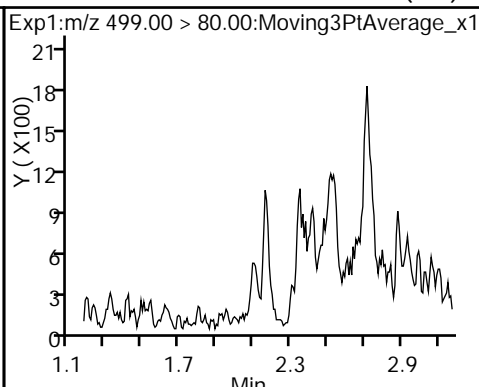
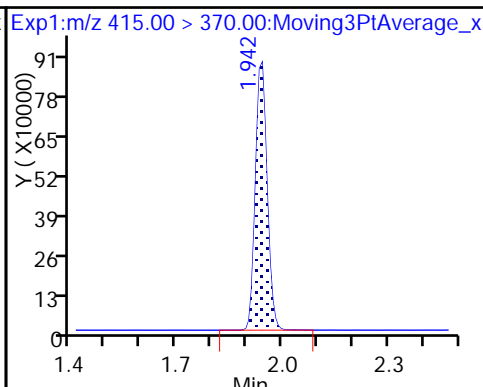
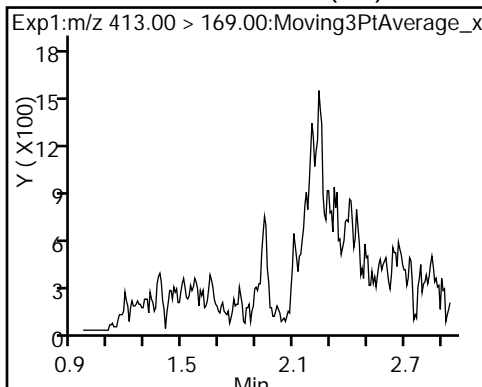
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

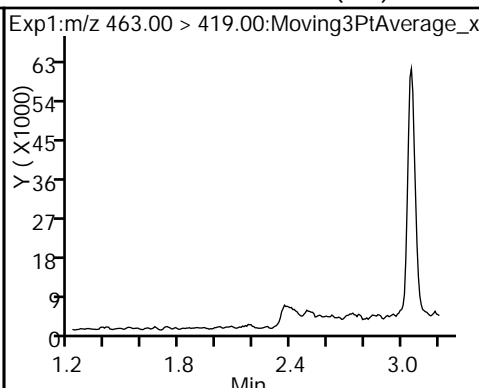
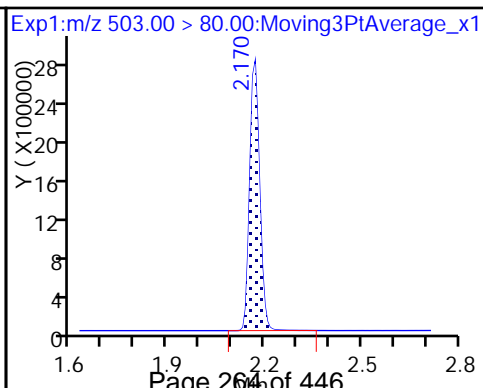
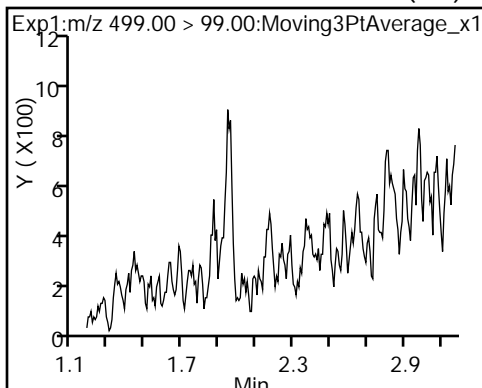
8 Perfluorooctane sulfonic acid (ND)



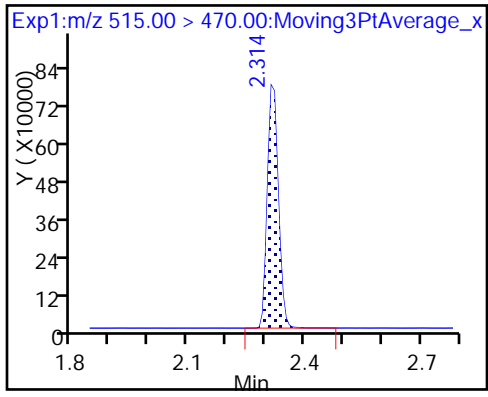
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_036.d
 Lims ID: 320-30191-A-21-A
 Client ID: WGNA-072617-FRB-3103
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:26:51 ALS Bottle#: 38 Worklist Smp#: 36
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-21-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.77	97.69
\$ 10 13C2 PFDA	10.0	12.7	127.29

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-DUP03 Lab Sample ID: 320-30191-22
 Matrix: Water Lab File ID: 2017.08.16_537C_037.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 284.7(mL) Date Analyzed: 08/16/2017 15:31
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.1	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	J M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.8	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d
 Lims ID: 320-30191-A-22-A
 Client ID: WGNA-072617-DUP03
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:31:34 ALS Bottle#: 39 Worklist Smp#: 37
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-22-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 16:01:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	202524	0.9055		28.8	
298.90 > 99.00	1.442	1.453	-0.011	1.000	139932		1.45(0.00-0.00)	30.0	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	1816280	8.89		5053	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	403066	1.36		53.8	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	106689	0.6524		7.3	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	381840	2.20		19.3	M
413.00 > 169.00	1.942	1.955	-0.013	1.000	235562		1.62(0.00-0.00)	242	M
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1910474	10.0		6031	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	369810	2.01		140	
499.00 > 99.00	2.170	2.177	-0.007	1.000	65528		5.64(0.00-0.00)	49.8	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5704175	28.7		4086	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.213	-0.043	1.000	21972	0.2030		0.9	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1376509	12.3		6645	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d

Injection Date: 16-Aug-2017 15:31:34

Instrument ID: A8_N

Lims ID: 320-30191-A-22-A

Lab Sample ID: 320-30191-22

Client ID: WGNA-072617-DUP03

Operator ID: SACINSTLCMS01

ALS Bottle#: 39

Worklist Smp#: 37

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

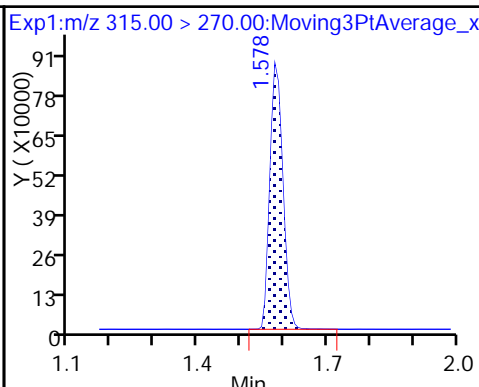
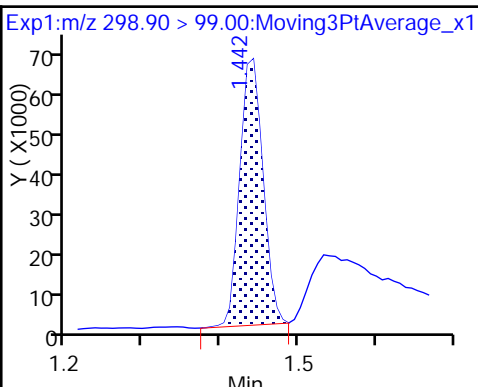
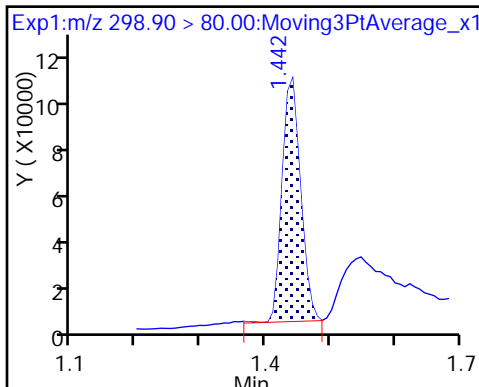
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

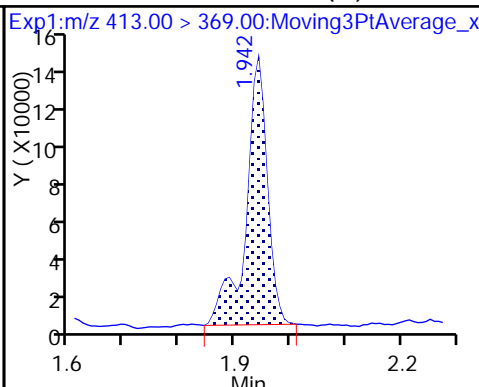
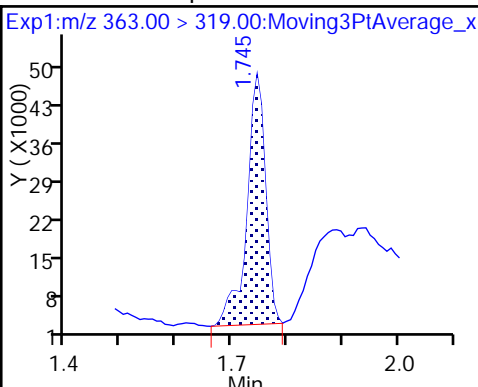
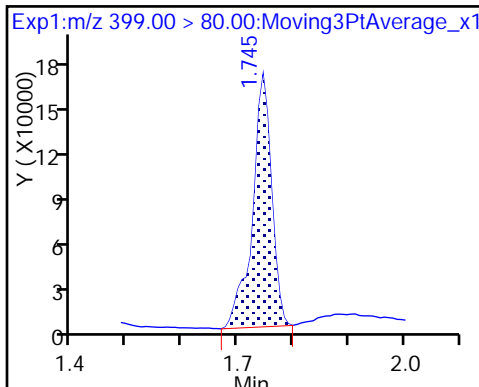
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

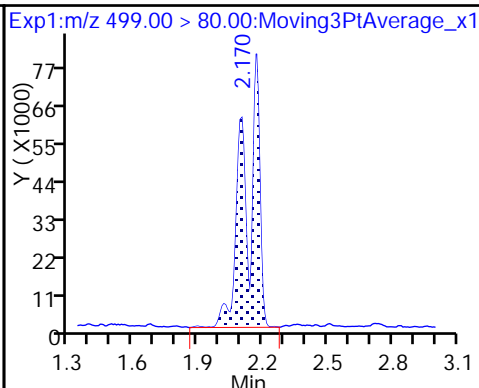
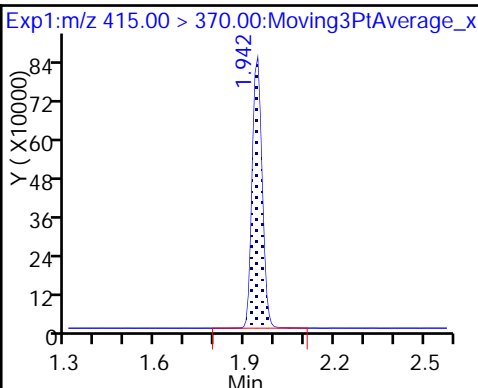
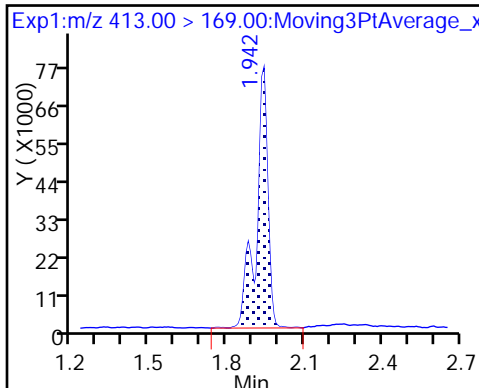
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

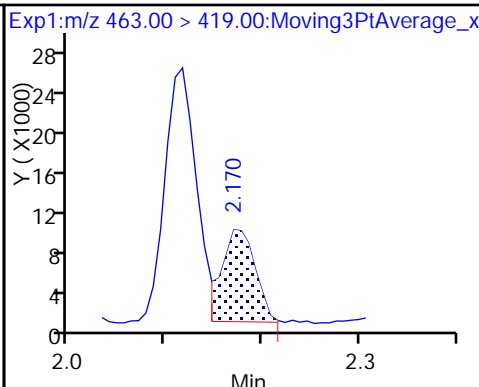
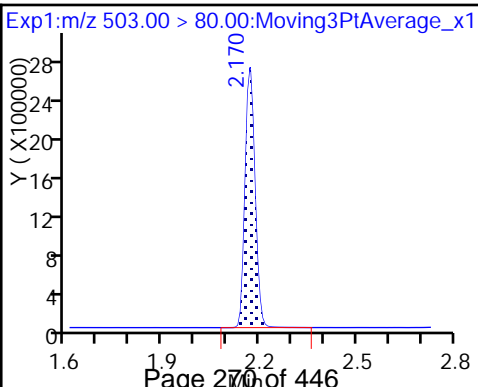
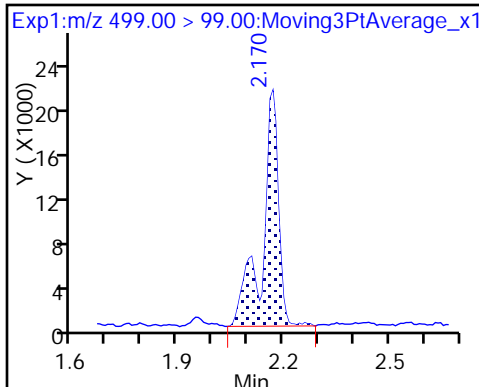
8 Perfluorooctane sulfonic acid



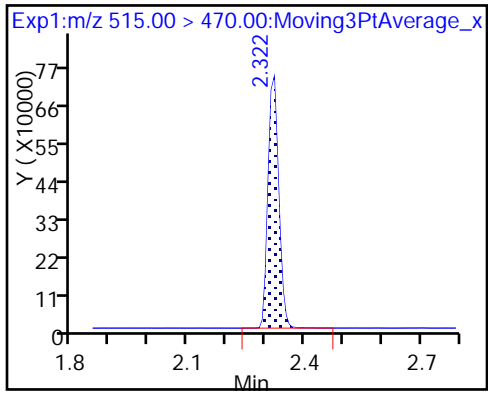
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d
 Lims ID: 320-30191-A-22-A
 Client ID: WGNA-072617-DUP03
 Sample Type: Client
 Inject. Date: 16-Aug-2017 15:31:34 ALS Bottle#: 39 Worklist Smp#: 37
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-22-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 16:01:07

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.89	88.91
\$ 10 13C2 PFDA	10.0	12.3	122.60

TestAmerica Sacramento

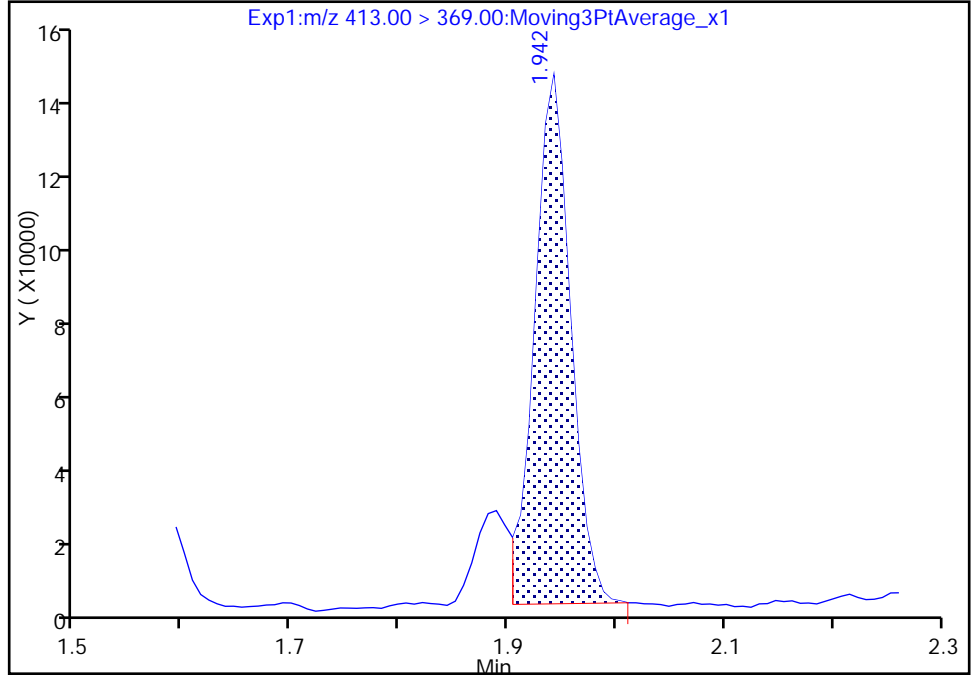
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d
Injection Date: 16-Aug-2017 15:31:34 Instrument ID: A8_N
Lims ID: 320-30191-A-22-A Lab Sample ID: 320-30191-22
Client ID: WGNA-072617-DUP03
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

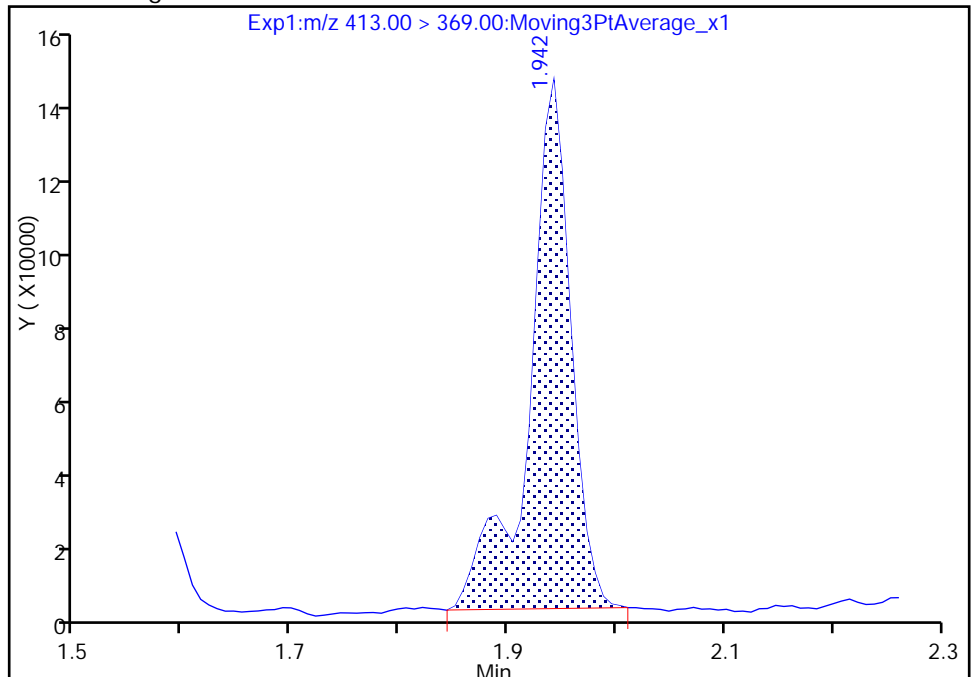
RT: 1.94
Area: 328436
Amount: 1.895747
Amount Units: ng/ml

Processing Integration Results



RT: 1.94
Area: 381840
Amount: 2.203997
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 16:00:17
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

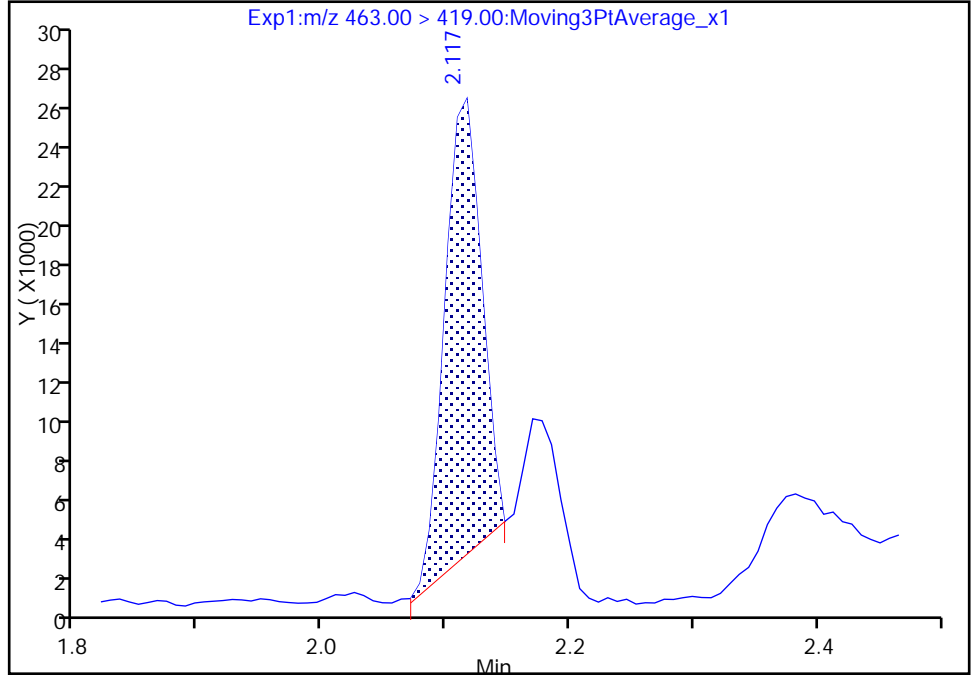
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d
Injection Date: 16-Aug-2017 15:31:34 Instrument ID: A8_N
Lims ID: 320-30191-A-22-A Lab Sample ID: 320-30191-22
Client ID: WGNA-072617-DUP03
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 37
Injection Vol: 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

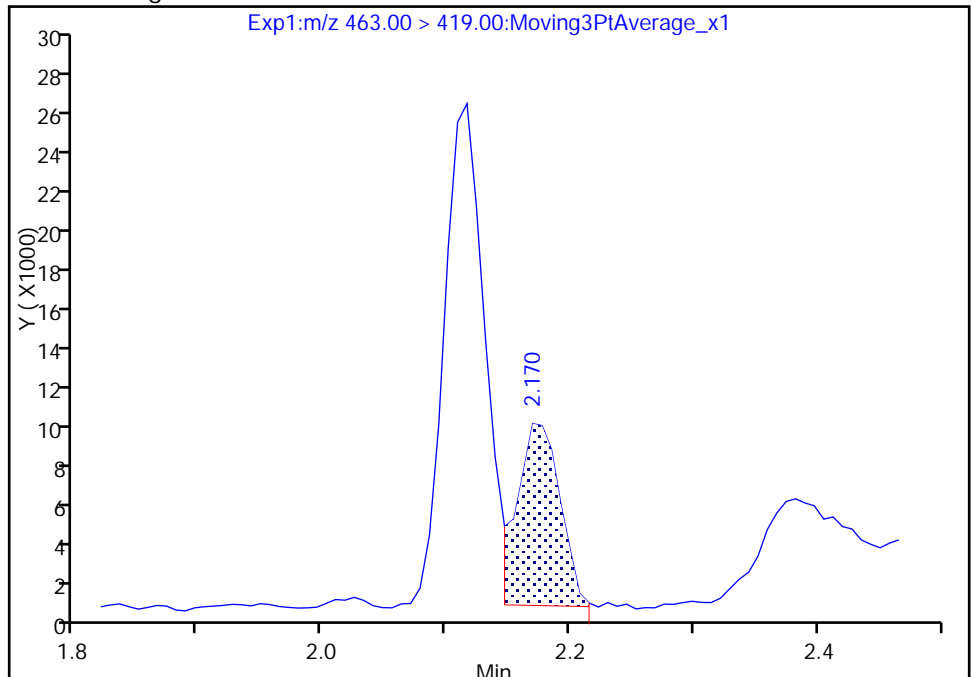
RT: 2.12
Area: 48180
Amount: 0.445174
Amount Units: ng/ml

Processing Integration Results



RT: 2.17
Area: 21972
Amount: 0.203017
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 16:00:48
Audit Action: Manually Integrated

Audit Reason: Wrong peak

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

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1 Analy Batch No.: 179319

SDG No.: _____

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

Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.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)	1.1417 0.7313	1.1495	1.0943	0.9210	0.7959	QuaF		1.1266	-0.002254					0.9980			0.9600
Perfluoroheptanoic acid (PFHpA)	0.8346 0.8325	0.8724	0.8737	0.8715	0.8517	Ave		0.8560			2.2		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.4757 1.3970	1.5378	1.5080	1.5703	1.4756	Ave		1.4941			4.0		30.0				
Perfluorooctanoic acid (PFOA)	0.8851 0.9102	0.8837	0.8984	0.9375	0.9261	Ave		0.9068			2.4		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8922 0.9252	0.9148	0.9148	0.9461	0.9486	Ave		0.9236			2.3		30.0				
Perfluorononanoic acid (PFNA)	0.5491 0.5714	0.5670	0.5764	0.5665	0.5686	Ave		0.5665			1.6		30.0				
13C2 PFHxA	1.0141 1.0999	1.0032	1.0998	1.0933	1.1053	Ave		1.0693			4.4		30.0				
13C2 PFDA	0.5512 0.6012	0.5785	0.5919	0.5906	0.6127	Ave		0.5877			3.6		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.: 320-30191-1 Analy Batch No.: 179319

SDG No.: _____

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

Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.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	2176776 26040065	4858409	10071471	16707104	21165476	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	198176 3589599	455479	965342	1966143	2763295	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	938005 16584369	2166866	4626981	9496666	13083092	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	420599 7854398	923370	1986507	4232647	6012905	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	756213 14645432	1718775	3742396	7629588	11213929	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	260762 4927051	592024	1273686	2556105	3689416	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	2407096 2370885	2356458	2429839	2465941	2390227	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1308306 1295768	1358920	1307668	1332089	1324957	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.: 320-30191-1 Analy Batch No.: 179319

SDG No.: _____

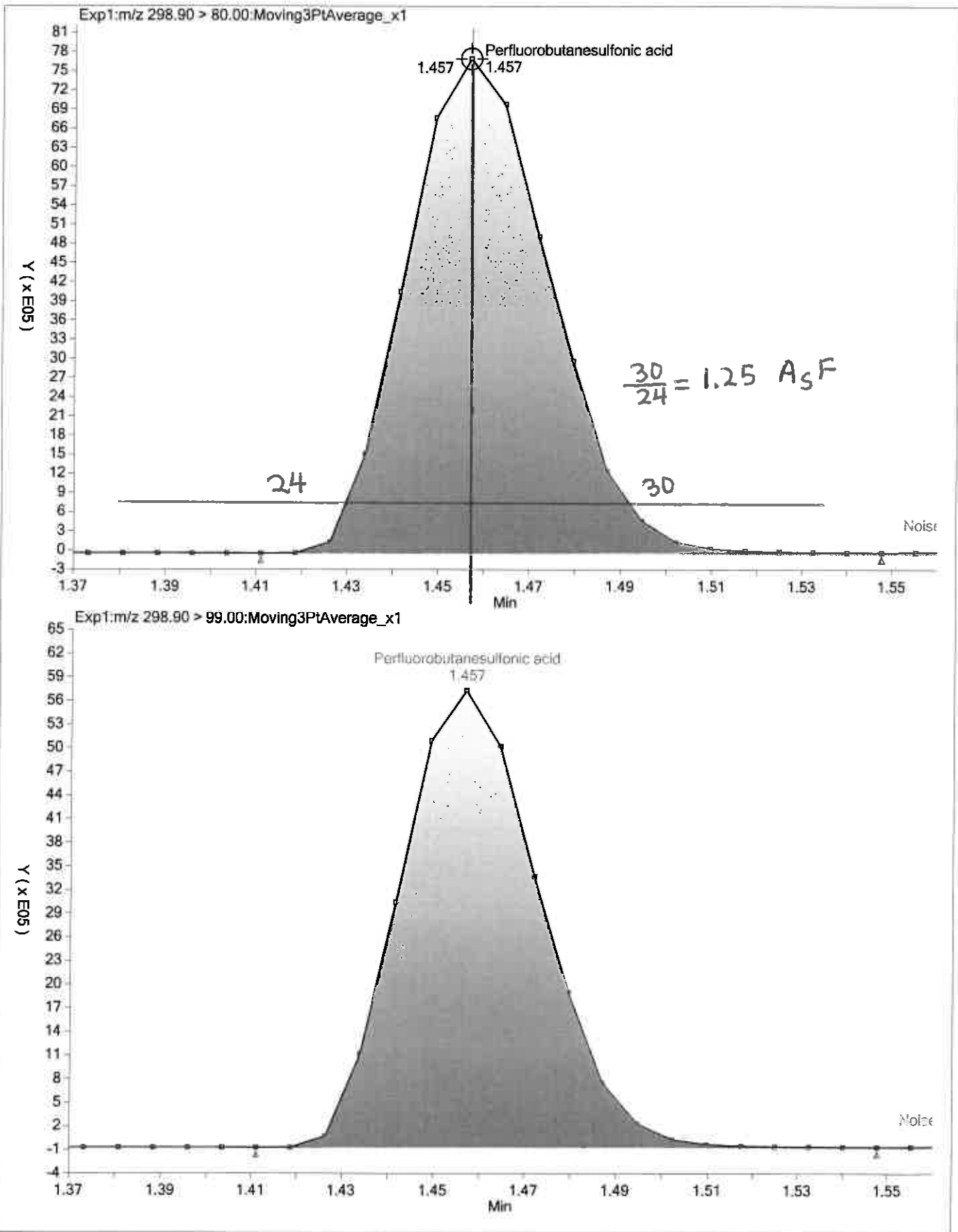
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

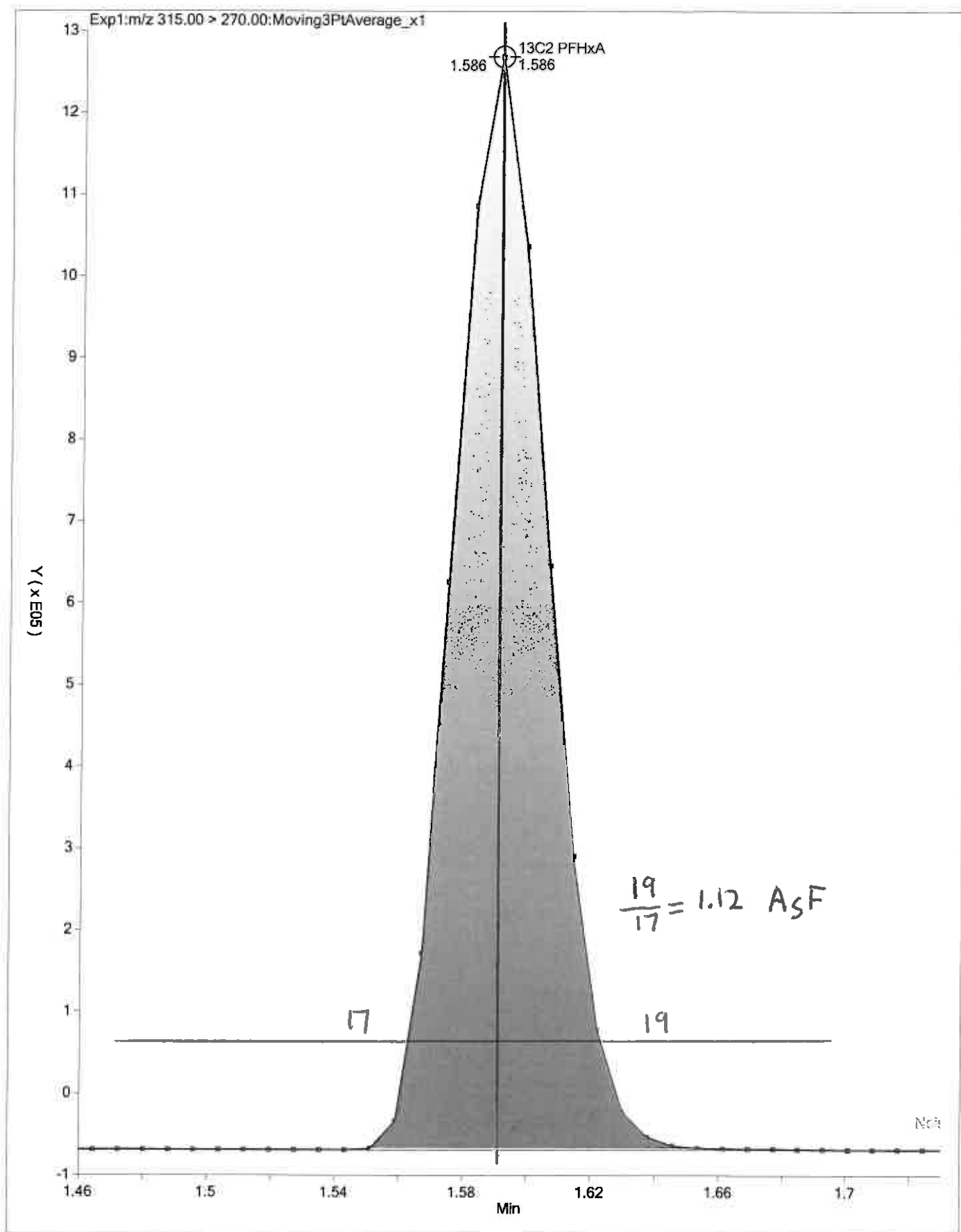
Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.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)	3.3	6.6	7.5	-0.4	-5.0	3.4	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-2.5	1.9	2.1	1.8	-0.5	-2.8	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-1.2	2.9	0.9	5.1	-1.2	-6.5	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-2.4	-2.5	-0.9	3.4	2.1	0.4	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-3.4	-1.0	-1.0	2.4	2.7	0.2	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	-3.1	0.1	1.7	0.0	0.4	0.9	50	50	50	50	50	50
13C2 PFHxA	-5.2	-6.2	2.9	2.2	3.4	2.9	30	30	30	30	30	30
13C2 PFDA	-6.2	-1.6	0.7	0.5	4.3	2.3	30	30	30	30	30	30





TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_002.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 14-Aug-2017 12:48:56 ALS Bottle#: 1 Worklist Smp#: 2
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:02 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:08:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	2176776	9.30		309	
298.90 > 99.00	1.449	1.453	-0.004	1.000	1426588		1.53(0.00-0.00)	311	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2407096	9.48		6502	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	198176	0.9753		16.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	938005	2.96		150	
* 6 13C2-PFOA									
415.00 > 370.00	1.957	1.955	0.002		2373611	10.0		11876	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.957	1.955	0.002	1.000	420599	1.95		27.8	
413.00 > 169.00	1.957	1.955	0.002	1.000	229992		1.83(0.00-0.00)	416	
* 7 13C4 PFOS									
503.00 > 80.00	2.208	2.205	0.003		6074703	28.7		6398	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.215	2.208	0.007	1.000	756213	3.87		746	
499.00 > 99.00	2.208	2.208	0.0	0.997	158187		4.78(0.00-0.00)	215	
9 Perfluorononanoic acid									
463.00 > 419.00	2.215	2.213	0.002	1.000	260762	1.94		63.7	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.360	2.354	0.006	1.000	1308306	9.38		6900	

Reagents:

LC537-L1_00020

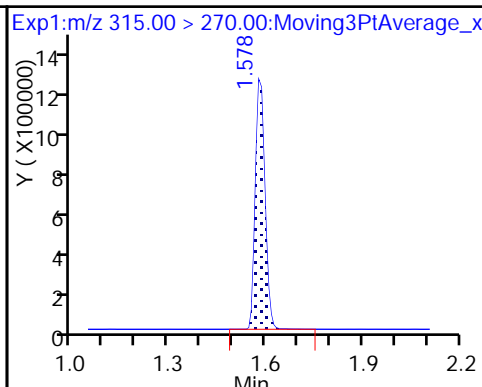
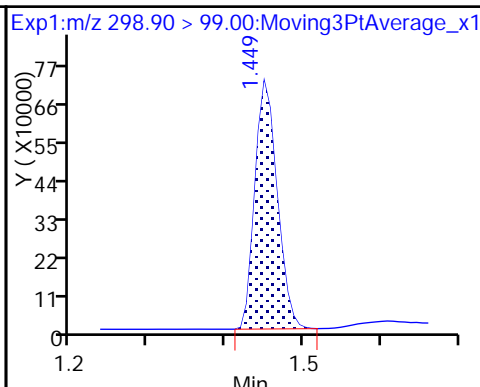
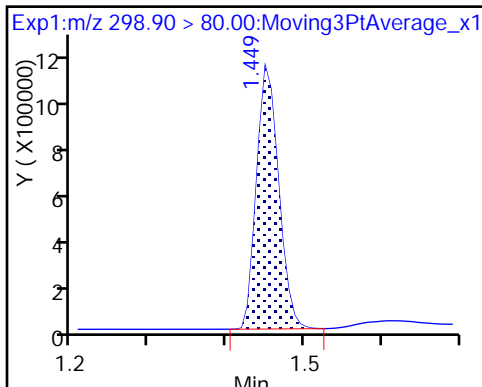
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

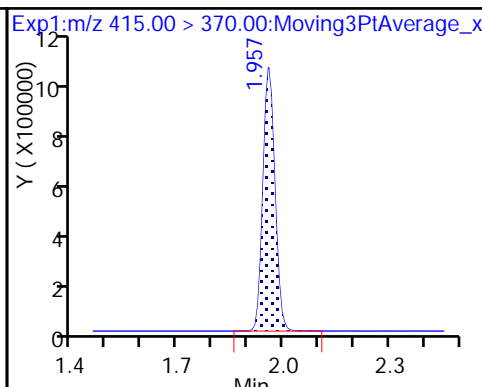
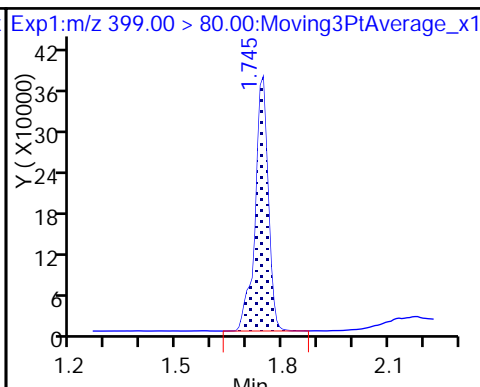
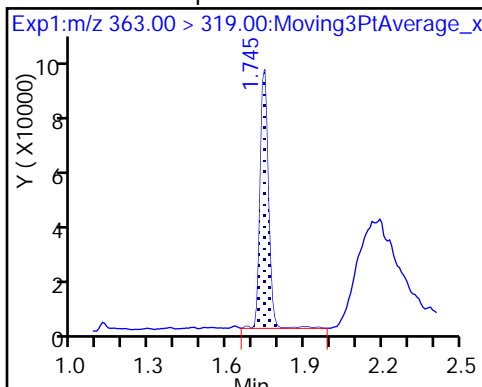
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

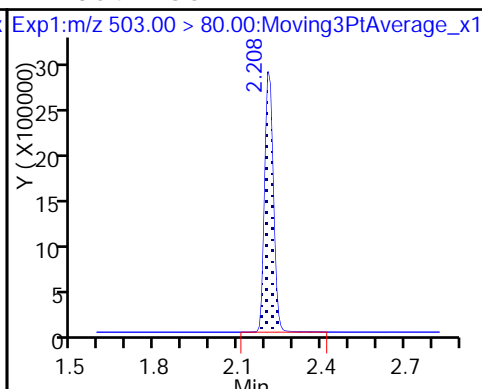
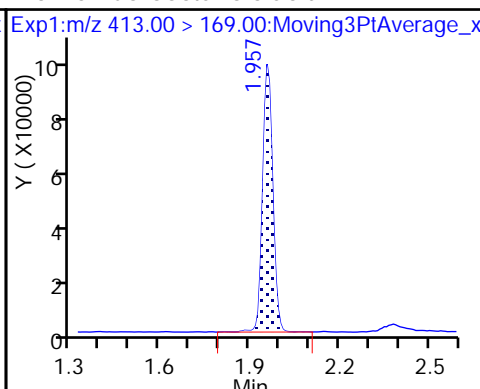
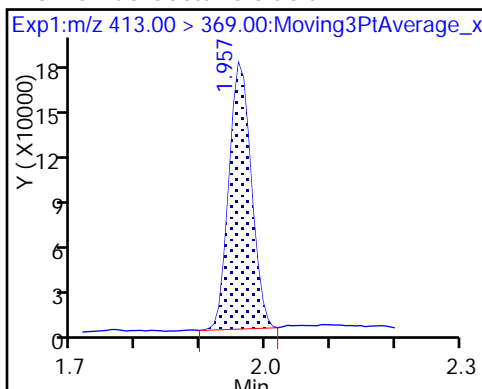
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

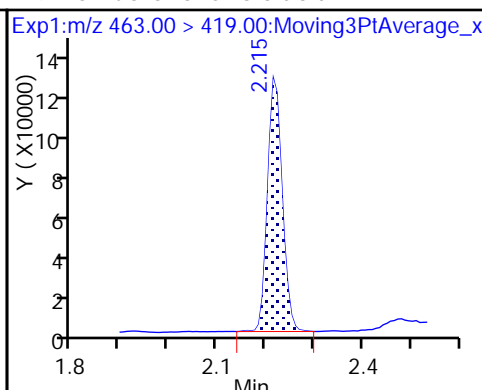
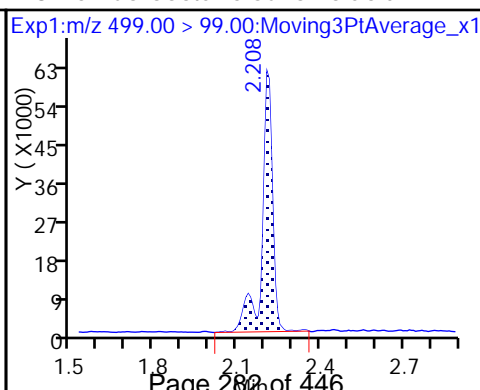
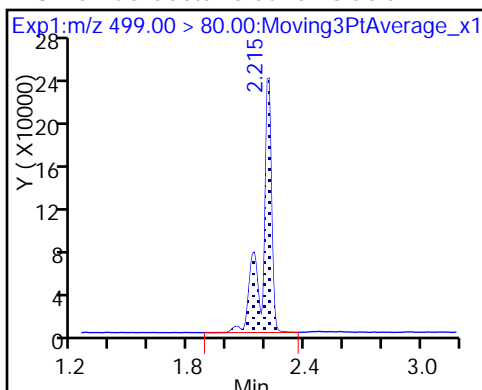
* 7 13C4 PFOS



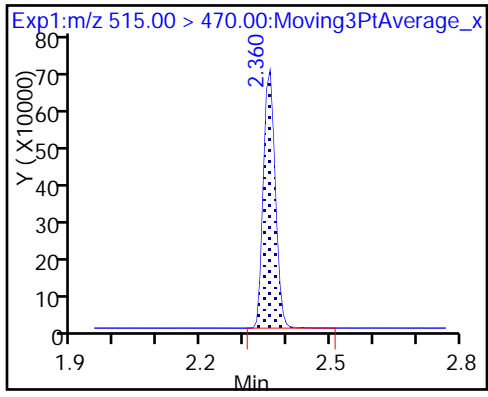
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_003.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 14-Aug-2017 12:53:41 ALS Bottle#: 2 Worklist Smp#: 3
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:03 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:08:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.457	1.453	0.004	1.000	4858409	21.3		661	
298.90 > 99.00	1.457	1.453	0.004	1.000	3160338		1.54(0.00-0.00)	670	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2356458	9.38		6407	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	2166866	6.86		343	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	455479	2.27		38.5	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.957	1.955	0.002	1.000	923370	4.33		60.6	
413.00 > 169.00	1.957	1.955	0.002	1.000	484643		1.91(0.00-0.00)	845	
* 6 13C2-PFOA									
415.00 > 370.00	1.957	1.955	0.002		2348990	10.0		11507	
* 7 13C4 PFOS									
503.00 > 80.00	2.208	2.205	0.003		6060332	28.7		6159	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.215	2.208	0.007	1.000	1718775	8.81		1524	
499.00 > 99.00	2.215	2.208	0.007	1.000	367461		4.68(0.00-0.00)	477	
9 Perfluorononanoic acid									
463.00 > 419.00	2.215	2.213	0.002	1.000	592024	4.45		150	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.360	2.354	0.006	1.000	1358920	9.84		7130	

Reagents:

LC537-L2_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_003.d

Injection Date: 14-Aug-2017 12:53:41

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

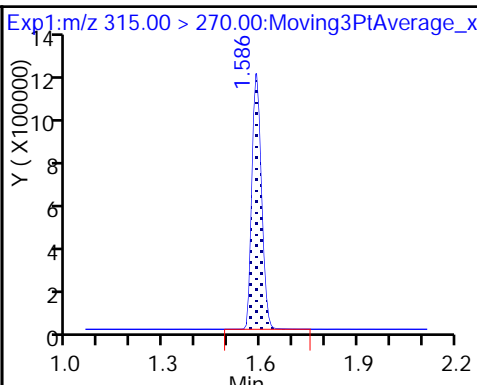
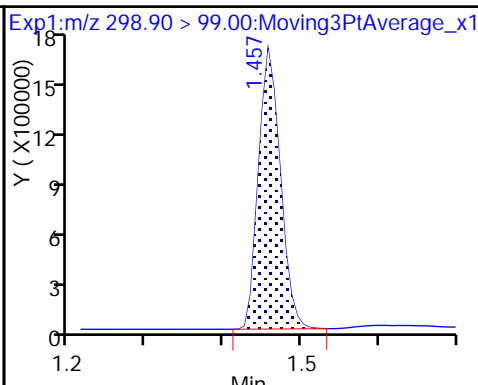
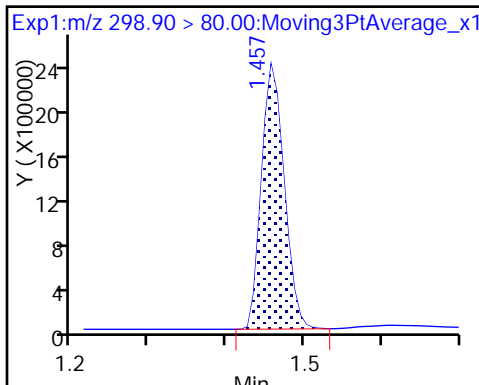
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

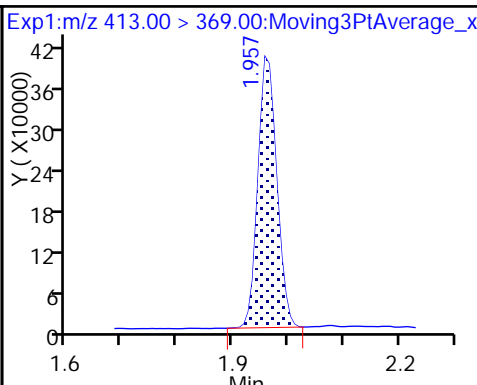
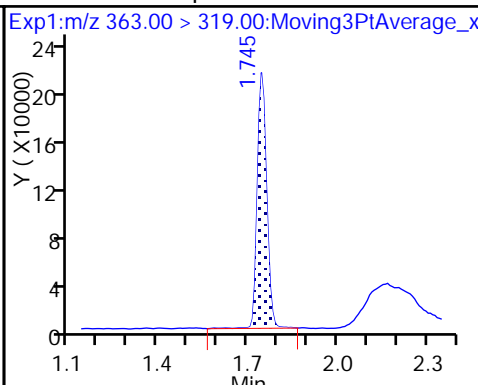
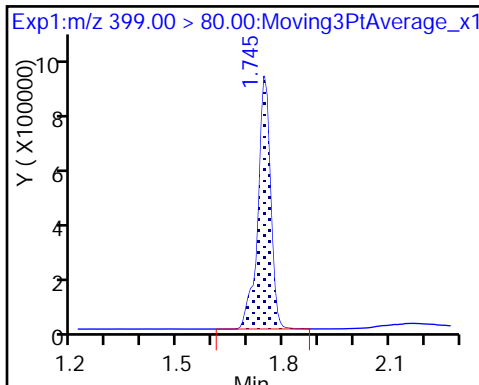
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

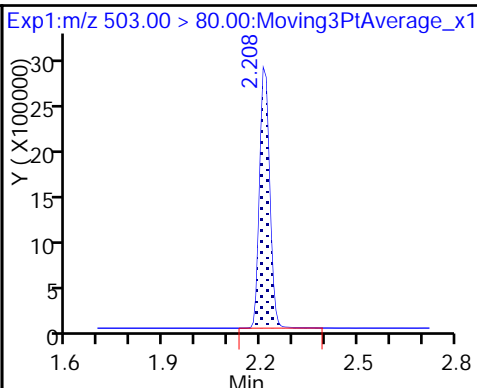
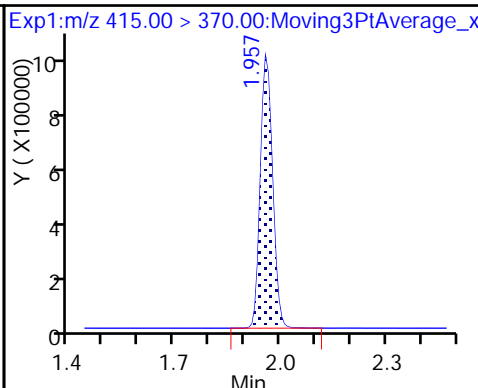
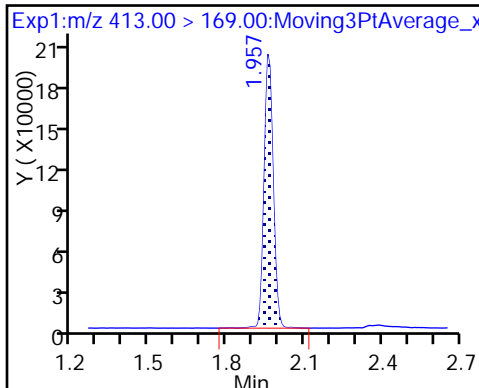
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

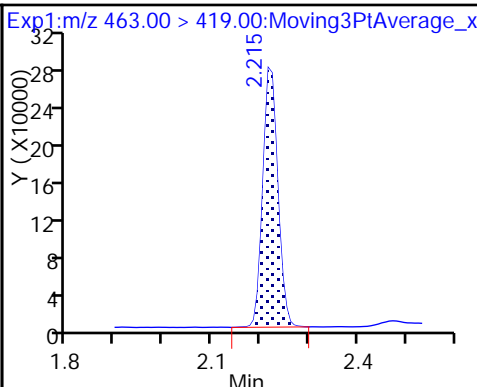
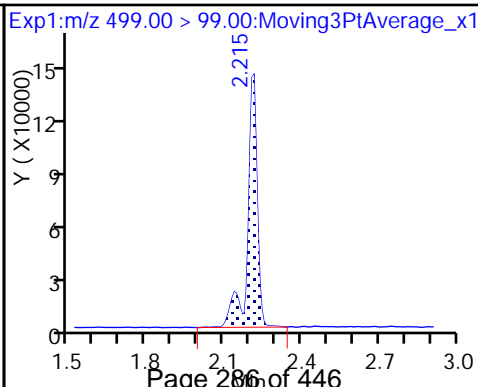
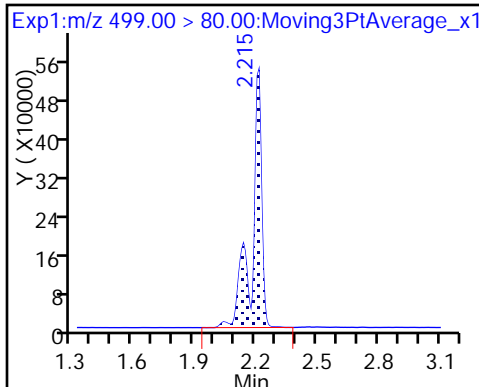
* 7 13C4 PFOS



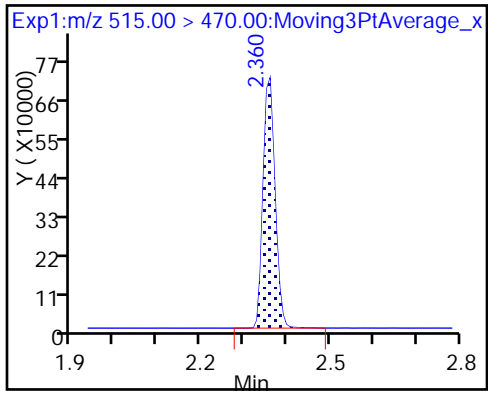
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_004.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 14-Aug-2017 12:58:26 ALS Bottle#: 3 Worklist Smp#: 4
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:04 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:08:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.457	1.453	0.004	1.000	10071471	48.4		1362	
298.90 > 99.00	1.457	1.453	0.004	1.000	6755881		1.49(0.00-0.00)	1317	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2429839	10.3		6722	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	965342	5.10		85.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	4626981	15.1		718	
* 6 13C2-PFOA									
415.00 > 370.00	1.957	1.955	0.002		2209361	10.0		11698	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.957	1.955	0.002	1.000	1986507	9.92		125	
413.00 > 169.00	1.957	1.955	0.002	1.000	1014880		1.96(0.00-0.00)	1650	
* 7 13C4 PFOS									
503.00 > 80.00	2.208	2.205	0.003		5865253	28.7		6014	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.208	2.208	0.0	1.000	3742396	19.8		2971	
499.00 > 99.00	2.208	2.208	0.0	1.000	760295		4.92(0.00-0.00)	903	
9 Perfluorononanoic acid									
463.00 > 419.00	2.215	2.213	0.002	1.000	1273686	10.2		298	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1307668	10.1		7842	

Reagents:

LC537-L3_00023

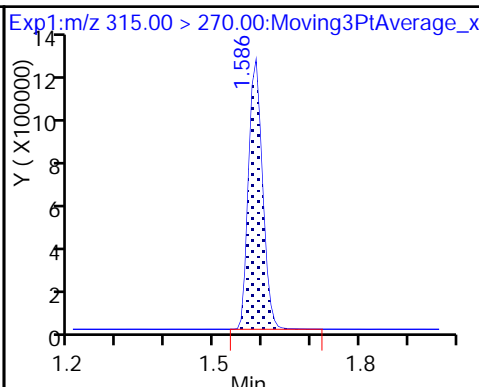
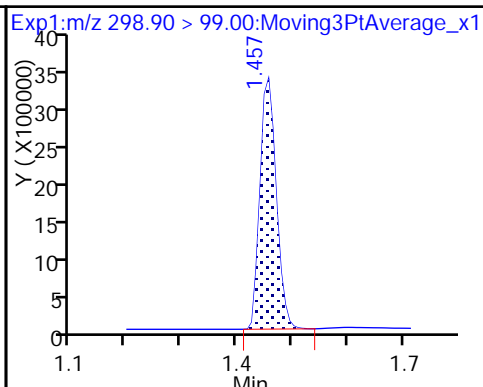
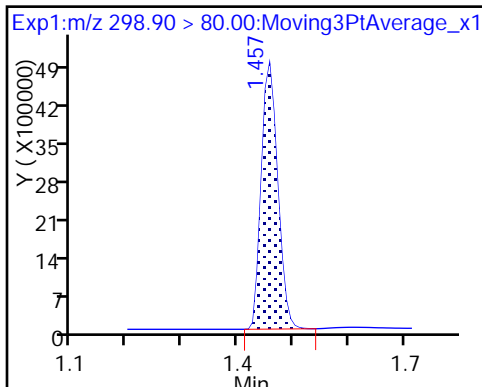
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

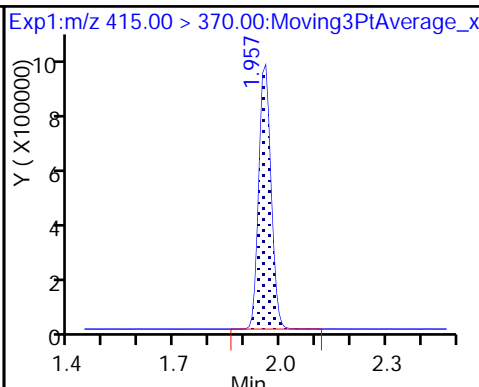
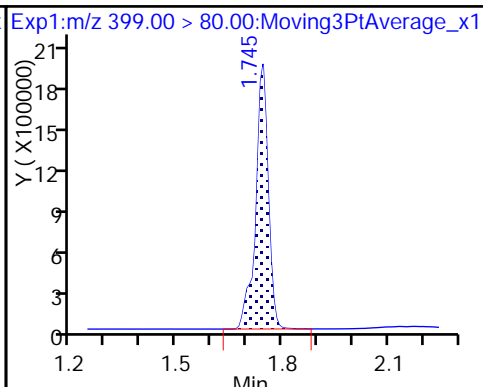
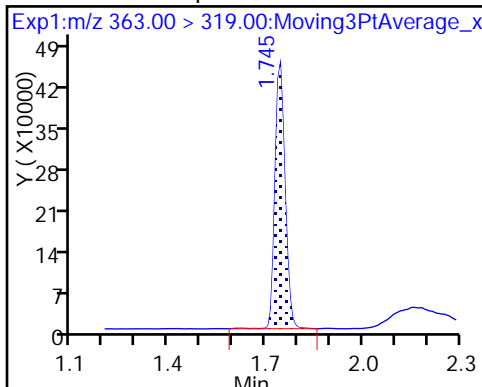
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

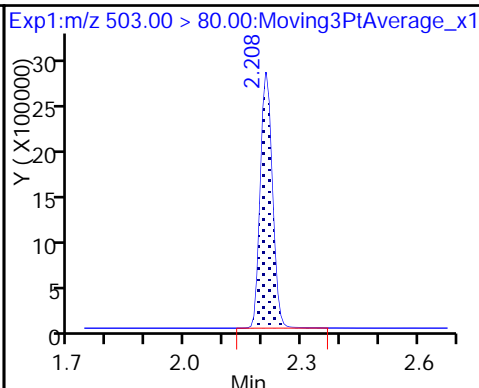
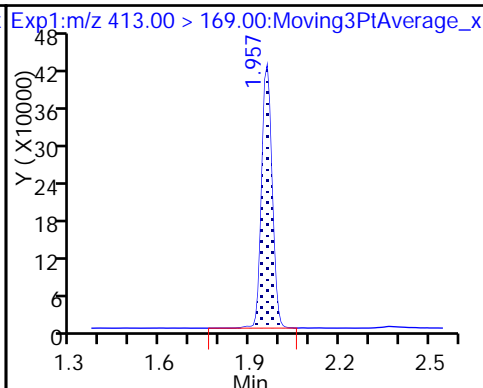
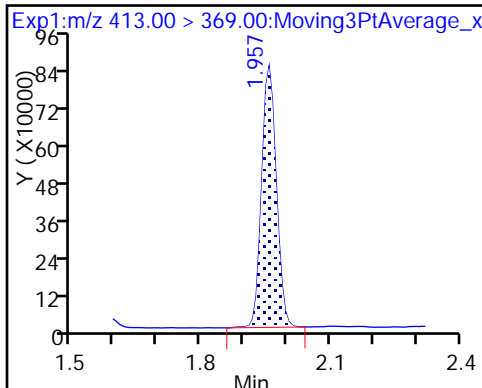
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

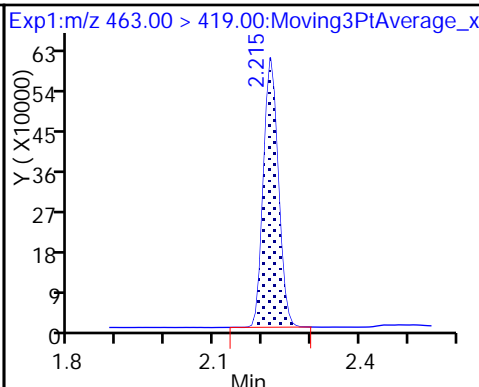
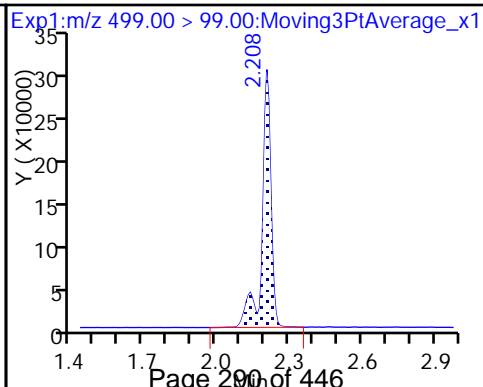
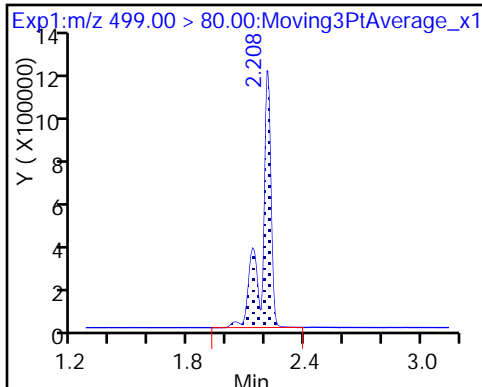
* 7 13C4 PFOS



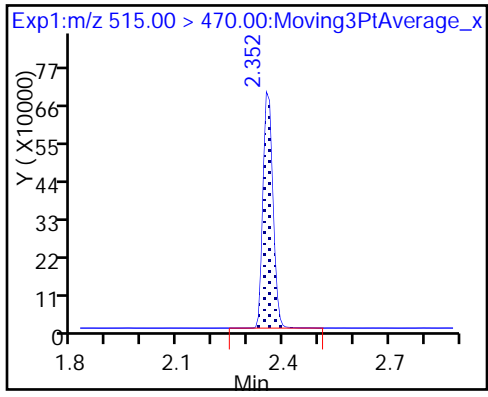
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_005.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 14-Aug-2017 13:03:11 ALS Bottle#: 4 Worklist Smp#: 5
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:04 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:08:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.457	1.453	0.004	1.000	16707104	89.7		1918	
298.90 > 99.00	1.457	1.453	0.004	1.000	12133728		1.38(0.00-0.00)	2117	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2465941	10.2		6561	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	9496666	31.5		1386	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	1966143	10.2		175	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.957	1.955	0.002	1.000	4232647	20.7		258	
413.00 > 169.00	1.957	1.955	0.002	1.000	2149139		1.97(0.00-0.00)	3387	
* 6 13C2-PFOA									
415.00 > 370.00	1.957	1.955	0.002		2255521	10.0		11927	
* 7 13C4 PFOS									
503.00 > 80.00	2.208	2.205	0.003		5780409	28.7		6098	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.208	2.208	0.0	1.000	7629588	41.0		6465	
499.00 > 99.00	2.208	2.208	0.0	1.000	1600291		4.77(0.00-0.00)	1799	
9 Perfluorononanoic acid									
463.00 > 419.00	2.215	2.213	0.002	1.000	2556105	20.0		585	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1332089	10.0		7263	

Reagents:

LC537-L4_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_005.d

Injection Date: 14-Aug-2017 13:03:11

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

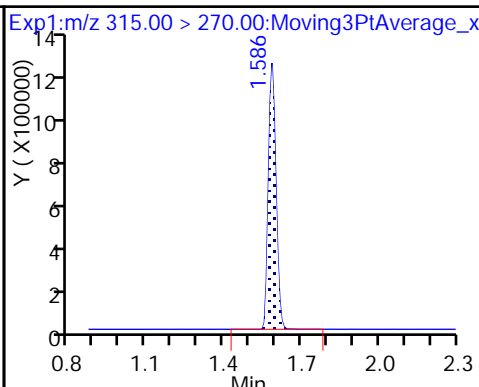
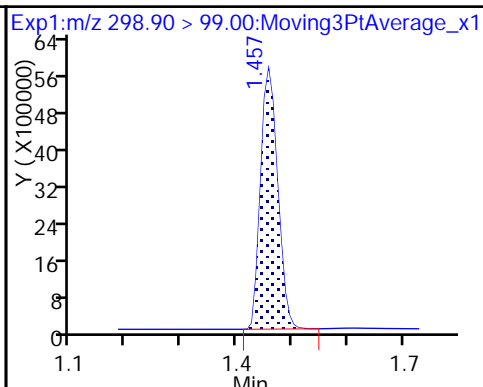
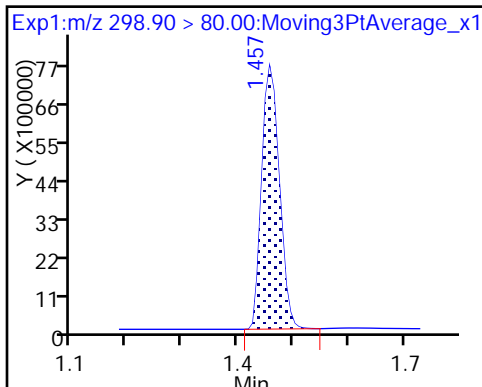
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

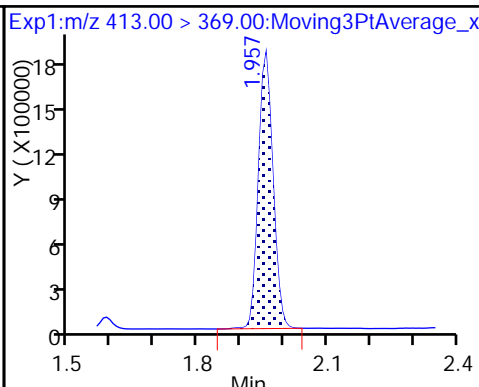
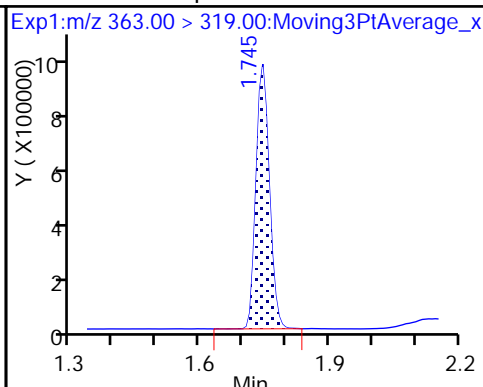
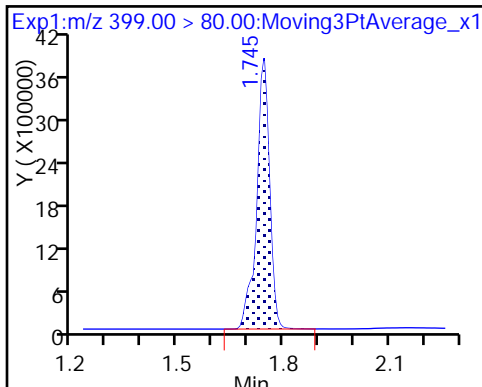
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

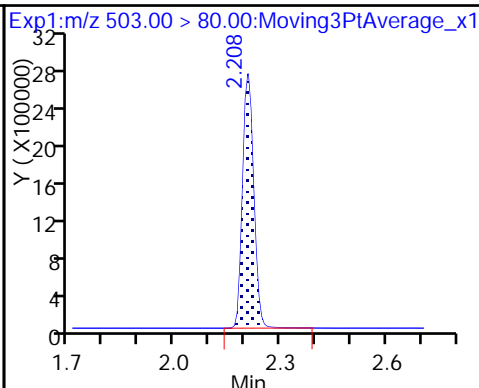
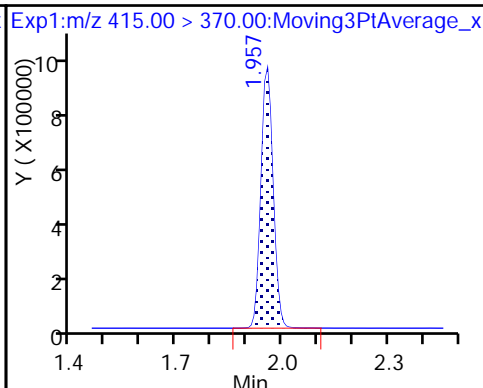
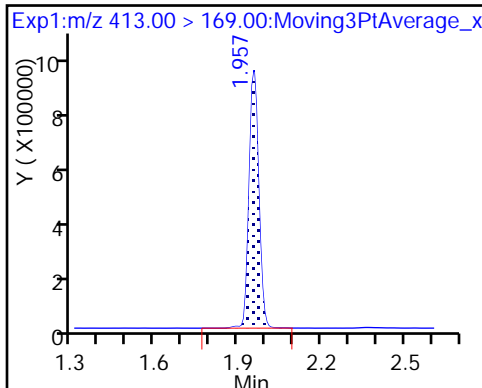
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

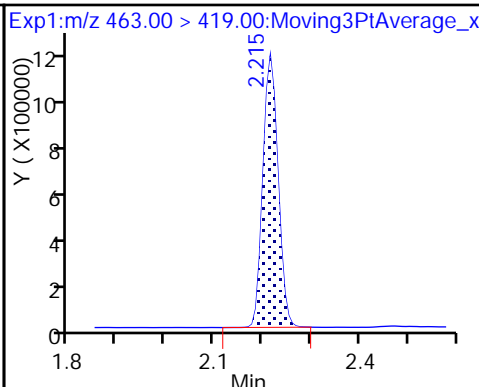
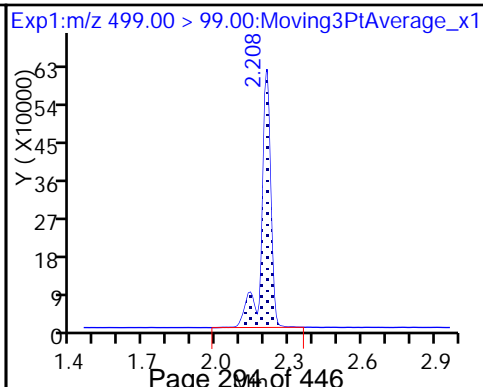
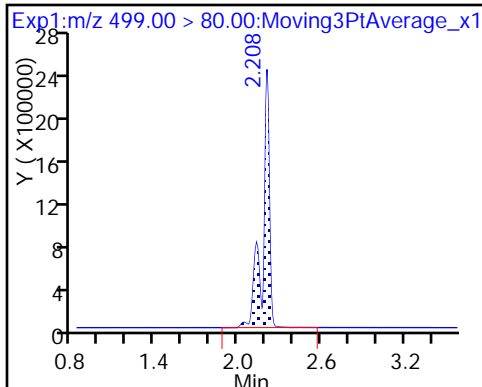
* 7 13C4 PFOS



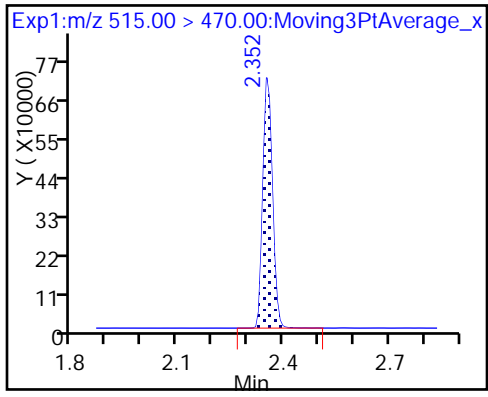
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_006.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 14-Aug-2017 13:07:55 ALS Bottle#: 5 Worklist Smp#: 6
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:05 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:09:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	21165476	128.3		1973	
298.90 > 99.00	1.449	1.453	-0.004	1.000	15381000		1.38(0.00-0.00)	2392	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2390227	10.3		7171	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.742	-0.005	1.000	2763295	14.9		247	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.742	-0.005	1.000	13083092	44.5		1759	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2162548	10.0		10597	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	6012905	30.7		331	
413.00 > 169.00	1.950	1.955	-0.005	1.000	3169462		1.90(0.00-0.00)	4885	
* 7 13C4 PFOS									
503.00 > 80.00	2.200	2.205	-0.005		5649456	28.7		5877	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.208	2.208	0.0	1.000	11213929	61.6		7515	
499.00 > 99.00	2.200	2.208	-0.008	0.997	2357369		4.76(0.00-0.00)	2390	
9 Perfluorononanoic acid									
463.00 > 419.00	2.208	2.213	-0.005	1.000	3689416	30.1		869	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1324957	10.4		7073	

Reagents:

LC537-L5_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_006.d

Injection Date: 14-Aug-2017 13:07:55

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

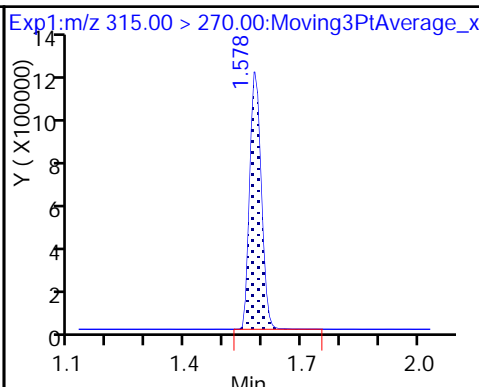
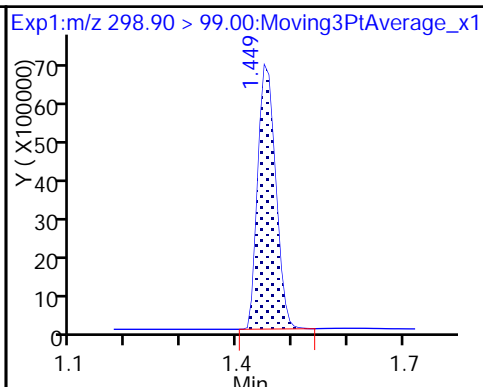
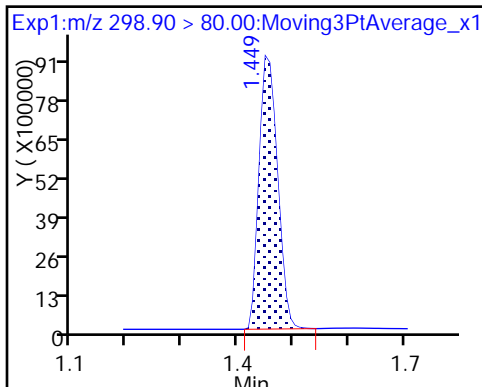
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

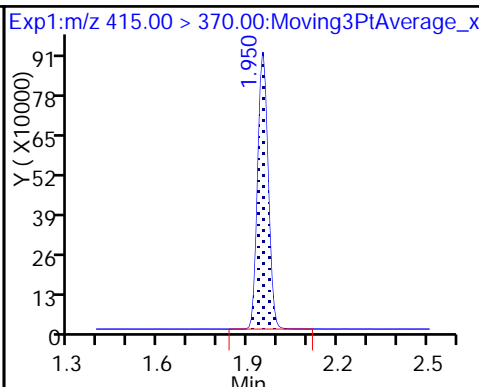
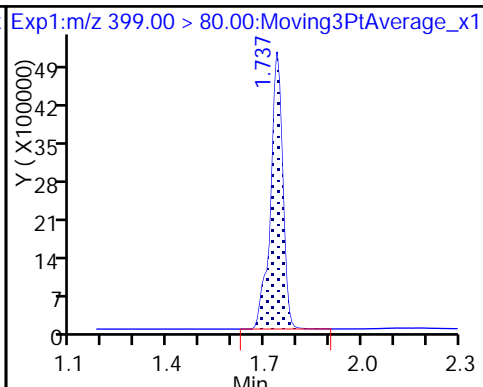
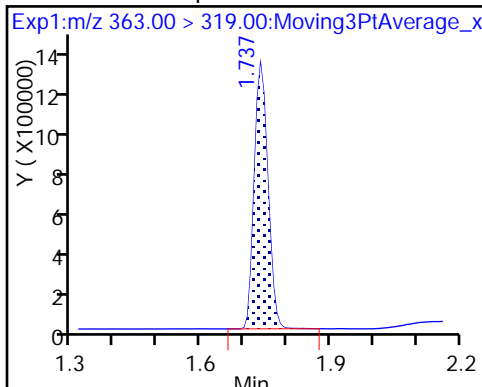
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

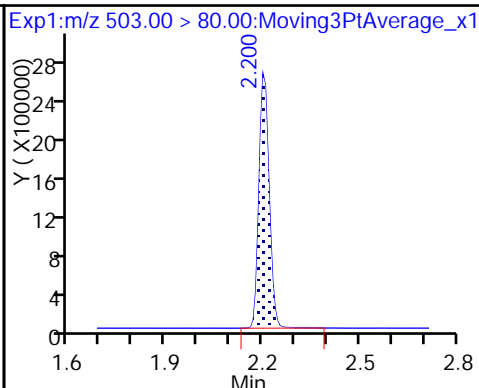
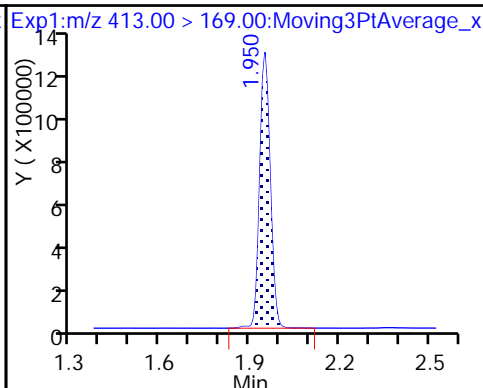
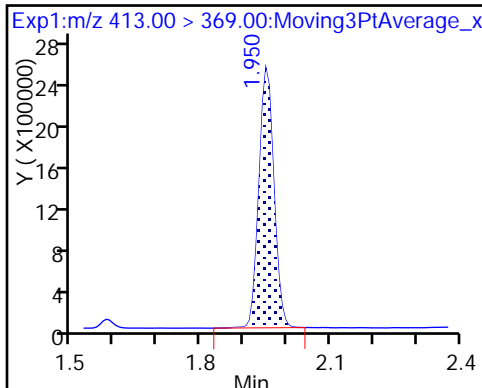
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

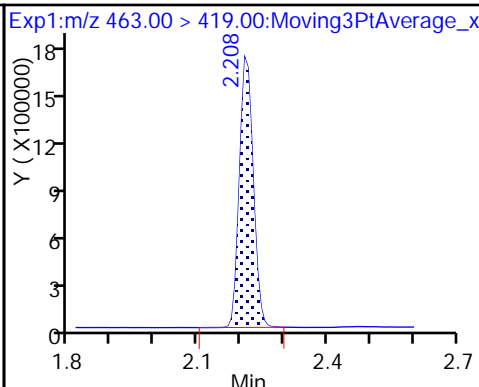
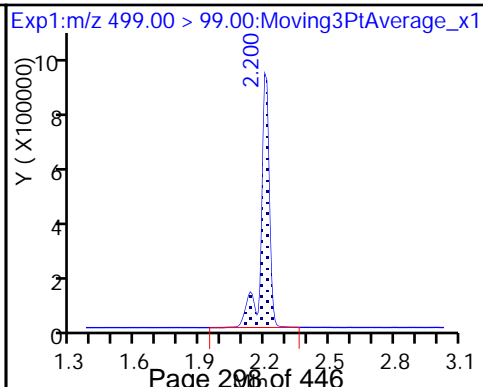
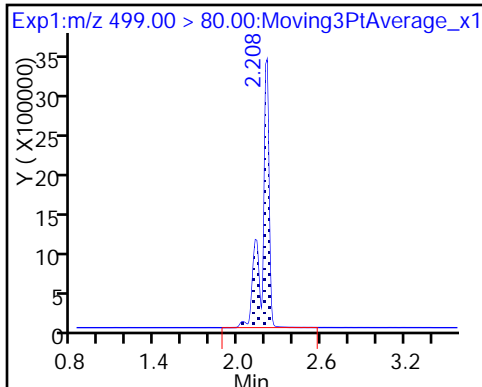
* 7 13C4 PFOS



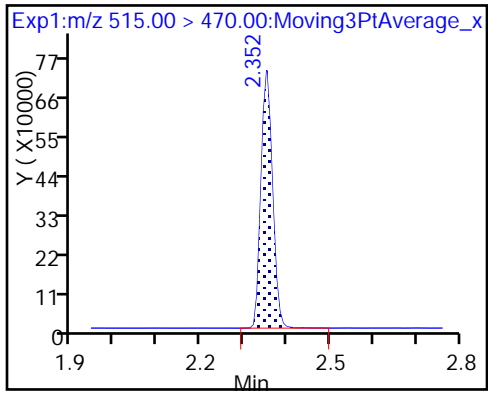
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 14-Aug-2017 13:12:40 ALS Bottle#: 6 Worklist Smp#: 7
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:07 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:09:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	26040065	186.2		2319	
298.90 > 99.00	1.449	1.453	-0.004	1.000	19002053		1.37(0.00-0.00)	2644	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2370885	10.3		6962	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.742	-0.005	1.000	16584369	56.1		1968	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.742	-0.005	1.000	3589599	19.5		307	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	7854398	40.2		429	
413.00 > 169.00	1.950	1.955	-0.005	1.000	4254502		1.85(0.00-0.00)	6275	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2155463	10.0		11567	
* 7 13C4 PFOS									
503.00 > 80.00	2.200	2.205	-0.005		5673459	28.7		5607	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.208	2.208	0.0	1.000	14645432	80.2		8157	
499.00 > 99.00	2.200	2.208	-0.008	0.997	3183566		4.60(0.00-0.00)	2767	
9 Perfluorononanoic acid									
463.00 > 419.00	2.208	2.213	-0.005	1.000	4927051	40.4		1112	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1295768	10.2		7545	

Reagents:

LC537-L6_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Injection Date: 14-Aug-2017 13:12:40

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

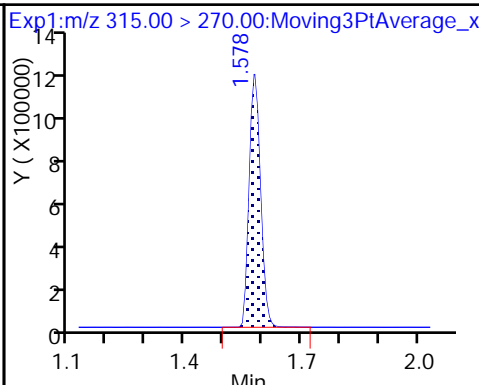
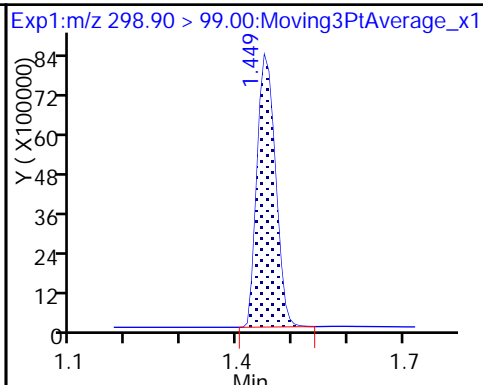
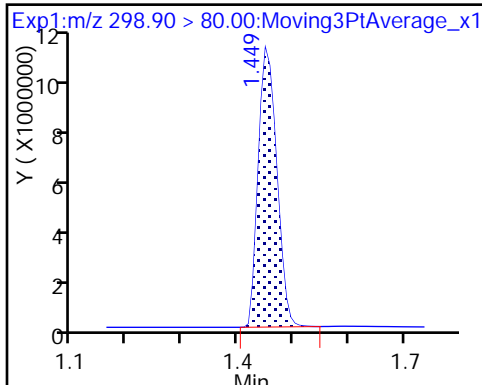
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

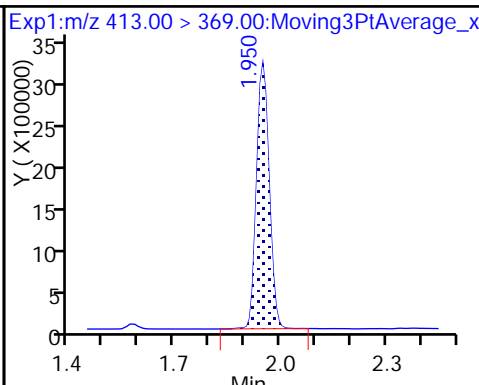
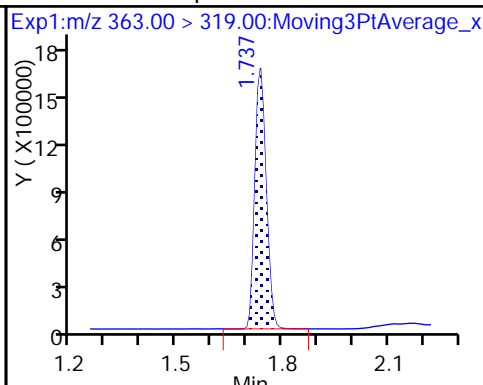
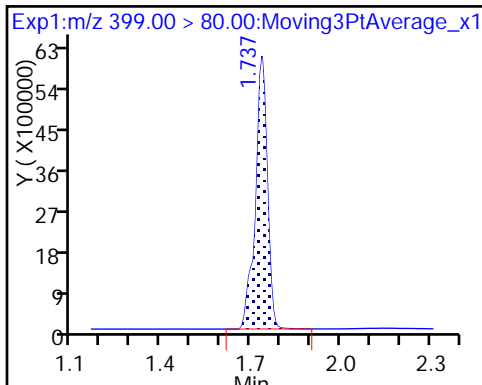
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

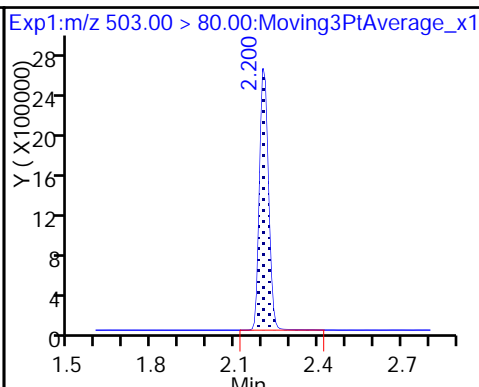
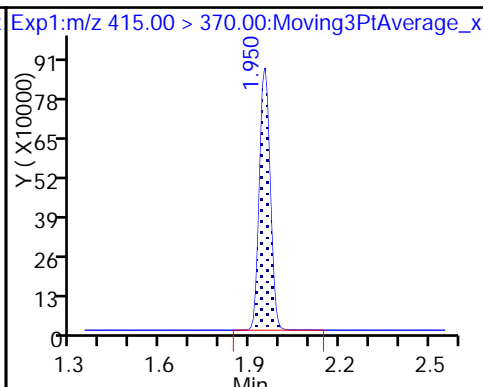
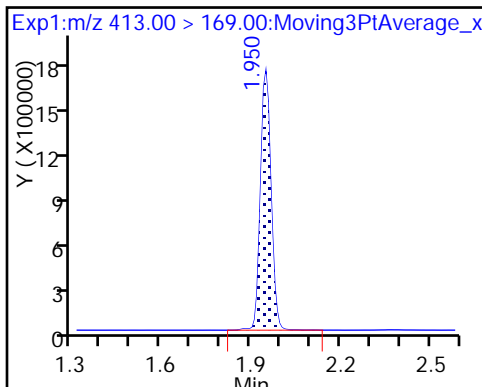
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

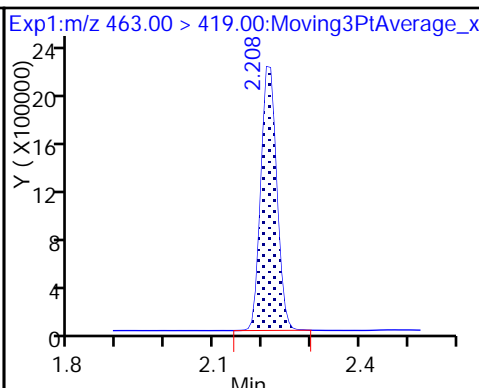
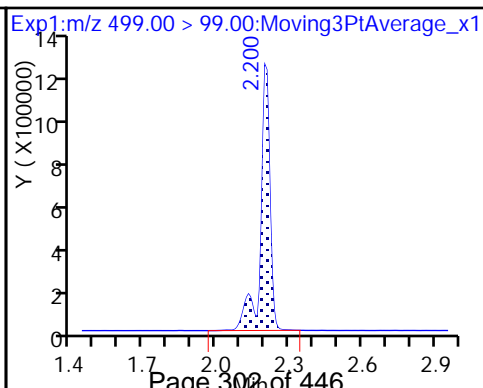
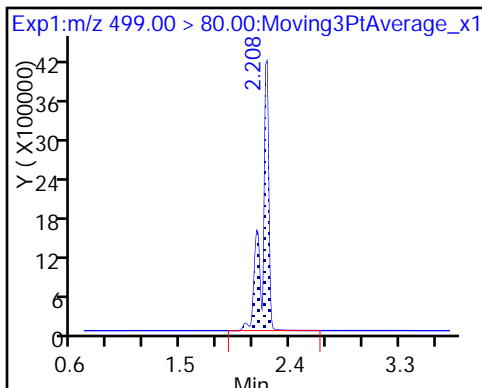
* 7 13C4 PFOS



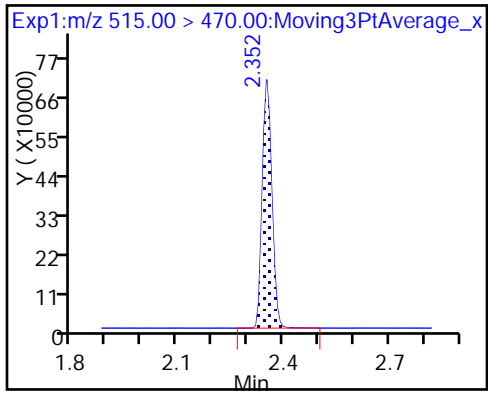
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-179319/9 Calibration Date: 08/14/2017 13:22
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.14_537ICAL_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.212		22.5	20.0	12.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9386		2.44	2.22	9.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.568		7.00	6.67	4.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9308		4.57	4.45	2.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9255		8.91	8.89	0.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6283		4.93	4.45	10.9	50.0
13C2 PFHxA	Ave	1.069	1.128		10.5	10.0	5.5	30.0
13C2 PFDA	Ave	0.5877	0.6289		10.7	10.0	7.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_009.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 14-Aug-2017 13:22:09 ALS Bottle#: 2 Worklist Smp#: 9
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:08 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:17:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	5069955	22.5		689	
298.90 > 99.00	1.449	1.453	-0.004	1.000	3233517		1.57(0.00-0.00)	644	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2456705	10.5		7072	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.742	-0.005	1.000	454396	2.44		40.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.742	-0.005	1.000	2186681	7.00		343	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		2177935	10.0		9587	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	901705	4.57		50.1	
413.00 > 169.00	1.942	1.955	-0.013	1.000	476593		1.89(0.00-0.00)	869	
* 7 13C4 PFOS									
503.00 > 80.00	2.200	2.205	-0.005		5998180	28.7		5754	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.200	2.208	-0.008	1.000	1720862	8.91		1437	
499.00 > 99.00	2.200	2.208	-0.008	1.000	364893		4.72(0.00-0.00)	416	
9 Perfluorononanoic acid									
463.00 > 419.00	2.208	2.213	-0.005	1.000	608257	4.93		144	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1369753	10.7		8253	

Reagents:

LC537-L2_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_009.d

Injection Date: 14-Aug-2017 13:22:09

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

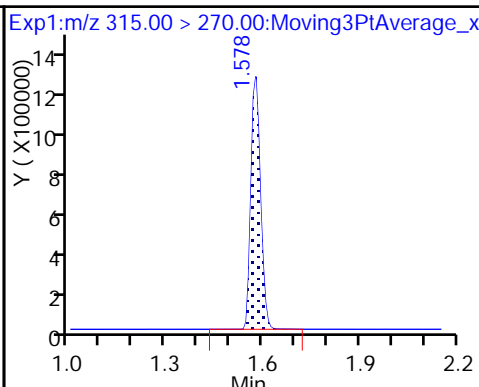
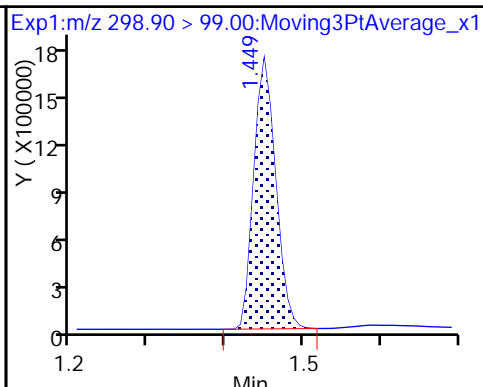
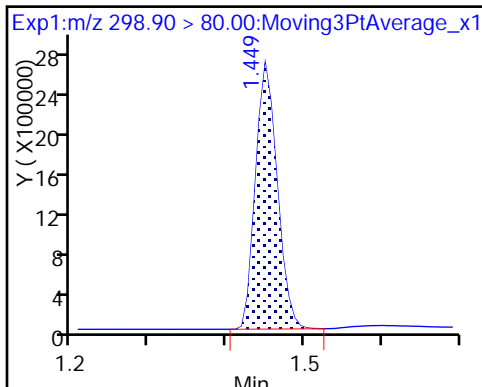
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

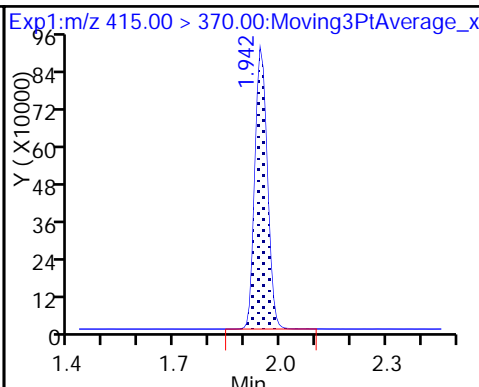
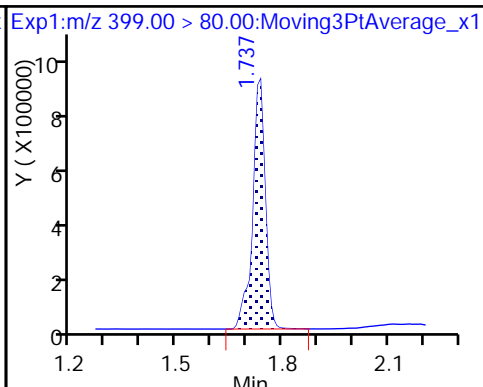
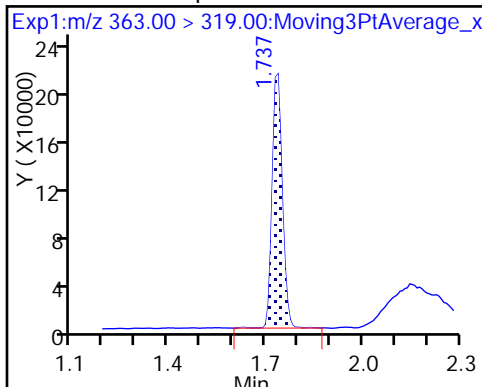
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

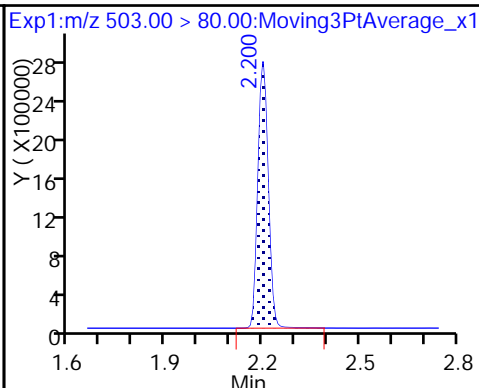
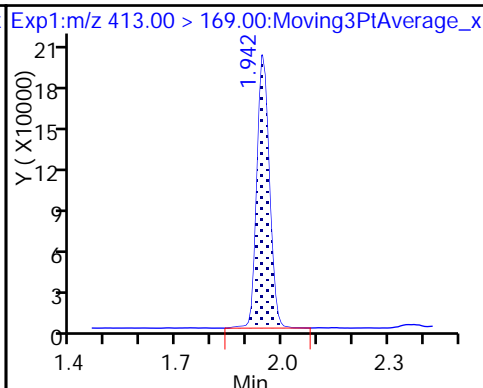
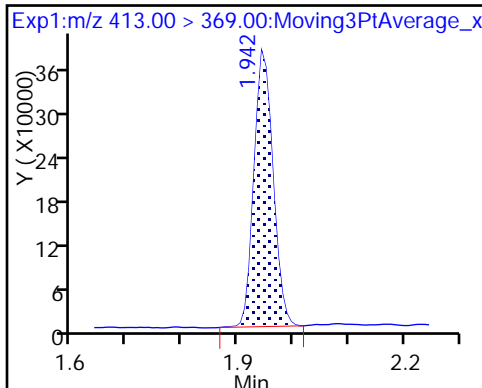
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

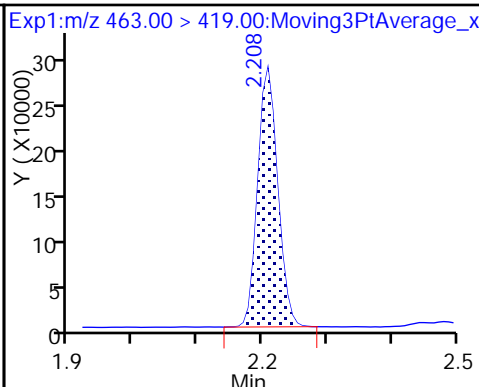
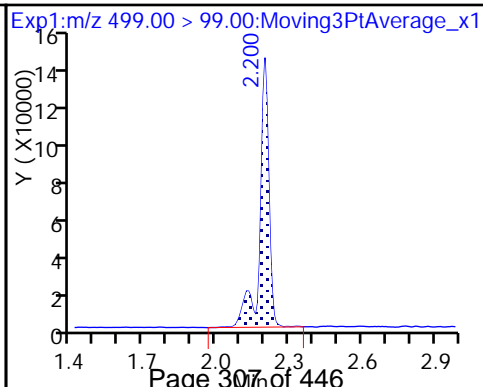
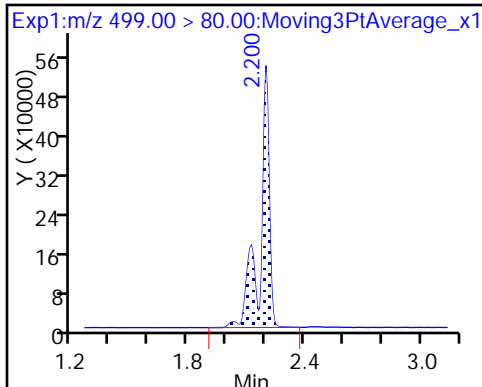
* 7 13C4 PFOS



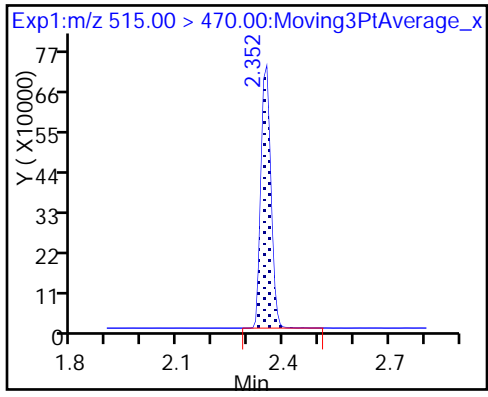
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: ICV 320-179319/11 Calibration Date: 08/14/2017 13:31
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.14_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		0.9251		104	100	3.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9672		11.3	10.0	13.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.761		23.7	20.1	17.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9396		21.2	20.5	3.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.7333		26.1	20.1	29.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	1.121		23.9	19.7	21.3	30.0
13C2 PFHxA	Ave	1.069	1.124		10.5	10.0	5.1	30.0
13C2 PFDA	Ave	0.5877	0.6385		10.9	10.0	8.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_011.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 14-Aug-2017 13:31:37 ALS Bottle#: 7 Worklist Smp#: 11
 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\20170814-46675.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 14-Aug-2017 14:36:10 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:18:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	18809532	103.7		1920	
298.90 > 99.00	1.449	1.453	-0.004	1.000	13567533		1.39(0.00-0.00)	2047	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2224871	10.5		6402	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.742	-0.012	1.000	1914446	11.3		166	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.742	-0.012	1.000	7180754	23.7		1082	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1980065	10.0		9656	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	3810943	21.2		220	
413.00 > 169.00	1.942	1.955	-0.013	1.000	2037831		1.87(0.00-0.00)	3256	
* 7 13C4 PFOS									
503.00 > 80.00	2.193	2.205	-0.012		5824653	28.7		5480	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.200	2.208	-0.008	1.000	4482668	23.9		3801	
499.00 > 99.00	2.200	2.208	-0.008	1.000	847951		5.29(0.00-0.00)	940	
9 Perfluorononanoic acid									
463.00 > 419.00	2.200	2.213	-0.013	1.000	2922223	26.1		737	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.354	-0.010	1.000	1264298	10.9		7686	

Reagents:

LC537-ICV_00028

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_011.d

Injection Date: 14-Aug-2017 13:31:37

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

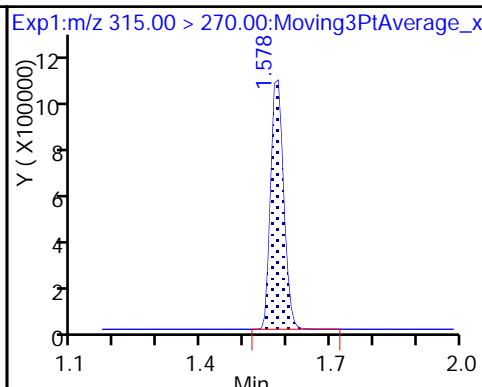
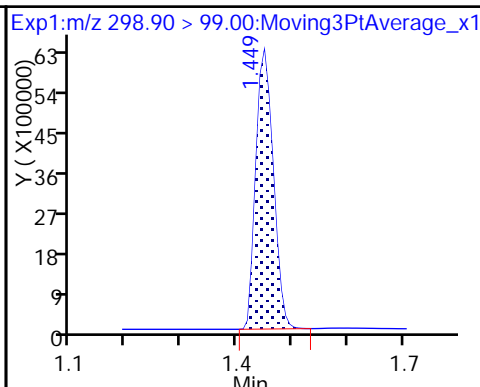
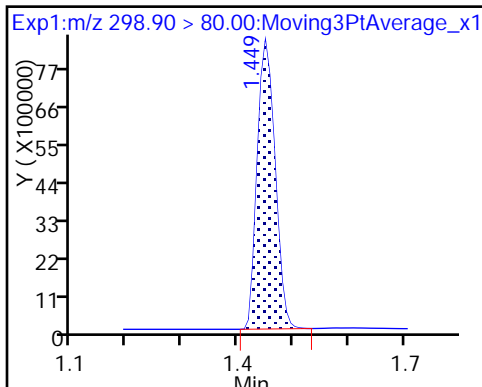
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

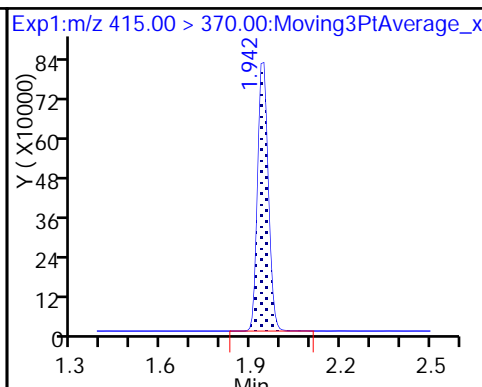
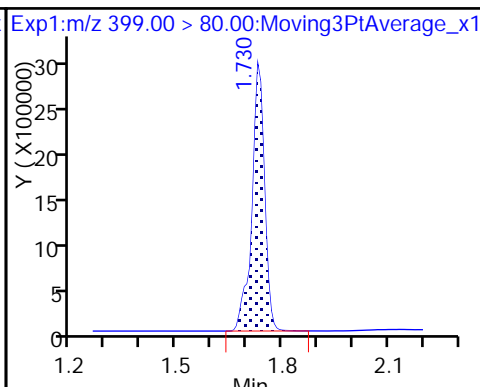
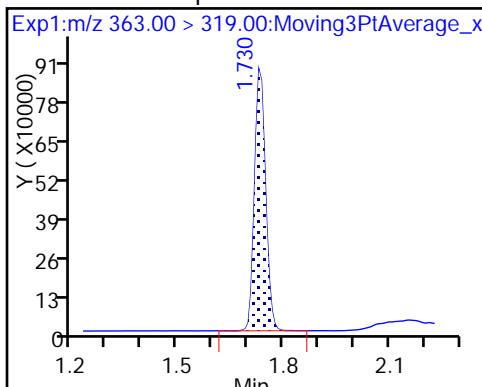
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

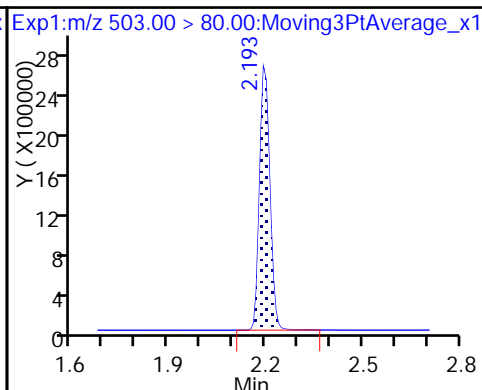
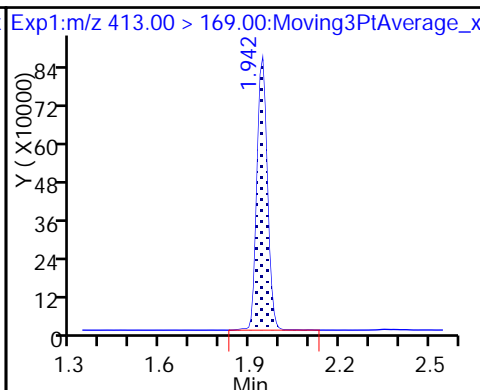
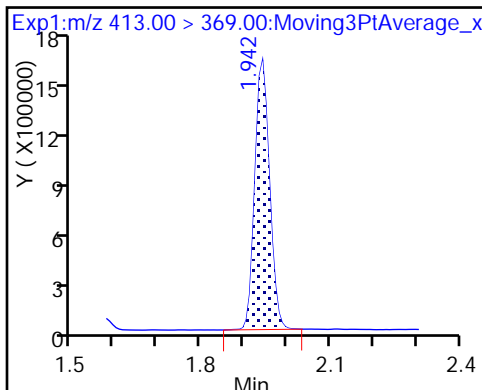
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

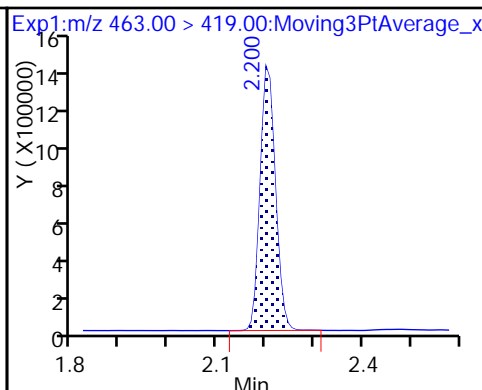
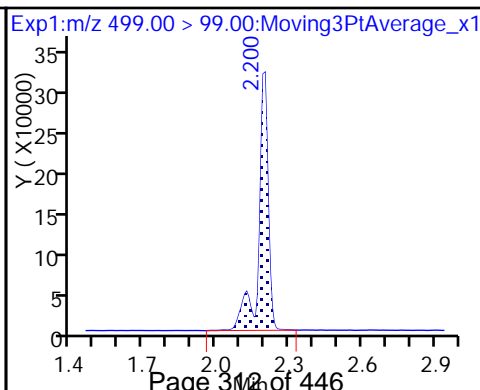
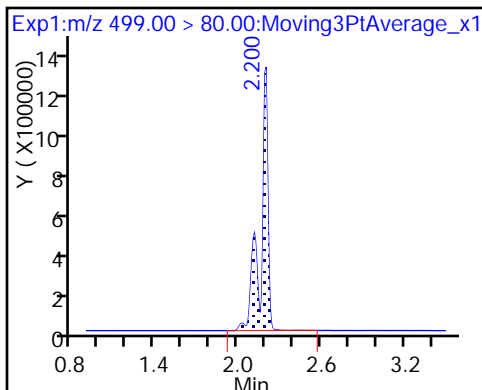
* 7 13C4 PFOS



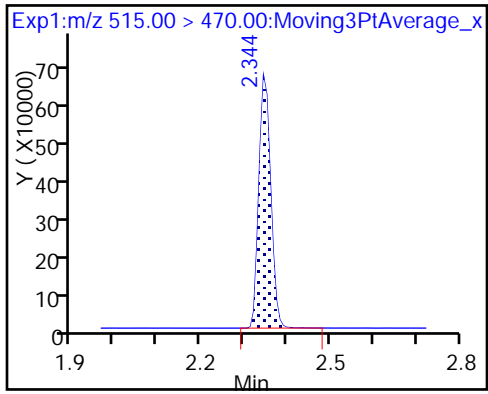
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-179695/4 Calibration Date: 08/16/2017 09:11
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.15_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		1.167		21.7	20.0	8.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.7567		1.96	2.22	-11.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.526		6.81	6.67	2.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9013		4.42	4.45	-0.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9279		8.93	8.89	0.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.5763		4.52	4.45	1.7	50.0
13C2 PFHxA	Ave	1.069	0.9803		9.17	10.0	-8.3	30.0
13C2 PFDA	Ave	0.5877	0.6186		10.5	10.0	5.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46763.b\2017.08.15_537A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 16-Aug-2017 09:11:57 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\20170816-46763.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2017 14:01:43 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: barnettj Date: 16-Aug-2017 13:35:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	4908309	21.7		621	
298.90 > 99.00	1.449	1.453	-0.004	1.000	3217797		1.53(0.00-0.00)	635	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.601	1.582	0.019	1.000	2392442	9.17		3409	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.775	1.742	0.033	1.000	2140738	6.81		291	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.775	1.742	0.033	1.000	410489	1.96		20.5	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.988	1.955	0.033	1.000	978392	4.42		59.6	
413.00 > 169.00	1.988	1.955	0.033	1.000	519425		1.88(0.00-0.00)	490	
* 6 13C2-PFOA									
415.00 > 370.00	1.988	1.955	0.033		2440436	10.0		8227	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.208	2.185	0.023	1.000	1735194	8.93		562	
499.00 > 99.00	2.208	2.185	0.023	1.000	374503		4.63(0.00-0.00)	303	
* 7 13C4 PFOS									
503.00 > 80.00	2.208	2.205	0.003		6032262	28.7		5656	
9 Perfluorononanoic acid									
463.00 > 419.00	2.215	2.213	0.002	1.000	625131	4.52		100	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1509624	10.5		3939	

Reagents:

LC537-L2_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46763.b\2017.08.15_537A_004.d

Injection Date: 16-Aug-2017 09:11:57

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

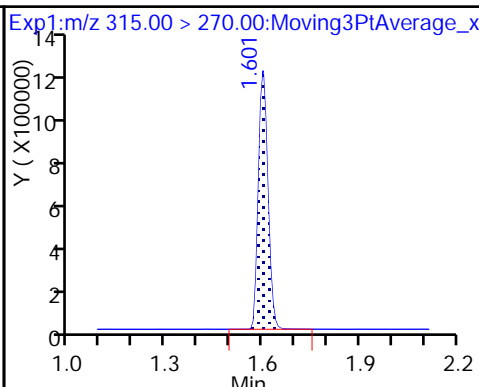
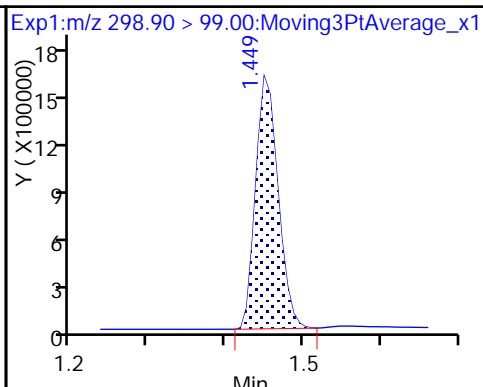
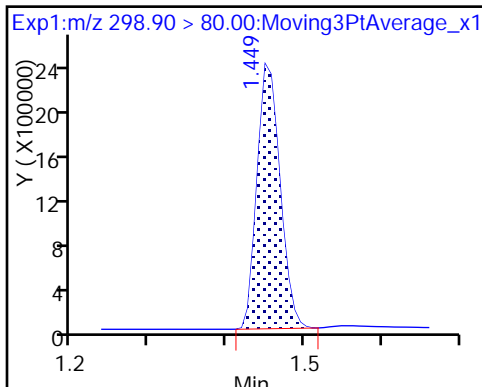
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

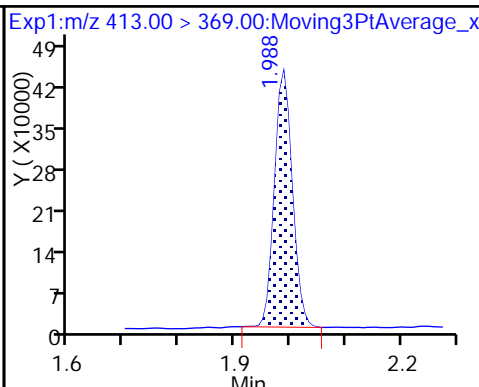
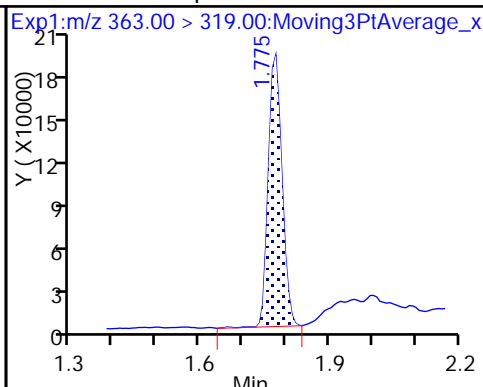
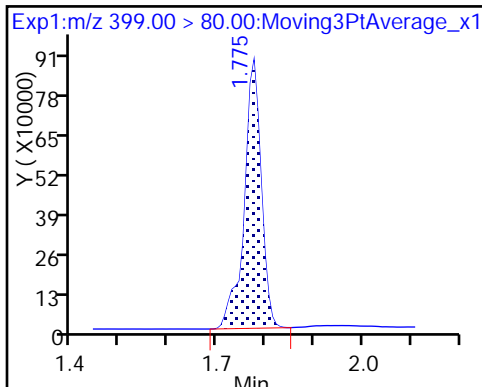
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

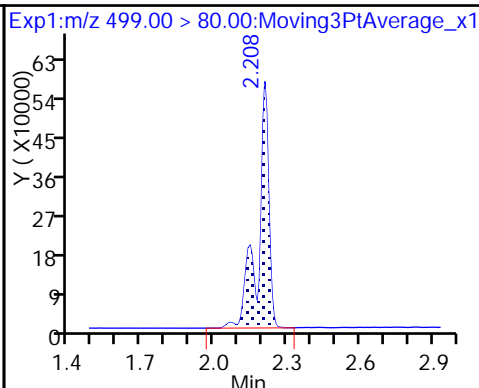
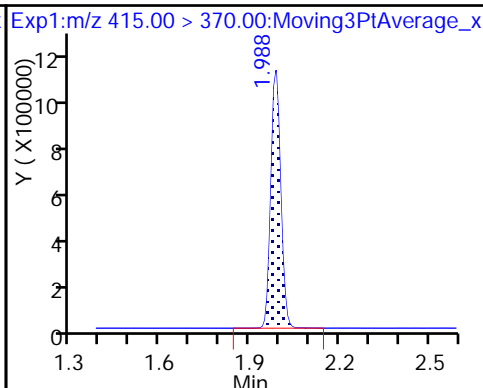
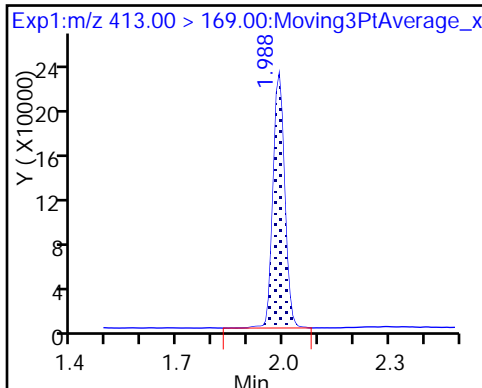
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

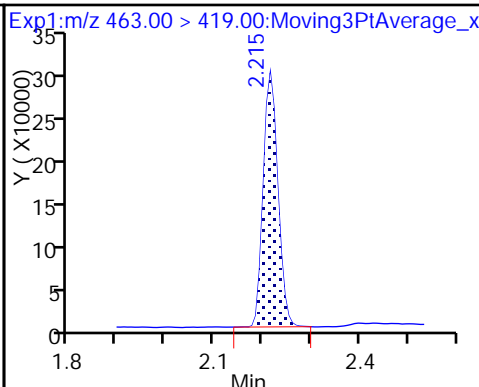
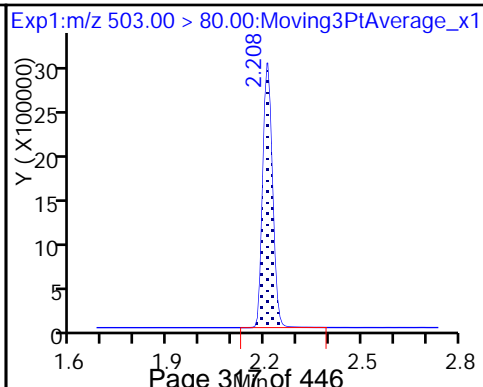
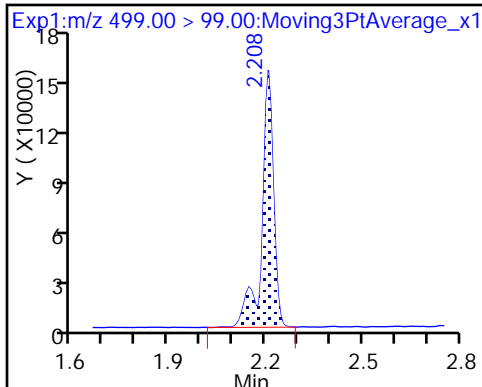
8 Perfluorooctane sulfonic acid



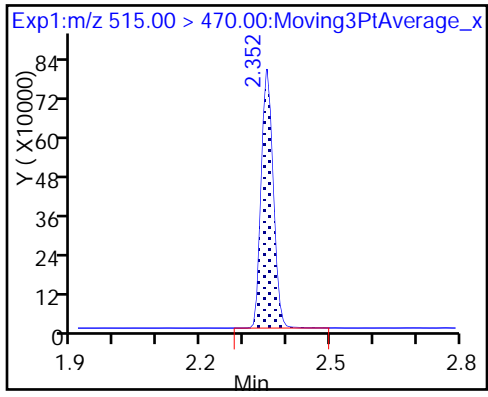
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179727/1 Calibration Date: 08/16/2017 12:40
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.062		46.8	45.0	4.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9427		5.51	5.00	10.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.585		15.9	15.0	6.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9145		10.1	10.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9443		20.5	20.0	2.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6560		11.6	10.0	15.8	30.0
13C2 PFHxA	Ave	1.069	1.200		11.2	10.0	12.3	30.0
13C2 PFDA	Ave	0.5877	0.7379		12.6	10.0	25.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_001.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 12:40:52 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:30:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9597921	46.8		1227	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6669440		1.44(0.00-0.00)	1163	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2447120	11.2		5436	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	4775829	15.9		716	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	961151	5.51		72.0	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1866038	10.1		112	
413.00 > 169.00	1.950	1.955	-0.005	1.000	978044		1.91(0.00-0.00)	1159	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2038727	10.0		5709	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	3793211	20.5		2438	
499.00 > 99.00	2.177	2.177	0.0	1.000	784658		4.83(0.00-0.00)	755	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5758922	28.7		5514	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	1337628	11.6		227	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1504309	12.6		5136	

Reagents:

LC537-L3_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_001.d

Injection Date: 16-Aug-2017 12:40:52

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

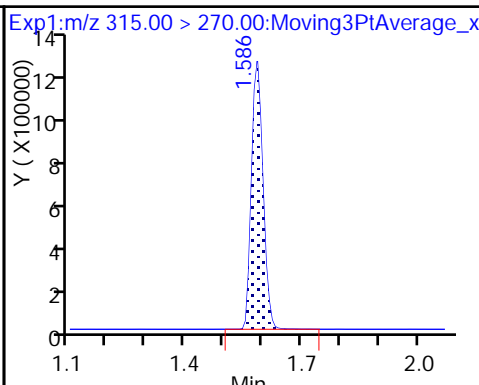
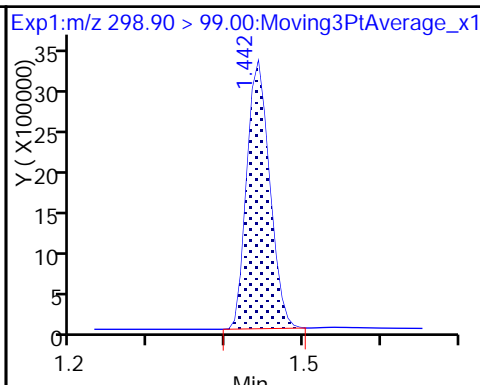
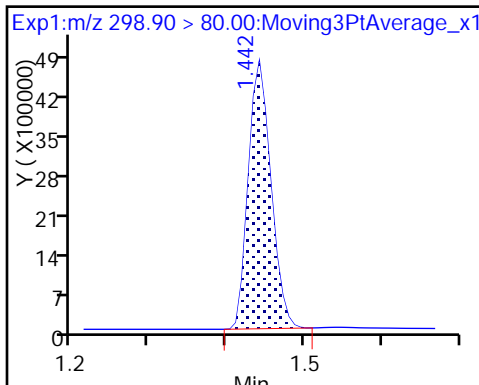
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

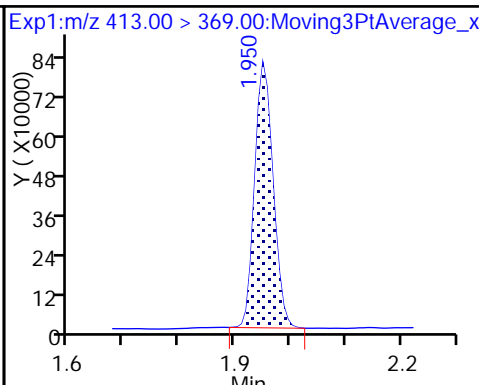
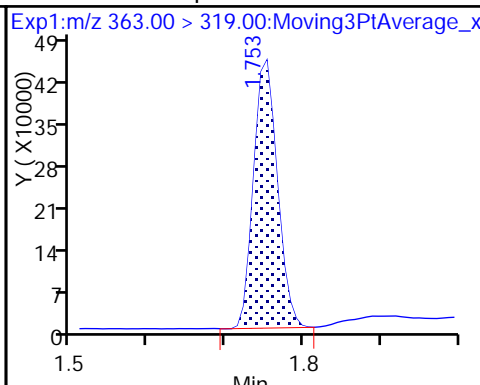
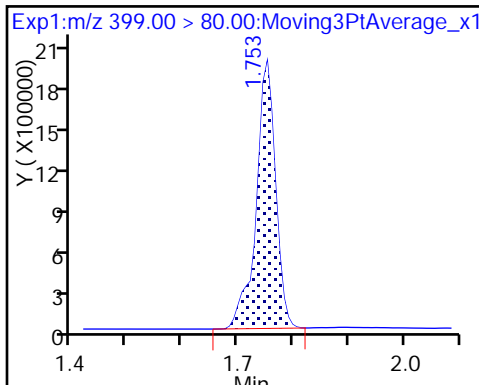
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

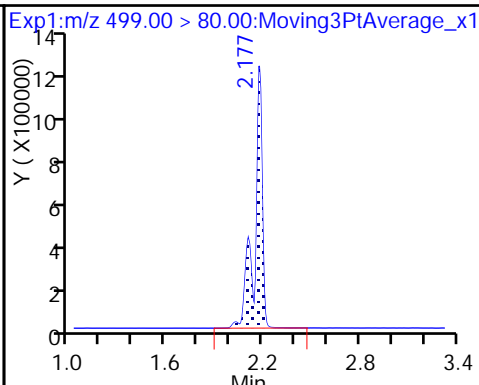
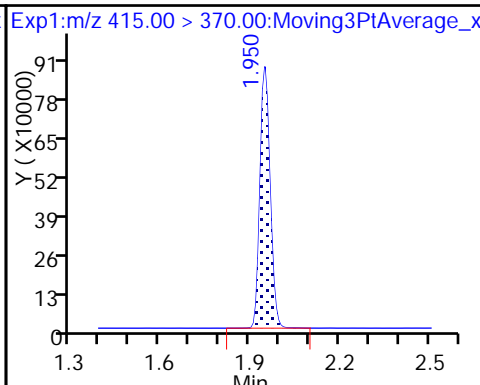
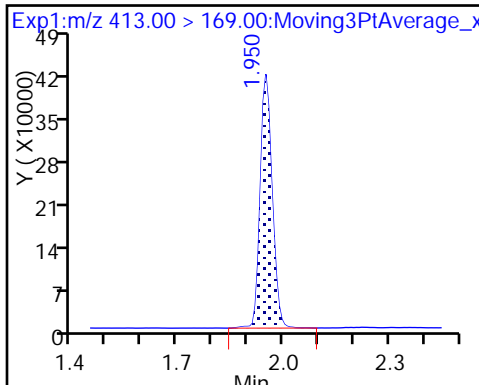
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

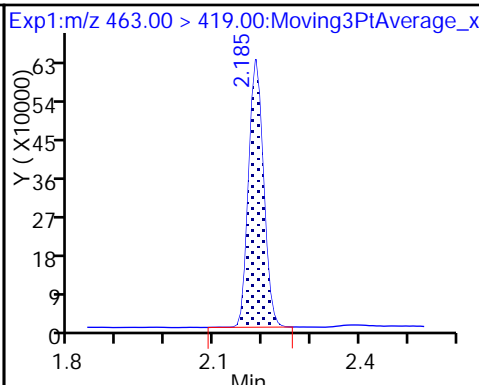
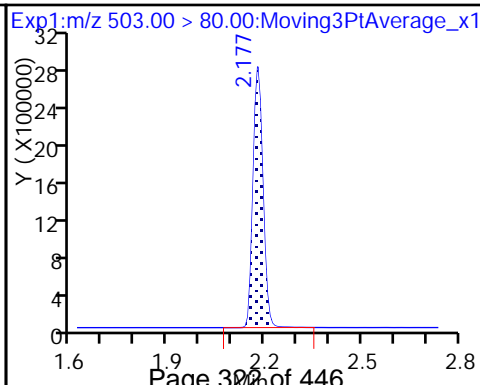
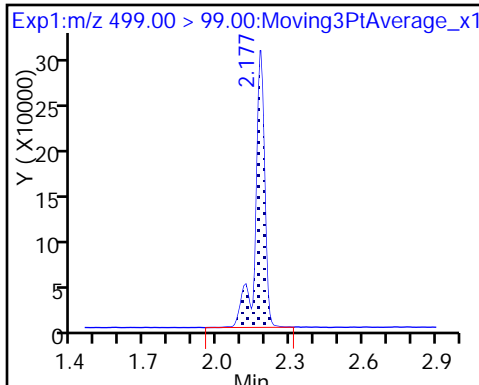
8 Perfluorooctane sulfonic acid



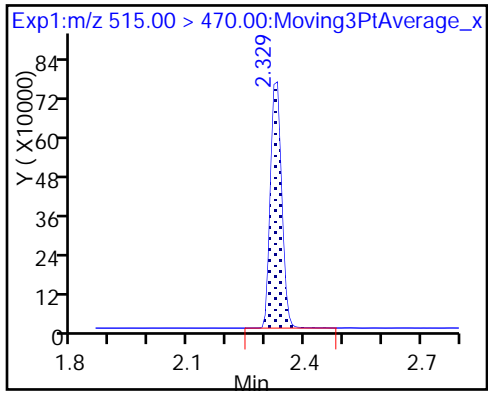
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179727/13 Calibration Date: 08/16/2017 13:37
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_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		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179728/13 Calibration Date: 08/16/2017 13:37
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_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		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_013.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 13:37:48 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:30:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	21733470	131.9		2243	
298.90 > 99.00	1.449	1.453	-0.004	1.000	15934232		1.36(0.00-0.00)	2480	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.593	1.582	0.011	1.000	2312497	11.6		6465	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13368176	45.0		1861	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2624805	16.4		229	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5081880	30.0		249	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2671084		1.90(0.00-0.00)	3011	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1866257	10.0		6208	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11121234	60.6		5042	
499.00 > 99.00	2.177	2.177	0.0	1.000	2375717		4.68(0.00-0.00)	1948	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5698459	28.7		5778	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3721491	35.2		497	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1280680	11.7		5563	

Reagents:

LC537-L5_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_013.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 13:37:48 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:30:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	21733470	131.9		2243	
298.90 > 99.00	1.449	1.453	-0.004	1.000	15934232		1.36(0.00-0.00)	2480	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.593	1.582	0.011	1.000	2312497	11.6		6465	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13368176	45.0		1861	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2624805	16.4		229	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5081880	30.0		249	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2671084		1.90(0.00-0.00)	3011	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1866257	10.0		6208	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11121234	60.6		5042	
499.00 > 99.00	2.177	2.177	0.0	1.000	2375717		4.68(0.00-0.00)	1948	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5698459	28.7		5778	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3721491	35.2		497	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1280680	11.7		5563	

Reagents:

LC537-L5_00024

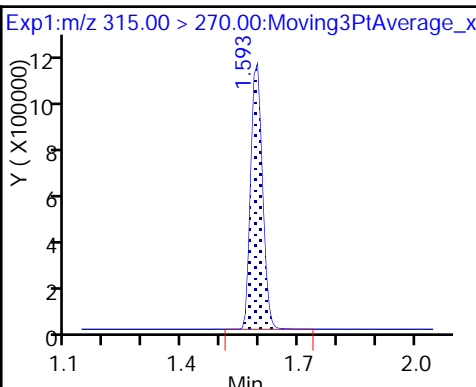
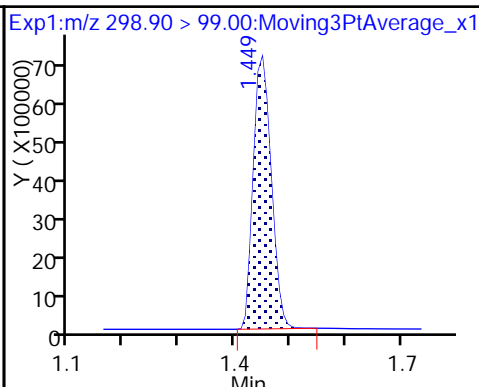
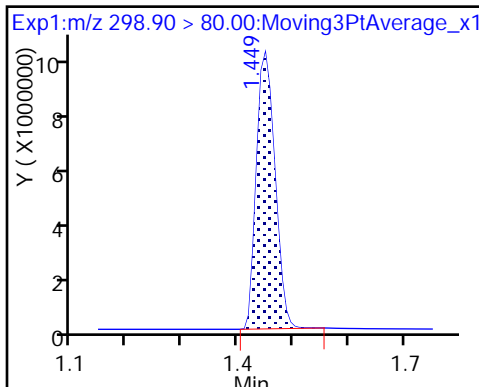
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

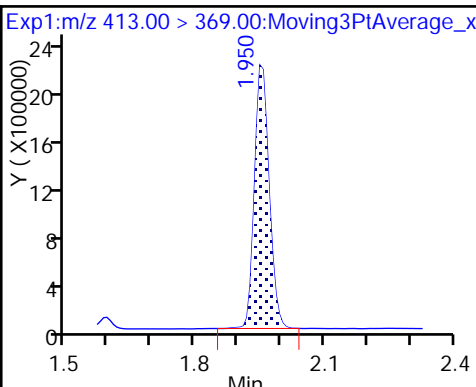
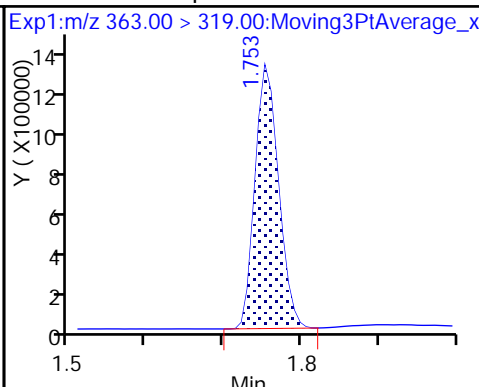
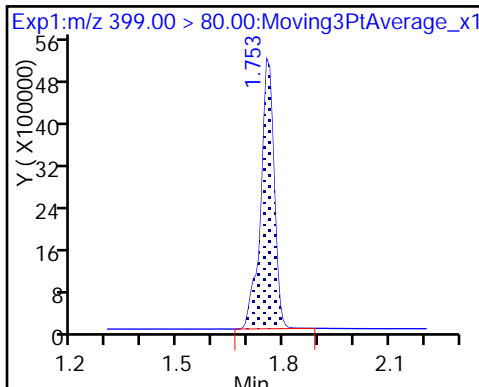
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

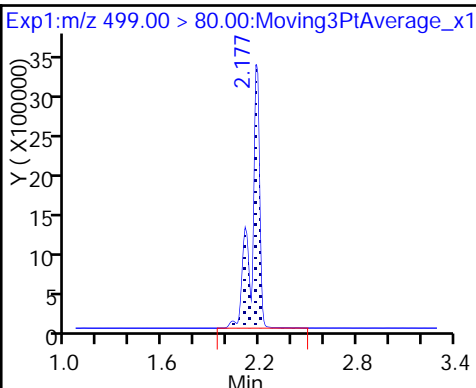
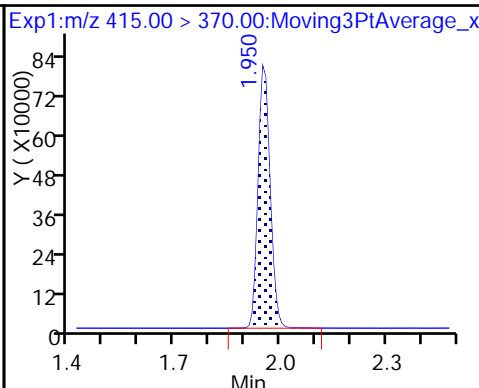
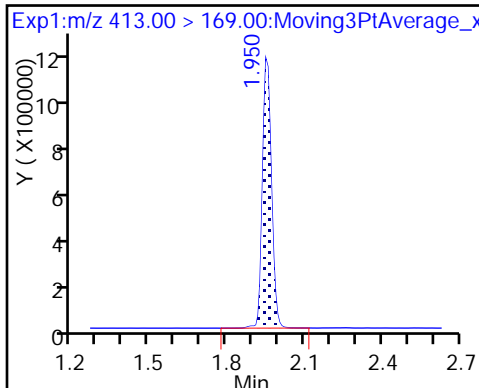
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

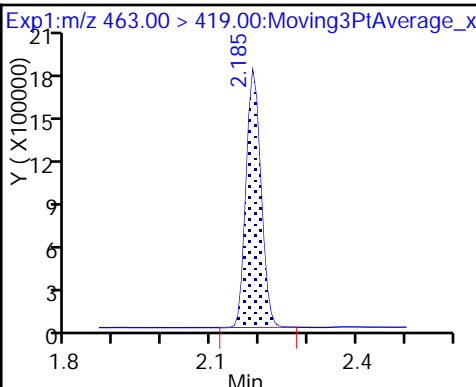
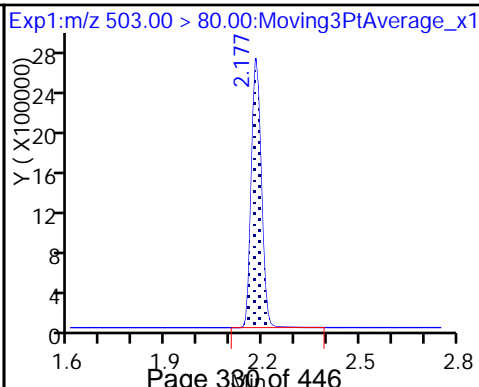
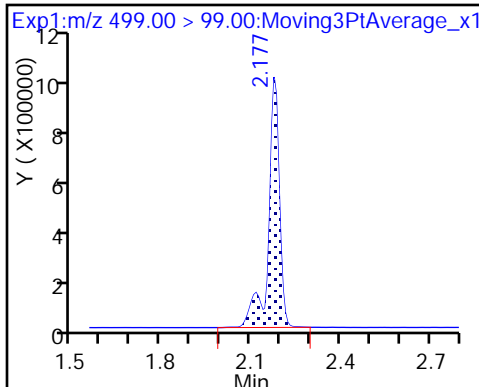
8 Perfluorooctane sulfonic acid



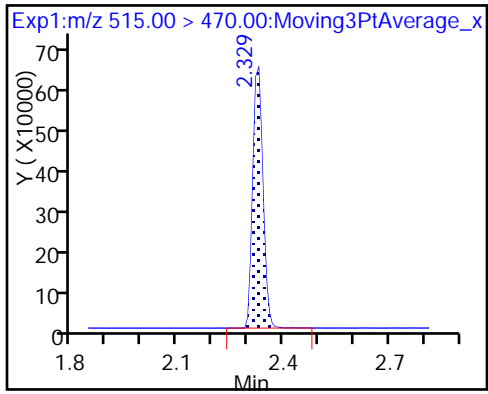
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



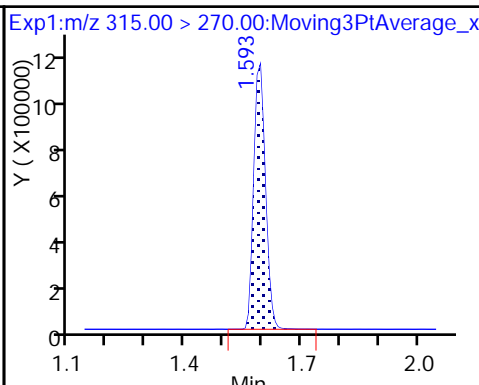
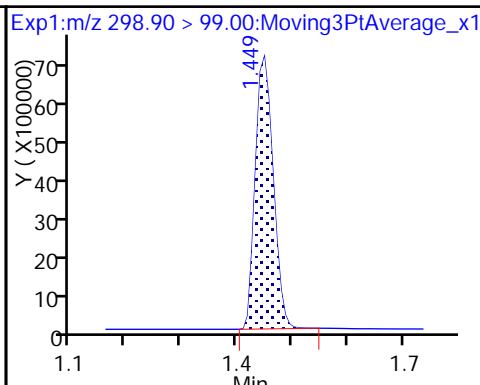
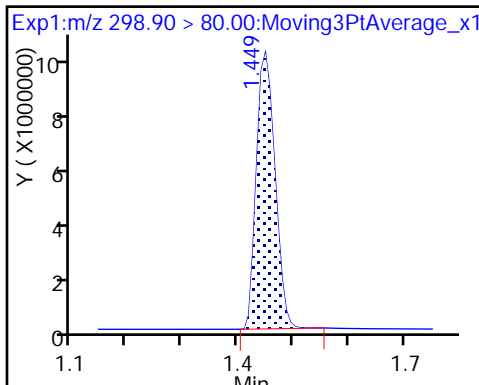
\$ 10 13C2 PFDA



1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

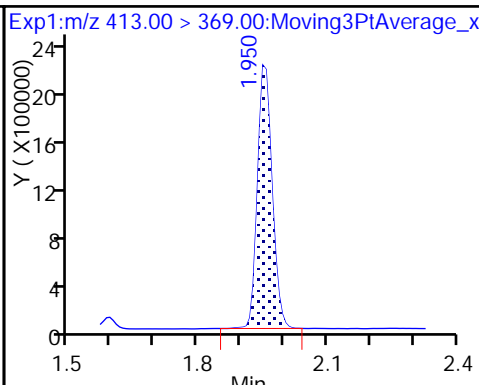
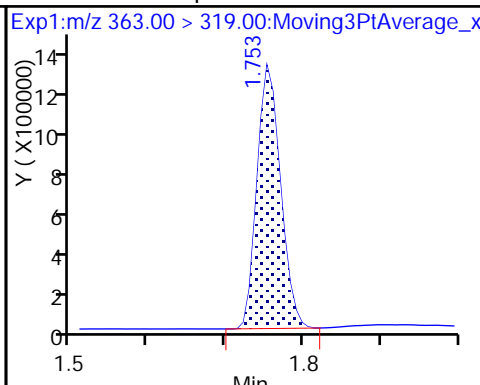
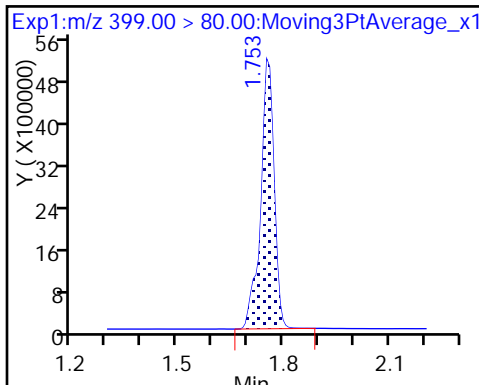
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

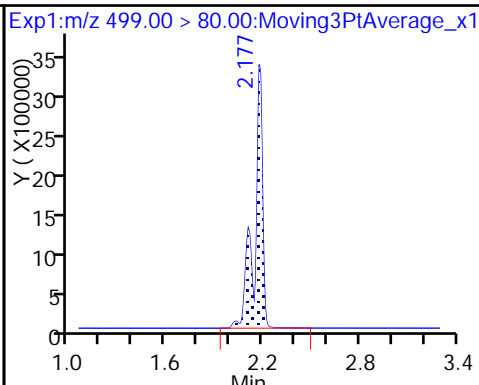
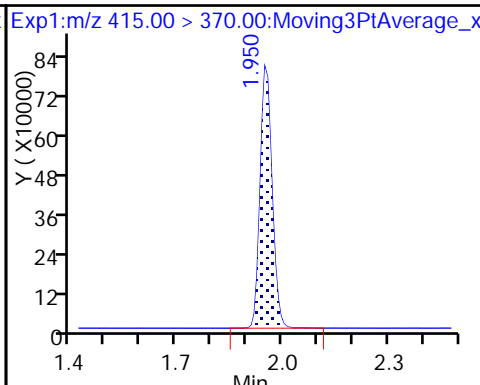
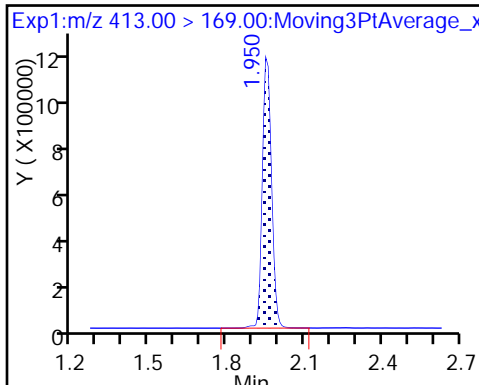
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

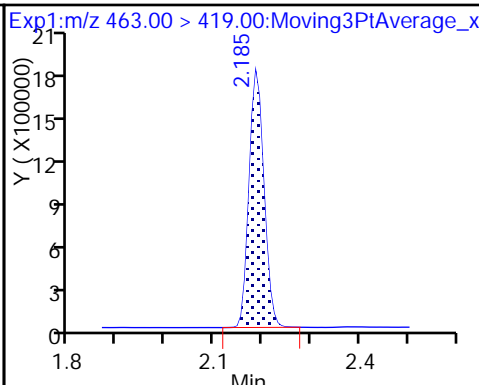
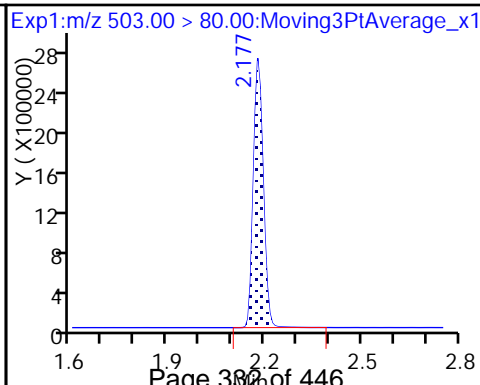
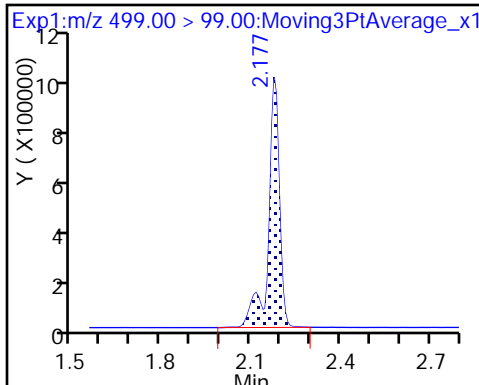
8 Perfluorooctane sulfonic acid



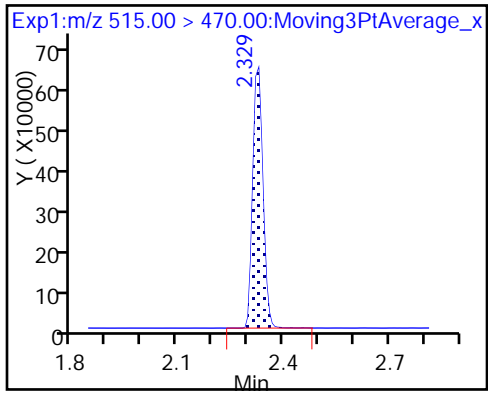
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179728/20 Calibration Date: 08/16/2017 14:10
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179732/20 Calibration Date: 08/16/2017 14:10
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 14:10:59 ALS Bottle#: 3 Worklist Smp#: 20
 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 17-Aug-2017 14:27:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9369038	48.1		1178	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6533892		1.43(0.00-0.00)	1246	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2131889	11.3		6282	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	4544096	15.9		737	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	842196	5.59		72.8	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	1655267	10.4		85.4	
413.00 > 169.00	1.942	1.955	-0.013	1.000	838322		1.97(0.00-0.00)	1122	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1760639	10.0		6727	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	3602430	20.4		3077	
499.00 > 99.00	2.170	2.177	-0.007	1.000	747206		4.82(0.00-0.00)	731	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5486673	28.7		5735	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1179710	11.8		191	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1237744	12.0		5712	

Reagents:

LC537-L3_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 14:10:59 ALS Bottle#: 3 Worklist Smp#: 20
 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 17-Aug-2017 14:27:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9369038	48.1		1178	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6533892		1.43(0.00-0.00)	1246	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2131889	11.3		6282	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	4544096	15.9		737	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	842196	5.59		72.8	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	1655267	10.4		85.4	
413.00 > 169.00	1.942	1.955	-0.013	1.000	838322		1.97(0.00-0.00)	1122	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1760639	10.0		6727	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	3602430	20.4		3077	
499.00 > 99.00	2.170	2.177	-0.007	1.000	747206		4.82(0.00-0.00)	731	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5486673	28.7		5735	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1179710	11.8		191	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1237744	12.0		5712	

Reagents:

LC537-L3_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d

Injection Date: 16-Aug-2017 14:10:59

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

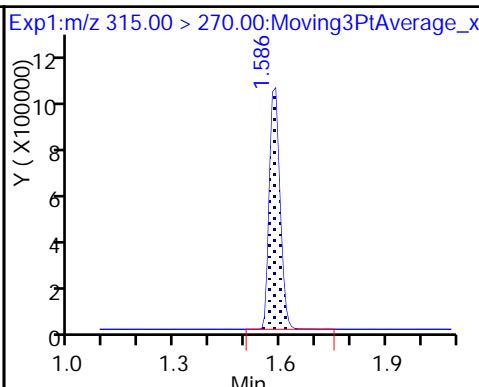
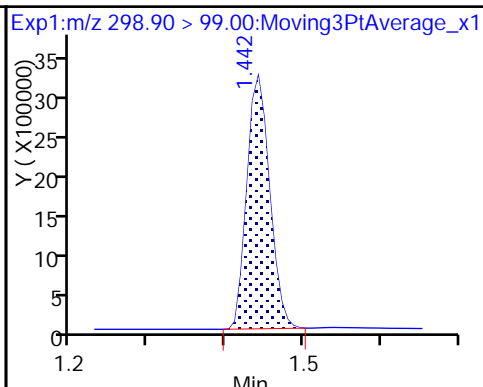
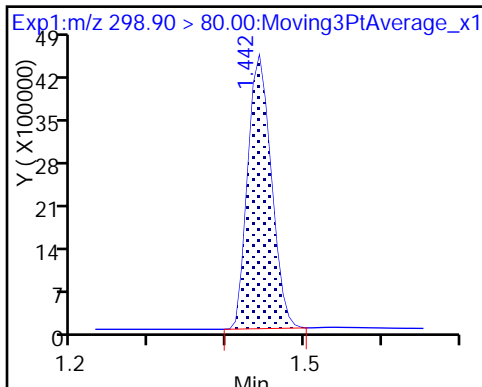
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

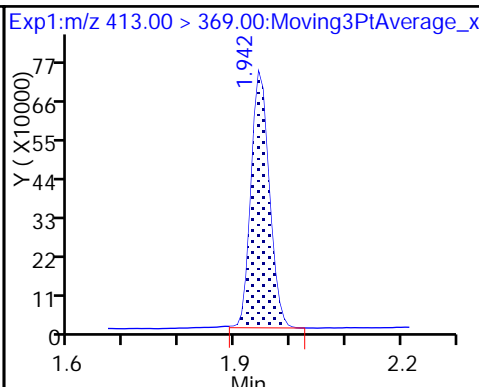
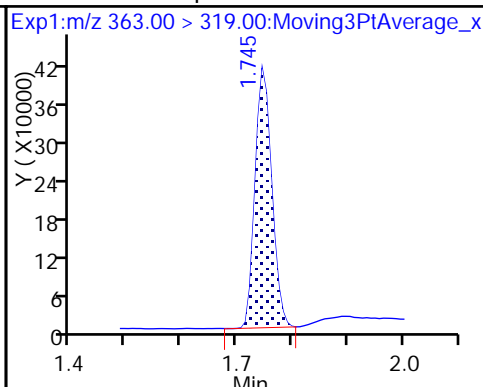
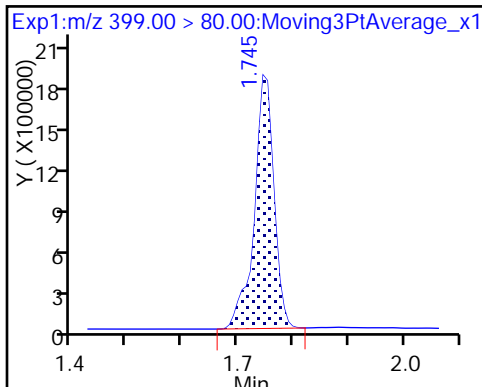
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

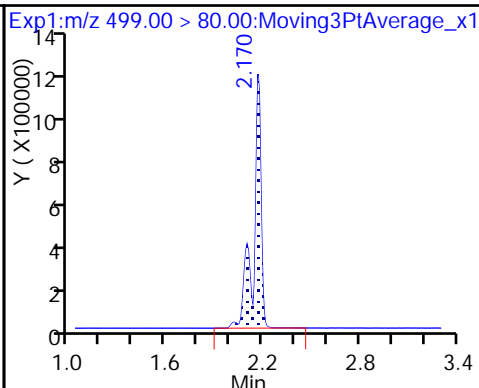
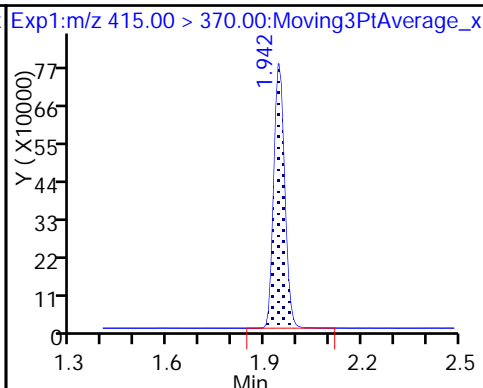
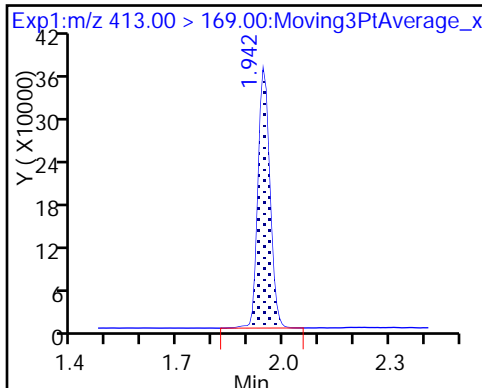
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

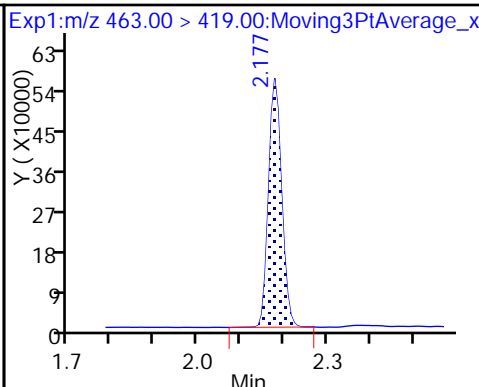
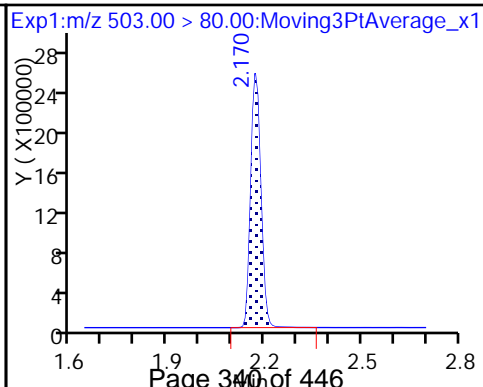
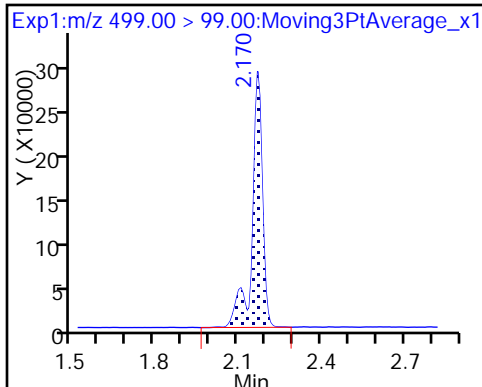
8 Perfluorooctane sulfonic acid



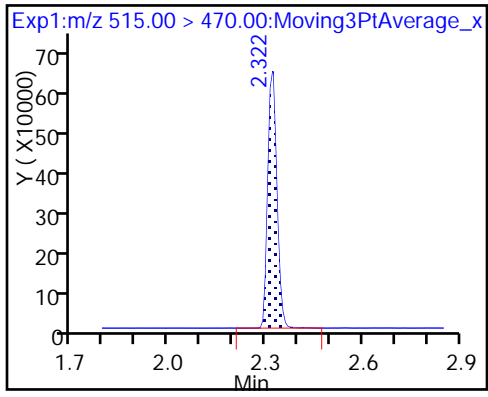
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d

Injection Date: 16-Aug-2017 14:10:59

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

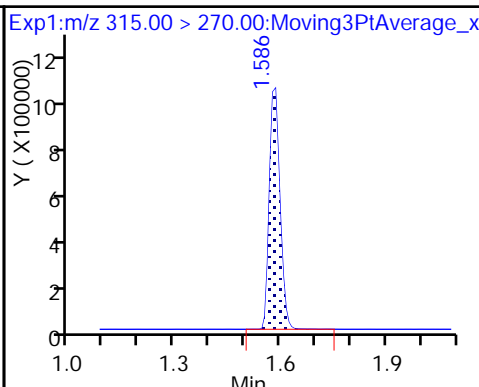
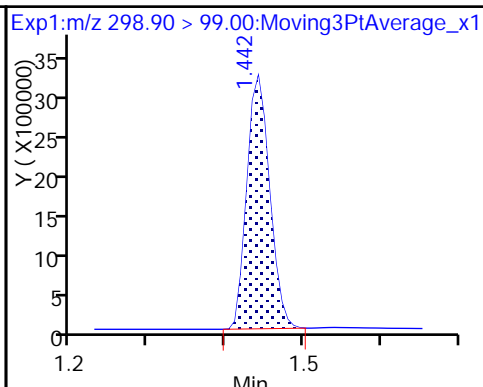
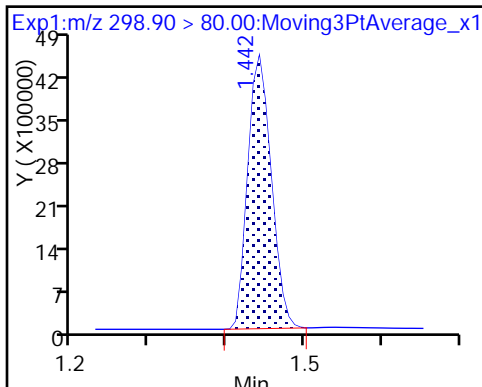
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

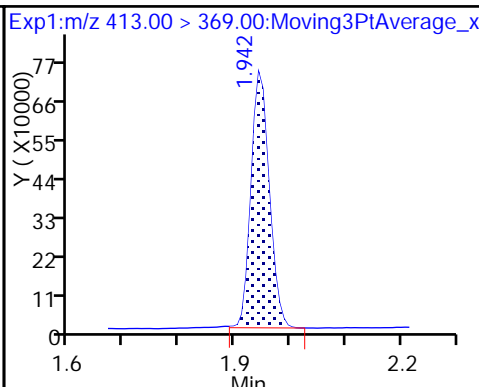
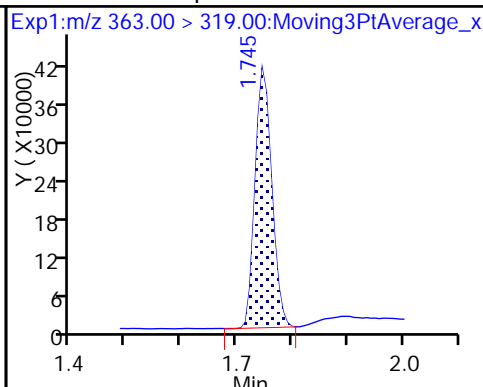
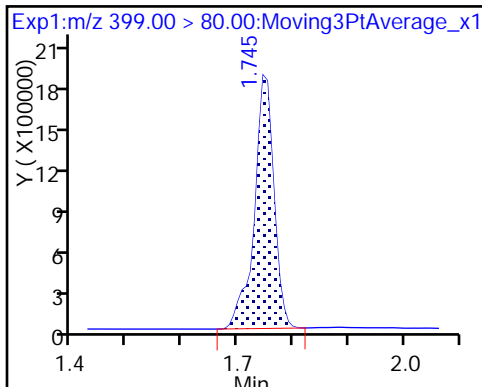
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

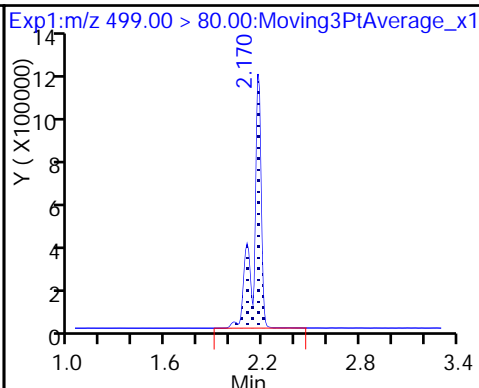
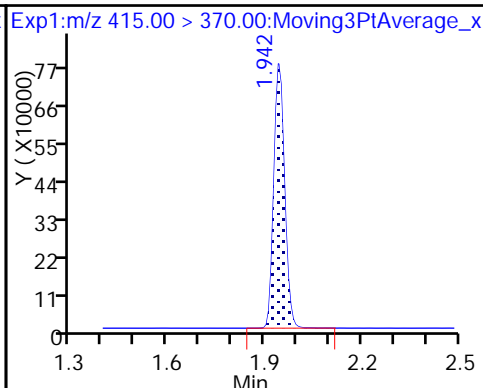
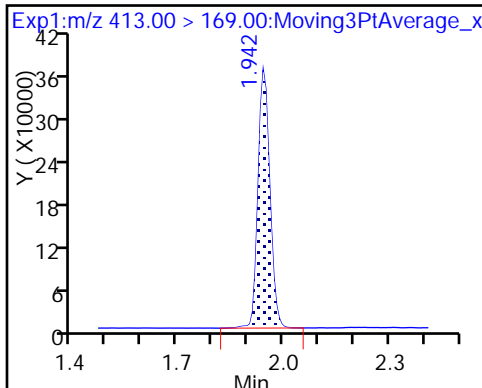
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

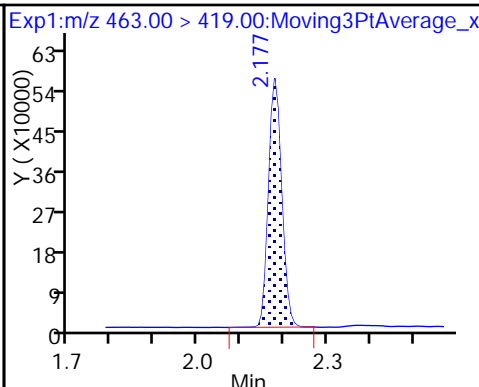
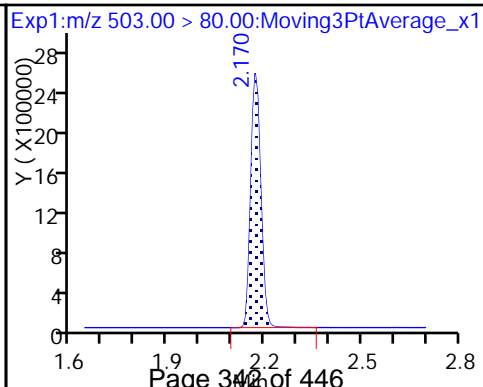
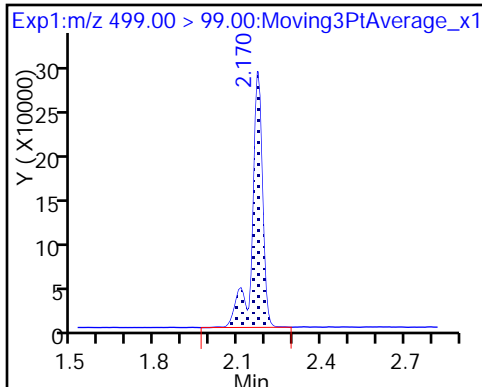
8 Perfluorooctane sulfonic acid



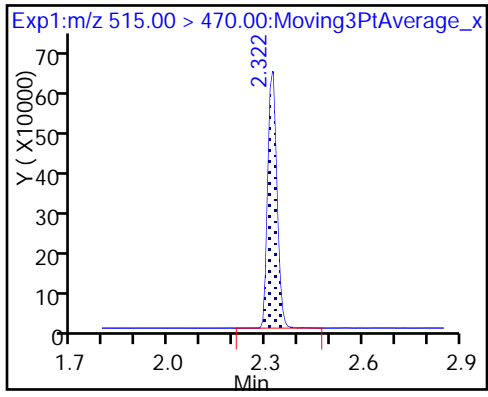
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179732/32 Calibration Date: 08/16/2017 15:07
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179733/32 Calibration Date: 08/16/2017 15:07
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 15:07:50 ALS Bottle#: 5 Worklist Smp#: 32
 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:49:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	21715594	132.8		2238	
298.90 > 99.00	1.442	1.453	-0.011	1.000	15722871		1.38(0.00-0.00)	2616	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2211841	11.2		6750	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13030775	44.1		1786	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2606212	16.6		212	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5154927	30.9		263	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2753920		1.87(0.00-0.00)	3051	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1839473	10.0		5404	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11257989	61.7		5836	
499.00 > 99.00	2.177	2.177	0.0	1.000	2387415		4.72(0.00-0.00)	1868	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5667758	28.7		5937	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3626153	34.8		436	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1334632	12.3		6282	

Reagents:

LC537-L5_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 15:07:50 ALS Bottle#: 5 Worklist Smp#: 32
 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:49:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	21715594	132.8		2238	
298.90 > 99.00	1.442	1.453	-0.011	1.000	15722871		1.38(0.00-0.00)	2616	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2211841	11.2		6750	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13030775	44.1		1786	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2606212	16.6		212	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5154927	30.9		263	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2753920		1.87(0.00-0.00)	3051	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1839473	10.0		5404	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11257989	61.7		5836	
499.00 > 99.00	2.177	2.177	0.0	1.000	2387415		4.72(0.00-0.00)	1868	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5667758	28.7		5937	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3626153	34.8		436	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1334632	12.3		6282	

Reagents:

LC537-L5_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d

Injection Date: 16-Aug-2017 15:07:50

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

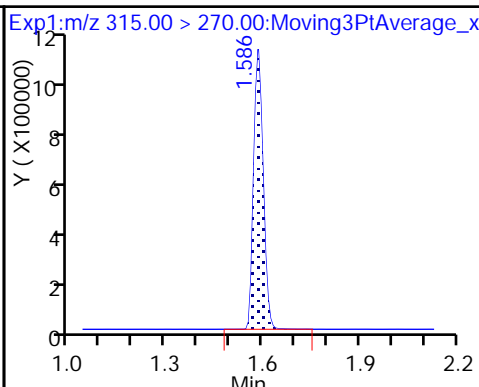
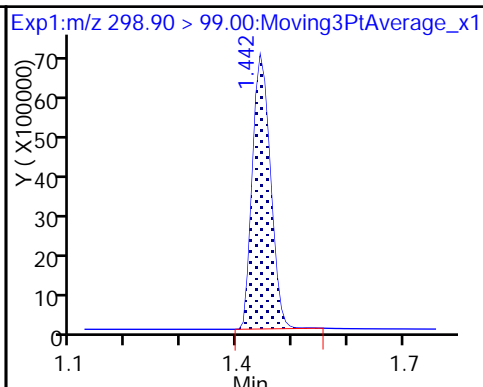
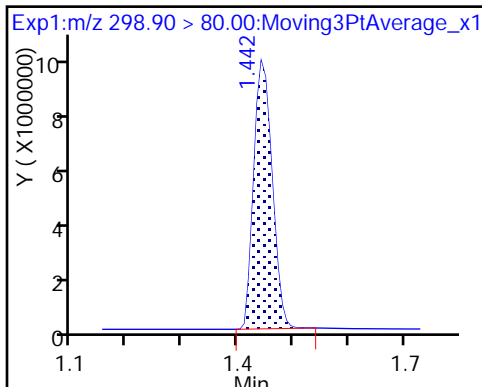
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

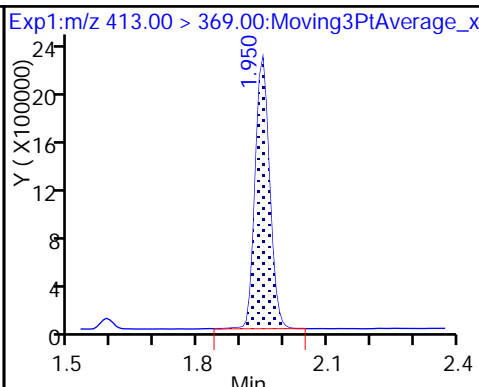
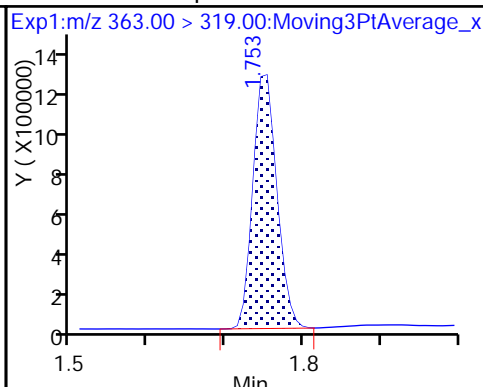
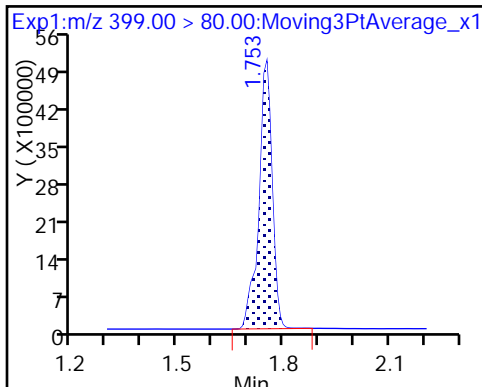
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

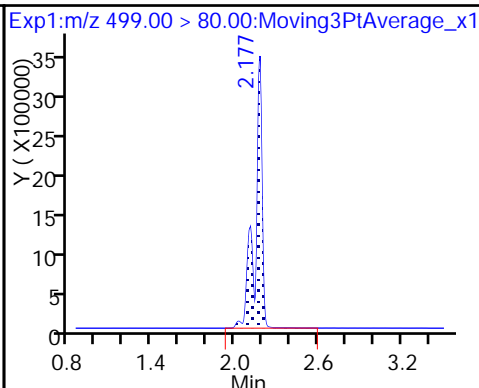
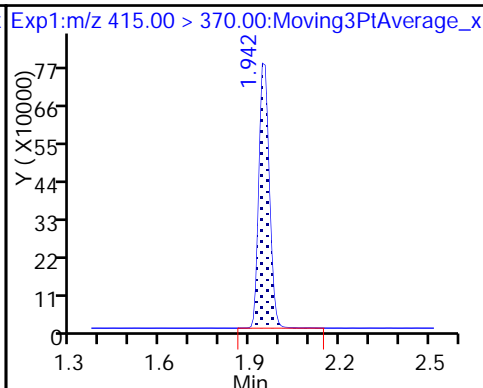
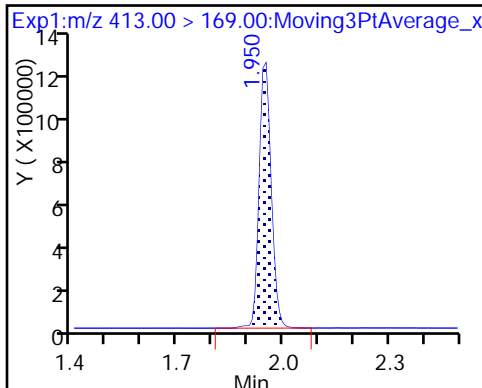
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

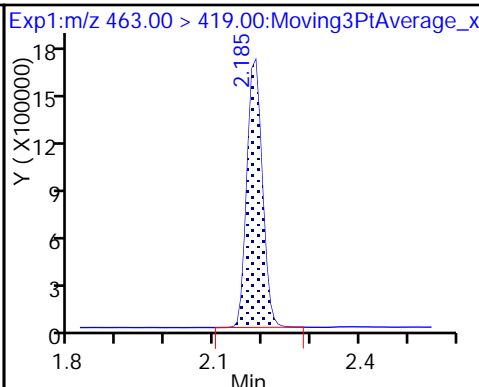
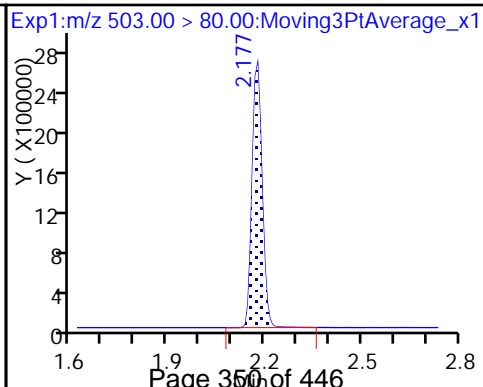
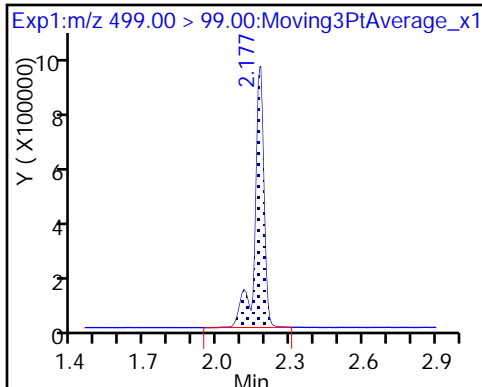
8 Perfluorooctane sulfonic acid



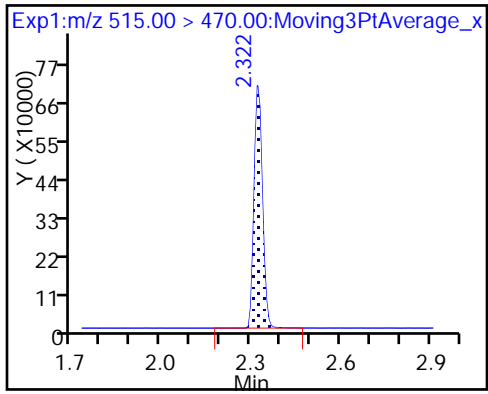
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d

Injection Date: 16-Aug-2017 15:07:50

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

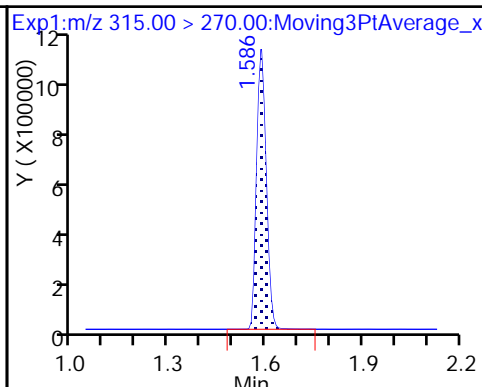
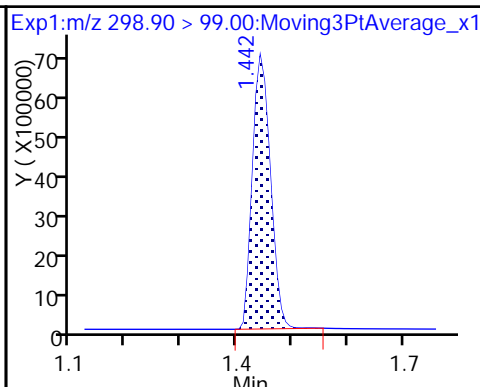
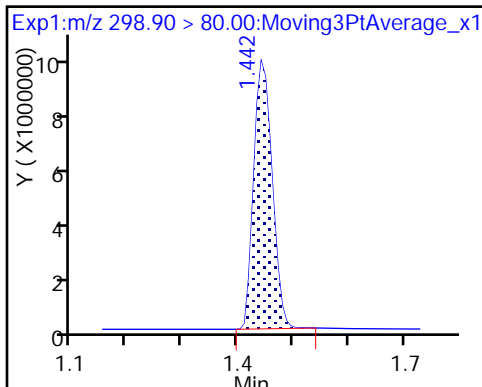
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

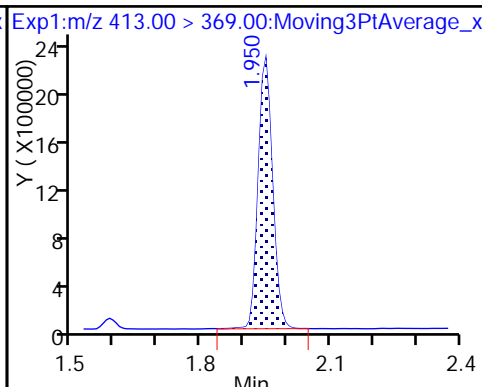
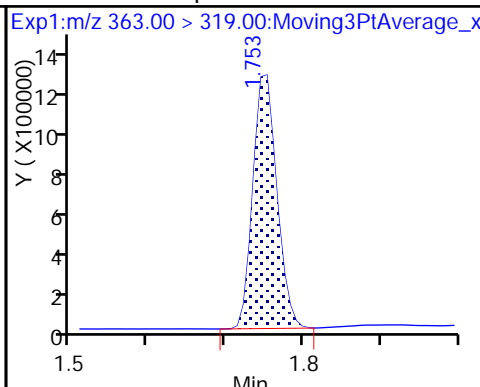
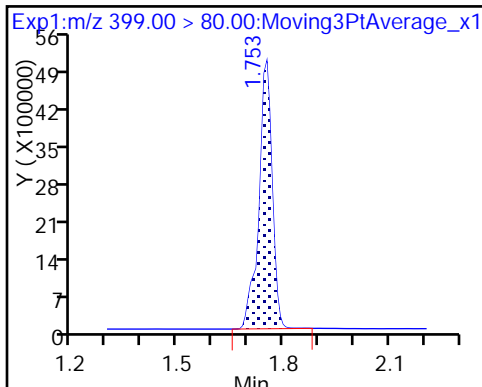
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

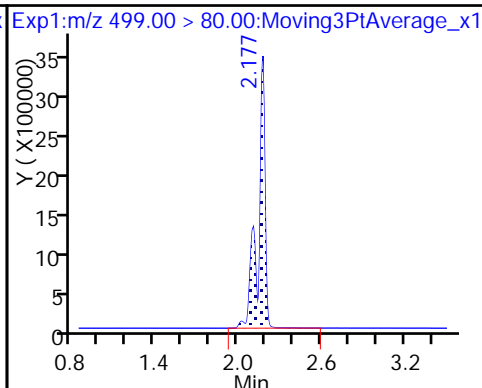
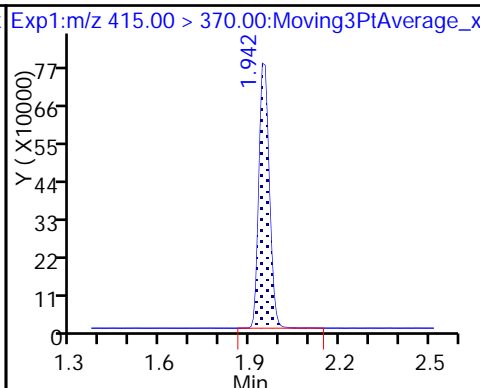
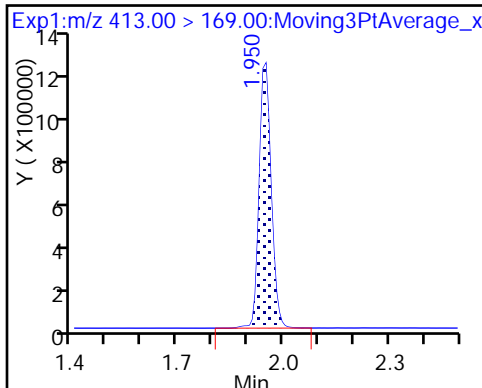
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

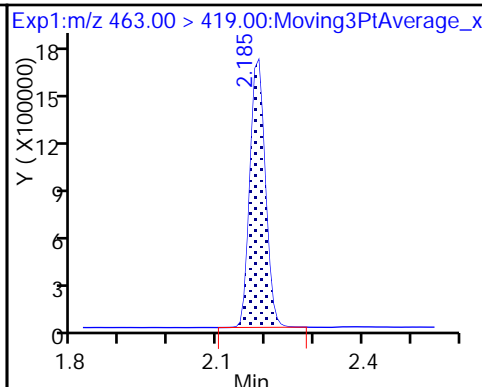
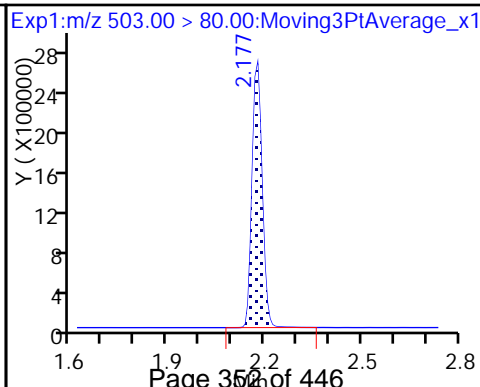
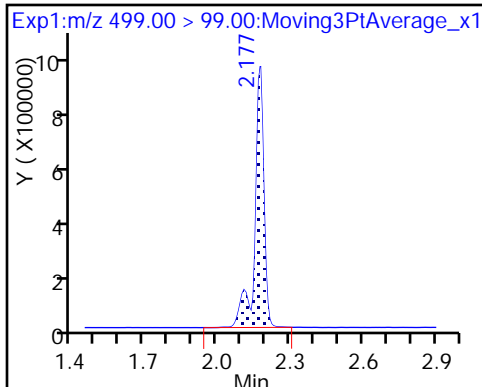
8 Perfluorooctane sulfonic acid



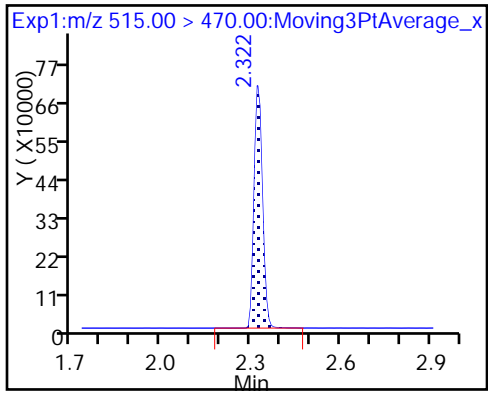
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179733/38 Calibration Date: 08/16/2017 15:36
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_038.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.109		49.1	45.0	9.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9321		5.45	5.00	8.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.555		15.6	15.0	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9246		10.2	10.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6463		11.4	10.0	14.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9188		19.9	20.0	-0.5	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.3	30.0
13C2 PFDA	Ave	0.5877	0.6799		11.6	10.0	15.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_038.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 15:36:19 ALS Bottle#: 3 Worklist Smp#: 38
 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\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:28:00 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 16:01:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9845046	49.1		1918	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6403360		1.54(0.00-0.00)	1179	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2250121	11.3		6751	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	4602752	15.6		721	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	865951	5.45		72.3	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1718972	10.2		87.9	
413.00 > 169.00	1.950	1.955	-0.005	1.000	886141		1.94(0.00-0.00)	1168	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1857646	10.0		6076	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	3625696	19.9		2858	
499.00 > 99.00	2.170	2.177	-0.007	0.997	754482		4.81(0.00-0.00)	688	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5657569	28.7		6136	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1200850	11.4		166	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1263001	11.6		5917	

Reagents:

LC537-L3_00023

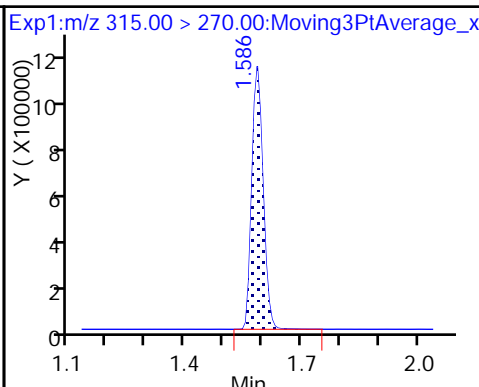
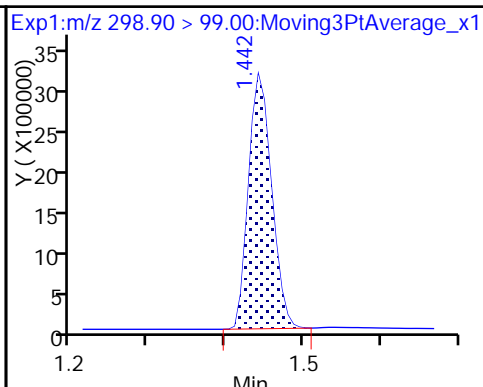
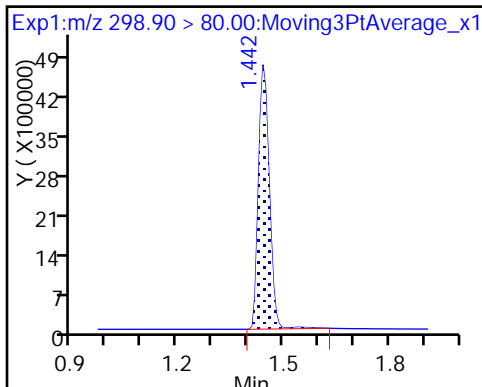
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

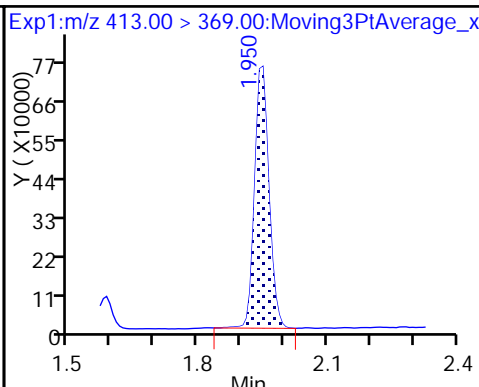
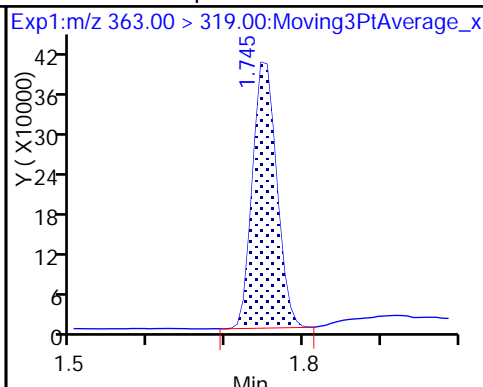
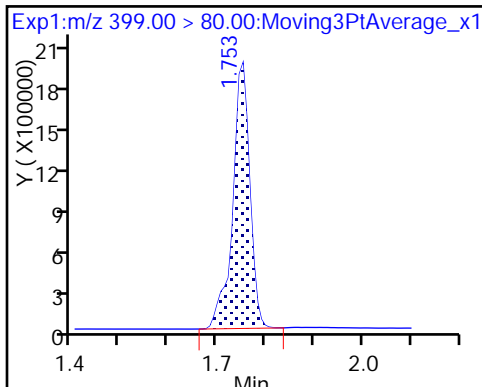
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

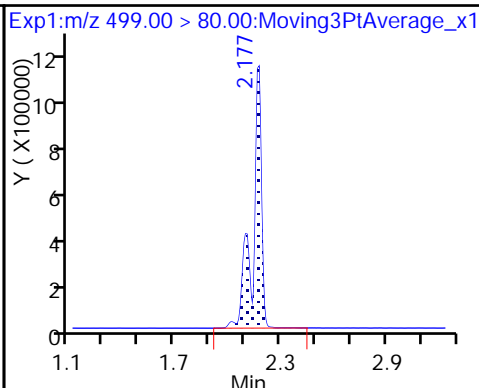
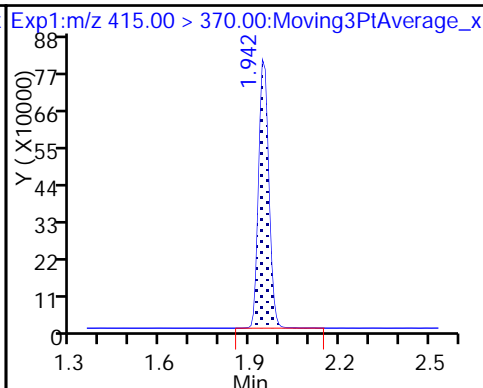
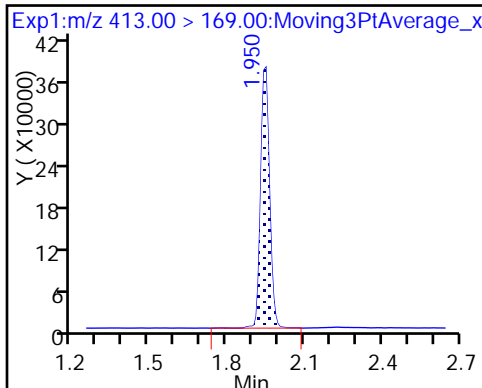
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

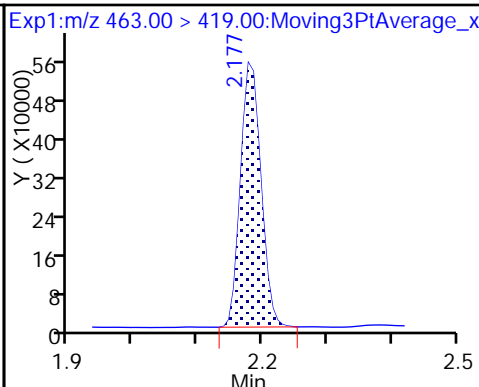
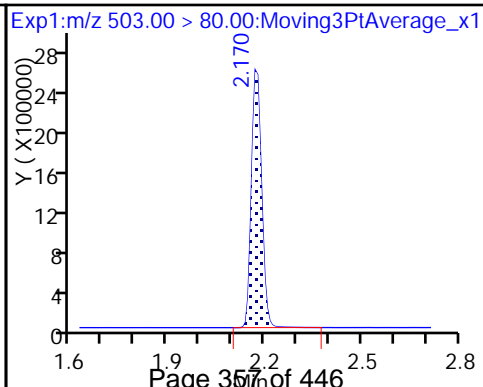
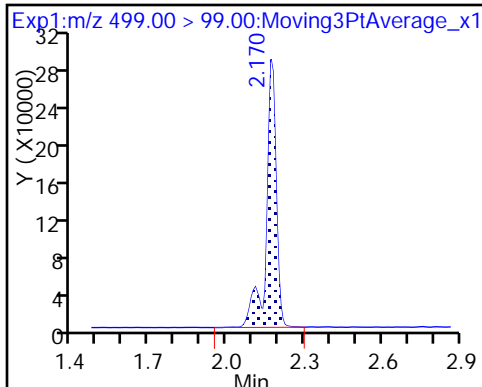
8 Perfluorooctane sulfonic acid



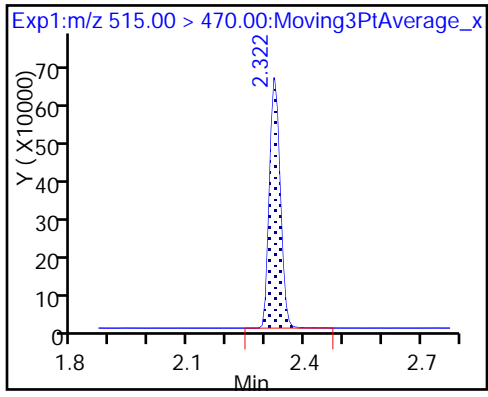
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179920/1 Calibration Date: 08/16/2017 19:48
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537D_052.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7972		129	135	-4.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9273		16.3	15.0	8.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.468		44.2	45.0	-1.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9342		30.9	30.0	3.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9166		59.6	60.0	-0.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6502		34.4	30.0	14.8	30.0
13C2 PFHxA	Ave	1.069	1.254		11.7	10.0	17.3	30.0
13C2 PFDA	Ave	0.5877	0.6899		11.7	10.0	17.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_052.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 19:48:22 ALS Bottle#: 5 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 18-Aug-2017 09:47:42 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: barnettj Date: 18-Aug-2017 09:47:31

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	1.453	-0.019	1.000	20876476	128.6		3504	
298.90 > 99.00	1.434	1.453	-0.019	1.000	15103228		1.38(0.00-0.00)	3736	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.582	-0.012	1.000	2272067	11.7		7456	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.742	-0.005	1.000	12819450	44.2		3473	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.742	-0.012	1.000	2520173	16.3		356	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.955	-0.028	1.000	5080884	30.9		226	
413.00 > 169.00	1.927	1.955	-0.028	1.000	2611782		1.95(0.00-0.00)	4249	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.955	-0.028		1811420	10.0		5818	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.170	-0.015	1.000	10669272	59.6		5348	M
499.00 > 99.00	2.155	2.170	-0.015	1.000	2272643		4.69(0.00-0.00)	1694	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.205	-0.050		5562915	28.7		5252	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.213	-0.051	1.000	3533906	34.4		415	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.354	-0.048	1.000	1249774	11.7		5620	

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\20170817-46814.b\2017.08.16_537D_052.d

Injection Date: 16-Aug-2017 19:48:22

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

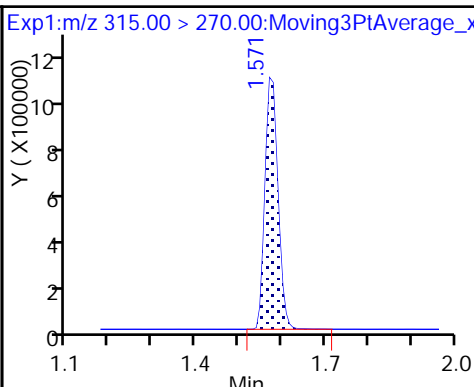
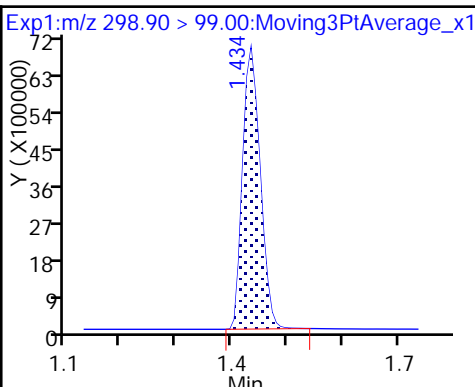
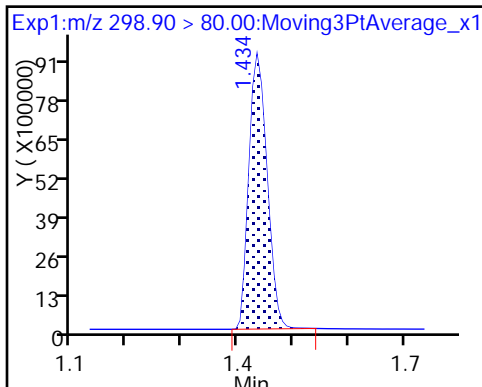
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

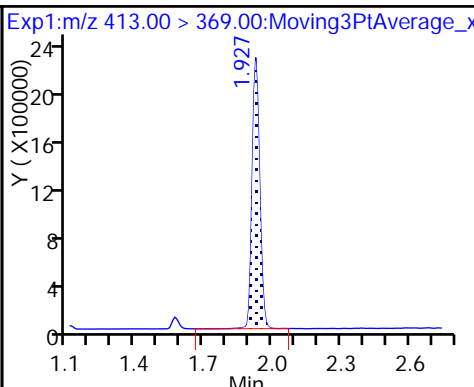
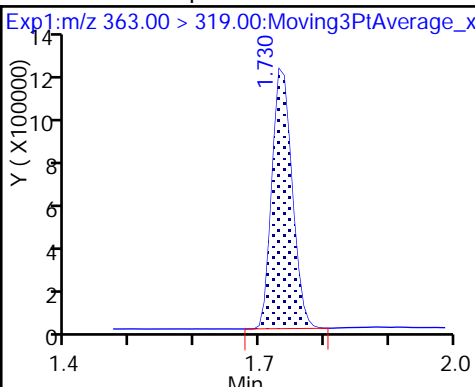
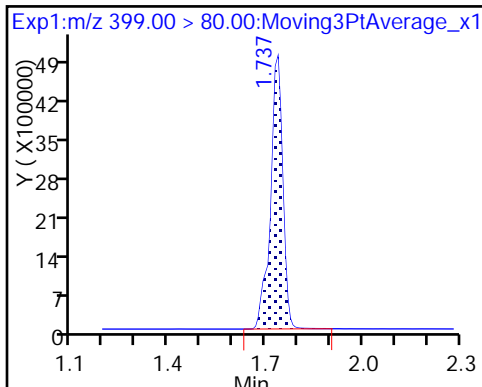
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

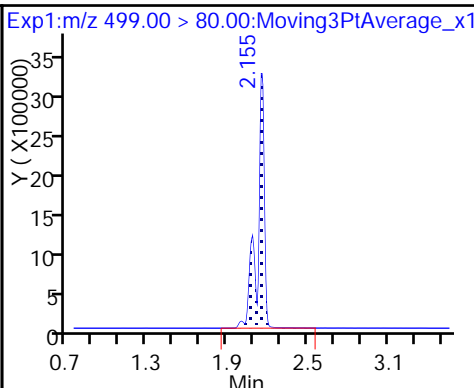
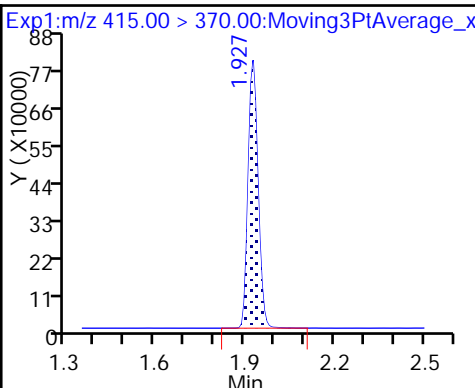
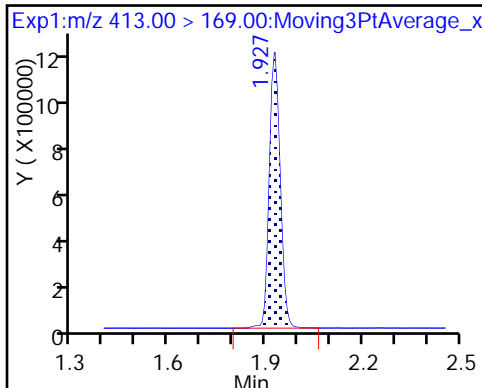
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

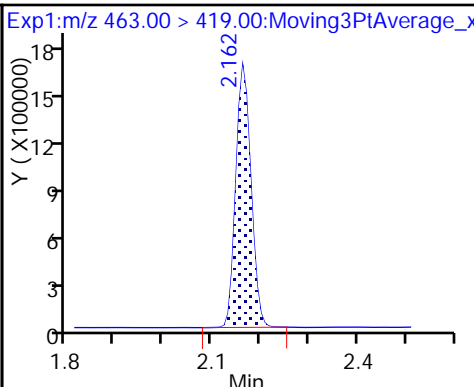
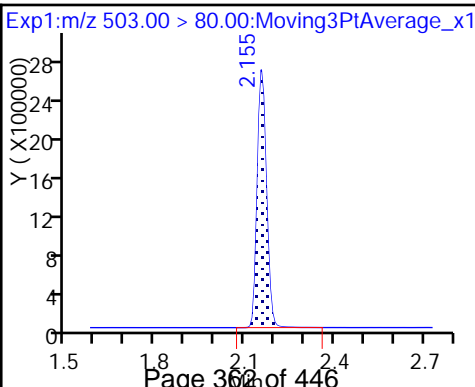
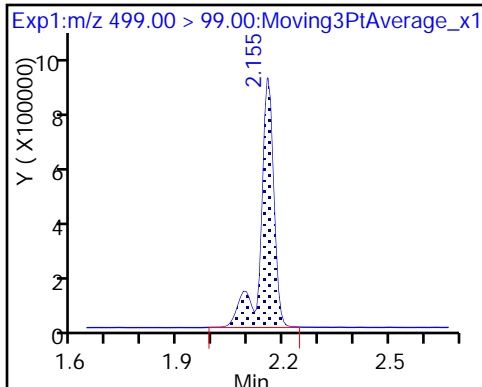
8 Perfluorooctane sulfonic acid



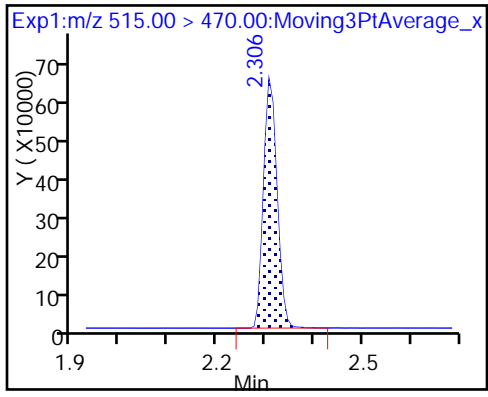
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

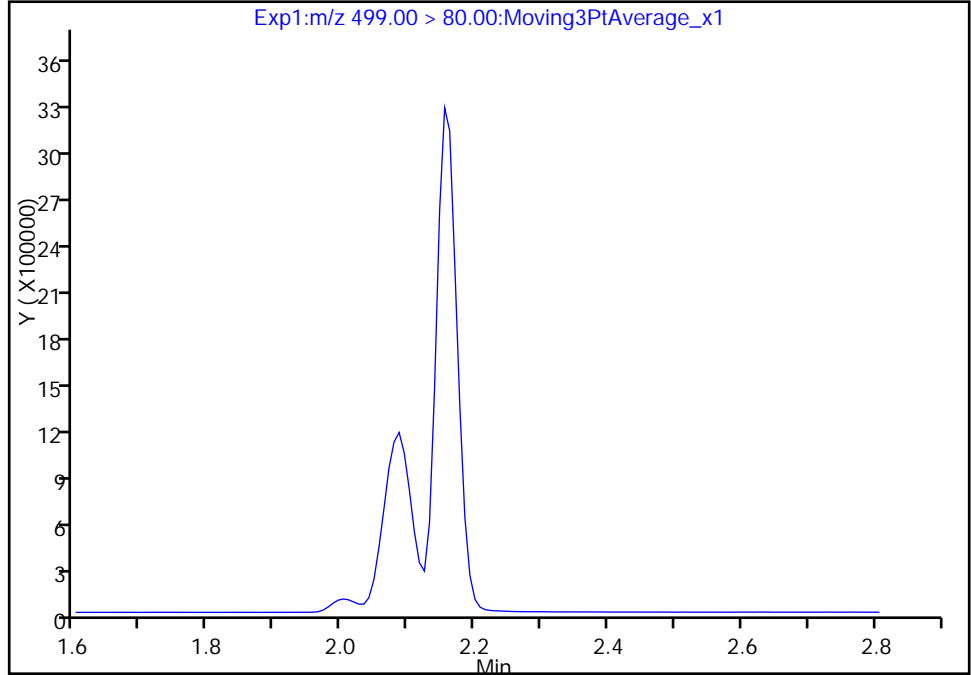
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_052.d
Injection Date: 16-Aug-2017 19:48:22 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

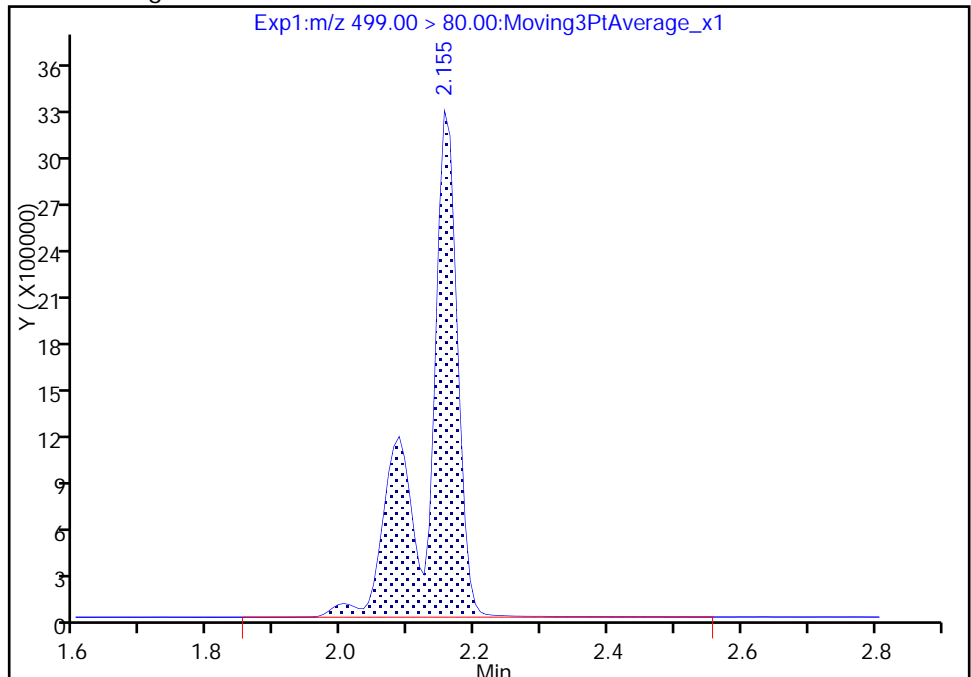
Not Detected
Expected RT: 2.17

Processing Integration Results



RT: 2.15
Area: 10669272
Amount: 59.554509
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Aug-2017 13:41:36
Audit Action: Assigned Compound ID

Audit Reason:

TestAmerica Sacramento

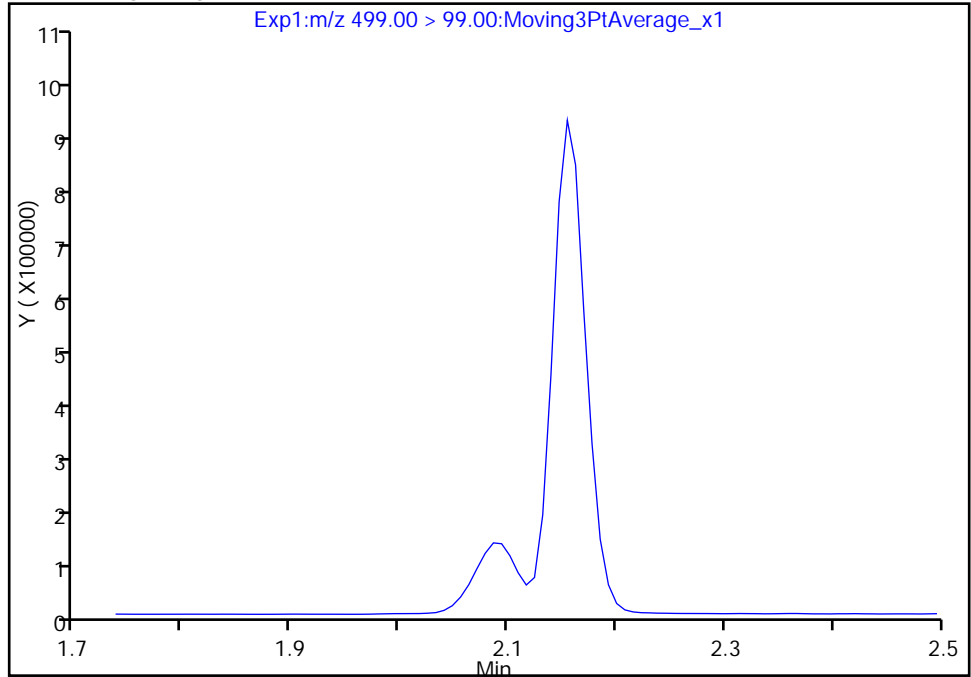
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_052.d
Injection Date: 16-Aug-2017 19:48:22 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

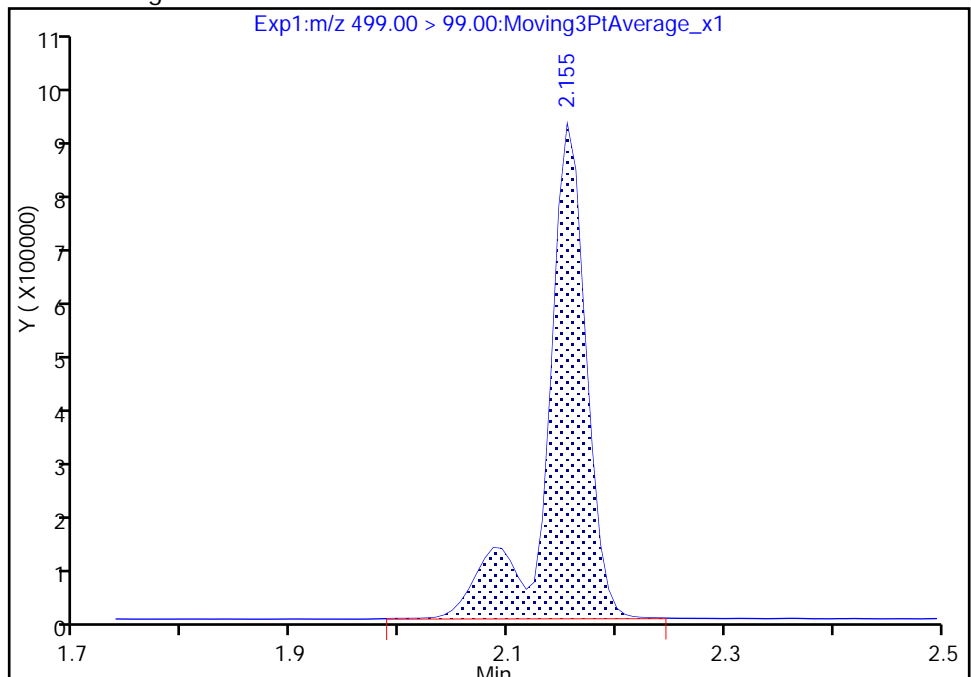
Not Detected
Expected RT: 2.17

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 2272643
Amount: 59.554509
Amount Units: ng/ml



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179920/13 Calibration Date: 08/16/2017 20:45
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537D_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.049		46.2	45.0	2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9052		5.29	5.00	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9215		10.2	10.0	1.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9376		20.3	20.0	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6800		12.0	10.0	20.0	30.0
13C2 PFHxA	Ave	1.069	1.250		11.7	10.0	16.9	30.0
13C2 PFDA	Ave	0.5877	0.7215		12.3	10.0	22.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_064.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2017 20:45:21 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:45:27 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 17-Aug-2017 13:42:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9306933	46.2		1966	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6497246		1.43(0.00-0.00)	2239	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2318674	11.7		8001	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	4681370	15.9		1576	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	839793	5.29		117	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.955	-0.020	1.000	1710793	10.2		76.7	
413.00 > 169.00	1.935	1.955	-0.020	1.000	873169		1.96(0.00-0.00)	1841	
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.955	-0.020		1854955	10.0		5797	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.170	0.0	1.000	3697035	20.3		3070	
499.00 > 99.00	2.170	2.170	0.0	1.000	781049		4.73(0.00-0.00)	718	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5653051	28.7		5295	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1261611	12.0		192	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1338324	12.3		6677	

Reagents:

LC537-L3_00023

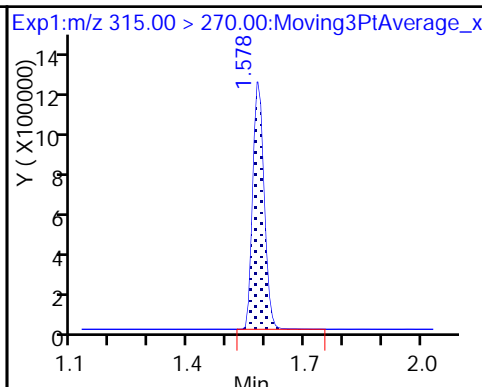
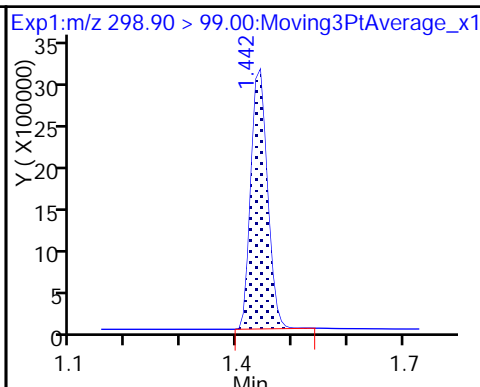
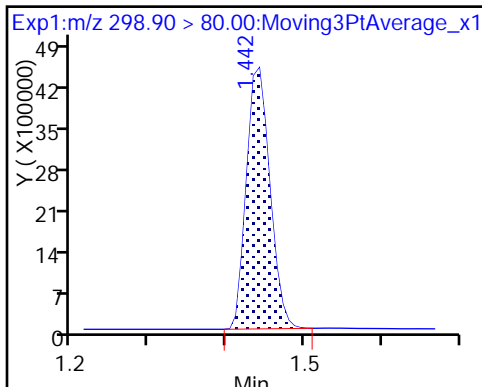
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

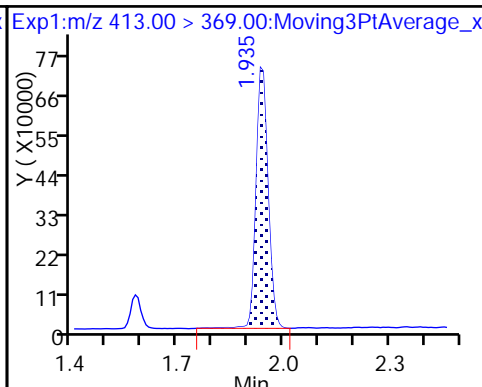
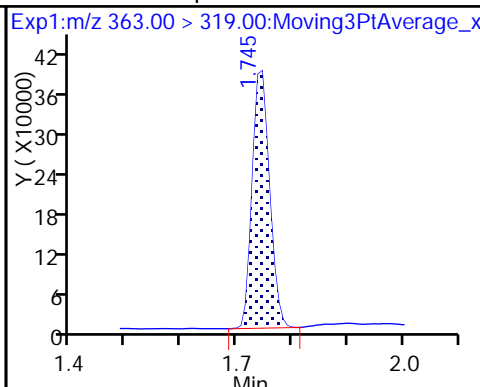
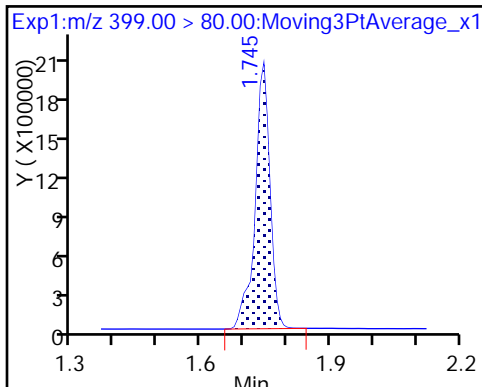
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

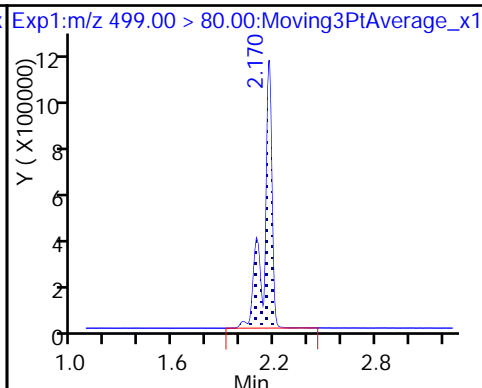
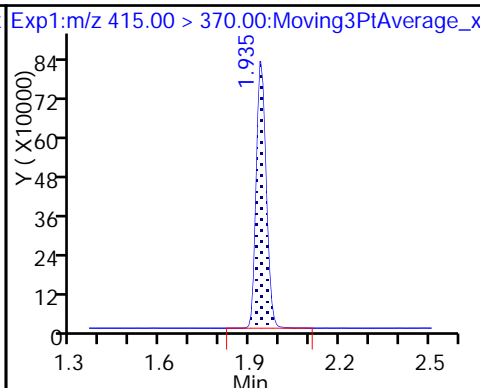
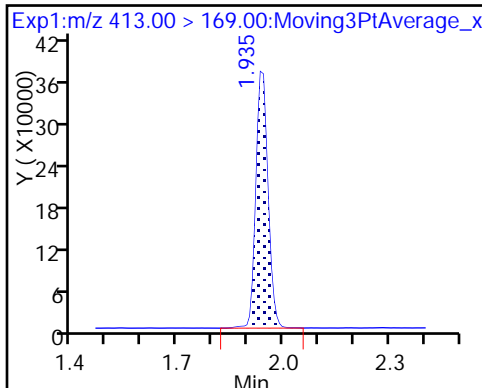
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

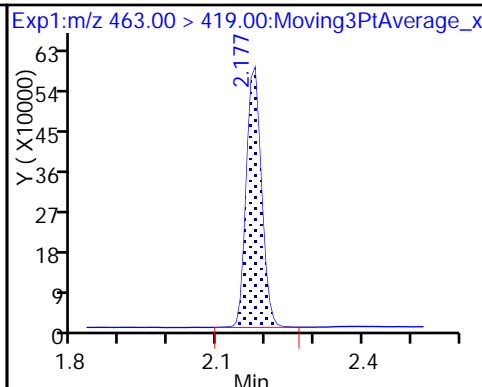
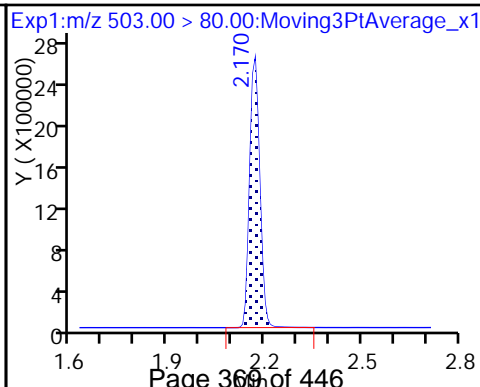
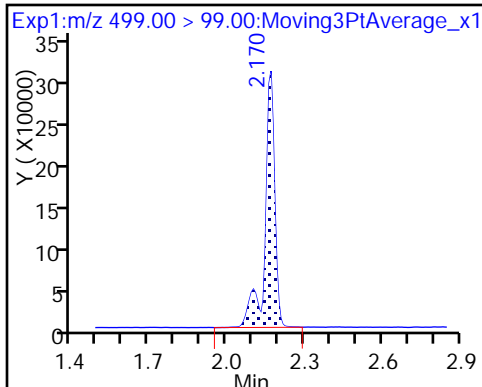
8 Perfluorooctane sulfonic acid



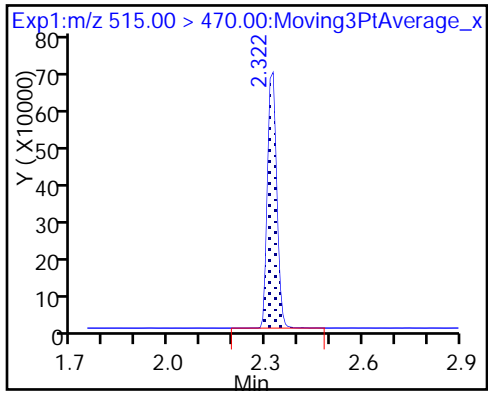
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-177640/1-A
 Matrix: Water Lab File ID: 2017.08.16_537C_003.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/16/2017 12:50
 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.: 179727 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	100		70-130
STL00996	13C2 PFDA	124		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_003.d
 Lims ID: MB 320-177640/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Aug-2017 12:50:20 ALS Bottle#: 11 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-177640/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.593	1.582	0.011	1.000	2188411	10.0	4985	
* 6 13C2-PFOA	415.00 > 370.00	1.957	1.955	0.002		2039484	10.0	5242	
* 7 13C4 PFOS	503.00 > 80.00	2.185	2.205	-0.020		5859519	28.7	5047	
\$ 10 13C2 PFDA	515.00 > 470.00	2.329	2.354	-0.025	1.000	1488931	12.4	5103	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_003.d

Injection Date: 16-Aug-2017 12:50:20

Instrument ID: A8_N

Lims ID: MB 320-177640/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 3

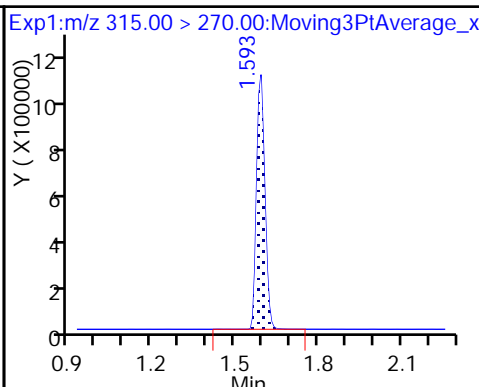
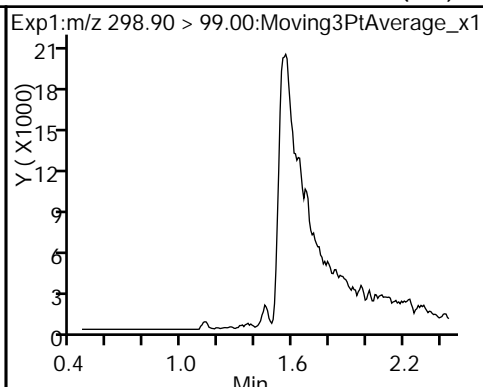
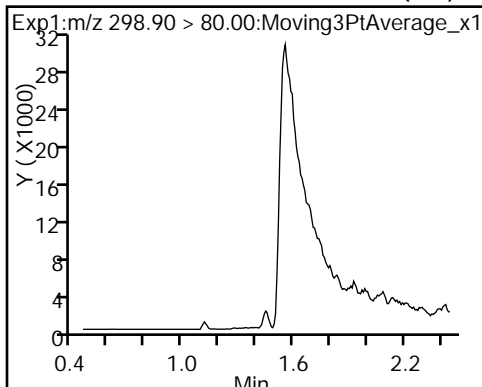
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

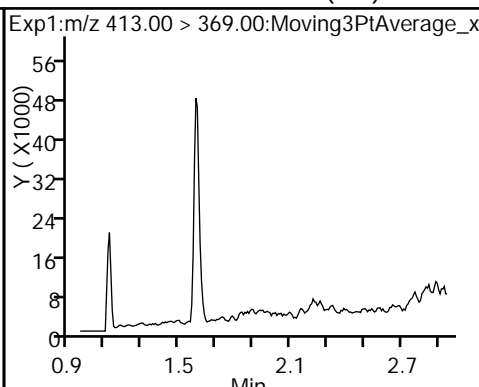
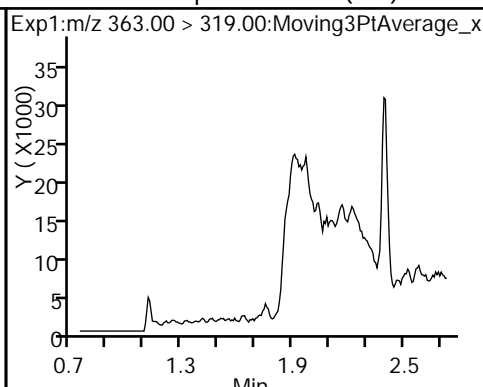
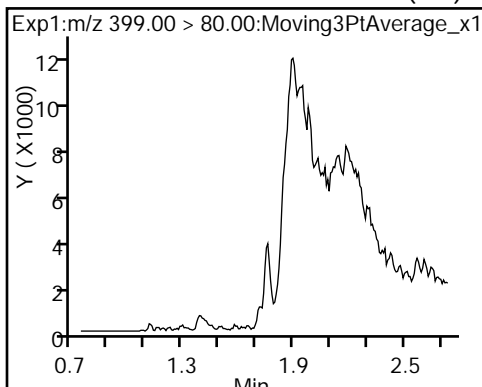
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

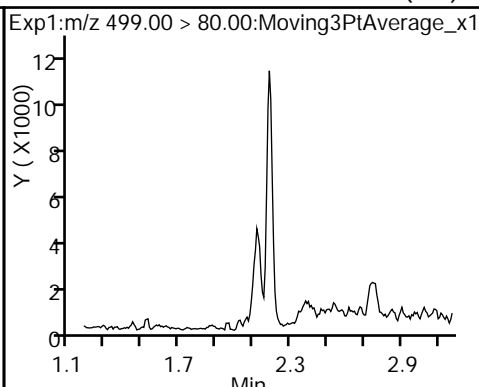
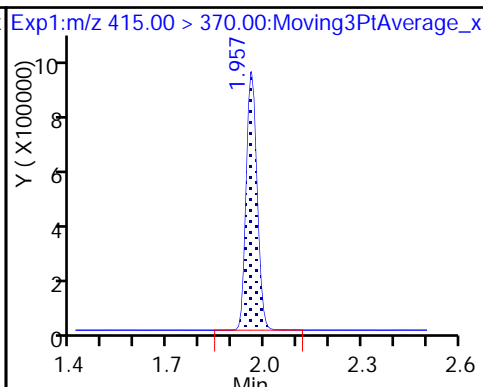
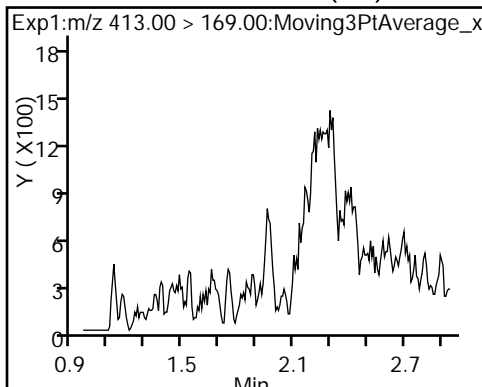
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

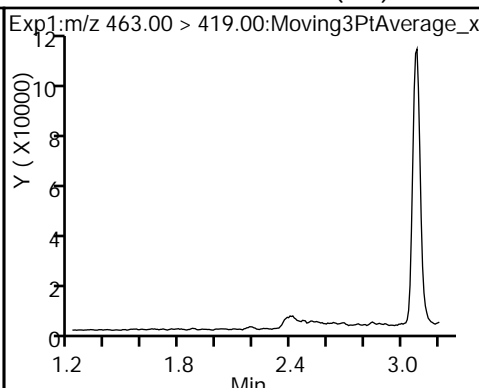
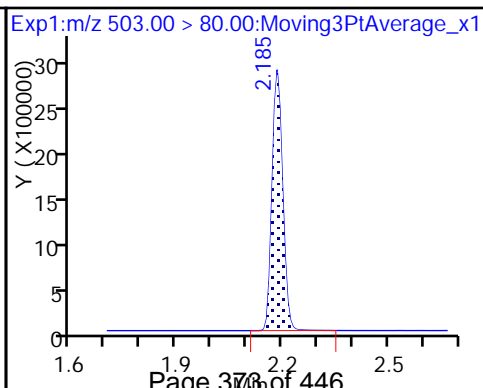
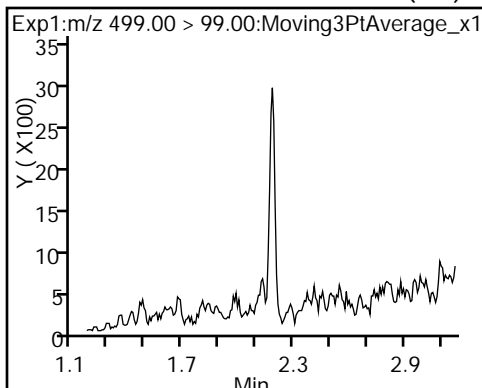
8 Perfluorooctane sulfonic acid (ND)



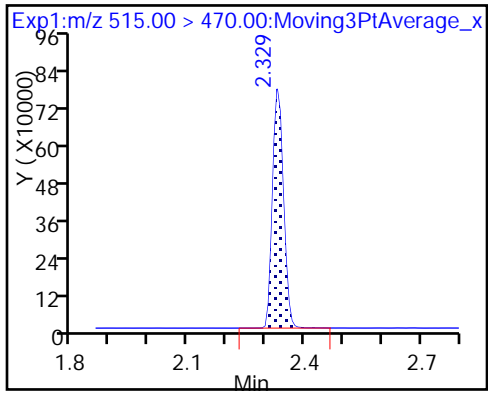
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_003.d
 Lims ID: MB 320-177640/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Aug-2017 12:50:20 ALS Bottle#: 11 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-177640/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.0	100.35
\$ 10 13C2 PFDA	10.0	12.4	124.23

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-177651/1-A
 Matrix: Water Lab File ID: 2017.08.16_537C_022.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/16/2017 14:20
 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.: 179732 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	98		70-130
STL00996	13C2 PFDA	122		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_022.d
 Lims ID: MB 320-177651/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Aug-2017 14:20:27 ALS Bottle#: 26 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-177651/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.578	1.582	-0.004	1.000	2052522	9.82	5347	
* 6 13C2-PFOA	415.00 > 370.00	1.942	1.955	-0.013		1954348	10.0	6635	
* 7 13C4 PFOS	503.00 > 80.00	2.170	2.205	-0.035		5738380	28.7	4436	
\$ 10 13C2 PFDA	515.00 > 470.00	2.314	2.354	-0.040	1.000	1405527	12.2	6422	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_022.d

Injection Date: 16-Aug-2017 14:20:27

Instrument ID: A8_N

Lims ID: MB 320-177651/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 26

Worklist Smp#: 22

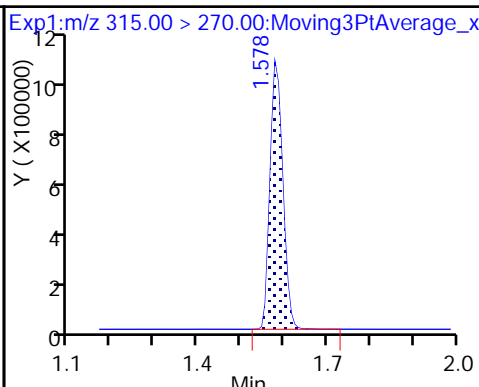
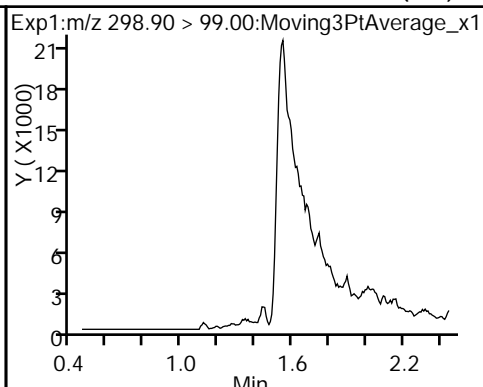
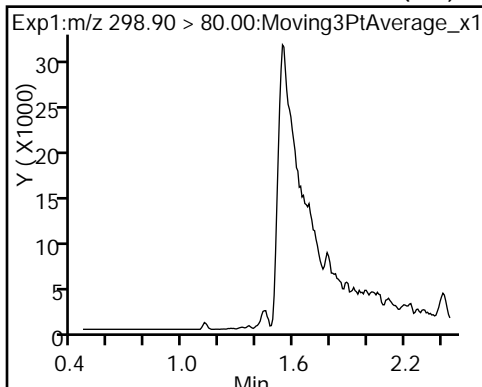
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

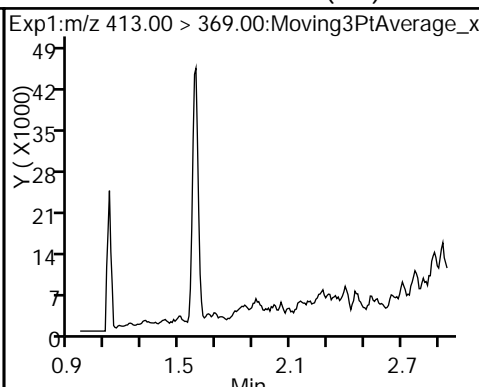
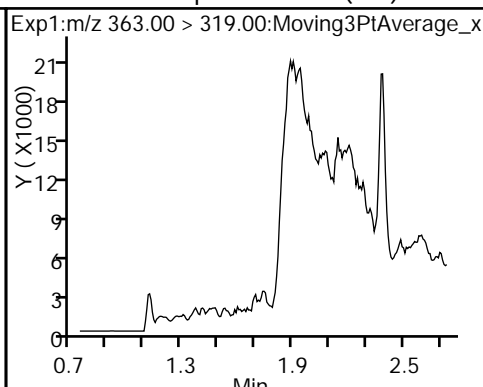
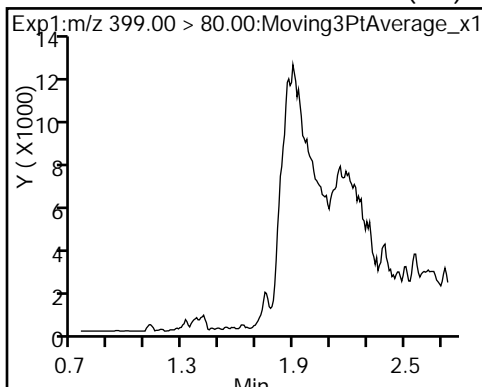
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

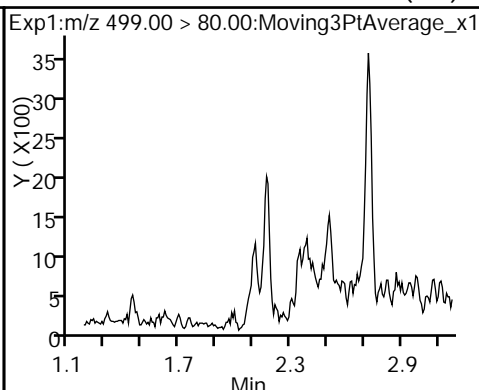
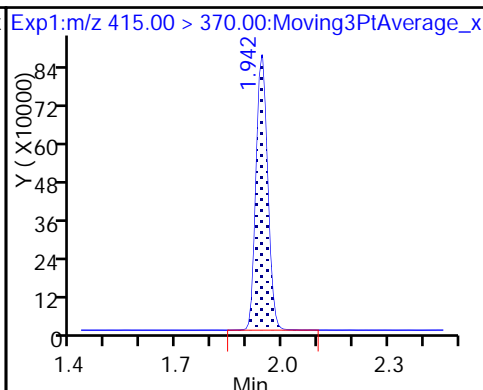
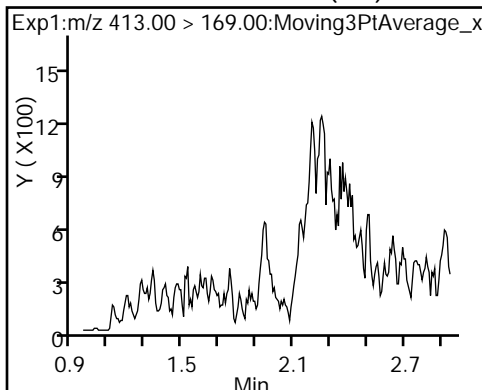
5 Perfluorooctanoic acid (ND)



5 Perfluorooctanoic acid (ND)

* 6 13C2-PFOA

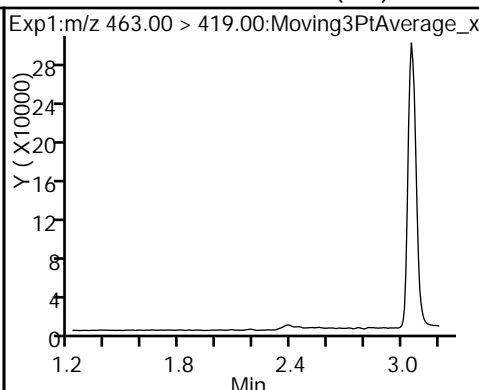
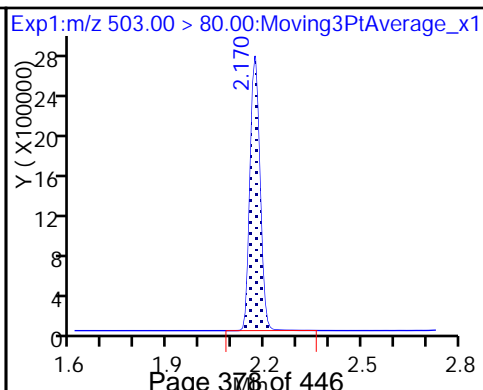
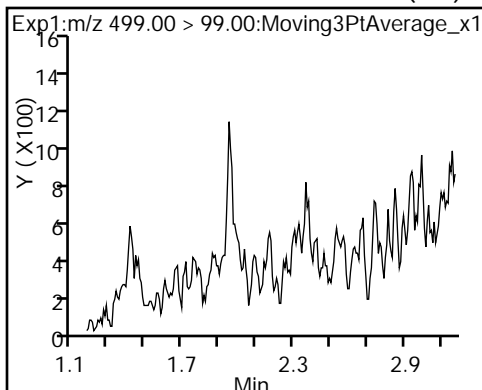
8 Perfluorooctane sulfonic acid (ND)



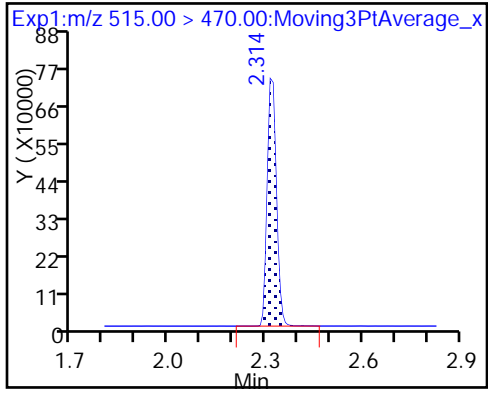
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_022.d
 Lims ID: MB 320-177651/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Aug-2017 14:20:27 ALS Bottle#: 26 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-177651/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
 Process Host: XAWRK030

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.82	98.22
\$ 10 13C2 PFDA	10.0	12.2	122.38

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-177640/2-A
 Matrix: Water Lab File ID: 2017.08.16_537C_004.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/16/2017 12:55
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	184		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	83.8		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	99.3		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	121		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	45.5		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	343		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	133	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_004.d
 Lims ID: LCS 320-177640/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Aug-2017 12:55:05 ALS Bottle#: 12 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-177640/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:31:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	17485375	85.8		1682	
298.90 > 99.00	1.442	1.453	-0.011	1.000	12562463		1.39(0.00-0.00)	1926	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2372977	10.1		5061	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	9835922	30.2		1440	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2140001	11.4		153	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	4171895	21.0		281	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2249500		1.85(0.00-0.00)	2353	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2195855	10.0		5323	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	9287226	46.1		3653	
499.00 > 99.00	2.177	2.177	0.0	1.000	2089840		4.44(0.00-0.00)	1867	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		6260681	28.7		4303	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3088656	24.8		355	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1720998	13.3		6006	

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_004.d

Injection Date: 16-Aug-2017 12:55:05

Instrument ID: A8_N

Lims ID: LCS 320-177640/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

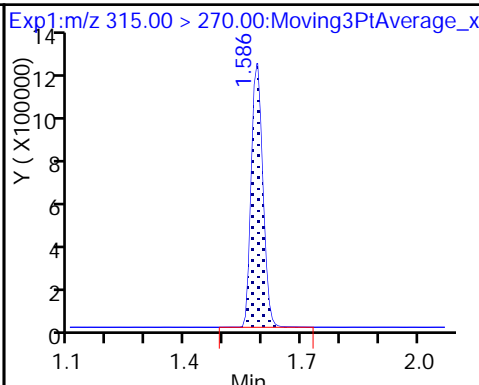
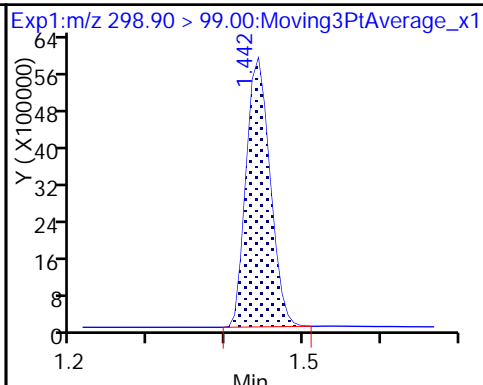
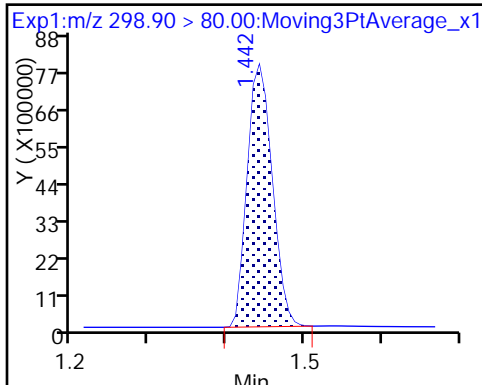
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

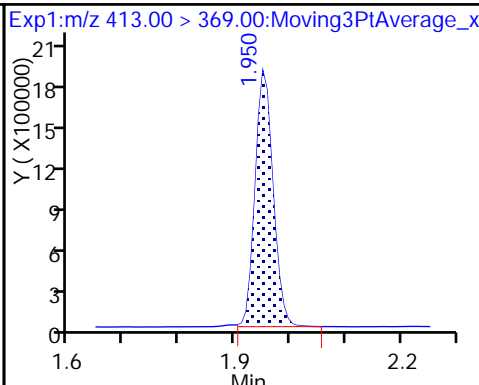
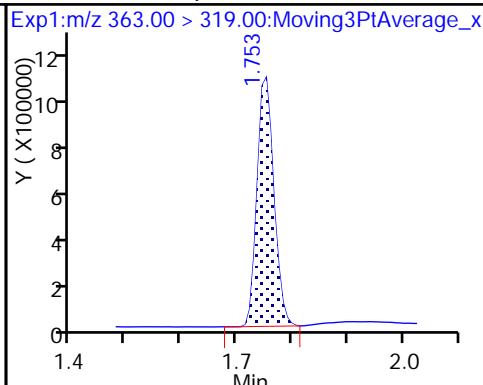
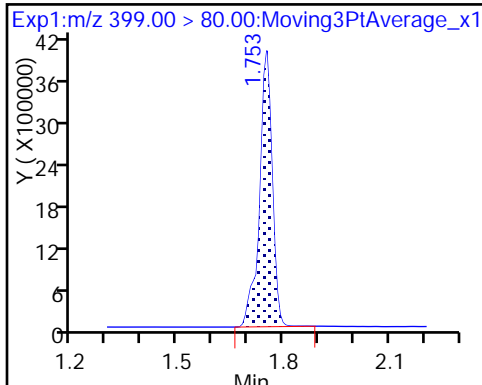
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

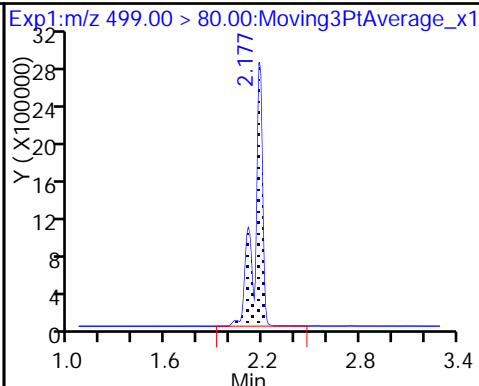
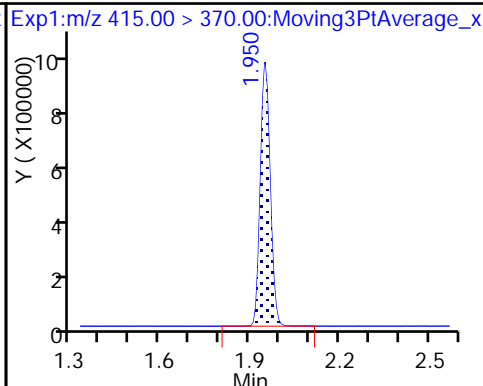
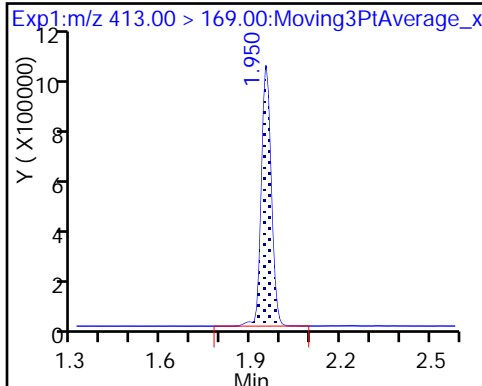
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

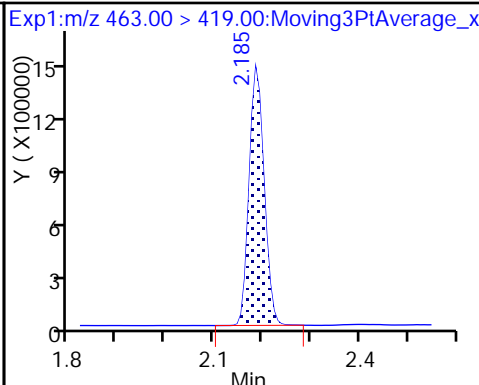
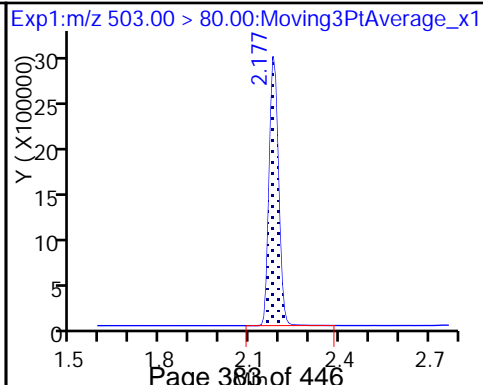
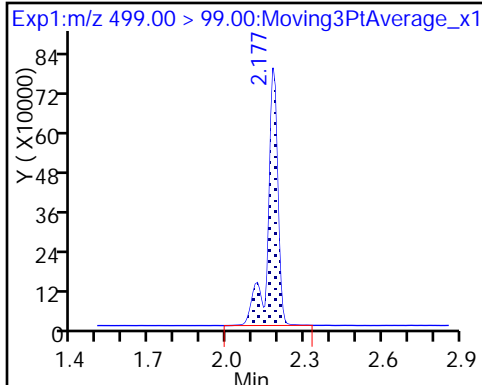
8 Perfluorooctane sulfonic acid



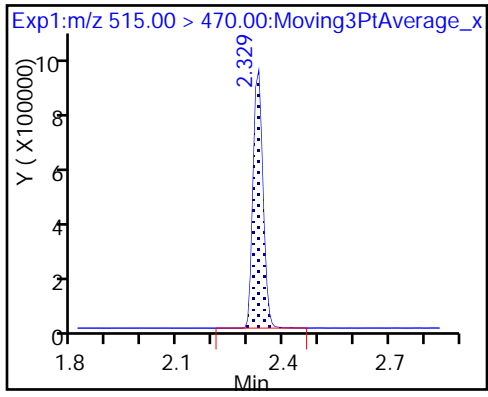
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_004.d
 Lims ID: LCS 320-177640/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Aug-2017 12:55:05 ALS Bottle#: 12 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-177640/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:31:20

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	101.07
\$ 10 13C2 PFDA	10.0	13.3	133.37

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-177651/2-A
 Matrix: Water Lab File ID: 2017.08.16_537C_023.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/16/2017 14:25
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	332	E	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	155		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	177	E	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	211		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	87.2	E	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	698		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	107		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_023.d
 Lims ID: LCS 320-177651/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Aug-2017 14:25:11 ALS Bottle#: 27 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-177651/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	25096672	174.5		2416	
298.90 > 99.00	1.449	1.453	-0.004	1.000	18349230		1.37(0.00-0.00)	2792	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2167280	10.7		6016	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	15460788	52.8		2083	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	3524903	21.8		287	E
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	6660757	38.9		405	
413.00 > 169.00	1.950	1.955	-0.005	1.000	3605906		1.85(0.00-0.00)	3800	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1889531	10.0		5611	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	15022010	82.9		5768	E
499.00 > 99.00	2.177	2.177	0.0	1.000	3521666		4.27(0.00-0.00)	2438	E
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5624637	28.7		4252	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	4724532	44.1		588	E
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1403635	12.6		6764	

[QC Flag Legend](#)

Processing Flags

E - Exceeded Maximum Amount

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_023.d

Injection Date: 16-Aug-2017 14:25:11

Instrument ID: A8_N

Lims ID: LCS 320-177651/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 27

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

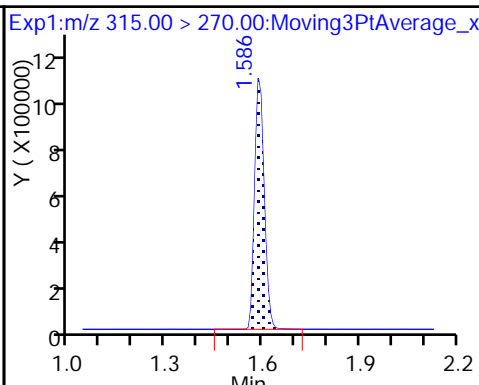
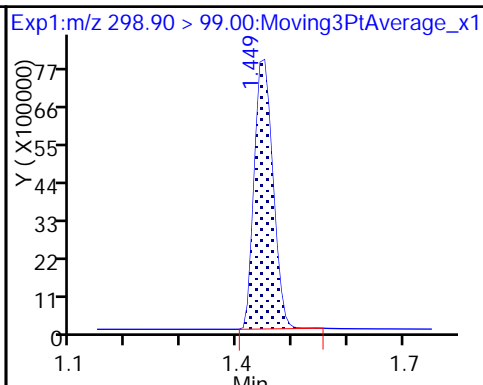
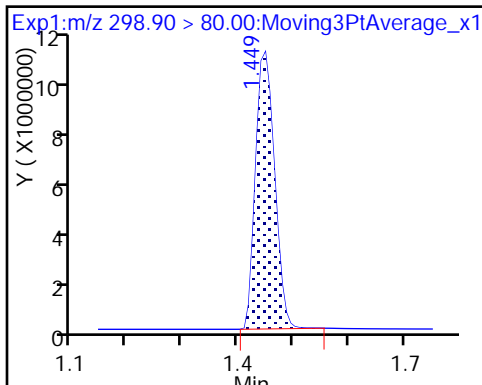
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

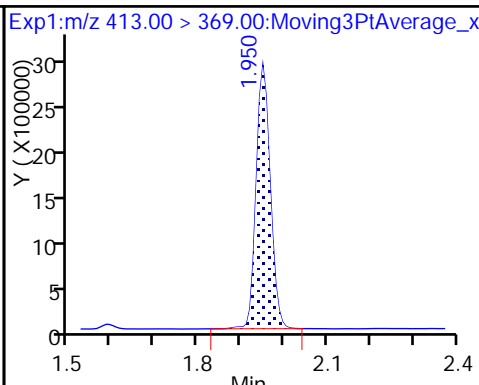
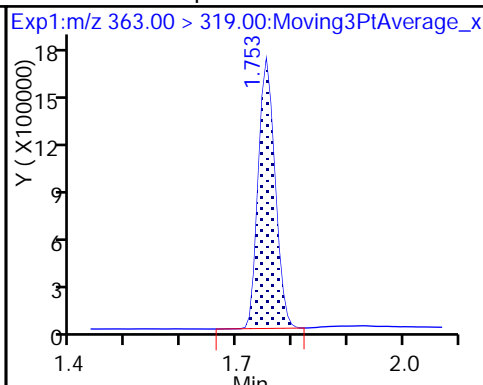
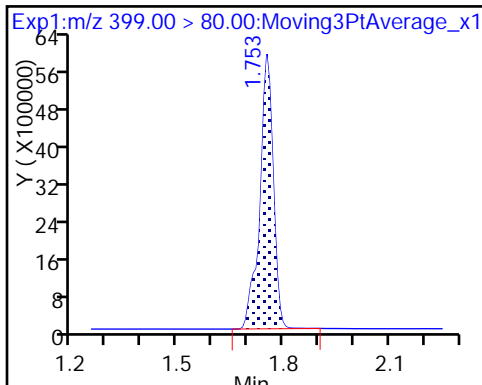
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

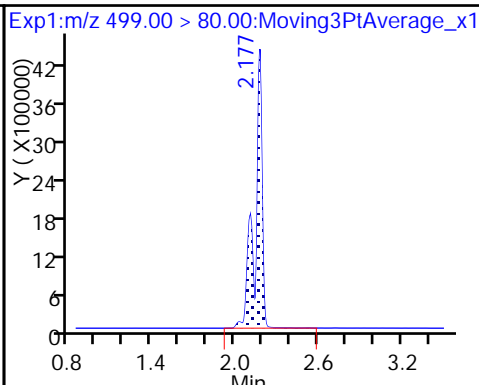
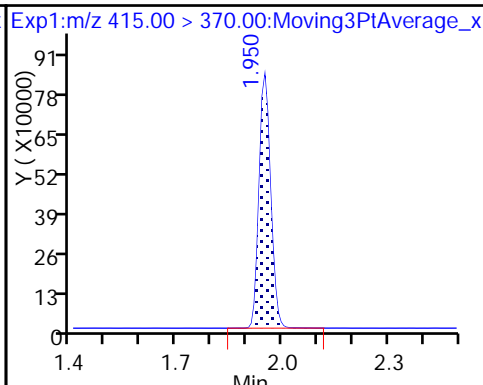
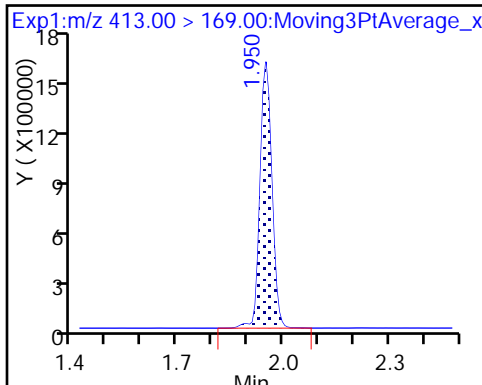
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

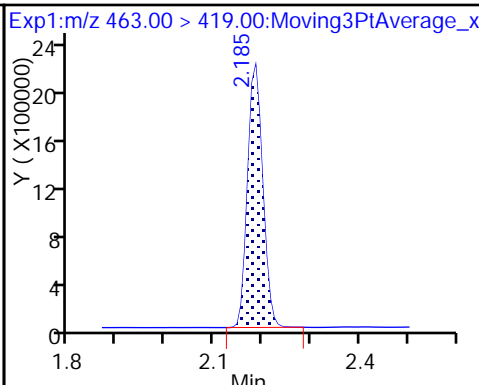
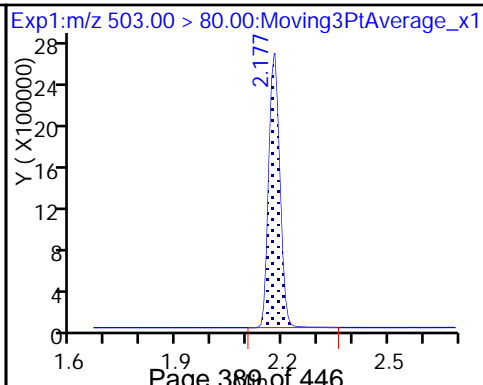
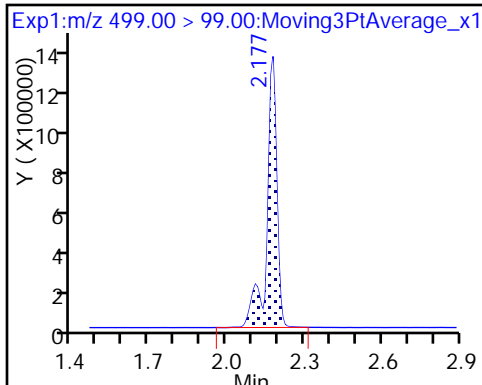
8 Perfluorooctane sulfonic acid



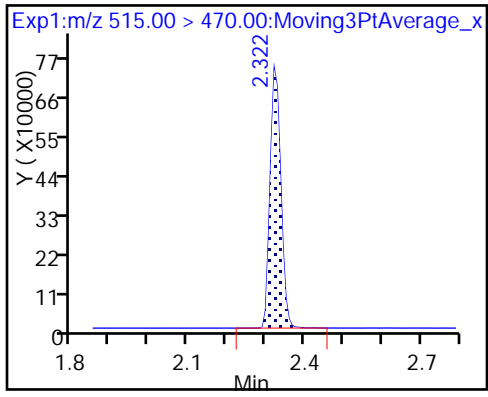
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_023.d
 Lims ID: LCS 320-177651/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Aug-2017 14:25:11 ALS Bottle#: 27 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-177651/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:04

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.7	107.27
\$ 10 13C2 PFDA	10.0	12.6	126.41

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-177651/3-A
 Matrix: Water Lab File ID: 2017.08.16_537C_024.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/16/2017 14:29
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	324	E	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	151		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	171	E	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	206		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	84.6	E	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	684		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	102		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_024.d
 Lims ID: LCSD 320-177651/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 16-Aug-2017 14:29:55 ALS Bottle#: 28 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-177651/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	24476093	171.1		2278	
298.90 > 99.00	1.442	1.453	-0.011	1.000	18096953		1.35(0.00-0.00)	2518	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2041250	10.2		6193	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	14825081	51.4		1922	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	3400965	21.1		292	E
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	6439782	37.8		376	
413.00 > 169.00	1.950	1.955	-0.005	1.000	3467596		1.86(0.00-0.00)	3478	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1879054	10.0		6195	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	14462643	81.1		4742	E
499.00 > 99.00	2.177	2.177	0.0	1.000	3382114		4.28(0.00-0.00)	2223	E
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5537284	28.7		4293	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	4559751	42.8		365	E
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1392725	12.6		6498	

[QC Flag Legend](#)

Processing Flags

E - Exceeded Maximum Amount

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_024.d

Injection Date: 16-Aug-2017 14:29:55

Instrument ID: A8_N

Lims ID: LCSD 320-177651/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

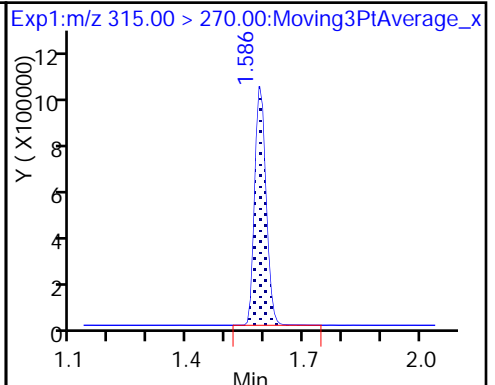
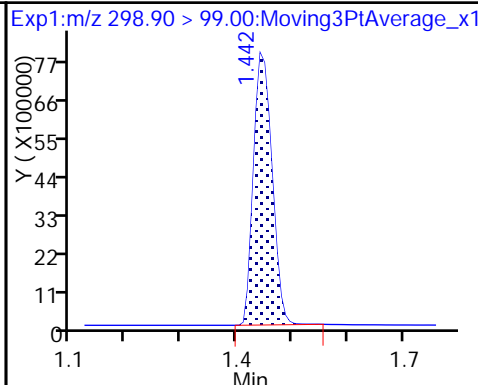
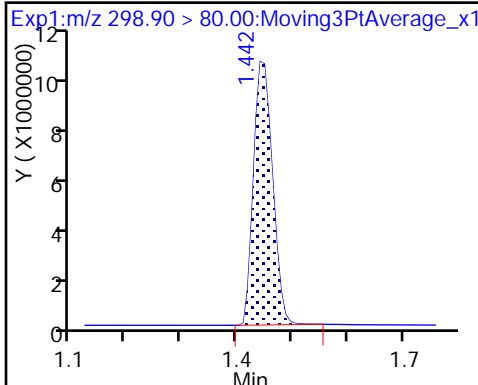
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

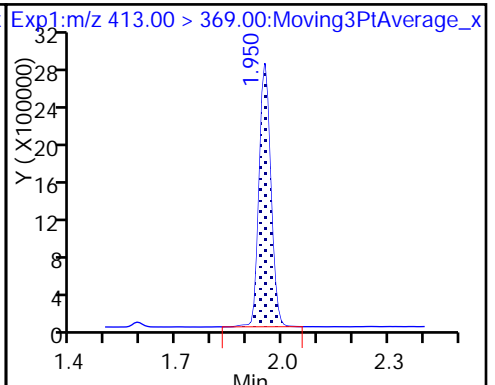
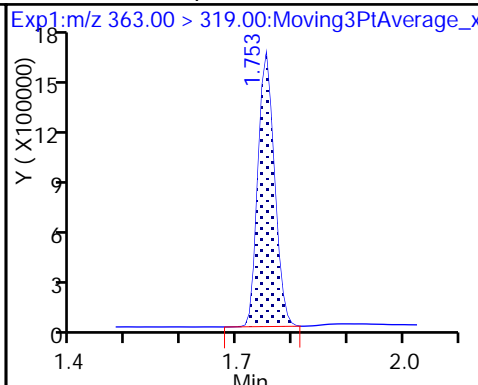
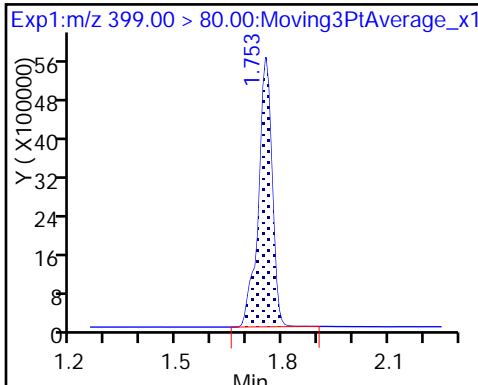
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

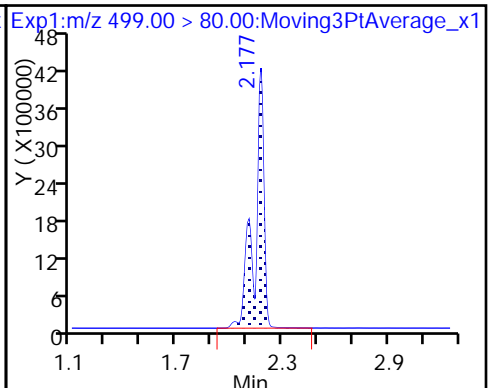
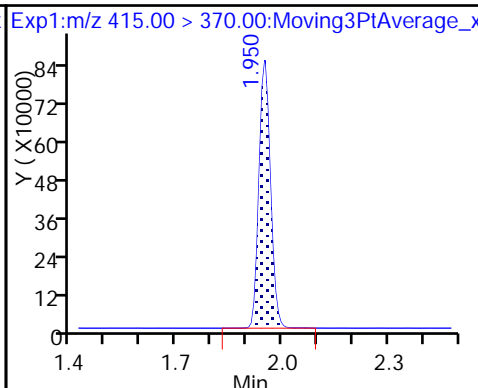
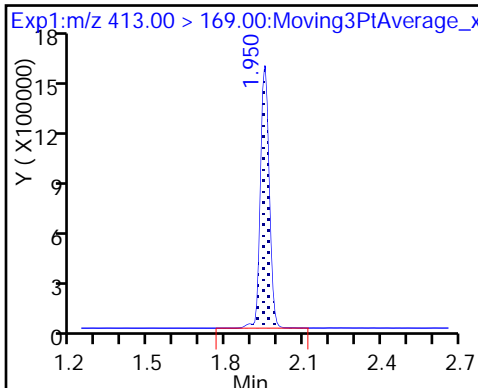
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

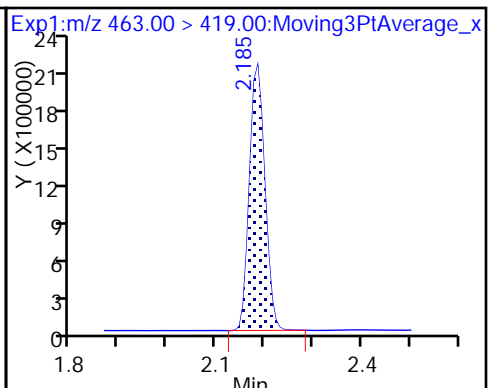
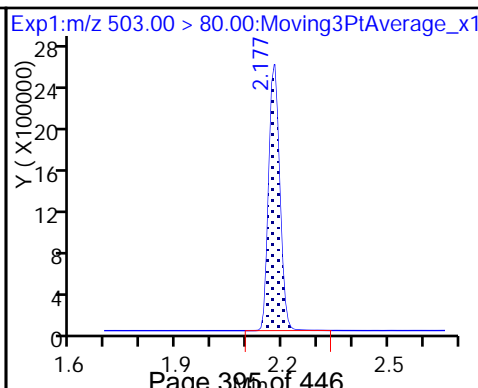
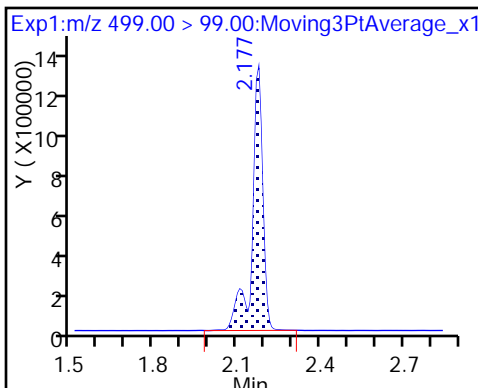
8 Perfluorooctane sulfonic acid



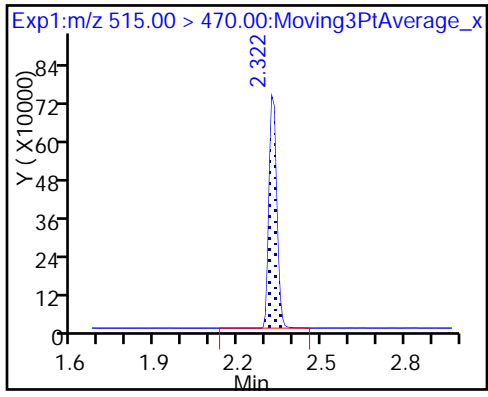
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_024.d
 Lims ID: LCSD 320-177651/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 16-Aug-2017 14:29:55 ALS Bottle#: 28 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-177651/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:24

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.2	101.59
\$ 10 13C2 PFDA	10.0	12.6	126.12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-349 MS Lab Sample ID: 320-30191-6 MS
 Matrix: Water Lab File ID: 2017.08.16_537C_011.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 294 (mL) Date Analyzed: 08/16/2017 13:28
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	168		34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	102	M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	90.8	J	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	101		26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	43.3		8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	283		77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	57	Q	70-130
STL00996	13C2 PFDA	130		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d
 Lims ID: 320-30191-A-6-B MS
 Client ID: NAWC-072617-RW-349
 Sample Type: MS
 Inject. Date: 16-Aug-2017 13:28:17 ALS Bottle#: 19 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-6-b ms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:38:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	16692617	83.1		1938	
298.90 > 99.00	1.442	1.453	-0.011	1.000	12117829		1.38(0.00-0.00)	2319	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1225368	5.71		2727	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	9510963	29.8		1128	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2189501	12.7		142	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.957	1.955	0.002	1.000	5463648	30.0		339	M
413.00 > 169.00	1.957	1.955	0.002	1.000	2913627		1.88(0.00-0.00)	2606	M
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2007840	10.0		5442	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.185	2.177	0.008	1.000	9731784	49.3		2939	
499.00 > 99.00	2.177	2.177	0.0	0.997	2131093		4.57(0.00-0.00)	1592	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		6134519	28.7		3874	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3036854	26.7		122	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1532667	13.0		6719	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d

Injection Date: 16-Aug-2017 13:28:17

Instrument ID: A8_N

Lims ID: 320-30191-A-6-B MS

Client ID: NAWC-072617-RW-349

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

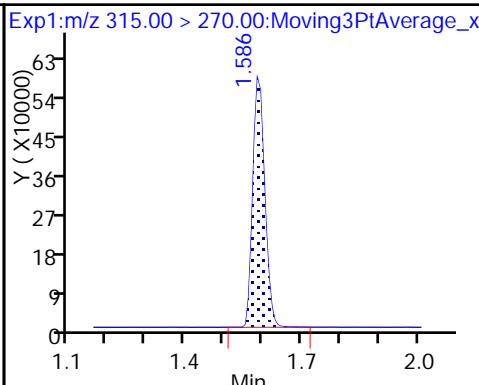
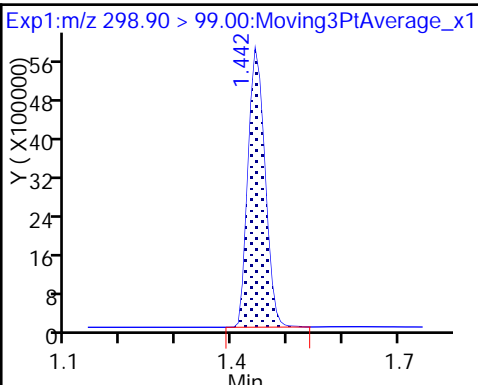
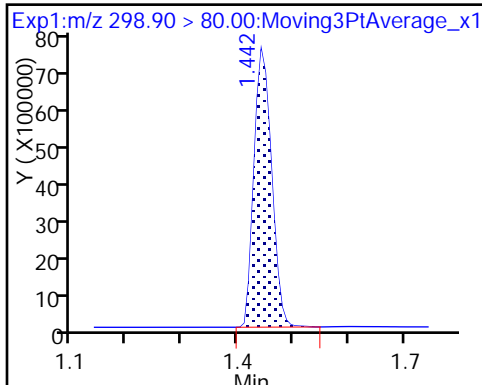
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

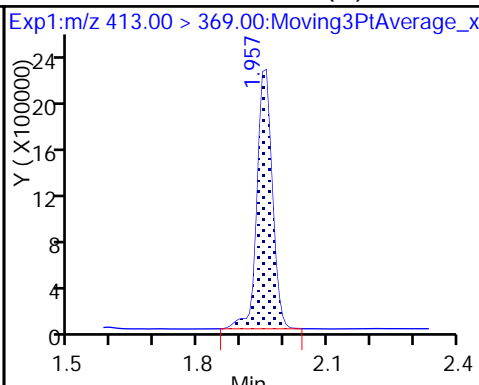
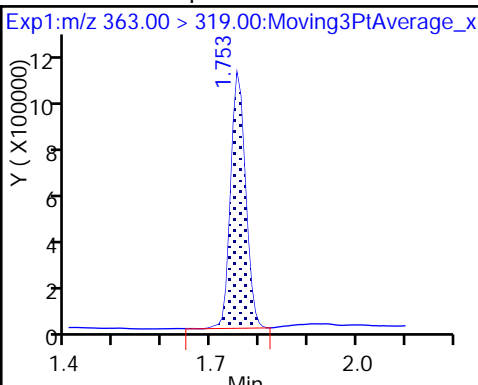
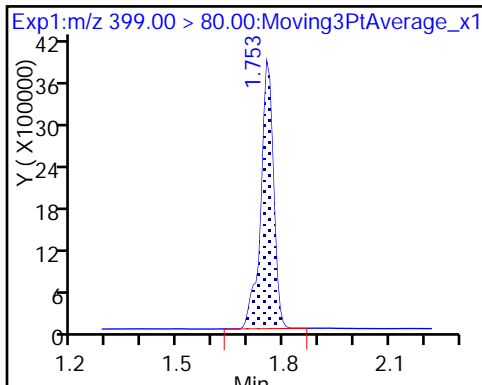
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

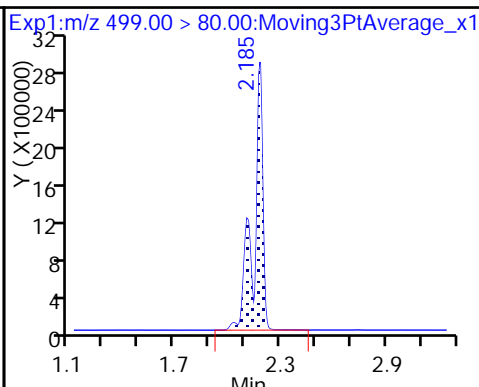
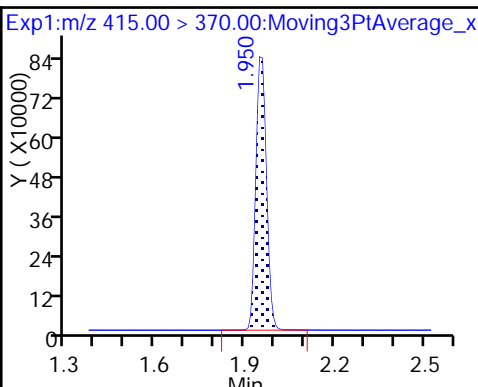
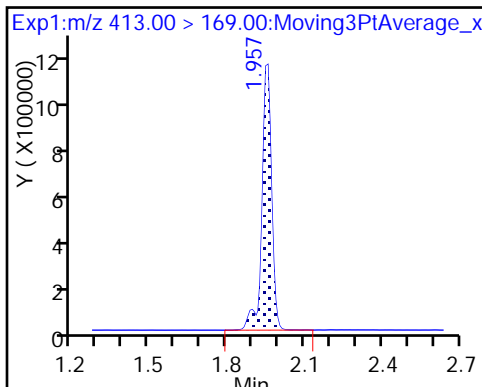
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

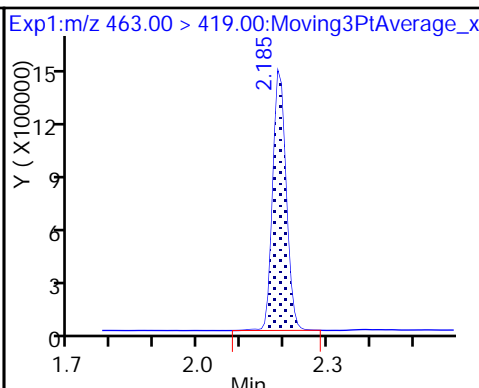
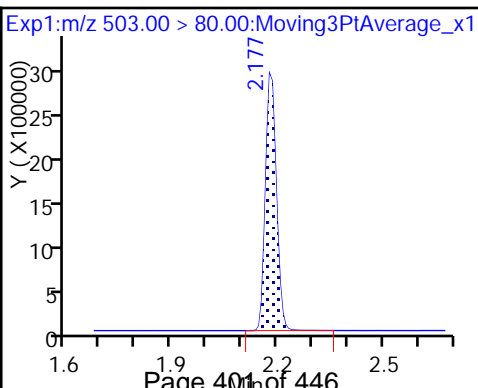
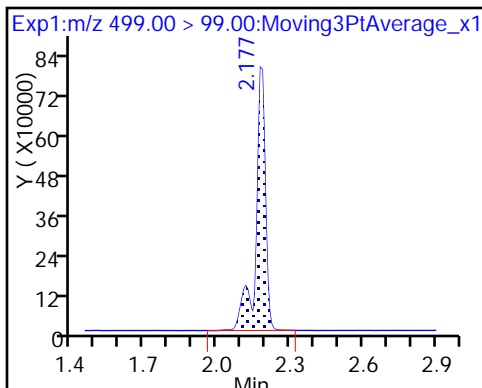
8 Perfluorooctane sulfonic acid



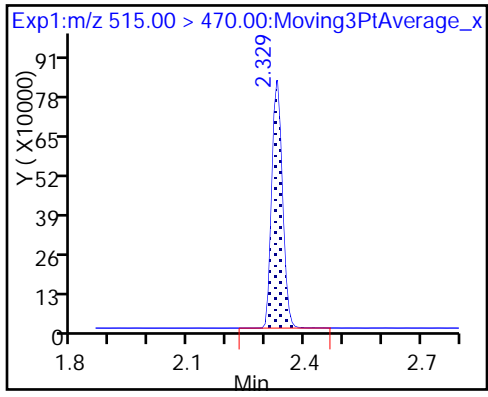
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d
 Lims ID: 320-30191-A-6-B MS
 Client ID: NAWC-072617-RW-349
 Sample Type: MS
 Inject. Date: 16-Aug-2017 13:28:17 ALS Bottle#: 19 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-6-b ms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:38:28

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	5.71	57.08
\$ 10 13C2 PFDA	10.0	13.0	129.89

TestAmerica Sacramento

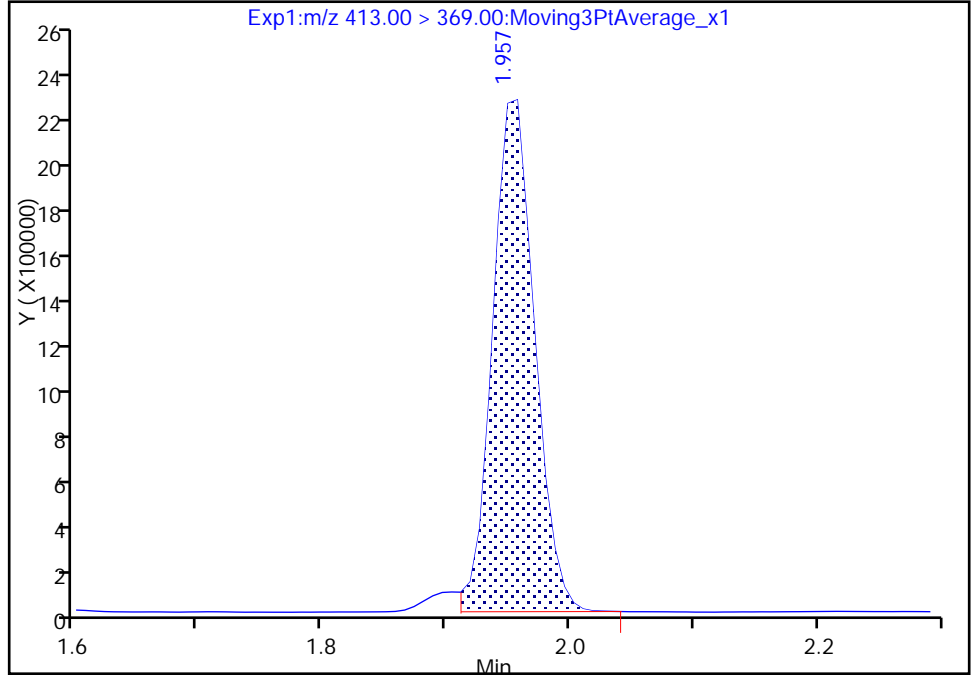
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d
Injection Date: 16-Aug-2017 13:28:17 Instrument ID: A8_N
Lims ID: 320-30191-A-6-B MS
Client ID: NAWC-072617-RW-349
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

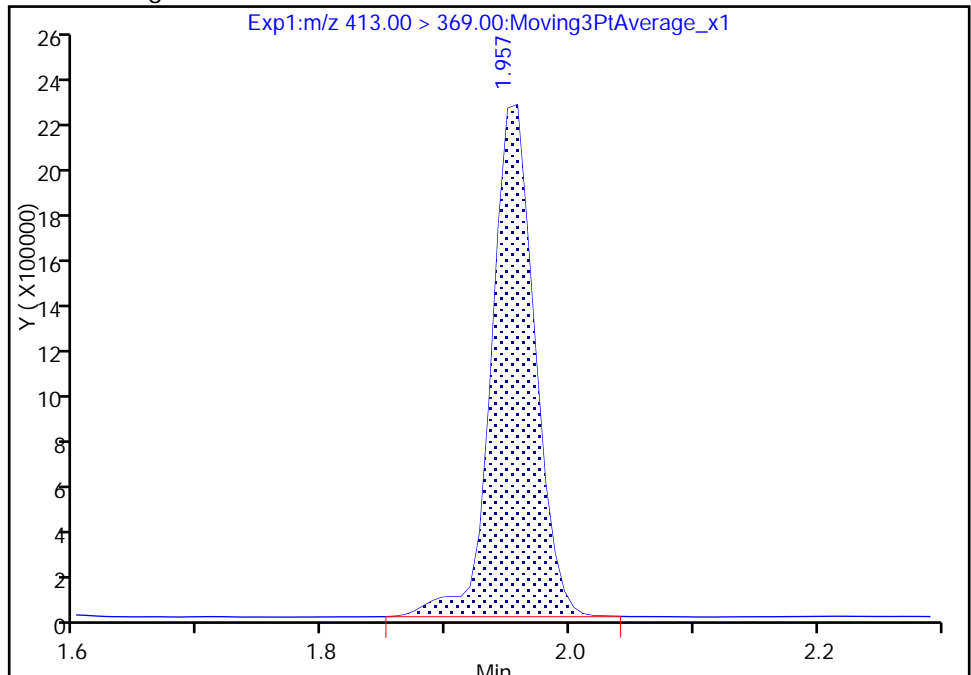
RT: 1.96
Area: 5290190
Amount: 29.054463
Amount Units: ng/ml

Processing Integration Results



RT: 1.96
Area: 5463648
Amount: 30.007119
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:38:08
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-349 MSD Lab Sample ID: 320-30191-6 MSD
 Matrix: Water Lab File ID: 2017.08.16_537C_012.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 287.8 (mL) Date Analyzed: 08/16/2017 13:33
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	178		35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	107	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	92.5	J	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	109		26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	46.5		8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	304		78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	61	Q	70-130
STL00996	13C2 PFDA	131	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d
 Lims ID: 320-30191-A-6-C MSD
 Client ID: NAWC-072617-RW-349
 Sample Type: MSD
 Inject. Date: 16-Aug-2017 13:33:04 ALS Bottle#: 20 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-6-c msd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:39:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	16196335	87.5		1888	
298.90 > 99.00	1.434	1.453	-0.019	0.995	11405248		1.42(0.00-0.00)	2330	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1193305	6.09		3055	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	9376681	31.5		1142	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	2101674	13.4		152	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	5122752	30.8		302	M
413.00 > 169.00	1.942	1.955	-0.013	1.000	2728840		1.88(0.00-0.00)	2671	M
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1833456	10.0		6001	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	9407985	51.1		3124	
499.00 > 99.00	2.170	2.177	-0.007	1.000	2059674		4.57(0.00-0.00)	1481	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5712310	28.7		3880	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	2765816	26.6		101	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1410951	13.1		5924	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d

Injection Date: 16-Aug-2017 13:33:04

Instrument ID: A8_N

Lims ID: 320-30191-A-6-C MSD

Client ID: NAWC-072617-RW-349

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

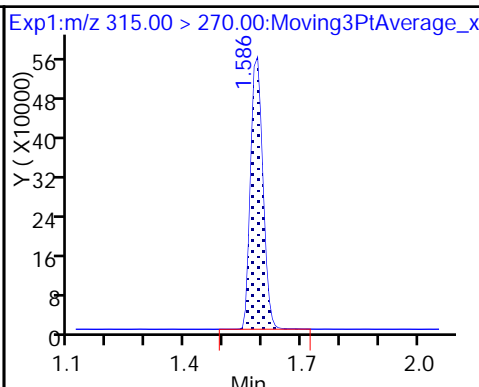
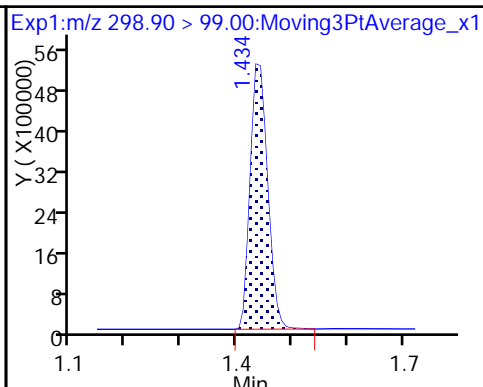
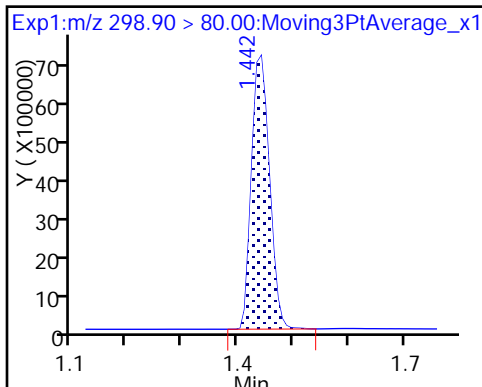
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

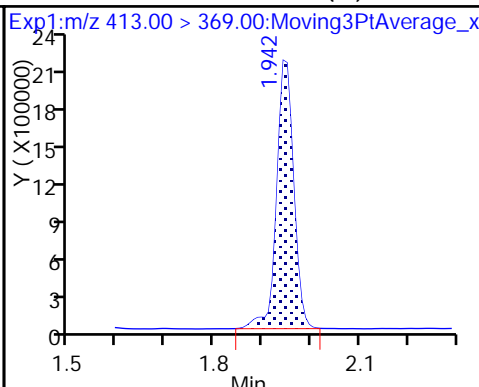
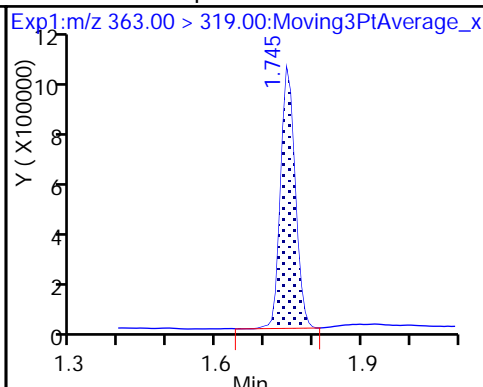
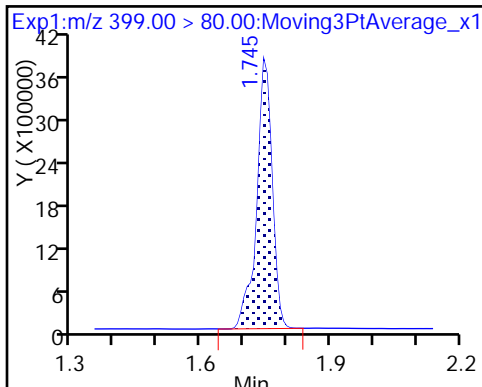
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

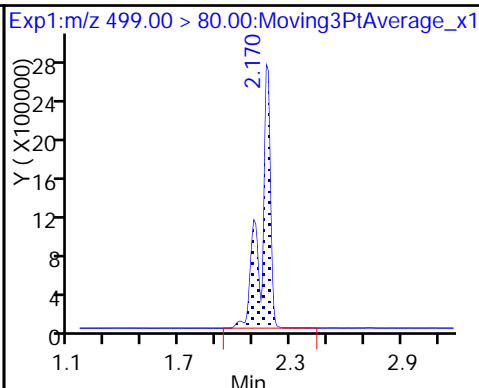
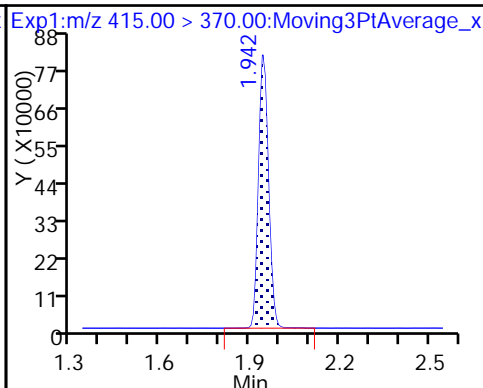
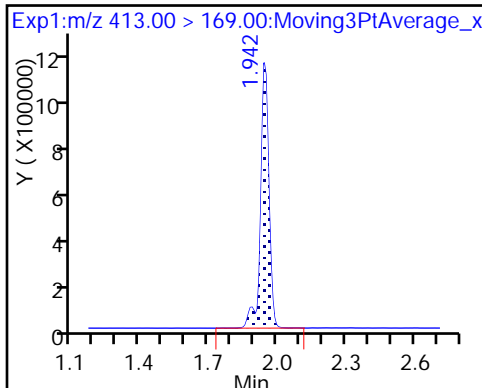
5 Perfluorooctanoic acid (M)



5 Perfluorooctanoic acid

* 6 13C2-PFOA

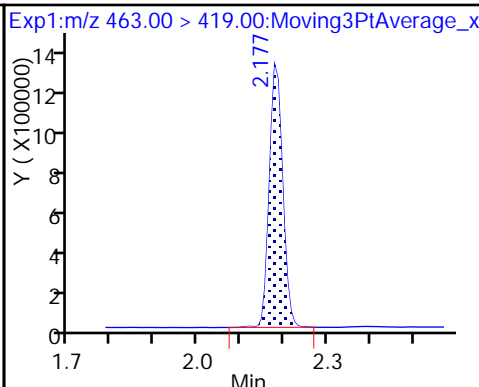
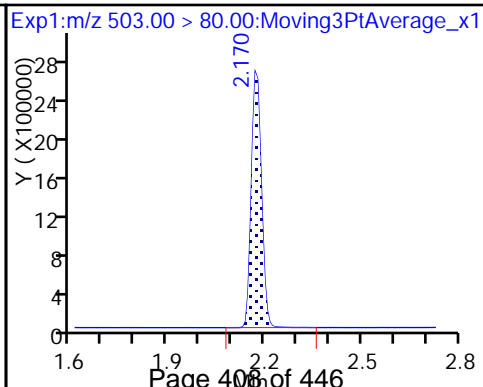
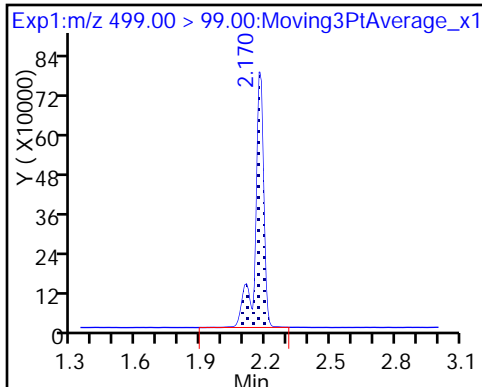
8 Perfluorooctane sulfonic acid



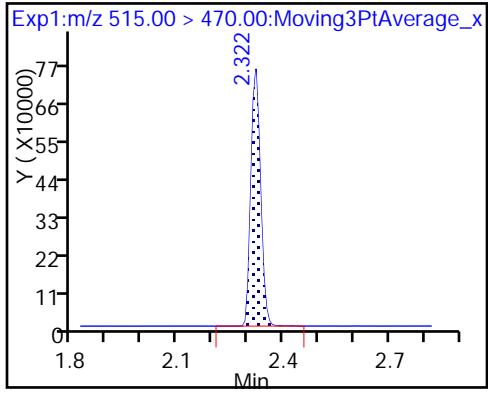
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d
 Lims ID: 320-30191-A-6-C MSD
 Client ID: NAWC-072617-RW-349
 Sample Type: MSD
 Inject. Date: 16-Aug-2017 13:33:04 ALS Bottle#: 20 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-30191-a-6-c msd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
 Column 1 : Det: EXP1
 Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:39:09

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	6.09	60.87
\$ 10 13C2 PFDA	10.0	13.1	130.95

TestAmerica Sacramento

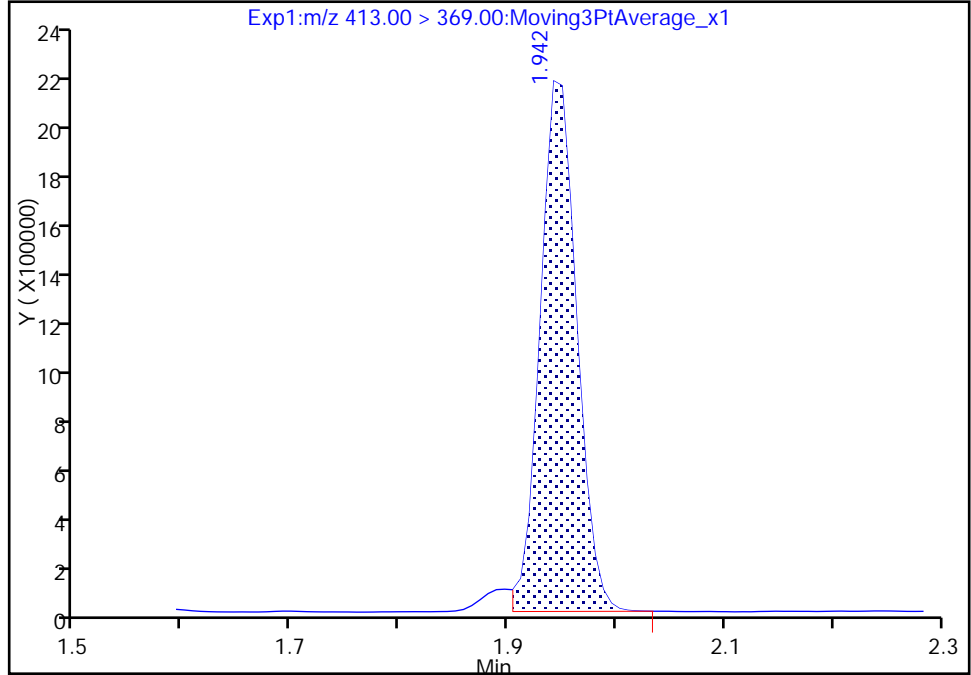
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d
Injection Date: 16-Aug-2017 13:33:04 Instrument ID: A8_N
Lims ID: 320-30191-A-6-C MSD
Client ID: NAWC-072617-RW-349
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

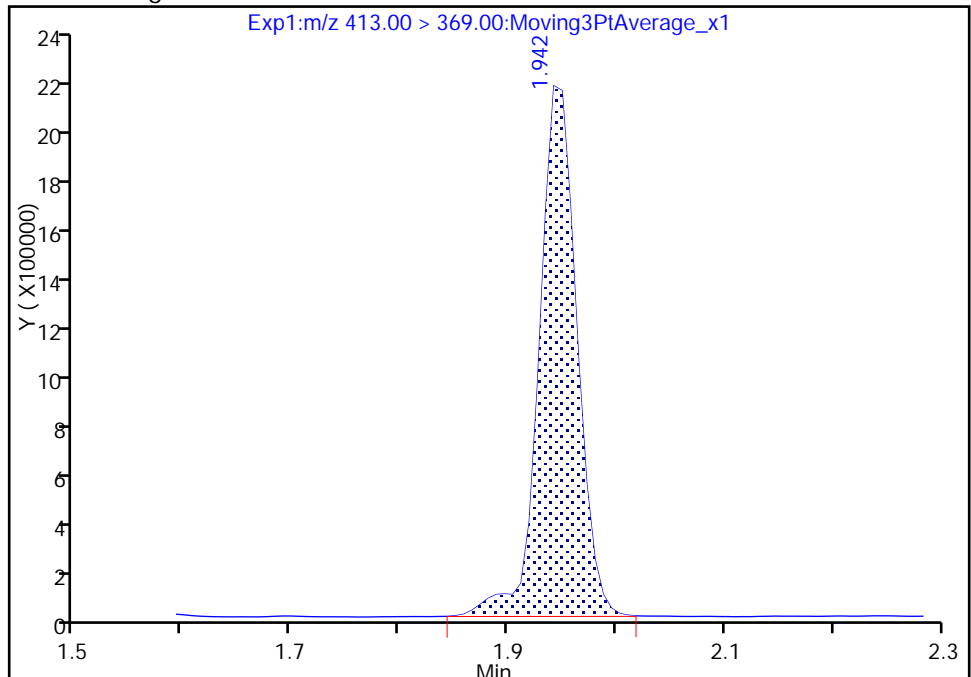
RT: 1.94
Area: 4948005
Amount: 29.759822
Amount Units: ng/ml

Processing Integration Results



RT: 1.94
Area: 5122752
Amount: 30.810839
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 16-Aug-2017 15:39:01
Audit Action: Manually Integrated

Audit Reason: Isomers

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/14/2017 12:48

Analysis Batch Number: 179319 End Date: 08/14/2017 13:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-179319/2		08/14/2017 12:48	1	2017.08.14_537I CAL 002.d	GeminiC18 3x100 3(mm)
IC 320-179319/3		08/14/2017 12:53	1	2017.08.14_537I CAL 003.d	GeminiC18 3x100 3(mm)
IC 320-179319/4		08/14/2017 12:58	1	2017.08.14_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-179319/5 ICISAV		08/14/2017 13:03	1	2017.08.14_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-179319/6		08/14/2017 13:07	1	2017.08.14_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-179319/7		08/14/2017 13:12	1	2017.08.14_537I CAL 007.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:17	1		GeminiC18 3x100 3(mm)
CCVL 320-179319/9		08/14/2017 13:22	1	2017.08.14_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:26	1		GeminiC18 3x100 3(mm)
ICV 320-179319/11		08/14/2017 13:31	1	2017.08.14_537I CAL 011.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 09:11

Analysis Batch Number: 179695 End Date: 08/16/2017 10:13

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-179695/4		08/16/2017 09:11	1	2017.08.15_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-179695/5 CCVIS		08/16/2017 09:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:04	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:08	1		GeminiC18 3x100 3(mm)
CCV 320-179695/17 CCVIS		08/16/2017 10:13	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 12:40

Analysis Batch Number: 179727 End Date: 08/16/2017 13:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179727/1 CCVIS		08/16/2017 12:40	1	2017.08.16_537C 001.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 12:45	1		GeminiC18 3x100 3(mm)
MB 320-177640/1-A		08/16/2017 12:50	1	2017.08.16_537C 003.d	GeminiC18 3x100 3(mm)
LCS 320-177640/2-A		08/16/2017 12:55	1	2017.08.16_537C 004.d	GeminiC18 3x100 3(mm)
320-30191-1		08/16/2017 12:59	1	2017.08.16_537C 005.d	GeminiC18 3x100 3(mm)
320-30191-2		08/16/2017 13:04	1	2017.08.16_537C 006.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:09	1		GeminiC18 3x100 3(mm)
320-30191-4		08/16/2017 13:14	1	2017.08.16_537C 008.d	GeminiC18 3x100 3(mm)
320-30191-5		08/16/2017 13:18	1	2017.08.16_537C 009.d	GeminiC18 3x100 3(mm)
320-30191-6		08/16/2017 13:23	1	2017.08.16_537C 010.d	GeminiC18 3x100 3(mm)
320-30191-6 MS		08/16/2017 13:28	1	2017.08.16_537C 011.d	GeminiC18 3x100 3(mm)
320-30191-6 MSD		08/16/2017 13:33	1	2017.08.16_537C 012.d	GeminiC18 3x100 3(mm)
CCV 320-179727/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 13:37

Analysis Batch Number: 179728 End Date: 08/16/2017 14:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179728/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:42	1		GeminiC18 3x100 3(mm)
320-30191-7		08/16/2017 13:47	1	2017.08.16_537C 015.d	GeminiC18 3x100 3(mm)
320-30191-8		08/16/2017 13:52	1	2017.08.16_537C 016.d	GeminiC18 3x100 3(mm)
320-30191-9		08/16/2017 13:56	1	2017.08.16_537C 017.d	GeminiC18 3x100 3(mm)
320-30191-10		08/16/2017 14:01	1	2017.08.16_537C 018.d	GeminiC18 3x100 3(mm)
320-30191-11		08/16/2017 14:06	1	2017.08.16_537C 019.d	GeminiC18 3x100 3(mm)
CCV 320-179728/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 14:10

Analysis Batch Number: 179732 End Date: 08/16/2017 15:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179732/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 14:15	1		GeminiC18 3x100 3(mm)
MB 320-177651/1-A		08/16/2017 14:20	1	2017.08.16_537C 022.d	GeminiC18 3x100 3(mm)
LCS 320-177651/2-A		08/16/2017 14:25	1	2017.08.16_537C 023.d	GeminiC18 3x100 3(mm)
LCSD 320-177651/3-A		08/16/2017 14:29	1	2017.08.16_537C 024.d	GeminiC18 3x100 3(mm)
320-30191-12		08/16/2017 14:34	1	2017.08.16_537C 025.d	GeminiC18 3x100 3(mm)
320-30191-13		08/16/2017 14:39	1	2017.08.16_537C 026.d	GeminiC18 3x100 3(mm)
320-30191-14		08/16/2017 14:44	1	2017.08.16_537C 027.d	GeminiC18 3x100 3(mm)
320-30191-15		08/16/2017 14:48	1	2017.08.16_537C 028.d	GeminiC18 3x100 3(mm)
320-30191-16		08/16/2017 14:53	1	2017.08.16_537C 029.d	GeminiC18 3x100 3(mm)
320-30191-17		08/16/2017 14:58	1	2017.08.16_537C 030.d	GeminiC18 3x100 3(mm)
320-30191-18		08/16/2017 15:03	1	2017.08.16_537C 031.d	GeminiC18 3x100 3(mm)
CCV 320-179732/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 15:07

Analysis Batch Number: 179733 End Date: 08/16/2017 15:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179733/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 15:12	1		GeminiC18 3x100 3(mm)
320-30191-19		08/16/2017 15:17	1	2017.08.16_537C 034.d	GeminiC18 3x100 3(mm)
320-30191-20		08/16/2017 15:22	1	2017.08.16_537C 035.d	GeminiC18 3x100 3(mm)
320-30191-21		08/16/2017 15:26	1	2017.08.16_537C 036.d	GeminiC18 3x100 3(mm)
320-30191-22		08/16/2017 15:31	1	2017.08.16_537C 037.d	GeminiC18 3x100 3(mm)
CCV 320-179733/38 CCVIS		08/16/2017 15:36	1	2017.08.16_537C 038.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 19:48

Analysis Batch Number: 179920 End Date: 08/16/2017 20:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179920/1 CCVIS		08/16/2017 19:48	1	2017.08.16_537D 052.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:53	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:57	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:07	1		GeminiC18 3x100 3(mm)
320-30191-3		08/16/2017 20:12	1	2017.08.16_537D 057.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:40	1		GeminiC18 3x100 3(mm)
CCV 320-179920/13 CCVIS		08/16/2017 20:45	1	2017.08.16_537D 064.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:50	1		GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00046
MB 320-177640/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-177640/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T	322.10 g	29.24 g	292.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T	313.75 g	28.15 g	285.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T	305.55 g	28.18 g	277.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-4	NAWC-072617-RW-341	537, 537	T	306.55 g	28.07 g	278.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T	312.18 g	27.56 g	284.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-6	NAWC-072617-RW-349	537, 537	T	316.97 g	28.12 g	288.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	322.23 g	28.25 g	294 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	315.87 g	28.12 g	287.8 mL	1.00 mL	7 SU	100 uL
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T	314.48 g	27.94 g	286.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-8	NAWC-072617-RW-343	537, 537	T	311.99 g	28.33 g	283.7 mL	1.00 mL	7 SU	100 uL
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T	316.09 g	27.71 g	288.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-10	NAWC-072617-RW-345	537, 537	T	317.11 g	28.09 g	289 mL	1.00 mL	7 SU	100 uL
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T	312.72 g	27.56 g	285.2 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
MB 320-177640/1		537, 537			100 uL	CH ND			
LCS 320-177640/2		537, 537		100 uL	100 uL	CH ND			
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T		100 uL	CH ND			
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T		100 uL	CH ND			
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T		100 uL	CH ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
320-30191-A-4	NAWC-072617-RW-341	537, 537	T		100 uL	CH ND			
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T		100 uL	CH ND			
320-30191-A-6	NAWC-072617-RW-349	537, 537	T		100 uL	CH ND			
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T		100 uL	CH ND			
320-30191-A-8	NAWC-072617-RW-343	537, 537	T		100 uL	CH ND			
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T		100 uL	CH ND			
320-30191-A-10	NAWC-072617-RW-345	537, 537	T		100 uL	CH ND			
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T		100 uL	CH ND			

Batch Notes	
Batch Comment	IS: 1002798
Manifold ID	7,1
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

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.: 320-30191-1

SDG No.: _____

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LC537-HSP 00017	LC537-IS 00046
MB 320-177651/1		537, 537				250.00 mL	1.00 mL		100 uL
LCS 320-177651/2		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
LCSD 320-177651/3		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	314.45 g	28.13 g	286.3 mL	1.00 mL		100 uL
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	314.60 g	28.18 g	286.4 mL	1.00 mL		100 uL
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	307.22 g	27.62 g	279.6 mL	1.00 mL		100 uL
320-30191-A-15	NAWC-072617-RW-117	537, 537	T	320.66 g	28.08 g	292.6 mL	1.00 mL		100 uL
320-30191-A-16	NAWC-072617-FRB-117	537, 537	T	306.45 g	27.57 g	278.9 mL	1.00 mL		100 uL
320-30191-A-17	NAWC-072617-DUP04	537, 537	T	307.09 g	28.14 g	279 mL	1.00 mL		100 uL
320-30191-A-18	WGNA-072617-RW-4844	537, 537	T	327.07 g	28.40 g	298.7 mL	1.00 mL		100 uL
320-30191-A-19	WGNA-072617-FRB-4844	537, 537	T	303.88 g	27.84 g	276 mL	1.00 mL		100 uL
320-30191-A-20	WGNA-072617-RW-3103	537, 537	T	305.20 g	28.60 g	276.6 mL	1.00 mL		100 uL
320-30191-A-21	WGNA-072617-FRB-3103	537, 537	T	312.89 g	27.81 g	285.1 mL	1.00 mL		100 uL
320-30191-A-22	WGNA-072617-DUP03	537, 537	T	312.39 g	27.67 g	284.7 mL	1.00 mL		100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046					
MB 320-177651/1		537, 537		100 uL					
LCS 320-177651/2		537, 537		100 uL					
LCSD 320-177651/3		537, 537		100 uL					
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	100 uL					
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	100 uL					
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	100 uL					

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.: 320-30191-1

SDG No.: _____

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046				
320-30191-A-15	NAWC-072617-RW-1 17	537, 537	T	100 uL				
320-30191-A-16	NAWC-072617-FRB- 117	537, 537	T	100 uL				
320-30191-A-17	NAWC-072617-DUPO 4	537, 537	T	100 uL				
320-30191-A-18	WGNA-072617-RW-4 844	537, 537	T	100 uL				
320-30191-A-19	WGNA-072617-FRB- 4844	537, 537	T	100 uL				
320-30191-A-20	WGNA-072617-RW-3 103	537, 537	T	100 uL				
320-30191-A-21	WGNA-072617-FRB- 3103	537, 537	T	100 uL				
320-30191-A-22	WGNA-072617-DUPO 3	537, 537	T	100 uL				

Batch Notes	
Batch Comment	IS:1002798
Manifold ID	1,4
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

Basis	Basis Description
T	Total/NA

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

A8

Job No: 30191 Instrument ID & Date: 8-16-17 ICAL Batch: 179319
 Extraction Batch: 177640 Worklist #: 46772, 46814 TALS Batch: 179727, 179728, 179920

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

1st Level Reviewer / Date: JRB 8-17-17 2nd Level Reviewer / Date: MW... [Signature]

NCM # and Comments: 97996, 97999, 98001

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16AUG2017_537D Worklist Number: 46772
 Instrument Name: A8_N Chrom Method: 537_A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b
 QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179727
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-177640/1-A	# 3 MB 320-177640/1-A
# 4 LCS 320-177640/2-A	# 4 LCS 320-177640/2-A
# 5 320-30191-A-1-A	# 5 320-30191-A-1-A
# 6 320-30191-A-2-A	# 6 320-30191-A-2-A
# 7 320-30191-A-3-A	# 7 320-30191-A-3-A
# 8 320-30191-A-4-A	# 8 320-30191-A-4-A
# 9 320-30191-A-5-A	# 9 320-30191-A-5-A
#10 320-30191-A-6-A	#10 320-30191-A-6-A
#11 320-30191-A-6-B MS	#11 320-30191-A-6-B MS
#12 320-30191-A-6-C MSD	#12 320-30191-A-6-C MSD
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 179728
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-30191-A-7-A	#15 320-30191-A-7-A
#16 320-30191-A-8-A	#16 320-30191-A-8-A
#17 320-30191-A-9-A	#17 320-30191-A-9-A
#18 320-30191-A-10-A	#18 320-30191-A-10-A
#19 320-30191-A-11-A	#19 320-30191-A-11-A
#20 CCV L3	#20 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 179732
#20 CCV L3	#20 CCV L3
#21 RB	#21 RB
#22 MB 320-177651/1-A	#22 MB 320-177651/1-A
#23 LCS 320-177651/2-A	#23 LCS 320-177651/2-A
#24 LCSD 320-177651/3-A	#24 LCSD 320-177651/3-A
#25 320-30191-A-12-A	#25 320-30191-A-12-A
#26 320-30191-A-13-A	#26 320-30191-A-13-A
#27 320-30191-A-14-A	#27 320-30191-A-14-A
#28 320-30191-A-15-A	#28 320-30191-A-15-A
#29 320-30191-A-16-A	#29 320-30191-A-16-A
#30 320-30191-A-17-A	#30 320-30191-A-17-A
#31 320-30191-A-18-A	#31 320-30191-A-18-A
#32 CCV L5	#32 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 179733
#32 CCV L5	#32 CCV L5
#33 RB	#33 RB
#34 320-30191-A-19-A	#34 320-30191-A-19-A
#35 320-30191-A-20-A	#35 320-30191-A-20-A
#36 320-30191-A-21-A	#36 320-30191-A-21-A
#37 320-30191-A-22-A	#37 320-30191-A-22-A
#38 CCV L3	#38 CCV L3

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16AUG2017_537G

Worklist Number: 46814

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179920
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 320-30391-A-24-A	# 3 320-30391-A-24-A
# 4 320-30327-A-2-A	# 4 320-30327-A-2-A
# 5 LCS 320-177640/2-A	# 5 LCS 320-177640/2-A
# 6 320-30191-A-3-A	# 6 320-30191-A-3-A
# 7 320-30191-A-6-A	# 7 320-30191-A-6-A
# 8 320-30191-A-6-B MS	# 8 320-30191-A-6-B MS
# 9 320-30191-A-6-C MSD	# 9 320-30191-A-6-C MSD
#10 320-30191-A-10-A	#10 320-30191-A-10-A
#11 320-30191-A-18-A	#11 320-30191-A-18-A
#12 320-30191-A-19-A	#12 320-30191-A-19-A
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB

84

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End: 8/9/2017 4:38:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs		Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
				Rcvd	Adj1 Adj2					
1 MB-320-177640/1 N/A	N/A		250.00 mL	7		N/A	N/A	N/A		
			1.00 mL							
2 LCS-320-177640/2 N/A	N/A		250.00 mL	7		N/A	N/A	N/A	RI Case 2-12	
			1.00 mL							
3 320-30191-A-1 (537_DOD5)	N/A (320-30191-1)	322.10 g	292.9 mL	7		8/2/17	16_Days	4		
		29.24 g	1.00 mL							
4 320-30191-A-2 (537_DOD5)	N/A (320-30191-1)	313.75 g	285.6 mL	7		8/2/17	16_Days	4		
		28.15 g	1.00 mL							
5 320-30191-A-3 (537_DOD5)	N/A (320-30191-1)	305.55 g	277.4 mL	7		8/2/17	16_Days	4	RI Case 2-15	
		28.18 g	1.00 mL							
6 320-30191-A-4 (537_DOD5)	N/A (320-30191-1)	306.55 g	278.5 mL	7		8/2/17	16_Days	4		
		28.07 g	1.00 mL							
7 320-30191-A-5 (537_DOD5)	N/A (320-30191-1)	312.18 g	284.6 mL	7		8/2/17	16_Days	4		
		27.56 g	1.00 mL							
8 320-30191-A-6 (537_DOD5)	N/A (320-30191-1)	316.97 g	288.9 mL	7		8/2/17	16_Days	4	RI Case 2-18	
		28.12 g	1.00 mL							
9 320-30191-A-6-MS (537_DOD5)	N/A (320-30191-1)	322.23 g	294 mL	7		8/2/17	16_Days	4	RI Case 2-19	
		28.25 g	1.00 mL							
10 320-30191-A-6-MSD (537_DOD5)	N/A (320-30191-1)	315.87 g	287.8 mL	7		8/2/17	16_Days	4	RI Case 2-20	
		28.12 g	1.00 mL							

Page 427 of 446

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)






Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-30191-A-7 (537_DOD5)	N/A (320-30191-1)	314.48 g	286.5 mL			8/2/17	16_Days	4	
			27.94 g	1.00 mL						
12	320-30191-A-8 (537_DOD5)	N/A (320-30191-1)	311.99 g	283.7 mL			8/2/17	16_Days	4	
			28.33 g	1.00 mL						
13	320-30191-A-9 (537_DOD5)	N/A (320-30191-1)	316.09 g	288.4 mL			8/2/17	16_Days	4	
			27.71 g	1.00 mL						
14	320-30191-A-10 (537_DOD5)	N/A (320-30191-1)	317.11 g	289 mL			8/2/17	16_Days	4	
			28.09 g	1.00 mL						
15	320-30191-A-11 (537_DOD5)	N/A (320-30191-1)	312.72 g	285.2 mL			8/2/17	16_Days	4	
			27.56 g	1.00 mL						

RI
Case 2-24

Page 428 of 446

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 7,1

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-02

Methanol ID 988835

Reagent Water ID 8/03/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop JER

Analyst ID - TA Reagent Drop TH
Witness

Analyst ID - SU Reagent Drop JER

Analyst ID - SU Reagent Drop TH
Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop TH
Witness

Batch Comment IS: 1002798

Page 429 of 446

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-177640/1	LC537-SU_00046	100 uL	1.00 mL	<i>JWR</i> 8/03/17	TH 08/03/17
LCS 320-177640/2	LC537-MSP_00021	100 uL	1.00 mL		
LCS 320-177640/2	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-1	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-2	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-3	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-4	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-5	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-6	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-6 MS	LC537-MSP_00021	100 uL	1.00 mL		
320-30191-A-6 MS	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-6 MSD	LC537-MSP_00021	100 uL	1.00 mL		
320-30191-A-6 MSD	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-7	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-8	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-9	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-10	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-11	LC537-SU_00046	100 uL	1.00 mL		

Page 430 of 446

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:		
Reagent	Amount/Units	Lot#:

Page 431 of 446

Preparation Batch Number(s): _____ Test: _____

Earliest Holding Time: 8/09/17

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

1st Level Reviewer: TH NSH Date: 8/9/17
 2nd Level Reviewer: NSH Date: 08/09/17
 Comments: _____

A8

Job No: 30191 Instrument ID & Date: 8-16-17 ICAL Batch: 179319
 Extraction Batch: 177651 Worklist #: 179727 46772 TALS Batch: 179732, 179733, 179920
 JRB 7/17/17 46814

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

1st Level Reviewer / Date: JRB 8-17-17 2nd Level Reviewer / Date: Murray 8/18/2017

NCM # and Comments: 98002

A8

Instrument ID & Date: 8-14-17 Worklist#: 46675

ICAL Batch: 179319, 179320 Calibration ID number: 33517

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

1st Level Reviewer / Date: JRB 8-14-17

2nd Level Reviewer / Date: CBW 8/14/17

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16AUG2017_537D Worklist Number: 46772
 Instrument Name: A8_N Chrom Method: 537_A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b
 QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179727
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-177640/1-A	# 3 MB 320-177640/1-A
# 4 LCS 320-177640/2-A	# 4 LCS 320-177640/2-A
# 5 320-30191-A-1-A	# 5 320-30191-A-1-A
# 6 320-30191-A-2-A	# 6 320-30191-A-2-A
# 7 320-30191-A-3-A	# 7 320-30191-A-3-A
# 8 320-30191-A-4-A	# 8 320-30191-A-4-A
# 9 320-30191-A-5-A	# 9 320-30191-A-5-A
#10 320-30191-A-6-A	#10 320-30191-A-6-A
#11 320-30191-A-6-B MS	#11 320-30191-A-6-B MS
#12 320-30191-A-6-C MSD	#12 320-30191-A-6-C MSD
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 179728
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-30191-A-7-A	#15 320-30191-A-7-A
#16 320-30191-A-8-A	#16 320-30191-A-8-A
#17 320-30191-A-9-A	#17 320-30191-A-9-A
#18 320-30191-A-10-A	#18 320-30191-A-10-A
#19 320-30191-A-11-A	#19 320-30191-A-11-A
#20 CCV L3	#20 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 179732
#20 CCV L3	#20 CCV L3
#21 RB	#21 RB
#22 MB 320-177651/1-A	#22 MB 320-177651/1-A
#23 LCS 320-177651/2-A	#23 LCS 320-177651/2-A
#24 LCSD 320-177651/3-A	#24 LCSD 320-177651/3-A
#25 320-30191-A-12-A	#25 320-30191-A-12-A
#26 320-30191-A-13-A	#26 320-30191-A-13-A
#27 320-30191-A-14-A	#27 320-30191-A-14-A
#28 320-30191-A-15-A	#28 320-30191-A-15-A
#29 320-30191-A-16-A	#29 320-30191-A-16-A
#30 320-30191-A-17-A	#30 320-30191-A-17-A
#31 320-30191-A-18-A	#31 320-30191-A-18-A
#32 CCV L5	#32 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 179733
#32 CCV L5	#32 CCV L5
#33 RB	#33 RB
#34 320-30191-A-19-A	#34 320-30191-A-19-A
#35 320-30191-A-20-A	#35 320-30191-A-20-A
#36 320-30191-A-21-A	#36 320-30191-A-21-A
#37 320-30191-A-22-A	#37 320-30191-A-22-A
#38 CCV L3	#38 CCV L3

TestAmerica Laboratories
 Worklist QC Batch Report

Worklist Name: 16AUG2017_537G

Worklist Number: 46814

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179920
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 320-30391-A-24-A	# 3 320-30391-A-24-A
# 4 320-30327-A-2-A	# 4 320-30327-A-2-A
# 5 LCS 320-177640/2-A	# 5 LCS 320-177640/2-A
# 6 320-30191-A-3-A	# 6 320-30191-A-3-A
# 7 320-30191-A-6-A	# 7 320-30191-A-6-A
# 8 320-30191-A-6-B MS	# 8 320-30191-A-6-B MS
# 9 320-30191-A-6-C MSD	# 9 320-30191-A-6-C MSD
#10 320-30191-A-10-A	#10 320-30191-A-10-A
#11 320-30191-A-18-A	#11 320-30191-A-18-A
#12 320-30191-A-19-A	#12 320-30191-A-19-A
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB

81

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End: 8/7/2017 9:59:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-177651/1 N/A	N/A		250.00 mL			N/A	N/A	N/A		
			1.00 mL							
2 LCS-320-177651/2 N/A	N/A		250.00 mL			N/A	N/A	N/A		
			1.00 mL							
3 LCSD-320-177651/3 N/A	N/A		250.00 mL			N/A	N/A	N/A		
			1.00 mL							
4 320-30191-A-12 (537_DOD5)	N/A (320-30191-1)	314.45 g	286.3 mL			8/2/17	16_Days	4		
		28.13 g	1.00 mL							
5 320-30191-A-13 (537_DOD5)	N/A (320-30191-1)	314.60 g	286.4 mL			8/2/17	16_Days	4		
		28.18 g	1.00 mL							
6 320-30191-A-14 (537_DOD5)	N/A (320-30191-1)	307.22 g	279.6 mL			8/2/17	16_Days	4		
		27.62 g	1.00 mL							
7 320-30191-A-15 (537_DOD5)	N/A (320-30191-1)	320.66 g	292.6 mL			8/2/17	16_Days	4		
		28.08 g	1.00 mL							
8 320-30191-A-16 (537_DOD5)	N/A (320-30191-1)	306.45 g	278.9 mL			8/2/17	16_Days	4		
		27.57 g	1.00 mL							
9 320-30191-A-17 (537_DOD5)	N/A (320-30191-1)	307.09 g	279 mL			8/2/17	16_Days	4		
		28.14 g	1.00 mL							
10 320-30191-A-18 (537_DOD5)	N/A (320-30191-1)	327.07 g	298.7 mL			8/2/17	16_Days	4	RI	
		28.40 g	1.00 mL							

Case 2-35

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)





Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-30191-A-19 (537_DOD5)	N/A (320-30191-1)	303.88 g	276 mL				8/2/17	16_Days	4	 RI Cure 2-36
			27.84 g	1.00 mL							
12	320-30191-A-20 (537_DOD5)	N/A (320-30191-1)	305.20 g	276.6 mL				8/2/17	16_Days	4	
			28.60 g	1.00 mL							
13	320-30191-A-21 (537_DOD5)	N/A (320-30191-1)	312.89 g	285.1 mL				8/2/17	16_Days	4	
			27.81 g	1.00 mL							
14	320-30191-A-22 (537_DOD5)	N/A (320-30191-1)	312.39 g	284.7 mL				8/2/17	16_Days	4	
			27.67 g	1.00 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 1,4

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-02

Methanol ID 988835

Reagent Water ID 8/03/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop JER

Analyst ID - TA Reagent Drop TN
Witness

Analyst ID - SU Reagent Drop JER

Analyst ID - SU Reagent Drop TN
Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop TN
Witness

Batch Comment IS: 1002798

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-177651/1	LC537-SU_00046	100 uL	1.00 mL	<i>JWR</i> 8/03/17	TH 08/03/17
LCS 320-177651/2	LC537-HSP_00017	100 uL	1.00 mL		
LCS 320-177651/2	LC537-SU_00046	100 uL	1.00 mL	↓	↓
LCSD 320-177651/3	LC537-HSP_00017	100 uL	1.00 mL		
LCSD 320-177651/3	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-12	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-13	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-14	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-15	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-16	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-17	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-18	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-19	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-20	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-21	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-22	LC537-SU_00046	100 uL	1.00 mL		

Page 440 of 446

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent

Amount/Units

Lot#:

Reagent	Amount/Units	Lot#:

Page 441 of 446

Preparation Batch Number(s): 177651 Test: 537

Earliest Holding Time: 8/09/17

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

1st Level Reviewer: TAF

Date: 08/07/17

2nd Level Reviewer: [Signature]

Date: 8/7/17

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact TetraTech 234 Mall Boulevard Suite 260 King of Prussia, PA 19406 610-382-1174 610-491-9688 Project Name: WE04 Site: WE04 P O # 1132358 (through EarthToxics)		Project Manager: Andy Frebowitz Tel/Fax: 610.382.1170		Site Contact: Mary Kay Bond Lab Contact: Dave Alltucker		Date: 7/26/17 Carrier: FedEx		COC No: 1 of 2 COCs Sampler: Mary Kay Bond For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:				
		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input checked="" type="checkbox"/> 1 day		 320-30191 Chain of Custody		Filtered Sample (Y/N) Perform MS / MSD (Y / N) EPA 537 UCMR3				Sample Specific Notes:		
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.						
NAWC-072617-RW-332A		7/26/2017	8:05	G	DW	2	N	N	Y			
NAWC-072617-RW-332B		7/26/2017	8:10	G	DW	2	N	N	Y			
NAWC-072617-FRB-332A		7/26/2017	8:00	G	BLK	2	N	N	Y		Field Reagent Blank	
Page 444 of 446	NAWC-072617-RW-341		7/26/2017	8:35	G	DW	2	N	N	Y		
	NAWC-072617-FRB-341		7/26/2017	8:30	G	BLK	2	N	N	Y		Field Reagent Blank
	NAWC-072617-RW-349		7/26/2017	10:35	G	DW	6	N	Y	Y		MS/MSD
	NAWC-072617-FRB-349		7/26/2017	10:30	G	BLK	2	N	N	Y		Field Reagent Blank
	NAWC-072617-RW-343		7/26/2017	13:55	G	DW	2	N	N	Y		
	NAWC-072617-FRB-343		7/26/2017	13:50	G	BLK	2	N	N	Y		Field Reagent Blank
	NAWC-072617-RW-345		7/26/2017	15:15	G	DW	2	N	N	Y		
	NAWC-072617-FRB-345		7/26/2017	15:10	G	BLK	2	N	N	Y		Field Reagent Blank
	NAWC-072617-DUP03		7/26/2017	07:00	G	DW	2	N	N	Y		Duplicate
	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 Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months					
Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562												
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 38		Corr'd: 58		Therm ID No.: Ak-2				
Relinquished by: Mary Kay Bond		Company: Tetra Tech		Date/Time: 7/26/17 18:00		Received by: [Signature]		Company: TAW		Date/Time: 7/27/17 0920		
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:		
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:		

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 7/26/17		COC No:		
TetraTech		Tel/Fax: 610.382.1170		Lab Contact: Dave Alltucker		Carrier: FedEx		2 of 2 COCs		
234 Mall Boulevard Suite 260		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS / MSD (Y/N) EPA 537 UCMR3				Sampler: Andy Frebowitz, Mary Kay Bond		
King of Prussia, PA 19406		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS						For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____		
610-382-3244		TAT if different from Below _____						Job / SDG No.:		
610-491-9688		<input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day								
Project Name: WE04										
Site: WE04										
P O # 1132358 (through EarthToxics)										
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.			Sample Specific Notes:	
NAWC-072617-RW-342		7/26/2017	12:10	G	DW	2	N	N		
NAWC-072617-RW-332B		7/26/2017	12:05	G	DW	2	N	N		
NAWC-072617-RW-117		7/26/2017	12:35	G	DW	2	N	N		
Page 445 of 446	NAWC-072617-FRB-117		7/26/2017	12:30	G	BLK	2	N	N	Field Reagent Blank
	NAWC-072617-DUP04		7/26/2017	07:00	G	DW	2	N	N	Duplicate
	WGNA-072617-RW-4844		7/26/2017	9:35	G	DW	2	N	N	
	WGNA-072617-FRB-4844		7/25/2017	9:30	G	BLK	2	N	N	Field Reagent Blank
	WGNA-072617-RW-3103		7/26/2017	11:10	G	DW	2	N	N	
	WGNA-072617-FRB-3103		7/26/2017	11:05	G	BLK	2	N	N	Field Reagent Blank
	WGNA-072617-DUP03		7/26/2017	7:00	G	DW	2	N	N	Duplicate
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 Comments Section if the lab is to dispose of the sample.							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
<input type="checkbox"/> Non-Hazard <input checked="" type="checkbox"/> Flammable <input checked="" type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562										
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 38		Corr'd: 38		Therm ID No.: ALC-2		
Relinquished by: Mary Kay Bond <i>Mary Kay Bond</i>		Company: Tetra Tech		Date/Time: 7/26/17 18:00		Received by: <i>[Signature]</i>		Company: THWS		
Relinquished by:		Company:		Date/Time:		Received by:		Company:		
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-30191-1

Login Number: 30191
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","9.7","ng/L","J","5.8","DL","","TRG","","","34","LOQ","YES","-99","","292.9","1.00","14",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","12","ng/L","J M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","292.9","1.00","6.8",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.2","ng/L","J","4.7","DL","","TRG","","","26","LOQ","YES","-99","","292.9","1.00","10",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","31","ng/L","U M","14","DL","","TRG","","","77","LOQ","YES","-99","","292.9","1.00","31",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","2.9","ng/L","J","1.6","DL","","TRG","","","8.5","LOQ","YES","-99","","292.9","1.00","3.4",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17","ng/L","U M","6.8","DL","","TRG","","","20","LOQ","YES","-99","","292.9","1.00","17",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","STL00993","13C2 PFHxA","31","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","34.1","","292.9","1.00","0",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","STL00996","13C2 PFDA","42","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","34.1","","292.9","1.00","0",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","42","ng/L","","5.9","DL","","TRG","","","35","LOQ","YES","-99","","289","1.00","14",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","42","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","289","1.00","6.9",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","8.1","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES","-99","","289","1.00","10",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES","-99","","289","1.00","31",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","11","ng/L","","1.6","DL","","TRG","","","8.7","LOQ","YES","-99","","289","1.00","3.5",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17","ng/L","U M","6.9","DL","","TRG","","","21","LOQ","YES","-99","","289","1.00","17",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","STL00993","13C2 PFHxA","31","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","34.6","","289","1.00","0",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","STL00996","13C2 PFDA","47","ng/L","Q","-99","DL","","SURR","135","","-99","LOQ","YES","34.6","","289","1.00","0",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","285.2","1.00","14",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","285.2","1.00","7.0",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","285.2","1.00","11",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","285.2","1.00","32",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","285.2","1.00","3.5",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","285.2","1.00","18",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","35.1","","285.2","1.00","0",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","STL00996","13C2 PFDA","42","ng/L","","-99","DL","","SURR","120","","-99","LOQ","YES","35.1","","285.2","1.00","0",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","12","ng/L","J","5.9","DL","","TRG","","","35","LOQ","YES","-99","","286.3","1.00","14",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","23","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","286.3","1.00","7.0",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS),"10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","286.3","1.00","10",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"31","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","286.3","1.00","31",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"7.6","ng/L","J","1.7","DL","","TRG","","","8.7","LOQ","YES","-99","","286.3","1.00","3.5",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"17","ng/L","U M","7.0","DL","","TRG","","","21","LOQ","YES","-99","","286.3","1.00","17",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","STL00993","13C2
PFHxA),"28","ng/L","","-99","DL","","SURR","80","","-99","LOQ","YES","34.9","","286.3","1.00","0",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","STL00996","13C2
PFDA),"43","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","34.9","","286.3","1.00","0",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"12","ng/L","J","5.9","DL","","TRG","","","35","LOQ","YES","-99","","286.4","1.00","14",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"24","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","286.4","1.00","7.0",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","286.4","1.00","10",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"31","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","286.4","1.00","31",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"8.4","ng/L","J","1.7","DL","","TRG","","","8.7","LOQ","YES","-99","","286.4","1.00","3.5",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"17","ng/L","U M","7.0","DL","","TRG","","","21","LOQ","YES","-99","","286.4","1.00","17",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","STL00993","13C2
PFHxA),"29","ng/L","","-99","DL","","SURR","83","","-99","LOQ","YES","34.9","","286.4","1.00","0",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","STL00996","13C2
PFDA),"44","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","34.9","","286.4","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","279.6","1.00","14",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","279.6","1.00","7.2",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","279.6","1.00","11",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES","-99","","279.6","1.00","32",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.6","ng/L","U","1.7","DL","","TRG","","","8.9","LOQ","YES","-99","","279.6","1.00","3.6",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"18","ng/L","U","7.2","DL","","TRG","","","21","LOQ","YES","-99","","279.6","1.00","18",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","STL00993","13C2
PFHxA),"36","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","35.8","","279.6","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","STL00996","13C2
PFDA),"45","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","35.8","","279.6","1.00","0",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"31","ng/L","J","5.8","DL","","TRG","","","34","LOQ","YES","-99","","292.6","1.00","14",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"23","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","292.6","1.00","6.8",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"16","ng/L","J","4.7","DL","","TRG","","","26","LOQ","YES","-99","","292.6","1.00","10",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"31","ng/L","U","14","DL","","TRG","","","77","LOQ","YES","-99","","292.6","1.00","31",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"6.2","ng/L","J","1.6","DL","","TRG","","","8.5","LOQ","YES","-99","","292.6","1.00","3.4",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"17","ng/L","U M","6.8","DL","","TRG","","","21","LOQ","YES",-99","","292.6","1.00","17","","
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","34.2","","292.6","1.00","0","","
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","120","","-99","LOQ","YES","34.2","","292.6","1.00","0","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES",-99","","278.9","1.00","14","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99","","278.9","1.00","7.2","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES",-99","","278.9","1.00","11","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES",-99","","278.9","1.00","32","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES",-99","","278.9","1.00","3.6","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES",-99","","278.9","1.00","18","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","35.9","","278.9","1.00","0","","
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","126","","-99","LOQ","YES","35.9","","278.9","1.00","0","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J","6.1","DL","","TRG","","","36","LOQ","YES",-99","","279","1.00","14","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","13","ng/L","J M","2.5","DL","","TRG","","","18","LOQ","YES",-99","","279","1.00","7.2","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.4","ng/L","J","4.9","DL","","TRG","","","27","LOQ","YES",-99","","279","1.00","11","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES",-99","","279","1.00","32","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","J","1.7","DL","","TRG","","","9.0","LOQ","YES",-99","","279","1.00","3.6","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.2","DL","","TRG","","","22","LOQ","YES",-99","","279","1.00","18","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","35.8","","279","1.00","0","","
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","124","","-99","LOQ","YES","35.8","","279","1.00","0","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","7.9","ng/L","J M","5.7","DL","","TRG","","","33","LOQ","YES",-99","","298.7","1.00","13","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","14","ng/L","J M","2.3","DL","","TRG","","","17","LOQ","YES",-99","","298.7","1.00","6.7","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.6","DL","","TRG","","","25","LOQ","YES",-99","","298.7","1.00","10","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","30","ng/L","U","13","DL","","TRG","","","75","LOQ","YES",-99","","298.7","1.00","30","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.0","ng/L","J","1.6","DL","","TRG","","","8.4","LOQ","YES",-99","","298.7","1.00","3.3","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U M","6.7","DL","","TRG","","","20","LOQ","YES",-99","","298.7","1.00","17","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","33.5","","298.7","1.00","0","","
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","STL00996","13C2
PFDA","45","ng/L","Q","-99","DL","","SURR","136","","-99","LOQ","YES","33.5","","298.7","1.00","0","","
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"14","ng/L","U","6.2","DL","","TRG","","","36","LOQ","YES",-99,"","276","1.00","14",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99,"","276","1.00","7.2",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES",-99,"","276","1.00","11",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES",-99,"","276","1.00","33",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.6","ng/L","U","1.7","DL","","TRG","","","9.1","LOQ","YES",-99,"","276","1.00","3.6",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES",-99,"","276","1.00","18",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","36.2","","276","1.00","0",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","STL00996","13C2
PFDA","50","ng/L","Q","-99","DL","","SURR","138","","-99","LOQ","YES","36.2","","276","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES",-99,"","285.6","1.00","14",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99,"","285.6","1.00","7.0",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES",-99,"","285.6","1.00","11",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES",-99,"","285.6","1.00","32",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES",-99,"","285.6","1.00","3.5",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES",-99,"","285.6","1.00","18",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","35.0","","285.6","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","35.0","","285.6","1.00","0",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"7.4","ng/L","J","6.1","DL","","TRG","","","36","LOQ","YES",-99,"","276.6","1.00","14",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"8.7","ng/L","J M","2.5","DL","","TRG","","","18","LOQ","YES",-99,"","276.6","1.00","7.2",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES",-99,"","276.6","1.00","11",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"33","ng/L","U","15","DL","","TRG","","","81","LOQ","YES",-99,"","276.6","1.00","33",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"2.2","ng/L","J M","1.7","DL","","TRG","","","9.0","LOQ","YES",-99,"","276.6","1.00","3.6",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"18","ng/L","U M","7.2","DL","","TRG","","","22","LOQ","YES",-99,"","276.6","1.00","18",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","36.2","","276.6","1.00","0",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","36.2","","276.6","1.00","0",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES",-99,"","285.1","1.00","14",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99,"","285.1","1.00","7.0",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES",-99,"","285.1","1.00","11",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "79", "LOQ", "YES", "-99", "", "285.1", "1.00", "32", ""
"WGNA-072617-FRB-3103", "537", "RES", "320-30191-21", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.5", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "8.8", "LOQ", "YES", "-99", "", "285.1", "1.00", "3.5", ""
"WGNA-072617-FRB-3103", "537", "RES", "320-30191-21", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "285.1", "1.00", "18", ""
"WGNA-072617-FRB-3103", "537", "RES", "320-30191-21", "TALSAC", "STL00993", "13C2
PFHxA", "34", "ng/L", "", "-99", "DL", "", "SURR", "98", "", "-99", "LOQ", "YES", "35.1", "", "285.1", "1.00", "0", ""
"WGNA-072617-FRB-3103", "537", "RES", "320-30191-21", "TALSAC", "STL00996", "13C2
PFDA", "45", "ng/L", "", "-99", "DL", "", "SURR", "127", "", "-99", "LOQ", "YES", "35.1", "", "285.1", "1.00", "0", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "7.1", "ng/L", "J", "6.0", "DL", "", "TRG", "", "", "35", "LOQ", "YES", "-99", "", "284.7", "1.00", "14", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.7", "ng/L", "J M", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "284.7", "1.00", "7.0", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "4.8", "ng/L", "J", "4.8", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "284.7", "1.00", "11", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "79", "LOQ", "YES", "-99", "", "284.7", "1.00", "32", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "2.3", "ng/L", "J", "1.7", "DL", "", "TRG", "", "", "8.8", "LOQ", "YES", "-99", "", "284.7", "1.00", "3.5", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U M", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "284.7", "1.00", "18", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "STL00993", "13C2
PFHxA", "31", "ng/L", "", "-99", "DL", "", "SURR", "89", "", "-99", "LOQ", "YES", "35.1", "", "284.7", "1.00", "0", ""
"WGNA-072617-DUP03", "537", "RES", "320-30191-22", "TALSAC", "STL00996", "13C2
PFDA", "43", "ng/L", "", "-99", "DL", "", "SURR", "123", "", "-99", "LOQ", "YES", "35.1", "", "284.7", "1.00", "0", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "14", "ng/L", "U", "6.1", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "277.4", "1.00", "14", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.2", "ng/L", "U", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "277.4", "1.00", "7.2", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "5.0", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "277.4", "1.00", "11", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "15", "DL", "", "TRG", "", "", "81", "LOQ", "YES", "-99", "", "277.4", "1.00", "32", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.6", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "9.0", "LOQ", "YES", "-99", "", "277.4", "1.00", "3.6", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.2", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "277.4", "1.00", "18", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "STL00993", "13C2
PFHxA", "36", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "36.0", "", "277.4", "1.00", "0", ""
"NAWC-072617-FRB-332A", "537", "RES", "320-30191-3", "TALSAC", "STL00996", "13C2
PFDA", "45", "ng/L", "", "-99", "DL", "", "SURR", "125", "", "-99", "LOQ", "YES", "36.0", "", "277.4", "1.00", "0", ""
"NAWC-072617-RW-341", "537", "RES", "320-30191-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "12", "ng/L", "J", "6.1", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "278.5", "1.00", "14", ""
"NAWC-072617-RW-341", "537", "RES", "320-30191-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "11", "ng/L", "J M", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "278.5", "1.00", "7.2", ""
"NAWC-072617-RW-341", "537", "RES", "320-30191-4", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "4.9", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "278.5", "1.00", "11", ""
"NAWC-072617-RW-341", "537", "RES", "320-30191-4", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "81", "LOQ", "YES", "-99", "", "278.5", "1.00", "32", ""
"NAWC-072617-RW-341", "537", "RES", "320-30191-4", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "2.9", "ng/L", "J", "1.7", "DL", "", "TRG", "", "", "9.0", "LOQ", "YES", "-99", "", "278.5", "1.00", "3.6", ""
"NAWC-072617-RW-341", "537", "RES", "320-30191-4", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U M", "7.2", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "278.5", "1.00", "18", ""
"NAWC-072617-RW-341", "537", "RES", "320-30191-4", "TALSAC", "STL00993", "13C2

PFHxA","29","ng/L","",-99,"DL","",,"SURR","81","",-99,"LOQ","YES","35.9","",,"278.5","1.00","0",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","STL00996","13C2
PFDA","45","ng/L","",-99,"DL","",,"SURR","126","",-99,"LOQ","YES","35.9","",,"278.5","1.00","0",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","",,"TRG","",,"",,"35","LOQ","YES","-99","",,"284.6","1.00","14",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.0","ng/L","U","2.5","DL","",,"TRG","",,"",,"18","LOQ","YES","-99","",,"284.6","1.00","7.0",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.8","DL","",,"TRG","",,"",,"26","LOQ","YES","-99","",,"284.6","1.00","11",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","",,"TRG","",,"",,"79","LOQ","YES","-99","",,"284.6","1.00","32",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","",,"TRG","",,"",,"8.8","LOQ","YES","-99","",,"284.6","1.00","3.5",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.0","DL","",,"TRG","",,"",,"21","LOQ","YES","-99","",,"284.6","1.00","18",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","STL00993","13C2
PFHxA","34","ng/L","",-99,"DL","",,"SURR","98","",-99,"LOQ","YES","35.1","",,"284.6","1.00","0",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","STL00996","13C2
PFDA","45","ng/L","",-99,"DL","",,"SURR","127","",-99,"LOQ","YES","35.1","",,"284.6","1.00","0",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J","5.9","DL","",,"TRG","",,"",,"35","LOQ","YES","-99","",,"288.9","1.00","14",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","29","ng/L","M","2.4","DL","",,"TRG","",,"",,"17","LOQ","YES","-99","",,"288.9","1.00","6.9",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","7.2","ng/L","J","4.8","DL","",,"TRG","",,"",,"26","LOQ","YES","-99","",,"288.9","1.00","10",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","",,"TRG","",,"",,"78","LOQ","YES","-99","",,"288.9","1.00","31",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.7","ng/L","J","1.6","DL","",,"TRG","",,"",,"8.7","LOQ","YES","-99","",,"288.9","1.00","3.5",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U J M","6.9","DL","",,"TRG","",,"",,"21","LOQ","YES","-99","",,"288.9","1.00","17",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","STL00993","13C2
PFHxA","19","ng/L","Q","-99","DL","",,"SURR","56","",-99,"LOQ","YES","34.6","",,"288.9","1.00","0",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","STL00996","13C2
PFDA","45","ng/L","Q","-99","DL","",,"SURR","131","",-99,"LOQ","YES","34.6","",,"288.9","1.00","0",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","168","ng/L","",,"5.8","DL","",,"SPK","110","",,"34","LOQ","YES","136","NAWC-072617-RW-
349","294","1.00","14",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","102","ng/L","M","2.4","DL","",,"SPK","107","",,"17","LOQ","YES","68.0","NAWC-072617-RW-
349","294","1.00","6.8",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","101","ng/L","",,"4.7","DL","",,"SPK","92","",,"26","LOQ","YES","102","NAWC-072617-RW-
349","294","1.00","10",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","283","ng/L","",,"14","DL","",,"SPK","94","",,"77","LOQ","YES","300","NAWC-072617-RW-
349","294","1.00","31",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","43.3","ng/L","",,"1.6","DL","",,"SPK","109","",,"8.5","LOQ","YES","33.7","NAWC-072617-RW-
349","294","1.00","3.4",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","90.8","ng/L","J","6.8","DL","",,"SPK","139","",,"20","LOQ","YES","65.5","NAWC-072617-RW-
349","294","1.00","17",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","STL00993","13C2

PFHxA", "19.4", "ng/L", "Q", "-99", "DL", "", "SURR", "57", "", "-99", "LOQ", "YES", "34.0", "NAWC-072617-RW-349", "294", "1.00", "0", ""

"NAWC-072617-RW-349MS", "537", "RES", "320-30191-6MS", "TALSAC", "STL00996", "13C2
PFDA", "44.2", "ng/L", "", "-99", "DL", "", "SURR", "130", "", "-99", "LOQ", "YES", "34.0", "NAWC-072617-RW-349", "294", "1.00", "0", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "178", "ng/L", "", "5.9", "DL", "", "SPK", "115", "6", "35", "LOQ", "YES", "139", "NAWC-072617-RW-349", "287.8", "1.00", "14", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "107", "ng/L", "M", "2.4", "DL", "", "SPK", "112", "5", "17", "LOQ", "YES", "69.4", "NAWC-072617-RW-349", "287.8", "1.00", "6.9", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "109", "ng/L", "", "4.8", "DL", "", "SPK", "98", "8", "26", "LOQ", "YES", "104", "NAWC-072617-RW-349", "287.8", "1.00", "10", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "304", "ng/L", "", "14", "DL", "", "SPK", "99", "7", "78", "LOQ", "YES", "307", "NAWC-072617-RW-349", "287.8", "1.00", "31", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "46.5", "ng/L", "", "1.7", "DL", "", "SPK", "116", "7", "8.7", "LOQ", "YES", "34.4", "NAWC-072617-RW-349", "287.8", "1.00", "3.5", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "92.5", "ng/L", "J", "6.9", "DL", "", "SPK", "138", "2", "21", "LOQ", "YES", "66.9", "NAWC-072617-RW-349", "287.8", "1.00", "17", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "STL00993", "13C2
PFHxA", "21.1", "ng/L", "Q", "-99", "DL", "", "SURR", "61", "", "-99", "LOQ", "YES", "34.7", "NAWC-072617-RW-349", "287.8", "1.00", "0", ""

"NAWC-072617-RW-349MSD", "537", "RES", "320-30191-6MSD", "TALSAC", "STL00996", "13C2
PFDA", "45.5", "ng/L", "Q", "-99", "DL", "", "SURR", "131", "", "-99", "LOQ", "YES", "34.7", "NAWC-072617-RW-349", "287.8", "1.00", "0", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "14", "ng/L", "U", "5.9", "DL", "", "TRG", "", "", "35", "LOQ", "YES", "-99", "", "286.5", "1.00", "14", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "7.0", "ng/L", "U", "2.4", "DL", "", "TRG", "", "", "17", "LOQ", "YES", "-99", "", "286.5", "1.00", "7.0", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "10", "ng/L", "U", "4.8", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "286.5", "1.00", "10", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "31", "ng/L", "U", "14", "DL", "", "TRG", "", "", "79", "LOQ", "YES", "-99", "", "286.5", "1.00", "31", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "3.5", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "8.7", "LOQ", "YES", "-99", "", "286.5", "1.00", "3.5", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "17", "ng/L", "U", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "286.5", "1.00", "17", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "STL00993", "13C2
PFHxA", "37", "ng/L", "", "-99", "DL", "", "SURR", "106", "", "-99", "LOQ", "YES", "34.9", "", "286.5", "1.00", "0", ""

"NAWC-072617-FRB-349", "537", "RES", "320-30191-7", "TALSAC", "STL00996", "13C2
PFDA", "45", "ng/L", "", "-99", "DL", "", "SURR", "130", "", "-99", "LOQ", "YES", "34.9", "", "286.5", "1.00", "0", ""

"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "16", "ng/L", "J", "6.0", "DL", "", "TRG", "", "", "35", "LOQ", "YES", "-99", "", "283.7", "1.00", "14", ""

"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "12", "ng/L", "J M", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "283.7", "1.00", "7.0", ""

"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "5.0", "ng/L", "J", "4.8", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "283.7", "1.00", "11", ""

"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "79", "LOQ", "YES", "-99", "", "283.7", "1.00", "32", ""

"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "375-85-9", "Perfluoroheptanoic acid

(PFHpA)", "3.5", "ng/L", "J", "1.7", "DL", "", "TRG", "", "", "8.8", "LOQ", "YES", "-99", "", "283.7", "1.00", "3.5", ""
"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U M", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "283.7", "1.00", "18", ""
"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "STL00993", "13C2
PFHxA", "30", "ng/L", "", "-99", "DL", "", "SURR", "84", "", "-99", "LOQ", "YES", "35.2", "", "283.7", "1.00", "0", ""
"NAWC-072617-RW-343", "537", "RES", "320-30191-8", "TALSAC", "STL00996", "13C2
PFDA", "44", "ng/L", "", "-99", "DL", "", "SURR", "125", "", "-99", "LOQ", "YES", "35.2", "", "283.7", "1.00", "0", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "14", "ng/L", "U", "5.9", "DL", "", "TRG", "", "", "35", "LOQ", "YES", "-99", "", "288.4", "1.00", "14", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "6.9", "ng/L", "U", "2.4", "DL", "", "TRG", "", "", "17", "LOQ", "YES", "-99", "", "288.4", "1.00", "6.9", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "10", "ng/L", "U", "4.8", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "288.4", "1.00", "10", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "31", "ng/L", "U", "14", "DL", "", "TRG", "", "", "78", "LOQ", "YES", "-99", "", "288.4", "1.00", "31", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.5", "ng/L", "U", "1.6", "DL", "", "TRG", "", "", "8.7", "LOQ", "YES", "-99", "", "288.4", "1.00", "3.5", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "17", "ng/L", "U", "6.9", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "288.4", "1.00", "17", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "STL00993", "13C2
PFHxA", "35", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "34.7", "", "288.4", "1.00", "0", ""
"NAWC-072617-FRB-343", "537", "RES", "320-30191-9", "TALSAC", "STL00996", "13C2
PFDA", "44", "ng/L", "", "-99", "DL", "", "SURR", "126", "", "-99", "LOQ", "YES", "34.7", "", "288.4", "1.00", "0", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "184", "ng/L", "", "6.8", "DL", "", "SPK", "115", "", "40", "LOQ", "YES", "160", "", "250.00", "1.00", "16", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "83.8", "ng/L", "", "2.8", "DL", "", "SPK", "105", "", "20", "LOQ", "YES", "79.9", "", "250.00", "1.00", "8.0", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "121", "ng/L", "", "5.5", "DL", "", "SPK", "100", "", "30", "LOQ", "YES", "120", "", "250.00", "1.00", "12", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "343", "ng/L", "", "16", "DL", "", "SPK", "97", "", "90", "LOQ", "YES", "353", "", "250.00", "1.00", "36", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "45.5", "ng/L", "", "1.9", "DL", "", "SPK", "115", "", "10", "LOQ", "YES", "39.6", "", "250.00", "1.00", "4.0", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "99.3", "ng/L", "", "8.0", "DL", "", "SPK", "129", "", "24", "LOQ", "YES", "77.0", "", "250.00", "1.00", "20", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "STL00993", "13C2
PFHxA", "40.4", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"LCS 320-177640/2-A", "537", "RES", "LCS 320-177640/2-A", "TALSAC", "STL00996", "13C2
PFDA", "53.3", "ng/L", "Q", "-99", "DL", "", "SURR", "133", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "332", "ng/L", "E", "6.8", "DL", "", "SPK", "110", "", "40", "LOQ", "YES", "300", "", "250.00", "1.00", "16", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "155", "ng/L", "", "2.8", "DL", "", "SPK", "104", "", "20", "LOQ", "YES", "150", "", "250.00", "1.00", "8.0", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "211", "ng/L", "", "5.5", "DL", "", "SPK", "94", "", "30", "LOQ", "YES", "225", "", "250.00", "1.00", "12", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "698", "ng/L", "", "16", "DL", "", "SPK", "105", "", "90", "LOQ", "YES", "663", "", "250.00", "1.00", "36", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "87.2", "ng/L", "E", "1.9", "DL", "", "SPK", "117", "", "10", "LOQ", "YES", "74.3", "", "250.00", "1.00", "4.0", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "177", "ng/L", "E", "8.0", "DL", "", "SPK", "122", "", "24", "LOQ", "YES", "144", "", "250.00", "1.00", "20", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "STL00993", "13C2
PFHxA", "42.9", "ng/L", "", "-99", "DL", "", "SURR", "107", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"LCS 320-177651/2-A", "537", "RES", "LCS 320-177651/2-A", "TALSAC", "STL00996", "13C2

PFDA", "50.6", "ng/L", "", "-99", "DL", "", "SURR", "126", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "324", "ng/L", "E", "6.8", "DL", "", "SPK", "108", "2", "40", "LOQ", "YES", "300", "LCS 320-177651/2-A", "250.00", "1.00", "16", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "151", "ng/L", "", "2.8", "DL", "", "SPK", "101", "3", "20", "LOQ", "YES", "150", "LCS 320-177651/2-A", "250.00", "1.00", "8.0", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "206", "ng/L", "", "5.5", "DL", "", "SPK", "91", "3", "30", "LOQ", "YES", "225", "LCS 320-177651/2-A", "250.00", "1.00", "12", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "684", "ng/L", "", "16", "DL", "", "SPK", "103", "2", "90", "LOQ", "YES", "663", "LCS 320-177651/2-A", "250.00", "1.00", "36", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "84.6", "ng/L", "E", "1.9", "DL", "", "SPK", "114", "3", "10", "LOQ", "YES", "74.3", "LCS 320-177651/2-A", "250.00", "1.00", "4.0", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "171", "ng/L", "E", "8.0", "DL", "", "SPK", "119", "3", "24", "LOQ", "YES", "144", "LCS 320-177651/2-A", "250.00", "1.00", "20", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "STL00993", "13C2 PFHxA", "40.6", "ng/L", "", "-99", "DL", "", "SURR", "102", "", "-99", "LOQ", "YES", "40.0", "LCS 320-177651/2-A", "250.00", "1.00", "0", ""
"LCSD 320-177651/3-A", "537", "RES", "LCSD 320-177651/3-A", "TALSAC", "STL00996", "13C2 PFDA", "50.4", "ng/L", "", "-99", "DL", "", "SURR", "126", "", "-99", "LOQ", "YES", "40.0", "LCS 320-177651/2-A", "250.00", "1.00", "0", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.00", "1.00", "16", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.00", "1.00", "8.0", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.00", "1.00", "12", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.00", "1.00", "36", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.00", "1.00", "4.0", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.00", "1.00", "20", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "STL00993", "13C2 PFHxA", "40.1", "ng/L", "", "-99", "DL", "", "SURR", "100", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"MB 320-177640/1-A", "537", "RES", "MB 320-177640/1-A", "TALSAC", "STL00996", "13C2 PFDA", "49.7", "ng/L", "", "-99", "DL", "", "SURR", "124", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.00", "1.00", "16", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.00", "1.00", "8.0", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.00", "1.00", "12", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.00", "1.00", "36", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.00", "1.00", "4.0", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.00", "1.00", "20", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "STL00993", "13C2

PFHxA", "39.3", "ng/L", "", "-99", "DL", "", "SURR", "98", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"MB 320-177651/1-A", "537", "RES", "MB 320-177651/1-A", "TALSAC", "STL00996", "13C2
PFDA", "49.0", "ng/L", "", "-99", "DL", "", "SURR", "122", "", "-99", "LOQ", "YES", "40.0", "", "250.00", "1.00", "0", ""
"Unknown", "Unknown", "NAWC-072617-RW-332A", "07/26/2017 08:05", "AQ", "320-30191-
1", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017
12:59", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-
179727", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-RW-345", "07/26/2017 15:15", "AQ", "320-30191-
10", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017
14:01", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-
179728", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-FRB-345", "07/26/2017 15:10", "AQ", "320-30191-
11", "FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017
14:06", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-
179728", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-DUP03", "07/26/2017 07:00", "AQ", "320-30191-
12", "FD", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
14:34", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179732", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-RW-342", "07/26/2017 12:10", "AQ", "320-30191-
13", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
14:39", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179732", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-RW-332B", "07/26/2017 12:05", "AQ", "320-30191-
14", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
14:44", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179732", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-RW-117", "07/26/2017 12:35", "AQ", "320-30191-
15", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
14:48", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179732", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-FRB-117", "07/26/2017 12:30", "AQ", "320-30191-
16", "FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
14:53", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179732", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-DUP04", "07/26/2017 07:00", "AQ", "320-30191-
17", "FD", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
14:58", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179732", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "WGNA-072617-RW-4844", "07/26/2017 09:35", "AQ", "320-30191-
18", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
15:03", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179732", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "WGNA-072617-FRB-4844", "07/25/2017 09:30", "AQ", "320-30191-
19", "FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
15:17", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-
179733", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "NAWC-072617-RW-332B", "07/26/2017 08:10", "AQ", "320-30191-
2", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017
13:04", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-
179727", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown", "Unknown", "WGNA-072617-RW-3103", "07/26/2017 11:10", "AQ", "320-30191-
20", "NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017
15:22", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-

179733","320-30191-1","07/27/2017 09:20","07/28/2017 10:15", ""
"Unknown","Unknown","WGNA-072617-FRB-3103","07/26/2017 11:05","AQ","320-30191-21","FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017 15:26", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-179733", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","WGNA-072617-DUP03","07/26/2017 07:00","AQ","320-30191-22","FD", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017 15:31", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-179733", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-FRB-332A","07/26/2017 08:00","AQ","320-30191-3","FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 20:12", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179920", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-RW-341","07/26/2017 08:35","AQ","320-30191-4","NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:14", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179727", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-FRB-341","07/26/2017 08:30","AQ","320-30191-5","FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:18", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179727", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-RW-349","07/26/2017 10:35","AQ","320-30191-6","NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:23", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179727", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-RW-349MS","07/26/2017 10:35","AQ","320-30191-6MS","MS", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:28", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179727", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-RW-349MSD","07/26/2017 10:35","AQ","320-30191-6MSD","MSD", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:33", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179727", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-FRB-349","07/26/2017 10:30","AQ","320-30191-7","FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:47", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179728", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-RW-343","07/26/2017 13:55","AQ","320-30191-8","NM", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:52", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179728", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","NAWC-072617-FRB-343","07/26/2017 13:50","AQ","320-30191-9","FB", "", "3.80", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 13:56", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179728", "320-30191-1", "07/27/2017 09:20", "07/28/2017 10:15", ""
"Unknown","Unknown","LCS 320-177640/2-A", "", "AQ", "LCS 320-177640/2-A", "LCS", "", "-99", "537", "METHOD", "RES", "08/03/2017 17:23", "08/16/2017 12:55", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177640", "320-177640", "NA", "320-179727", "320-30191-1", "08/03/2017 17:23", "07/28/2017 10:15", ""
"Unknown","Unknown","LCS 320-177651/2-A", "", "AQ", "LCS 320-177651/2-A", "LCS", "", "-99", "537", "METHOD", "RES", "08/03/2017 17:40", "08/16/2017 14:25", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-177651", "320-177651", "NA", "320-179732", "320-30191-1", "08/03/2017 17:40", "07/28/2017 10:15", ""
"Unknown","Unknown","LCSD 320-177651/3-A", "", "AQ", "LCSD 320-177651/3-

A,"LCSD",,"",-99",537",METHOD",RES",08/03/2017 17:40",08/16/2017
14:29",TALSAC",COA",WET",NA",1",NA",NA",,"100",320-177651",320-177651",NA",320-
179732",320-30191-1",08/03/2017 17:40",07/28/2017 10:15",
"Unknown",Unknown",MB 320-177640/1-A",,"AQ",MB 320-177640/1-
A",MB",,"",-99",537",METHOD",RES",08/03/2017 17:23",08/16/2017
12:50",TALSAC",COA",WET",NA",1",NA",NA",,"100",320-177640",320-177640",NA",320-
179727",320-30191-1",08/03/2017 17:23",07/28/2017 10:15",
"Unknown",Unknown",MB 320-177651/1-A",,"AQ",MB 320-177651/1-
A",MB",,"",-99",537",METHOD",RES",08/03/2017 17:40",08/16/2017
14:20",TALSAC",COA",WET",NA",1",NA",NA",,"100",320-177651",320-177651",NA",320-
179732",320-30191-1",08/03/2017 17:40",07/28/2017 10:15",

Minor

- Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).
- The following surrogate recoveries were either above the 130% or below the 70% quality control limits. The samples were reanalyzed by the laboratory with similar recoveries and the original analyses were reported. The detected and nondetected results reported in the affected samples were qualified as estimated (J) and (UJ), respectively in sample NAWC-072617-RW-349. Detected results only in the samples associated with high recoveries were qualified as estimated, (J).

<u>Sample</u>	<u>Surrogate</u>
NAWC-072617-RW-349	13C2 Perfluorohexanoic acid (<70%); 13C2 Perfluorodecanoic acid (>130%)
NAWC-072617-RW-345	13C2 Perfluorodecanoic acid (>130%)
WGNA-072617-RW-4844	13C2 Perfluorodecanoic acid (>130%)
WGNA-072617-FRB-4844	13C2 Perfluorodecanoic acid (>130%)

Notes

The sampling date of 07/25/2017 on the chain of custody (COC) was incorrect for sample WGNA-072617-FRB-4844. The project manager confirmed the correct date. The chain of custody and Form I were amended with the correct sampling date of 07/26/2017.

Sample NAWC-072617-RW-332B was listed on the COC with a sampling time of 8:10 and 12:05. The laboratory analyzed both samples and all results were nondetects. There was no field blank associated with sample NAWC-072617-RW-342 listed on the COC. The project manager confirmed that sample NAWC-072617-RW-332B was sampled at 8:10 and the sample at 12:05 was NAWC-072617-FRB-342. The COC appeared to have not been changed from the previous sampling event. The Form Is and COC were amended with the correct samples.

The matrix spike / matrix spike duplicate (MS/MSD) percent recoveries (%Rs) for perfluorononanoic acid were greater than the 130% quality control limit for sample NAWC-072617-RW-349. No validation actions were warranted as the sample result was nondetected.

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

<u>Sample</u>	<u>Associated FRB</u>
NAWC-072617-RW-345	NAWC-072617-FRB-345
NAWC-072617-RW-342	NAWC-072617-FRB-342
NAWC-072617-DUP03	NAWC-072617-FRB-342
NAWC-072617-RW-117	NAWC-072617-FRB-117
NAWC-072617-RW-332A	NAWC-072617-FRB-332A
NAWC-072617-RW-341	NAWC-072617-FRB-341
NAWC-072617-RW-349	NAWC-072617-FRB-349
NAWC-072617-RW-343	NAWC-072617-FRB-343
NAWC-072617-DUP04	NAWC-072617-FRB-343
WGNA-072617-RW-4844	WGNA-072617-FRB-4844
WGNA-072617-RW-3103	WGNA-072617-FRB-3103
WGNA-072617-DUP03	WGNA-072617-FRB-3103

TO: A. FREBOWITZ
SDG: 320-30191-1

PAGE 3

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

Executive Summary

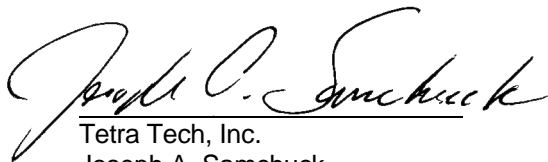
Laboratory Performance: Three samples contained one high surrogate recovery and one sample contained two surrogate recoveries outside of quality control limits.

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.



Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	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).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

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

PROJ_NO: 08005-WE04 SDG: 320-30191-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-072617-DUP03			NAWC-072617-DUP04			NAWC-072617-FRB-117			NAWC-072617-FRB-332A		
	LAB_ID	320-30191-12			320-30191-17			320-30191-16			320-30191-3		
	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
	QC_TYPE	FD			FD			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	NAWC-072617-RW-342			NAWC-072617-RW-343								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	23			13	J	P	7.2	U		7.2	U		
PERFLUOROBUTANESULFONIC ACID	31	U		32	U		32	U		32	U		
PERFLUOROHEPTANOIC ACID	7.6	J	P	3.9	J	P	3.6	U		3.6	U		
PERFLUOROHEXANESULFONIC ACID	10	U		5.4	J	P	11	U		11	U		
PERFLUORONONANOIC ACID	17	U		18	U		18	U		18	U		
PERFLUOROOCTANE SULFONIC ACID	12	J	P	17	J	P	14	U		14	U		

PROJ_NO: 08005-WE04 SDG: 320-30191-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-072617-FRB-341			NAWC-072617-FRB-342			NAWC-072617-FRB-343			NAWC-072617-FRB-345		
	LAB_ID	320-30191-5			320-30191-14			320-30191-9			320-30191-11		
	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
	QC_TYPE	FB			NM			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	U		7.2	U		6.9	U		7	U		
PERFLUOROBUTANESULFONIC ACID	32	U		32	U		31	U		32	U		
PERFLUOROHEPTANOIC ACID	3.5	U		3.6	U		3.5	U		3.5	U		
PERFLUOROHXANESULFONIC ACID	11	U		11	U		10	U		11	U		
PERFLUORONONANOIC ACID	18	U		18	U		17	U		18	U		
PERFLUOROOCTANE SULFONIC ACID	14	U		14	U		14	U		14	U		

PROJ_NO: 08005-WE04 SDG: 320-30191-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-072617-FRB-349			NAWC-072617-RW-117			NAWC-072617-RW-332A			NAWC-072617-RW-332B		
	LAB_ID	320-30191-7			320-30191-15			320-30191-1			320-30191-14		
	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
	QC_TYPE	FB			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	7	U		23			12	J	P	7	U		
PERFLUOROBUTANESULFONIC ACID	31	U		31	U		31	U		32	U		
PERFLUOROHEPTANOIC ACID	3.5	U		6.2	J	P	2.9	J	P	3.5	U		
PERFLUOROHXANESULFONIC ACID	10	U		16	J	P	7.2	J	P	11	U		
PERFLUORONONANOIC ACID	17	U		17	U		17	U		18	U		
PERFLUOROOCTANE SULFONIC ACID	14	U		31	J	P	9.7	J	P	14	U		

PROJ_NO: 08005-WE04 SDG: 320-30191-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-072617-RW-341			NAWC-072617-RW-342			NAWC-072617-RW-343			NAWC-072617-RW-345		
	LAB_ID	320-30191-4			320-30191-13			320-30191-8			320-30191-10		
	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
	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	11	J	P	24			12	J	P	42	J	R	
PERFLUOROBUTANESULFONIC ACID	32	U		31	U		32	U		31	U		
PERFLUOROHEPTANOIC ACID	2.9	J	P	8.4	J	P	3.5	J	P	11	J	R	
PERFLUOROHXANESULFONIC ACID	11	U		10	U		5	J	P	8.1	J	PR	
PERFLUORONONANOIC ACID	18	U		17	U		18	U		17	U		
PERFLUOROOCTANE SULFONIC ACID	12	J	P	12	J	P	16	J	P	42	J	R	

PROJ_NO: 08005-WE04 SDG: 320-30191-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-072617-RW-349			WGNA-072617-DUP03			WGNA-072617-FRB-3103			WGNA-072617-FRB-4844		
	LAB_ID	320-30191-6			320-30191-22			320-30191-21			320-30191-19		
	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
	QC_TYPE	NM			FD			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				WGNA-072617-RW-3103								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	29	J	R	7.7	J	P	7	U		7.2	U		
PERFLUOROBUTANESULFONIC ACID	31	U		32	U		32	U		33	U		
PERFLUOROHEPTANOIC ACID	6.7	J	PR	2.3	J	P	3.5	U		3.6	U		
PERFLUOROHXANESULFONIC ACID	7.2	J	PR	4.8	J	P	11	U		11	U		
PERFLUORONONANOIC ACID	17	U		18	U		18	U		18	U		
PERFLUOROOCTANE SULFONIC ACID	17	J	PR	7.1	J	P	14	U		14	U		

PROJ_NO: 08005-WE04 SDG: 320-30191-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-072617-RW-3103			WGNA-072617-RW-4844		
	LAB_ID	320-30191-20			320-30191-18		
	SAMP_DATE	7/26/2017			7/26/2017		
	QC_TYPE	NM			NM		
	UNITS	NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	8.7	J	P	14	J	PR	
PERFLUOROBUTANESULFONIC ACID	33	U		30	U		
PERFLUOROHEPTANOIC ACID	2.2	J	P	7	J	PR	
PERFLUOROHEXANESULFONIC ACID	11	U		10	U		
PERFLUORONONANOIC ACID	18	U		17	U		
PERFLUOROOCTANE SULFONIC ACID	7.4	J	P	7.9	J	PR	

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-332A Lab Sample ID: 320-30191-1
 Matrix: Water Lab File ID: 2017.08.16_537C_005.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 292.9(mL) Date Analyzed: 08/16/2017 12:59
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.7	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	12	J-M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U-M	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U-M	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	123		70-130

Ali L. Salaman
08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-332B Lab Sample ID: 320-30191-2
 Matrix: Water Lab File ID: 2017.08.16_537C_006.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 285.6(mL) Date Analyzed: 08/16/2017 13:04
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	125		70-130

Teri L. Salzman
08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-332A Lab Sample ID: 320-30191-3
 Matrix: Water Lab File ID: 2017.08.16_537D_057.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 277.4 (mL) Date Analyzed: 08/16/2017 20:12
 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.: 179920 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

Ali L. Salaman
08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-341 Lab Sample ID: 320-30191-4
 Matrix: Water Lab File ID: 2017.08.16_537C_008.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 278.5 (mL) Date Analyzed: 08/16/2017 13:14
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	11	J-M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U-M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	126		70-130

Abdul Salam

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-341 Lab Sample ID: 320-30191-5
 Matrix: Water Lab File ID: 2017.08.16_537C_009.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 284.6(mL) Date Analyzed: 08/16/2017 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

Wesley L. Selman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-349 Lab Sample ID: 320-30191-6
 Matrix: Water Lab File ID: 2017.08.16_537C_010.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 288.9(mL) Date Analyzed: 08/16/2017 13:23
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	29	M J	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	J M UJ	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U UJ	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	56	Q	70-130
STL00996	13C2 PFDA	131	Q	70-130

Amir L. Salameh
08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-349 Lab Sample ID: 320-30191-7
 Matrix: Water Lab File ID: 2017.08.16_537C_015.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 286.5 (mL) Date Analyzed: 08/16/2017 13:47
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	130		70-130

Ali L. Salameh

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-343 Lab Sample ID: 320-30191-8
 Matrix: Water Lab File ID: 2017.08.16_537C_016.d
 Analysis Method: 537 Date Collected: 07/26/2017 13:55
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 283.7(mL) Date Analyzed: 08/16/2017 13:52
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	12	J M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.0	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	125		70-130

Abdul L. Saleem

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-343 Lab Sample ID: 320-30191-9
 Matrix: Water Lab File ID: 2017.08.16_537C_017.d
 Analysis Method: 537 Date Collected: 07/26/2017 13:50
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 288.4 (mL) Date Analyzed: 08/16/2017 13:56
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	U	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

Teri L. Salaman
08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-345 Lab Sample ID: 320-30191-10
 Matrix: Water Lab File ID: 2017.08.16_537C_018.d
 Analysis Method: 537 Date Collected: 07/26/2017 15:15
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 289(mL) Date Analyzed: 08/16/2017 14:01
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42		35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	42	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	135	Q	70-130

Ali L. Salaman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-345 Lab Sample ID: 320-30191-11
 Matrix: Water Lab File ID: 2017.08.16_537C_019.d
 Analysis Method: 537 Date Collected: 07/26/2017 15:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 285.2 (mL) Date Analyzed: 08/16/2017 14:06
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	120		70-130

Ali L. Salaman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-DUP03 Lab Sample ID: 320-30191-12
 Matrix: Water Lab File ID: 2017.08.16_537C_025.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 286.3(mL) Date Analyzed: 08/16/2017 14:34
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U-M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	123		70-130

Wesley L. Salomon
08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-342 Lab Sample ID: 320-30191-13
 Matrix: Water Lab File ID: 2017.08.16_537C_026.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 286.4 (mL) Date Analyzed: 08/16/2017 14:39
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U-M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	125		70-130

Ali L. Salameh

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: NAWC-072617-FRB-342
 Client Sample ID: ~~NAWC-072617-RW-332B~~ Lab Sample ID: 320-30191-14
 Matrix: Water Lab File ID: 2017.08.16_537C_027.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 279.6(mL) Date Analyzed: 08/16/2017 14:44
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

Wesley L. Salzman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-117 Lab Sample ID: 320-30191-15
 Matrix: Water Lab File ID: 2017.08.16_537C_028.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 292.6(mL) Date Analyzed: 08/16/2017 14:48
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	120		70-130

Ali L. Salaman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-117 Lab Sample ID: 320-30191-16
 Matrix: Water Lab File ID: 2017.08.16_537C_029.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 278.9(mL) Date Analyzed: 08/16/2017 14:53
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

Ali L. Salaman
08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-DUP04 Lab Sample ID: 320-30191-17
 Matrix: Water Lab File ID: 2017.08.16_537C_030.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 279(mL) Date Analyzed: 08/16/2017 14:58
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	13	J-M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U-M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.4	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	124		70-130

Amir L. Salameh

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-RW-4844 Lab Sample ID: 320-30191-18
 Matrix: Water Lab File ID: 2017.08.16_537C_031.d
 Analysis Method: 537 Date Collected: 07/26/2017 09:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 298.7(mL) Date Analyzed: 08/16/2017 15:03
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.9	J M	33	13	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J M	17	6.7	2.3
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	20	17	6.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	8.4	3.3	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U	75	30	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	136	Q	70-130

Steve L. Salzman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-FRB-4844 Lab Sample ID: 320-30191-19
 Matrix: Water Lab File ID: 2017.08.16_537C_034.d
 Analysis Method: 537 Date Collected: 07/25/2017 09:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 276 (mL) Date Analyzed: 08/16/2017 15:17
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	138	Q	70-130

Amir L. Salaman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-RW-3103 Lab Sample ID: 320-30191-20
 Matrix: Water Lab File ID: 2017.08.16_537C_035.d
 Analysis Method: 537 Date Collected: 07/26/2017 11:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 276.6(mL) Date Analyzed: 08/16/2017 15:22
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.4	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	8.7	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.2	J M	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

Wesley L. Selman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-FRB-3103 Lab Sample ID: 320-30191-21
 Matrix: Water Lab File ID: 2017.08.16_537C_036.d
 Analysis Method: 537 Date Collected: 07/26/2017 11:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 285.1(mL) Date Analyzed: 08/16/2017 15:26
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

Wesley L. Salzman

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-DUP03 Lab Sample ID: 320-30191-22
 Matrix: Water Lab File ID: 2017.08.16_537C_037.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 284.7(mL) Date Analyzed: 08/16/2017 15:31
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.1	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	J-M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U-M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.8	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

Steve L. Selman
08/28/2017

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-332A Lab Sample ID: 320-30191-1
 Matrix: Water Lab File ID: 2017.08.16_537C_005.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 292.9(mL) Date Analyzed: 08/16/2017 12:59
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.7	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	12	J M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U M	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	123		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-332B Lab Sample ID: 320-30191-2
 Matrix: Water Lab File ID: 2017.08.16_537C_006.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 285.6(mL) Date Analyzed: 08/16/2017 13:04
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-332A Lab Sample ID: 320-30191-3
 Matrix: Water Lab File ID: 2017.08.16_537D_057.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 277.4 (mL) Date Analyzed: 08/16/2017 20:12
 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.: 179920 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-341 Lab Sample ID: 320-30191-4
 Matrix: Water Lab File ID: 2017.08.16_537C_008.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 278.5 (mL) Date Analyzed: 08/16/2017 13:14
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	11	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	126		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-341 Lab Sample ID: 320-30191-5
 Matrix: Water Lab File ID: 2017.08.16_537C_009.d
 Analysis Method: 537 Date Collected: 07/26/2017 08:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 284.6(mL) Date Analyzed: 08/16/2017 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-349 Lab Sample ID: 320-30191-6
 Matrix: Water Lab File ID: 2017.08.16_537C_010.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 288.9(mL) Date Analyzed: 08/16/2017 13:23
 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.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	29	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U J M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	56	Q	70-130
STL00996	13C2 PFDA	131	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-349 Lab Sample ID: 320-30191-7
 Matrix: Water Lab File ID: 2017.08.16_537C_015.d
 Analysis Method: 537 Date Collected: 07/26/2017 10:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 286.5 (mL) Date Analyzed: 08/16/2017 13:47
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	130		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-343 Lab Sample ID: 320-30191-8
 Matrix: Water Lab File ID: 2017.08.16_537C_016.d
 Analysis Method: 537 Date Collected: 07/26/2017 13:55
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 283.7(mL) Date Analyzed: 08/16/2017 13:52
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	12	J M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.0	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-343 Lab Sample ID: 320-30191-9
 Matrix: Water Lab File ID: 2017.08.16_537C_017.d
 Analysis Method: 537 Date Collected: 07/26/2017 13:50
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 288.4(mL) Date Analyzed: 08/16/2017 13:56
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	U	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-345 Lab Sample ID: 320-30191-10
 Matrix: Water Lab File ID: 2017.08.16_537C_018.d
 Analysis Method: 537 Date Collected: 07/26/2017 15:15
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 289(mL) Date Analyzed: 08/16/2017 14:01
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42		35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	42	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	135	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-345 Lab Sample ID: 320-30191-11
 Matrix: Water Lab File ID: 2017.08.16_537C_019.d
 Analysis Method: 537 Date Collected: 07/26/2017 15:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 285.2 (mL) Date Analyzed: 08/16/2017 14:06
 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.: 179728 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	120		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-DUP03 Lab Sample ID: 320-30191-12
 Matrix: Water Lab File ID: 2017.08.16_537C_025.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 286.3(mL) Date Analyzed: 08/16/2017 14:34
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	123		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-342 Lab Sample ID: 320-30191-13
 Matrix: Water Lab File ID: 2017.08.16_537C_026.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 286.4 (mL) Date Analyzed: 08/16/2017 14:39
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: NAWC-072617-FRB-342
 Client Sample ID: NAWC-072617-RW-332B Lab Sample ID: 320-30191-14
 Matrix: Water Lab File ID: 2017.08.16_537C_027.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 279.6(mL) Date Analyzed: 08/16/2017 14:44
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-RW-117 Lab Sample ID: 320-30191-15
 Matrix: Water Lab File ID: 2017.08.16_537C_028.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 292.6(mL) Date Analyzed: 08/16/2017 14:48
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	120		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-FRB-117 Lab Sample ID: 320-30191-16
 Matrix: Water Lab File ID: 2017.08.16_537C_029.d
 Analysis Method: 537 Date Collected: 07/26/2017 12:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 278.9(mL) Date Analyzed: 08/16/2017 14:53
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: NAWC-072617-DUP04 Lab Sample ID: 320-30191-17
 Matrix: Water Lab File ID: 2017.08.16_537C_030.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 279(mL) Date Analyzed: 08/16/2017 14:58
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	13	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.4	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	124		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-RW-4844 Lab Sample ID: 320-30191-18
 Matrix: Water Lab File ID: 2017.08.16_537C_031.d
 Analysis Method: 537 Date Collected: 07/26/2017 09:35
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 298.7(mL) Date Analyzed: 08/16/2017 15:03
 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.: 179732 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.9	J M	33	13	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J M	17	6.7	2.3
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	20	17	6.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	8.4	3.3	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U	75	30	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	136	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-FRB-4844 Lab Sample ID: 320-30191-19
 Matrix: Water Lab File ID: 2017.08.16_537C_034.d
 Analysis Method: 537 Date Collected: 07/25/2017 09:30
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 276 (mL) Date Analyzed: 08/16/2017 15:17
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	138	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-RW-3103 Lab Sample ID: 320-30191-20
 Matrix: Water Lab File ID: 2017.08.16_537C_035.d
 Analysis Method: 537 Date Collected: 07/26/2017 11:10
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 276.6(mL) Date Analyzed: 08/16/2017 15:22
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.4	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	8.7	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.2	J M	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-FRB-3103 Lab Sample ID: 320-30191-21
 Matrix: Water Lab File ID: 2017.08.16_537C_036.d
 Analysis Method: 537 Date Collected: 07/26/2017 11:05
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 285.1(mL) Date Analyzed: 08/16/2017 15:26
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: WGNA-072617-DUP03 Lab Sample ID: 320-30191-22
 Matrix: Water Lab File ID: 2017.08.16_537C_037.d
 Analysis Method: 537 Date Collected: 07/26/2017 07:00
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 284.7(mL) Date Analyzed: 08/16/2017 15:31
 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.: 179733 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.1	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	J M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.8	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

Appendix C

Support Documentation

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 50%	ORIGINAL	DUPLICATE SAMPLE	DIFFERENCE >2XRL
	NAWC-072617- RW-342	NAWC-072617- DUP03				SAMPLE CONC >2xRL	CONC >2xRL	
Perfluorooctanesulfonic acid (PFOS)	12	12	35	0.000	FALSE	FALSE	FALSE	FALSE
Perfluorooctanoic acid (PFOA)	24	23	17	4.255	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	8.4	7.6	8.7	10.000	FALSE	FALSE	FALSE	FALSE

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 50%	ORIGINAL	DUPLICATE SAMPLE	DIFFERENCE >2XRL
	NAWC-072617- RW-343	NAWC-072617- DUP04				SAMPLE CONC >2xRL	CONC >2xRL	
Perfluorooctanesulfonic acid (PFOS)	16	17	35	6.061	FALSE	FALSE	FALSE	FALSE
Perfluorooctanoic acid (PFOA)	12	13	18	8.000	FALSE	FALSE	FALSE	FALSE
Perfluorohexanesulfonic acid (PFHxS)	5	5.4	26	7.692	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	3.5	3.9	8.8	10.811	FALSE	FALSE	FALSE	FALSE

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 50%	ORIGINAL	DUPLICATE SAMPLE	DIFFERENCE >2XRL
	WGNA-072617- RW-3103	WGNA-072617- DUP03				SAMPLE CONC >2xRL	CONC >2xRL	
Perfluorooctanoic acid (PFOA)	8.7	7.7	18	12.195	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	2.2	2.3	9	4.444	FALSE	FALSE	FALSE	FALSE
Perfluorohexanesulfonic acid (PFHxS)	11	4.8	27	78.481	TRUE	FALSE	FALSE	FALSE
Perfluorooctanesulfonic acid (PFOS)	7.4	7.1	36	4.138	FALSE	FALSE	FALSE	FALSE

TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact TetraTech 234 Mall Boulevard Suite 260 King of Prussia, PA 19406 610-382-1174 610-491-9688 Project Name: WE04 Site: WE04 P O # 1132358 (through EarthToxics)		Project Manager: Andy Frebowitz Tel/Fax: 610.382.1170		Site Contact: Mary Kay Bond Lab Contact: Dave Alltucker		Date: 7/26/17 Carrier: FedEx		COC No: 1 of 2 COCs Sampler: Mary Kay Bond For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input checked="" type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS / MSD (Y / N) EPA 537 UCMR3		320-30191 Chain of Custody			
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.			Sample Specific Notes:
NAWC-072617-RW-332A		7/26/2017	8:05	G	DW	2	N	N	
NAWC-072617-RW-332B		7/26/2017	8:10	G	DW	2	N	N	
NAWC-072617-FRB-332A		7/26/2017	8:00	G	BLK	2	N	N	Field Reagent Blank
NAWC-072617-RW-341		7/26/2017	8:35	G	DW	2	N	N	
NAWC-072617-FRB-341		7/26/2017	8:30	G	BLK	2	N	N	Field Reagent Blank
NAWC-072617-RW-349		7/26/2017	10:35	G	DW	6	N	Y	MS/MSD
NAWC-072617-FRB-349		7/26/2017	10:30	G	BLK	2	N	N	Field Reagent Blank
NAWC-072617-RW-343		7/26/2017	13:55	G	DW	2	N	N	
NAWC-072617-FRB-343		7/26/2017	13:50	G	BLK	2	N	N	Field Reagent Blank
NAWC-072617-RW-345		7/26/2017	15:15	G	DW	2	N	N	
NAWC-072617-FRB-345		7/26/2017	15:10	G	BLK	2	N	N	Field Reagent Blank
NAWC-072617-DUP03		7/26/2017	07:00	G	DW	2	N	N	Duplicate
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months		
Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 38		Corr'd: 58		Therm ID No.: Ak-2	
Relinquished by: Mary Kay Bond		Company: Tetra Tech		Date/Time: 7/26/17 18:00		Received by: [Signature]		Company: TAW	
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time: 7/27/17 0920	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Date/Time:	

Page 444 of 446

TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605-1500
 phone 916.373.5600 fax 303.467.7248

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact TetraTech 234 Mall Boulevard Suite 260 King of Prussia, PA 19406 610-382-3244 610-491-9688 Project Name: WE04 Site: WE04 P O # 1132358 (through EarthToxics)		Project Manager: Andy Frebowitz Tel/Fax: 610.382.1170		Site Contact: Mary Kay Bond Lab Contact: Dave Alltucker		Date: 7/26/17 Carrier: FedEx		COC No: 2 of 2 COCs Sampler: Andy Frebowitz, Mary Kay Bond For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <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-072617-RW-342	7/26/2017	12:10	G	DW	2	N	N	Y												
NAWC-072617-RW-332B	7/26/2017	12:05	G	DW	2	N	N	Y	Should be sample NAWC-072617-FRB-342											
NAWC-072617-RW-117	7/26/2017	12:35	G	DW	2	N	N	Y												
NAWC-072617-FRB-117	7/26/2017	12:30	G	BLK	2	N	N	Y	Field Reagent Blank											
NAWC-072617-DUP04	7/26/2017	07:00	G	DW	2	N	N	Y	Duplicate											
WGNA-072617-RW-4844	7/26/2017	9:35	G	DW	2	N	N	Y												
WGNA-072617-FRB-4844	7/25/2017	9:30	G	BLK	2	N	N	Y	Should be sample date of 07/26/2017											
WGNA-072617-RW-3103	7/26/2017	11:10	G	DW	2	N	N	Y												
WGNA-072617-FRB-3103	7/26/2017	11:05	G	BLK	2	N	N	Y	Field Reagent Blank											
WGNA-072617-DUP03	7/26/2017	7:00	G	DW	2	N	N	Y	Duplicate											

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 Comments Section if the lab is to dispose of the sample.
 Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for _____ Months

Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temp. (°C):	Obs'd: 38	Corr'd: 38	Therm ID No.: ALC-2
Relinquished by: Mary Kay Bond <i>Mary Kay Bond</i>	Company: Tetra Tech	Date/Time: 7/26/17 18:00	Received by: <i>7.5</i>	Company: THWS	Date/Time: 7/27/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

**Job Narrative
320-30191-1**

Receipt

The samples were received on 7/27/2017 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8° 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: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-177640 and analytical batch 320-179727 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537: Surrogate recovery for the following samples was outside control limits: NAWC-072617-RW-349 (320-30191-6), NAWC-072617-RW-349 (320-30191-6[MS]), NAWC-072617-RW-349 (320-30191-6[MSD]) and (LCS 320-177640/2-A). Re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 537: Surrogate recovery for the following sample was outside control limits: NAWC-072617-RW-345 (320-30191-10). Re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 537: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) has E flags because it is spiked at the upper level of the calibration curve as specified in the method. (LCS 320-177651/2-A) and (LCSD 320-177651/3-A)

Method(s) 537: Surrogate recovery for the following samples was outside control limits: WGNA-072617-RW-4844 (320-30191-18) and WGNA-072617-FRB-4844 (320-30191-19). 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 320-177651.

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: 320-30191-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-30191-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-30191-1	NAWC-072617-RW-332A	Water	07/26/17 08:05	07/27/17 09:20
320-30191-2	NAWC-072617-RW-332B	Water	07/26/17 08:10	07/27/17 09:20
320-30191-3	NAWC-072617-FRB-332A	Water	07/26/17 08:00	07/27/17 09:20
320-30191-4	NAWC-072617-RW-341	Water	07/26/17 08:35	07/27/17 09:20
320-30191-5	NAWC-072617-FRB-341	Water	07/26/17 08:30	07/27/17 09:20
320-30191-6	NAWC-072617-RW-349	Water	07/26/17 10:35	07/27/17 09:20
320-30191-7	NAWC-072617-FRB-349	Water	07/26/17 10:30	07/27/17 09:20
320-30191-8	NAWC-072617-RW-343	Water	07/26/17 13:55	07/27/17 09:20
320-30191-9	NAWC-072617-FRB-343	Water	07/26/17 13:50	07/27/17 09:20
320-30191-10	NAWC-072617-RW-345	Water	07/26/17 15:15	07/27/17 09:20
320-30191-11	NAWC-072617-FRB-345	Water	07/26/17 15:10	07/27/17 09:20
320-30191-12	NAWC-072617-DUP03	Water	07/26/17 07:00	07/27/17 09:20
320-30191-13	NAWC-072617-RW-342	Water	07/26/17 12:10	07/27/17 09:20
320-30191-14	NAWC-072617-RW-332B NAWC-072617-FRB-342	Water	07/26/17 12:05	07/27/17 09:20
320-30191-15	NAWC-072617-RW-117	Water	07/26/17 12:35	07/27/17 09:20
320-30191-16	NAWC-072617-FRB-117	Water	07/26/17 12:30	07/27/17 09:20
320-30191-17	NAWC-072617-DUP04	Water	07/26/17 07:00	07/27/17 09:20
320-30191-18	WGNA-072617-RW-4844	Water	07/26/17 09:35	07/27/17 09:20
320-30191-19	WGNA-072617-FRB-4844	Water	07/26/17 07/25/17 09:30	07/27/17 09:20
320-30191-20	WGNA-072617-RW-3103	Water	07/26/17 11:10	07/27/17 09:20
320-30191-21	WGNA-072617-FRB-3103	Water	07/26/17 11:05	07/27/17 09:20
320-30191-22	WGNA-072617-DUP03	Water	07/26/17 07:00	07/27/17 09:20

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-30191-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-072617-RW-332 A	320-30191-1	91	123
NAWC-072617-RW-332 B	320-30191-2	100	125
NAWC-072617-FRB-33 2A	320-30191-3	101	125
NAWC-072617-RW-341	320-30191-4	81	126
NAWC-072617-FRB-34 1	320-30191-5	98	127
NAWC-072617-RW-349	320-30191-6	56 Q	131 Q
NAWC-072617-FRB-34 9	320-30191-7	106	130
NAWC-072617-RW-343	320-30191-8	84	125
NAWC-072617-FRB-34 3	320-30191-9	101	126
NAWC-072617-RW-345	320-30191-10	90	135 Q
NAWC-072617-FRB-34 5	320-30191-11	95	120
NAWC-072617-DUP03	320-30191-12	80	123
NAWC-072617-RW-342	320-30191-13	83	125
NAWC-072617-RW-332 B	320-30191-14	101	125
NAWC-072617-RW-117	320-30191-15	92	120
NAWC-072617-FRB-11 7	320-30191-16	101	126
NAWC-072617-DUP04	320-30191-17	88	124
WGNA-072617-RW-484 4	320-30191-18	88	136 Q
WGNA-072617-FRB-48 44	320-30191-19	96	138 Q
WGNA-072617-RW-310 3	320-30191-20	89	123
WGNA-072617-FRB-31 03	320-30191-21	98	127
WGNA-072617-DUP03	320-30191-22	89	123
	MB 320-177640/1-A	100	124
	MB 320-177651/1-A	98	122
	LCS 320-177640/2-A	101	133 Q
	LCS 320-177651/2-A	107	126
	LCSD 320-177651/3-A	102	126

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-072617-RW-349 MS	320-30191-6 MS	57 Q	130
NAWC-072617-RW-349 MSD	320-30191-6 MSD	61 Q	131 Q

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.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_004.d
 Lab ID: LCS 320-177640/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	160	184	115	70-130	
Perfluorooctanoic acid (PFOA)	79.9	83.8	105	70-130	
Perfluorononanoic acid (PFNA)	77.0	99.3	129	70-130	
Perfluorohexanesulfonic acid (PFHxS)	120	121	100	70-130	
Perfluoroheptanoic acid (PFHpA)	39.6	45.5	115	70-130	
Perfluorobutanesulfonic acid (PFBS)	353	343	97	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_023.d
 Lab ID: LCS 320-177651/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	300	332	110	70-130	E
Perfluorooctanoic acid (PFOA)	150	155	104	70-130	
Perfluorononanoic acid (PFNA)	144	177	122	70-130	E
Perfluorohexanesulfonic acid (PFHxS)	225	211	94	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	87.2	117	70-130	E
Perfluorobutanesulfonic acid (PFBS)	663	698	105	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.: 320-30191-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_024.d

Lab ID: LCSD 320-177651/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	300	324	108	2	30	70-130	E
Perfluorooctanoic acid (PFOA)	150	151	101	3	30	70-130	
Perfluorononanoic acid (PFNA)	144	171	119	3	30	70-130	E
Perfluorohexanesulfonic acid (PFHxS)	225	206	91	3	30	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	84.6	114	3	30	70-130	E
Perfluorobutanesulfonic acid (PFBS)	663	684	103	2	30	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_011.d
 Lab ID: 320-30191-6 MS Client ID: NAWC-072617-RW-349 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	136	17 J	168	110	70-130	
Perfluorooctanoic acid (PFOA)	68.0	29	102	107	70-130	M
Perfluorononanoic acid (PFNA)	65.5	17 U	90.8	139	70-130	J
Perfluorohexanesulfonic acid (PFHxS)	102	7.2 J	101	92	70-130	
Perfluoroheptanoic acid (PFHpA)	33.7	6.7 J	43.3	109	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	31 U	283	94	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_012.d
 Lab ID: 320-30191-6 MSD Client ID: NAWC-072617-RW-349 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	139	178	115	6	30	70-130	
Perfluorooctanoic acid (PFOA)	69.4	107	112	5	30	70-130	M
Perfluorononanoic acid (PFNA)	66.9	92.5	138	2	30	70-130	J
Perfluorohexanesulfonic acid (PFHxS)	104	109	98	8	30	70-130	
Perfluoroheptanoic acid (PFHpA)	34.4	46.5	116	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	307	304	99	7	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.: 320-30191-1
 SDG No.: _____
 Lab File ID: 2017.08.16_537C_003.d Lab Sample ID: MB 320-177640/1-A
 Matrix: Water Date Extracted: 08/03/2017 17:23
 Instrument ID: A8_N Date Analyzed: 08/16/2017 12:50
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-177640/2-A	2017.08.16_537C 004.d	08/16/2017 12:55
NAWC-072617-RW-332A	320-30191-1	2017.08.16_537C 005.d	08/16/2017 12:59
NAWC-072617-RW-332B	320-30191-2	2017.08.16_537C 006.d	08/16/2017 13:04
NAWC-072617-RW-341	320-30191-4	2017.08.16_537C 008.d	08/16/2017 13:14
NAWC-072617-FRB-341	320-30191-5	2017.08.16_537C 009.d	08/16/2017 13:18
NAWC-072617-RW-349	320-30191-6	2017.08.16_537C 010.d	08/16/2017 13:23
NAWC-072617-RW-349 MS	320-30191-6 MS	2017.08.16_537C 011.d	08/16/2017 13:28
NAWC-072617-RW-349 MSD	320-30191-6 MSD	2017.08.16_537C 012.d	08/16/2017 13:33
NAWC-072617-FRB-349	320-30191-7	2017.08.16_537C 015.d	08/16/2017 13:47
NAWC-072617-RW-343	320-30191-8	2017.08.16_537C 016.d	08/16/2017 13:52
NAWC-072617-FRB-343	320-30191-9	2017.08.16_537C 017.d	08/16/2017 13:56
NAWC-072617-RW-345	320-30191-10	2017.08.16_537C 018.d	08/16/2017 14:01
NAWC-072617-FRB-345	320-30191-11	2017.08.16_537C 019.d	08/16/2017 14:06
NAWC-072617-FRB-332A	320-30191-3	2017.08.16_537D 057.d	08/16/2017 20:12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-177640/1-A
 Matrix: Water Lab File ID: 2017.08.16_537C_003.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/03/2017 17:23
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/16/2017 12:50
 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.: 179727 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	100		70-130
STL00996	13C2 PFDA	124		70-130

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab File ID: 2017.08.16_537C_022.d Lab Sample ID: MB 320-177651/1-A
 Matrix: Water Date Extracted: 08/03/2017 17:40
 Instrument ID: A8_N Date Analyzed: 08/16/2017 14:20
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-177651/2-A	2017.08.16_537C_023.d	08/16/2017 14:25
	LCSD 320-177651/3-A	2017.08.16_537C_024.d	08/16/2017 14:29
NAWC-072617-DUP03	320-30191-12	2017.08.16_537C_025.d	08/16/2017 14:34
NAWC-072617-RW-342	320-30191-13	2017.08.16_537C_026.d	08/16/2017 14:39
NAWC-072617-RW-332B	320-30191-14	2017.08.16_537C_027.d	08/16/2017 14:44
NAWC-072617-RW-117	320-30191-15	2017.08.16_537C_028.d	08/16/2017 14:48
NAWC-072617-FRB-117	320-30191-16	2017.08.16_537C_029.d	08/16/2017 14:53
NAWC-072617-DUP04	320-30191-17	2017.08.16_537C_030.d	08/16/2017 14:58
WGNA-072617-RW-4844	320-30191-18	2017.08.16_537C_031.d	08/16/2017 15:03
WGNA-072617-FRB-4844	320-30191-19	2017.08.16_537C_034.d	08/16/2017 15:17
WGNA-072617-RW-3103	320-30191-20	2017.08.16_537C_035.d	08/16/2017 15:22
WGNA-072617-FRB-3103	320-30191-21	2017.08.16_537C_036.d	08/16/2017 15:26
WGNA-072617-DUP03	320-30191-22	2017.08.16_537C_037.d	08/16/2017 15:31

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-177651/1-A
 Matrix: Water Lab File ID: 2017.08.16_537C_022.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/03/2017 17:40
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/16/2017 14:20
 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.: 179732 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	98		70-130
STL00996	13C2 PFDA	122		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	2250916	1.95	5850602	2.21		
UPPER LIMIT	3376374	2.45	8775903	2.71		
LOWER LIMIT	1125458	1.45	2925301	1.71		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-179319/9		2177935	1.94	5998180	2.20	
ICV 320-179319/11		1980065	1.94	5824653	2.19	
CCVL 320-179695/4		2440436	1.99	6032262	2.21	
CCV 320-179727/1 CCVIS		2038727	1.95	5758922	2.18	
MB 320-177640/1-A		2039484	1.96	5859519	2.19	
LCS 320-177640/2-A		2195855	1.95	6260681	2.18	
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18	
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18	
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17	
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18	
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18	
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18	
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17	
CCV 320-179727/13 CCVIS		1866257	1.95	5698459	2.18	
CCV 320-179728/13 CCVIS		1866257	1.95	5698459	2.18	
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17	
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17	
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17	
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17	
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17	
CCV 320-179728/20 CCVIS		1760639	1.94	5486673	2.17	
CCV 320-179732/20 CCVIS		1760639	1.94	5486673	2.17	
MB 320-177651/1-A		1954348	1.94	5738380	2.17	
LCS 320-177651/2-A		1889531	1.95	5624637	2.18	
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18	
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18	
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17	

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.: 320-30191-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	2250916	1.95	5850602	2.21		
UPPER LIMIT	3376374	2.45	8775903	2.71		
LOWER LIMIT	1125458	1.45	2925301	1.71		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17	
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18	
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17	
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17	
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18	
CCV 320-179732/32 CCVIS		1839473	1.94	5667758	2.18	
CCV 320-179733/32 CCVIS		1839473	1.94	5667758	2.18	
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17	
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17	
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17	
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17	
CCV 320-179733/38 CCVIS		1857646	1.94	5657569	2.17	
CCV 320-179920/1 CCVIS		1811420	1.93	5562915	2.16	
320-30191-3	NAWC-072617-FRB-332A	1923676	1.93	5905224	2.16	
CCV 320-179920/13 CCVIS		1854955	1.94	5653051	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179727/1 Date Analyzed: 08/16/2017 12:40
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_001 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	2038727	1.95	5758922	2.18		
UPPER LIMIT	2854218	2.45	8062491	2.68		
LOWER LIMIT	1427109	1.45	4031245	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177640/1-A		2039484	1.96	5859519	2.19	
LCS 320-177640/2-A		2195855	1.95	6260681	2.18	
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18	
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18	
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17	
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18	
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18	
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18	
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179727/13 Date Analyzed: 08/16/2017 13:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1866257	1.95	5698459	2.18		
UPPER LIMIT	2612760	2.45	7977843	2.68		
LOWER LIMIT	1306380	1.45	3988921	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177640/1-A		2039484	1.96	5859519	2.19	
LCS 320-177640/2-A		2195855	1.95	6260681	2.18	
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18	
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18	
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17	
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18	
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18	
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18	
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179728/13 Date Analyzed: 08/16/2017 13:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1866257	1.95	5698459	2.18		
UPPER LIMIT	2612760	2.45	7977843	2.68		
LOWER LIMIT	1306380	1.45	3988921	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17	
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17	
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17	
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17	
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179728/20 Date Analyzed: 08/16/2017 14:10
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1760639	1.94	5486673	2.17		
UPPER LIMIT	2464895	2.44	7681342	2.67		
LOWER LIMIT	1232447	1.44	3840671	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17	
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17	
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17	
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17	
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179732/20 Date Analyzed: 08/16/2017 14:10
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1760639	1.94	5486673	2.17		
UPPER LIMIT	2464895	2.44	7681342	2.67		
LOWER LIMIT	1232447	1.44	3840671	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177651/1-A		1954348	1.94	5738380	2.17	
LCS 320-177651/2-A		1889531	1.95	5624637	2.18	
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18	
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18	
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17	
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17	
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18	
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17	
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17	
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179732/32 Date Analyzed: 08/16/2017 15:07
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1839473	1.94	5667758	2.18		
UPPER LIMIT	2575262	2.44	7934861	2.68		
LOWER LIMIT	1287631	1.44	3967431	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-177651/1-A		1954348	1.94	5738380	2.17	
LCS 320-177651/2-A		1889531	1.95	5624637	2.18	
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18	
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18	
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17	
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17	
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18	
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17	
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17	
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179733/32 Date Analyzed: 08/16/2017 15:07
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1839473	1.94	5667758	2.18		
UPPER LIMIT	2575262	2.44	7934861	2.68		
LOWER LIMIT	1287631	1.44	3967431	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17	
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17	
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17	
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179733/38 Date Analyzed: 08/16/2017 15:36
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537C_038 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1857646	1.94	5657569	2.17		
UPPER LIMIT	2600704	2.44	7920597	2.67		
LOWER LIMIT	1300352	1.44	3960298	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17	
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17	
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17	
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17	

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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179920/1 Date Analyzed: 08/16/2017 19:48
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537D_052 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1811420	1.93	5562915	2.16		
UPPER LIMIT	2535988	2.43	7788081	2.66		
LOWER LIMIT	1267994	1.43	3894041	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-3	NAWC-072617-FRB-332A		1923676	1.93	5905224	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.: 320-30191-1
 SDG No.: _____
 Sample No.: CCV 320-179920/13 Date Analyzed: 08/16/2017 20:45
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.08.16_537D_064 Heated Purge: (Y/N) N
 Calibration ID: 33517

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1854955	1.94	5653051	2.17		
UPPER LIMIT	2596937	2.44	7914271	2.67		
LOWER LIMIT	1298469	1.44	3957136	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-30191-3	NAWC-072617-FRB-332A		1923676	1.93	5905224	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 VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1 Analy Batch No.: 179319

SDG No.: _____

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

Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.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)	1.1417 0.7313	1.1495	1.0943	0.9210	0.7959	QuaF		1.1266	-0.002254					0.9980			0.9600
Perfluoroheptanoic acid (PFHpA)	0.8346 0.8325	0.8724	0.8737	0.8715	0.8517	Ave		0.8560			2.2		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.4757 1.3970	1.5378	1.5080	1.5703	1.4756	Ave		1.4941			4.0		30.0				
Perfluorooctanoic acid (PFOA)	0.8851 0.9102	0.8837	0.8984	0.9375	0.9261	Ave		0.9068			2.4		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8922 0.9252	0.9148	0.9148	0.9461	0.9486	Ave		0.9236			2.3		30.0				
Perfluorononanoic acid (PFNA)	0.5491 0.5714	0.5670	0.5764	0.5665	0.5686	Ave		0.5665			1.6		30.0				
13C2 PFHxA	1.0141 1.0999	1.0032	1.0998	1.0933	1.1053	Ave		1.0693			4.4		30.0				
13C2 PFDA	0.5512 0.6012	0.5785	0.5919	0.5906	0.6127	Ave		0.5877			3.6		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.: 320-30191-1 Analy Batch No.: 179319

SDG No.: _____

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

Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.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	2176776 26040065	4858409	10071471	16707104	21165476	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	198176 3589599	455479	965342	1966143	2763295	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	938005 16584369	2166866	4626981	9496666	13083092	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	420599 7854398	923370	1986507	4232647	6012905	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	756213 14645432	1718775	3742396	7629588	11213929	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	260762 4927051	592024	1273686	2556105	3689416	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	2407096 2370885	2356458	2429839	2465941	2390227	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1308306 1295768	1358920	1307668	1332089	1324957	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.: 320-30191-1 Analy Batch No.: 179319

SDG No.: _____

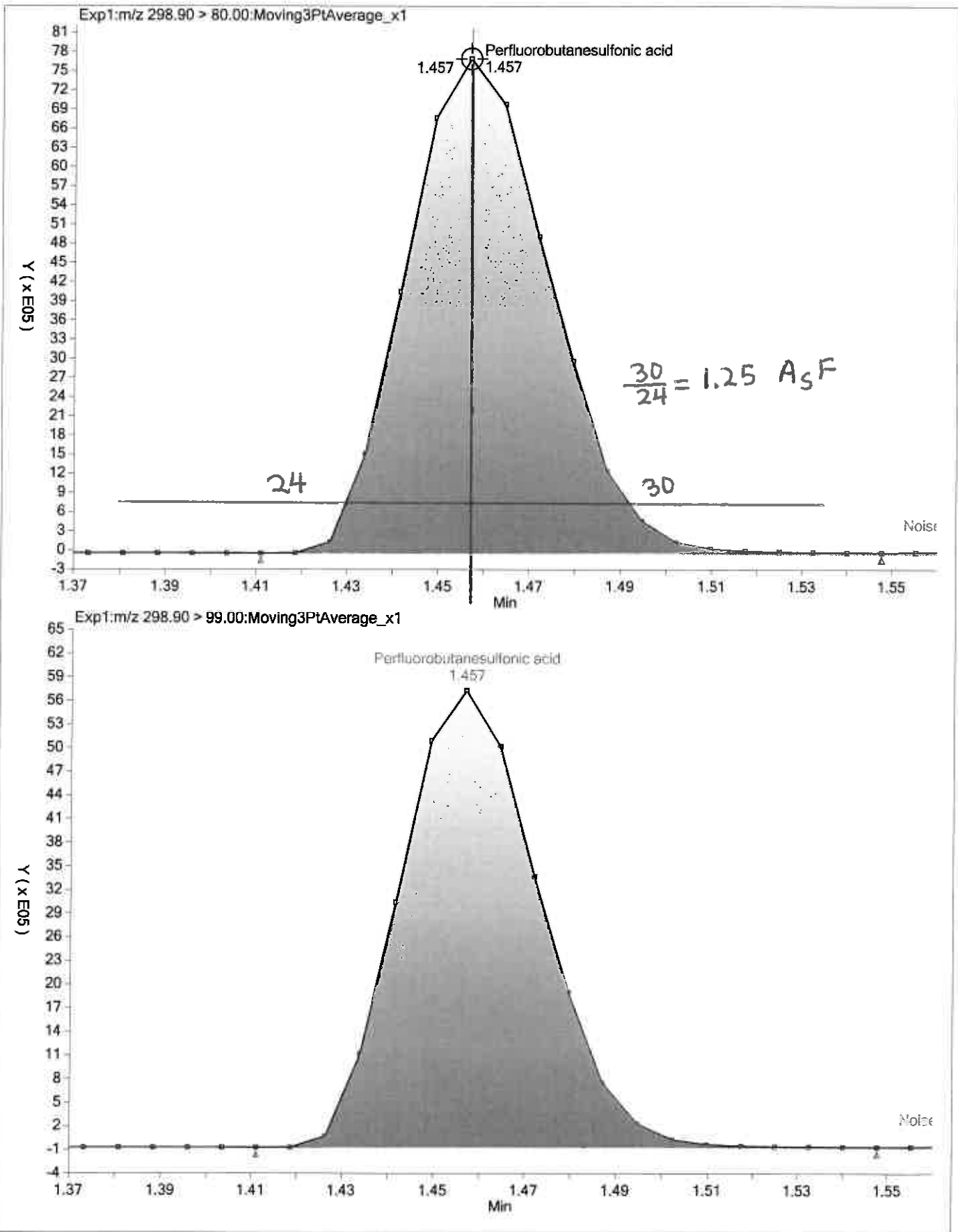
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

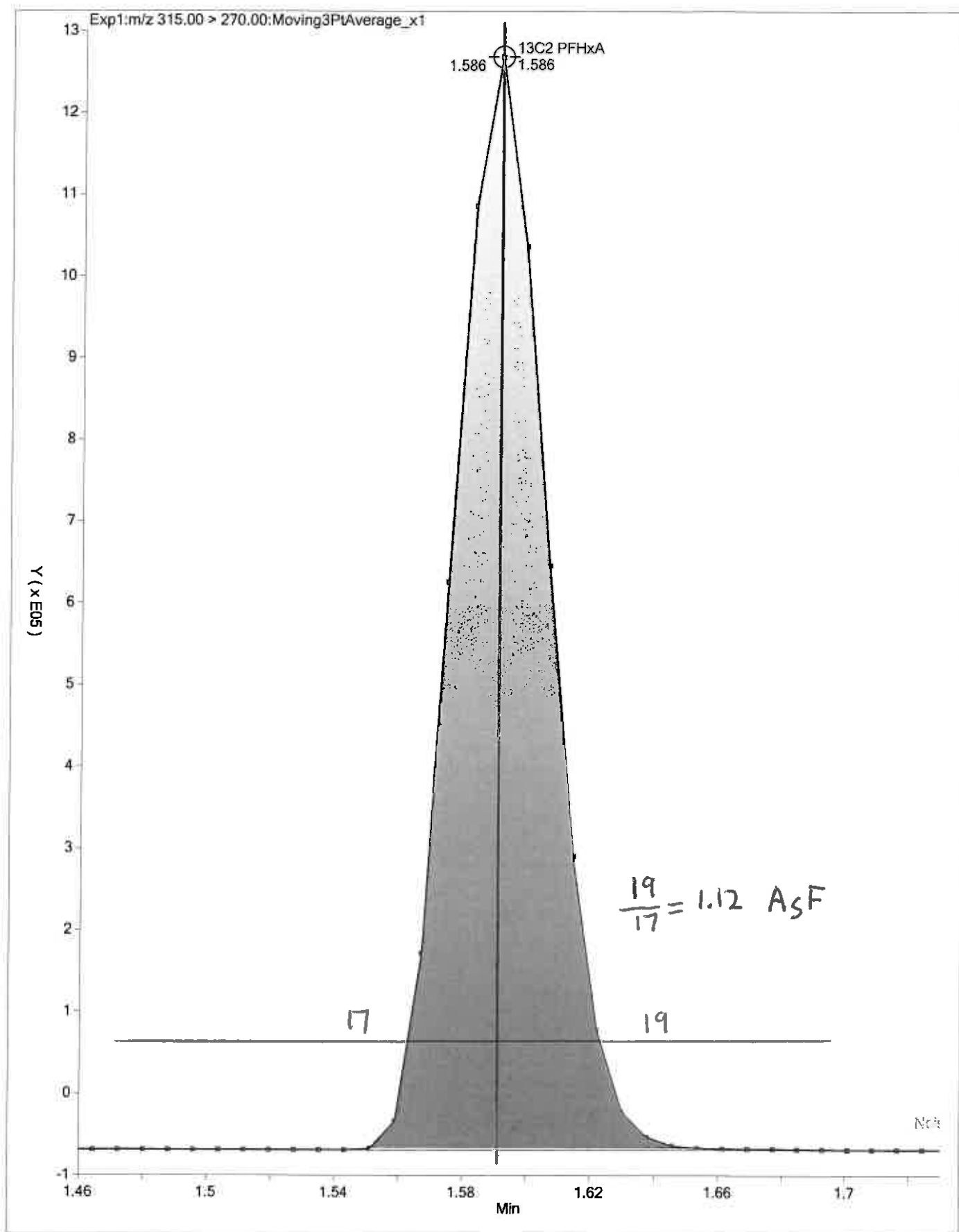
Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.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)	3.3	6.6	7.5	-0.4	-5.0	3.4	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-2.5	1.9	2.1	1.8	-0.5	-2.8	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-1.2	2.9	0.9	5.1	-1.2	-6.5	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-2.4	-2.5	-0.9	3.4	2.1	0.4	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-3.4	-1.0	-1.0	2.4	2.7	0.2	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	-3.1	0.1	1.7	0.0	0.4	0.9	50	50	50	50	50	50
13C2 PFHxA	-5.2	-6.2	2.9	2.2	3.4	2.9	30	30	30	30	30	30
13C2 PFDA	-6.2	-1.6	0.7	0.5	4.3	2.3	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-179319/9 Calibration Date: 08/14/2017 13:22
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.14_537ICAL_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.212		22.5	20.0	12.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9386		2.44	2.22	9.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.568		7.00	6.67	4.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9308		4.57	4.45	2.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9255		8.91	8.89	0.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6283		4.93	4.45	10.9	50.0
13C2 PFHxA	Ave	1.069	1.128		10.5	10.0	5.5	30.0
13C2 PFDA	Ave	0.5877	0.6289		10.7	10.0	7.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: ICV 320-179319/11 Calibration Date: 08/14/2017 13:31
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.14_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		0.9251		104	100	3.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9672		11.3	10.0	13.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.761		23.7	20.1	17.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9396		21.2	20.5	3.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.7333		26.1	20.1	29.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	1.121		23.9	19.7	21.3	30.0
13C2 PFHxA	Ave	1.069	1.124		10.5	10.0	5.1	30.0
13C2 PFDA	Ave	0.5877	0.6385		10.9	10.0	8.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-179695/4 Calibration Date: 08/16/2017 09:11
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.15_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		1.167		21.7	20.0	8.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.7567		1.96	2.22	-11.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.526		6.81	6.67	2.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9013		4.42	4.45	-0.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9279		8.93	8.89	0.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.5763		4.52	4.45	1.7	50.0
13C2 PFHxA	Ave	1.069	0.9803		9.17	10.0	-8.3	30.0
13C2 PFDA	Ave	0.5877	0.6186		10.5	10.0	5.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179727/1 Calibration Date: 08/16/2017 12:40
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.062		46.8	45.0	4.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9427		5.51	5.00	10.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.585		15.9	15.0	6.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9145		10.1	10.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9443		20.5	20.0	2.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6560		11.6	10.0	15.8	30.0
13C2 PFHxA	Ave	1.069	1.200		11.2	10.0	12.3	30.0
13C2 PFDA	Ave	0.5877	0.7379		12.6	10.0	25.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179727/13 Calibration Date: 08/16/2017 13:37
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_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		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179728/13 Calibration Date: 08/16/2017 13:37
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_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		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179728/20 Calibration Date: 08/16/2017 14:10
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179732/20 Calibration Date: 08/16/2017 14:10
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179732/32 Calibration Date: 08/16/2017 15:07
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179733/32 Calibration Date: 08/16/2017 15:07
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179733/38 Calibration Date: 08/16/2017 15:36
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537C_038.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.109		49.1	45.0	9.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9321		5.45	5.00	8.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.555		15.6	15.0	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9246		10.2	10.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6463		11.4	10.0	14.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9188		19.9	20.0	-0.5	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.3	30.0
13C2 PFDA	Ave	0.5877	0.6799		11.6	10.0	15.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179920/1 Calibration Date: 08/16/2017 19:48
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537D_052.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7972		129	135	-4.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9273		16.3	15.0	8.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.468		44.2	45.0	-1.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9342		30.9	30.0	3.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9166		59.6	60.0	-0.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6502		34.4	30.0	14.8	30.0
13C2 PFHxA	Ave	1.069	1.254		11.7	10.0	17.3	30.0
13C2 PFDA	Ave	0.5877	0.6899		11.7	10.0	17.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1
 SDG No.: _____
 Lab Sample ID: CCV 320-179920/13 Calibration Date: 08/16/2017 20:45
 Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/14/2017 13:12
 Lab File ID: 2017.08.16_537D_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.049		46.2	45.0	2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9052		5.29	5.00	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9215		10.2	10.0	1.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9376		20.3	20.0	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6800		12.0	10.0	20.0	30.0
13C2 PFHxA	Ave	1.069	1.250		11.7	10.0	16.9	30.0
13C2 PFDA	Ave	0.5877	0.7215		12.3	10.0	22.8	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/14/2017 12:48

Analysis Batch Number: 179319 End Date: 08/14/2017 13:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-179319/2		08/14/2017 12:48	1	2017.08.14_537I CAL 002.d	GeminiC18 3x100 3(mm)
IC 320-179319/3		08/14/2017 12:53	1	2017.08.14_537I CAL 003.d	GeminiC18 3x100 3(mm)
IC 320-179319/4		08/14/2017 12:58	1	2017.08.14_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-179319/5 ICISAV		08/14/2017 13:03	1	2017.08.14_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-179319/6		08/14/2017 13:07	1	2017.08.14_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-179319/7		08/14/2017 13:12	1	2017.08.14_537I CAL 007.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:17	1		GeminiC18 3x100 3(mm)
CCVL 320-179319/9		08/14/2017 13:22	1	2017.08.14_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:26	1		GeminiC18 3x100 3(mm)
ICV 320-179319/11		08/14/2017 13:31	1	2017.08.14_537I CAL 011.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 09:11

Analysis Batch Number: 179695 End Date: 08/16/2017 10:13

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-179695/4		08/16/2017 09:11	1	2017.08.15_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-179695/5 CCVIS		08/16/2017 09:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:04	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:08	1		GeminiC18 3x100 3(mm)
CCV 320-179695/17 CCVIS		08/16/2017 10:13	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 12:40

Analysis Batch Number: 179727 End Date: 08/16/2017 13:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179727/1 CCVIS		08/16/2017 12:40	1	2017.08.16_537C 001.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 12:45	1		GeminiC18 3x100 3(mm)
MB 320-177640/1-A		08/16/2017 12:50	1	2017.08.16_537C 003.d	GeminiC18 3x100 3(mm)
LCS 320-177640/2-A		08/16/2017 12:55	1	2017.08.16_537C 004.d	GeminiC18 3x100 3(mm)
320-30191-1		08/16/2017 12:59	1	2017.08.16_537C 005.d	GeminiC18 3x100 3(mm)
320-30191-2		08/16/2017 13:04	1	2017.08.16_537C 006.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:09	1		GeminiC18 3x100 3(mm)
320-30191-4		08/16/2017 13:14	1	2017.08.16_537C 008.d	GeminiC18 3x100 3(mm)
320-30191-5		08/16/2017 13:18	1	2017.08.16_537C 009.d	GeminiC18 3x100 3(mm)
320-30191-6		08/16/2017 13:23	1	2017.08.16_537C 010.d	GeminiC18 3x100 3(mm)
320-30191-6 MS		08/16/2017 13:28	1	2017.08.16_537C 011.d	GeminiC18 3x100 3(mm)
320-30191-6 MSD		08/16/2017 13:33	1	2017.08.16_537C 012.d	GeminiC18 3x100 3(mm)
CCV 320-179727/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 13:37

Analysis Batch Number: 179728 End Date: 08/16/2017 14:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179728/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:42	1		GeminiC18 3x100 3(mm)
320-30191-7		08/16/2017 13:47	1	2017.08.16_537C 015.d	GeminiC18 3x100 3(mm)
320-30191-8		08/16/2017 13:52	1	2017.08.16_537C 016.d	GeminiC18 3x100 3(mm)
320-30191-9		08/16/2017 13:56	1	2017.08.16_537C 017.d	GeminiC18 3x100 3(mm)
320-30191-10		08/16/2017 14:01	1	2017.08.16_537C 018.d	GeminiC18 3x100 3(mm)
320-30191-11		08/16/2017 14:06	1	2017.08.16_537C 019.d	GeminiC18 3x100 3(mm)
CCV 320-179728/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 14:10

Analysis Batch Number: 179732 End Date: 08/16/2017 15:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179732/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 14:15	1		GeminiC18 3x100 3(mm)
MB 320-177651/1-A		08/16/2017 14:20	1	2017.08.16_537C 022.d	GeminiC18 3x100 3(mm)
LCS 320-177651/2-A		08/16/2017 14:25	1	2017.08.16_537C 023.d	GeminiC18 3x100 3(mm)
LCSD 320-177651/3-A		08/16/2017 14:29	1	2017.08.16_537C 024.d	GeminiC18 3x100 3(mm)
320-30191-12		08/16/2017 14:34	1	2017.08.16_537C 025.d	GeminiC18 3x100 3(mm)
320-30191-13		08/16/2017 14:39	1	2017.08.16_537C 026.d	GeminiC18 3x100 3(mm)
320-30191-14		08/16/2017 14:44	1	2017.08.16_537C 027.d	GeminiC18 3x100 3(mm)
320-30191-15		08/16/2017 14:48	1	2017.08.16_537C 028.d	GeminiC18 3x100 3(mm)
320-30191-16		08/16/2017 14:53	1	2017.08.16_537C 029.d	GeminiC18 3x100 3(mm)
320-30191-17		08/16/2017 14:58	1	2017.08.16_537C 030.d	GeminiC18 3x100 3(mm)
320-30191-18		08/16/2017 15:03	1	2017.08.16_537C 031.d	GeminiC18 3x100 3(mm)
CCV 320-179732/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 15:07

Analysis Batch Number: 179733 End Date: 08/16/2017 15:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179733/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 15:12	1		GeminiC18 3x100 3(mm)
320-30191-19		08/16/2017 15:17	1	2017.08.16_537C 034.d	GeminiC18 3x100 3(mm)
320-30191-20		08/16/2017 15:22	1	2017.08.16_537C 035.d	GeminiC18 3x100 3(mm)
320-30191-21		08/16/2017 15:26	1	2017.08.16_537C 036.d	GeminiC18 3x100 3(mm)
320-30191-22		08/16/2017 15:31	1	2017.08.16_537C 037.d	GeminiC18 3x100 3(mm)
CCV 320-179733/38 CCVIS		08/16/2017 15:36	1	2017.08.16_537C 038.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/16/2017 19:48

Analysis Batch Number: 179920 End Date: 08/16/2017 20:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179920/1 CCVIS		08/16/2017 19:48	1	2017.08.16_537D 052.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:53	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:57	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:07	1		GeminiC18 3x100 3(mm)
320-30191-3		08/16/2017 20:12	1	2017.08.16_537D 057.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:40	1		GeminiC18 3x100 3(mm)
CCV 320-179920/13 CCVIS		08/16/2017 20:45	1	2017.08.16_537D 064.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:50	1		GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00046
MB 320-177640/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-177640/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T	322.10 g	29.24 g	292.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T	313.75 g	28.15 g	285.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T	305.55 g	28.18 g	277.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-4	NAWC-072617-RW-341	537, 537	T	306.55 g	28.07 g	278.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T	312.18 g	27.56 g	284.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-6	NAWC-072617-RW-349	537, 537	T	316.97 g	28.12 g	288.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	322.23 g	28.25 g	294 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	315.87 g	28.12 g	287.8 mL	1.00 mL	7 SU	100 uL
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T	314.48 g	27.94 g	286.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-8	NAWC-072617-RW-343	537, 537	T	311.99 g	28.33 g	283.7 mL	1.00 mL	7 SU	100 uL
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T	316.09 g	27.71 g	288.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-10	NAWC-072617-RW-345	537, 537	T	317.11 g	28.09 g	289 mL	1.00 mL	7 SU	100 uL
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T	312.72 g	27.56 g	285.2 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
MB 320-177640/1		537, 537			100 uL	CH ND			
LCS 320-177640/2		537, 537		100 uL	100 uL	CH ND			
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T		100 uL	CH ND			
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T		100 uL	CH ND			
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T		100 uL	CH ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
320-30191-A-4	NAWC-072617-RW-341	537, 537	T		100 uL	CH ND			
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T		100 uL	CH ND			
320-30191-A-6	NAWC-072617-RW-349	537, 537	T		100 uL	CH ND			
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T		100 uL	CH ND			
320-30191-A-8	NAWC-072617-RW-343	537, 537	T		100 uL	CH ND			
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T		100 uL	CH ND			
320-30191-A-10	NAWC-072617-RW-345	537, 537	T		100 uL	CH ND			
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T		100 uL	CH ND			

Batch Notes	
Batch Comment	IS: 1002798
Manifold ID	7,1
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

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.: 320-30191-1

SDG No.: _____

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.: _____

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LC537-HSP 00017	LC537-IS 00046
MB 320-177651/1		537, 537				250.00 mL	1.00 mL		100 uL
LCS 320-177651/2		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
LCSD 320-177651/3		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	314.45 g	28.13 g	286.3 mL	1.00 mL		100 uL
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	314.60 g	28.18 g	286.4 mL	1.00 mL		100 uL
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	307.22 g	27.62 g	279.6 mL	1.00 mL		100 uL
320-30191-A-15	NAWC-072617-RW-117	537, 537	T	320.66 g	28.08 g	292.6 mL	1.00 mL		100 uL
320-30191-A-16	NAWC-072617-FRB-117	537, 537	T	306.45 g	27.57 g	278.9 mL	1.00 mL		100 uL
320-30191-A-17	NAWC-072617-DUP04	537, 537	T	307.09 g	28.14 g	279 mL	1.00 mL		100 uL
320-30191-A-18	WGNA-072617-RW-4844	537, 537	T	327.07 g	28.40 g	298.7 mL	1.00 mL		100 uL
320-30191-A-19	WGNA-072617-FRB-4844	537, 537	T	303.88 g	27.84 g	276 mL	1.00 mL		100 uL
320-30191-A-20	WGNA-072617-RW-3103	537, 537	T	305.20 g	28.60 g	276.6 mL	1.00 mL		100 uL
320-30191-A-21	WGNA-072617-FRB-3103	537, 537	T	312.89 g	27.81 g	285.1 mL	1.00 mL		100 uL
320-30191-A-22	WGNA-072617-DUP03	537, 537	T	312.39 g	27.67 g	284.7 mL	1.00 mL		100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046					
MB 320-177651/1		537, 537		100 uL					
LCS 320-177651/2		537, 537		100 uL					
LCSD 320-177651/3		537, 537		100 uL					
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	100 uL					
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	100 uL					
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	100 uL					

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.: 320-30191-1

SDG No.: _____

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046				
320-30191-A-15	NAWC-072617-RW-1 17	537, 537	T	100 uL				
320-30191-A-16	NAWC-072617-FRB- 117	537, 537	T	100 uL				
320-30191-A-17	NAWC-072617-DUPO 4	537, 537	T	100 uL				
320-30191-A-18	WGNA-072617-RW-4 844	537, 537	T	100 uL				
320-30191-A-19	WGNA-072617-FRB- 4844	537, 537	T	100 uL				
320-30191-A-20	WGNA-072617-RW-3 103	537, 537	T	100 uL				
320-30191-A-21	WGNA-072617-FRB- 3103	537, 537	T	100 uL				
320-30191-A-22	WGNA-072617-DUPO 3	537, 537	T	100 uL				

Batch Notes	
Batch Comment	IS:1002798
Manifold ID	1,4
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

Basis	Basis Description
T	Total/NA

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

84

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E











Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End: 8/9/2017 4:38:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

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-320-177640/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A		
			1.00 mL								
2 LCS-320-177640/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	RI Case 2-12	
			1.00 mL								
3 320-30191-A-1 (537_DOD5)	N/A (320-30191-1)	322.10 g	292.9 mL	7			8/2/17	16_Days	4		
		29.24 g	1.00 mL								
4 320-30191-A-2 (537_DOD5)	N/A (320-30191-1)	313.75 g	285.6 mL	7			8/2/17	16_Days	4		
		28.15 g	1.00 mL								
5 320-30191-A-3 (537_DOD5)	N/A (320-30191-1)	305.55 g	277.4 mL	7			8/2/17	16_Days	4	RI Case 2-15	
		28.18 g	1.00 mL								
6 320-30191-A-4 (537_DOD5)	N/A (320-30191-1)	306.55 g	278.5 mL	7			8/2/17	16_Days	4		
		28.07 g	1.00 mL								
7 320-30191-A-5 (537_DOD5)	N/A (320-30191-1)	312.18 g	284.6 mL	7			8/2/17	16_Days	4		
		27.56 g	1.00 mL								
8 320-30191-A-6 (537_DOD5)	N/A (320-30191-1)	316.97 g	288.9 mL	7			8/2/17	16_Days	4	RI Case 2-18	
		28.12 g	1.00 mL								
9 320-30191-A-6-MS (537_DOD5)	N/A (320-30191-1)	322.23 g	294 mL	7			8/2/17	16_Days	4	RI Case 2-19	
		28.25 g	1.00 mL								
10 320-30191-A-6-MSD (537_DOD5)	N/A (320-30191-1)	315.87 g	287.8 mL	7			8/2/17	16_Days	4	RI Case 2-20	
		28.12 g	1.00 mL								

Page 427 of 446

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)






Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-30191-A-7 (537_DOD5)	N/A (320-30191-1)	314.48 g	286.5 mL			8/2/17	16_Days	4	
			27.94 g	1.00 mL						
12	320-30191-A-8 (537_DOD5)	N/A (320-30191-1)	311.99 g	283.7 mL			8/2/17	16_Days	4	
			28.33 g	1.00 mL						
13	320-30191-A-9 (537_DOD5)	N/A (320-30191-1)	316.09 g	288.4 mL			8/2/17	16_Days	4	
			27.71 g	1.00 mL						
14	320-30191-A-10 (537_DOD5)	N/A (320-30191-1)	317.11 g	289 mL			8/2/17	16_Days	4	 <i>RI</i> <i>Case 2-24</i>
			28.09 g	1.00 mL						
15	320-30191-A-11 (537_DOD5)	N/A (320-30191-1)	312.72 g	285.2 mL			8/2/17	16_Days	4	
			27.56 g	1.00 mL						

Page 428 of 446

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 7,1

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-02

Methanol ID 988835

Reagent Water ID 8/03/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop JER

Analyst ID - TA Reagent Drop Witness TH

Analyst ID - SU Reagent Drop JER

Analyst ID - SU Reagent Drop Witness TH

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop Witness TH

Batch Comment IS: 1002798

Page 429 of 446

Comments

81

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End: 8/7/2017 9:59:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

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-320-177651/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			1.00 mL								
2 LCS-320-177651/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			1.00 mL								
3 LCSD-320-177651/3 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			1.00 mL								
4 320-30191-A-12 (537_DOD5)	N/A (320-30191-1)	314.45 g	286.3 mL				8/2/17	16_Days	4		
		28.13 g	1.00 mL								
5 320-30191-A-13 (537_DOD5)	N/A (320-30191-1)	314.60 g	286.4 mL				8/2/17	16_Days	4		
		28.18 g	1.00 mL								
6 320-30191-A-14 (537_DOD5)	N/A (320-30191-1)	307.22 g	279.6 mL				8/2/17	16_Days	4		
		27.62 g	1.00 mL								
7 320-30191-A-15 (537_DOD5)	N/A (320-30191-1)	320.66 g	292.6 mL				8/2/17	16_Days	4		
		28.08 g	1.00 mL								
8 320-30191-A-16 (537_DOD5)	N/A (320-30191-1)	306.45 g	278.9 mL				8/2/17	16_Days	4		
		27.57 g	1.00 mL								
9 320-30191-A-17 (537_DOD5)	N/A (320-30191-1)	307.09 g	279 mL				8/2/17	16_Days	4		
		28.14 g	1.00 mL								
10 320-30191-A-18 (537_DOD5)	N/A (320-30191-1)	327.07 g	298.7 mL				8/2/17	16_Days	4	RI	
		28.40 g	1.00 mL								

Case 2-35

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)





Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-30191-A-19 (537_DOD5)	N/A (320-30191-1)	303.88 g	276 mL				8/2/17	16_Days	4	<div style="font-size: 2em; font-weight: bold; margin-bottom: 5px;">RI</div> <div style="font-size: 1.2em; font-weight: bold; margin-bottom: 5px;">Case 7-36</div> 
			27.84 g	1.00 mL							
12	320-30191-A-20 (537_DOD5)	N/A (320-30191-1)	305.20 g	276.6 mL				8/2/17	16_Days	4	
			28.60 g	1.00 mL							
13	320-30191-A-21 (537_DOD5)	N/A (320-30191-1)	312.89 g	285.1 mL				8/2/17	16_Days	4	
			27.81 g	1.00 mL							
14	320-30191-A-22 (537_DOD5)	N/A (320-30191-1)	312.39 g	284.7 mL				8/2/17	16_Days	4	
			27.67 g	1.00 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 1,4

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-02

Methanol ID 988835

Reagent Water ID 8/03/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop JER

Analyst ID - TA Reagent Drop Witness TN

Analyst ID - SU Reagent Drop JER

Analyst ID - SU Reagent Drop Witness TN

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop Witness TN

Batch Comment IS: 100.27.98

Page 4.39 of 4.40

Comments

PFAS Calibration Calculations:

Initial Calibration 8/14/2017
 Instrument A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3	938005	6074703	28.7	1.47720	1.4757
6.67	2166866	6060332	28.7	1.53848	1.5378
15	4626981	5865253	28.7	1.50939	1.508
30	9496666	5780409	28.7	1.57171	1.5703
45	13083092	5649456	28.7	1.47698	1.4756
60	16584369	5673459	28.7	1.39824	1.397
Average				1.49533	1.4941
Standard Deviation				0.0600	
RSD				0.0401	
%RSD				4.01090	4

Continuing Calibration 08/16/2017 @ 12:40
 A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
15	4775829	5758922	28.7	1.5867	6.1985394	1.585	6.1

Wallops Island
SDG 320-30191-1

Sample Identification NAWC-072617-RW-349

Compound Perfluorohexanesulfonic acid

Compound Area 664619

Internal Standard Amount (ng) 28.7

Dilution Factor 1

Internal Standard Area 6164558

Average RRF 1.4941

Sample Volume(ml) 288.9

Volume Extract (ml) 1

Injection Volume (μl) 1

μl to ml 1000.00

Concentration 7.17 ng/L

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	WILLOW_GROVE_NAS	320-30191-1							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-072617-FRB-4844	Water for QC samples	Field Reagent Blank	26-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	320-30191-1							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-072617-FRB-3103	Water for QC samples	Field Reagent Blank	26-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	320-30191-1	OFFSITE_RW	SITE 00005	WGNA-RW-4844	Domestic well	2698665.565	312779.2951	N6247016D9008	WE04	TETRA TECH, INC.	WGNA-072617-RW-4844	Drinking water	Normal (Regular)	26-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	320-30191-1	OFFSITE_RW	SITE 00005	WGNA-RW-3103	Domestic well	2702727.316	325169.481	N6247016D9008	WE04	TETRA TECH, INC.	WGNA-072617-RW-3103-D	Drinking water	Field duplicate	26-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	320-30191-1	OFFSITE_RW	SITE 00005	WGNA-RW-3103	Domestic well	2702727.316	325169.481	N6247016D9008	WE04	TETRA TECH, INC.	WGNA-072617-RW-3103	Drinking water	Normal (Regular)	26-Jul-17	537	Perfluoroalkyl Compounds