NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG 320-31489-1

Naval Air Warfare Center Warminster
Warminster, Pennsylvania

August 2019

N62269_001137
WARMINSTER_NAWC
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-31489-1, NAS WILLOW GROVE NAWC WARMINSTER PA

09/22/2017

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 320-31489-1

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
9/22/2017 3:00 PM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
09/22/2017

Table of Contents

Table of Contents

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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
320-31489-1

Receipt
The samples were received on 9/13/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.5º C and 3.1º C.

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

Method(s) 537: Surrogate recovery for the following sample was outside control limits: NAWC-091217-RW-032 (320-31489-13). 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
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

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

TestAmerica Job ID: 320-31489-1

Client Sample ID: NAWC-091217-RW-289 — Lab Sample ID: 320-31489-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	12	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	6.4	J	20	2.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-091217-FRB-289 — Lab Sample ID: 320-31489-2

No Detections.

Client Sample ID: NAWC-091217-RW-029 — Lab Sample ID: 320-31489-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	21	J M	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	18	J	19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.5	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.1	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-091217-FRB-029 — Lab Sample ID: 320-31489-4

No Detections.

Client Sample ID: NAWC-091217-RW-312 — Lab Sample ID: 320-31489-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J M	40	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	17	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.5	J	9.9	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-091217-FRB-312 — Lab Sample ID: 320-31489-6

No Detections.

Client Sample ID: NAWC-091217-RW-141 — Lab Sample ID: 320-31489-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	23	J M	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	15	J	19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.2	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-091217-FRB-141 — Lab Sample ID: 320-31489-8

No Detections.

Client Sample ID: NAWC-091217-RW-038 — Lab Sample ID: 320-31489-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J M	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.1	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.5	J	9.6	1.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-31489-1

Client Sample ID: NAWC-091217-FRB-038 — Lab Sample ID: 320-31489-10

No Detections.

Client Sample ID: NAWC-091217-RW-315 — Lab Sample ID: 320-31489-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	9.0	J M	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.0	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-091217-FRB-315 — Lab Sample ID: 320-31489-12

No Detections.

Client Sample ID: NAWC-091217-RW-032 — Lab Sample ID: 320-31489-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J M	39	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	14	J	20	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.8	J	9.8	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-091217-FRB-032 — Lab Sample ID: 320-31489-14

No Detections.

Client Sample ID: NAWC-091217-RW-300 — Lab Sample ID: 320-31489-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J M	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.8	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-091217-FRB-300 — Lab Sample ID: 320-31489-16

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: NAWC-091217-RW-289 — Lab Sample ID: 320-31489-1

Date Collected: 09/12/17 07:35 — **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**12**	**J M**	39	6.6	ng/L		09/15/17 10:28	09/20/17 07:02	1
Perfluorooctanoic acid (PFOA)	**6.4**	**J**	20	2.7	ng/L		09/15/17 10:28	09/20/17 07:02	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L		09/15/17 10:28	09/20/17 07:02	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		09/15/17 10:28	09/20/17 07:02	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		09/15/17 10:28	09/20/17 07:02	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		09/15/17 10:28	09/20/17 07:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:02*	*1*
13C2 PFDA	*113*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:02*	*1*

Client Sample ID: NAWC-091217-FRB-289 — Lab Sample ID: 320-31489-2

Date Collected: 09/12/17 07:30 — **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.7	ng/L		09/15/17 10:28	09/20/17 07:07	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		09/15/17 10:28	09/20/17 07:07	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		09/15/17 10:28	09/20/17 07:07	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.4	ng/L		09/15/17 10:28	09/20/17 07:07	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		09/15/17 10:28	09/20/17 07:07	1
Perfluorobutanesulfonic acid (PFBS)	35	U	89	16	ng/L		09/15/17 10:28	09/20/17 07:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:07*	*1*
13C2 PFDA	*109*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:07*	*1*

Client Sample ID: NAWC-091217-RW-029 — Lab Sample ID: 320-31489-3

Date Collected: 09/12/17 08:05 — **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**21**	**J M**	38	6.5	ng/L		09/15/17 10:28	09/20/17 07:12	1
Perfluorooctanoic acid (PFOA)	**18**	**J**	19	2.7	ng/L		09/15/17 10:28	09/20/17 07:12	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		09/15/17 10:28	09/20/17 07:12	1
Perfluorohexanesulfonic acid (PFHxS)	**6.5**	**J**	29	5.3	ng/L		09/15/17 10:28	09/20/17 07:12	1
Perfluoroheptanoic acid (PFHpA)	**5.1**	**J**	9.6	1.8	ng/L		09/15/17 10:28	09/20/17 07:12	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		09/15/17 10:28	09/20/17 07:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*71*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:12*	*1*
13C2 PFDA	*127*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:12*	*1*

Client Sample ID: NAWC-091217-FRB-029 — Lab Sample ID: 320-31489-4

Date Collected: 09/12/17 08:00 — **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.7	ng/L		09/15/17 10:28	09/20/17 07:17	1
Perfluorooctanoic acid (PFOA)	7.8	U	20	2.7	ng/L		09/15/17 10:28	09/20/17 07:17	1
Perfluorononanoic acid (PFNA)	20	U	24	7.8	ng/L		09/15/17 10:28	09/20/17 07:17	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		09/15/17 10:28	09/20/17 07:17	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		09/15/17 10:28	09/20/17 07:17	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		09/15/17 10:28	09/20/17 07:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:17*	*1*
13C2 PFDA	*109*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:17*	*1*

Client Sample ID: NAWC-091217-RW-312 — Lab Sample ID: 320-31489-5

Date Collected: 09/12/17 08:35 — **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**17**	**J M**	40	6.7	ng/L		09/15/17 10:28	09/20/17 07:21	1
Perfluorooctanoic acid (PFOA)	**17**	**J**	20	2.8	ng/L		09/15/17 10:28	09/20/17 07:21	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		09/15/17 10:28	09/20/17 07:21	1
Perfluorohexanesulfonic acid (PFHxS)	**5.7**	**J**	30	5.4	ng/L		09/15/17 10:28	09/20/17 07:21	1
Perfluoroheptanoic acid (PFHpA)	**7.5**	**J**	9.9	1.9	ng/L		09/15/17 10:28	09/20/17 07:21	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L		09/15/17 10:28	09/20/17 07:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*75*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:21*	*1*
13C2 PFDA	*104*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:21*	*1*

Client Sample ID: NAWC-091217-FRB-312 — Lab Sample ID: 320-31489-6

Date Collected: 09/12/17 08:30 — **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.7	ng/L		09/15/17 10:28	09/20/17 07:26	1
Perfluorooctanoic acid (PFOA)	7.8	U	20	2.7	ng/L		09/15/17 10:28	09/20/17 07:26	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L		09/15/17 10:28	09/20/17 07:26	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		09/15/17 10:28	09/20/17 07:26	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		09/15/17 10:28	09/20/17 07:26	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		09/15/17 10:28	09/20/17 07:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:26*	*1*
13C2 PFDA	*116*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:26*	*1*

Client Sample ID: NAWC-091217-RW-141 — Lab Sample ID: 320-31489-7

Date Collected: 09/12/17 09:00 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**23**	**J M**	38	6.5	ng/L		09/15/17 10:28	09/20/17 07:31	1
Perfluorooctanoic acid (PFOA)	**15**	**J**	19	2.7	ng/L		09/15/17 10:28	09/20/17 07:31	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		09/15/17 10:28	09/20/17 07:31	1
Perfluorohexanesulfonic acid (PFHxS)	**15**	**J**	29	5.3	ng/L		09/15/17 10:28	09/20/17 07:31	1
Perfluoroheptanoic acid (PFHpA)	**7.2**	**J**	9.6	1.8	ng/L		09/15/17 10:28	09/20/17 07:31	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		09/15/17 10:28	09/20/17 07:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:31*	*1*
13C2 PFDA	*116*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:31*	*1*

Client Sample ID: NAWC-091217-FRB-141 — Lab Sample ID: 320-31489-8

Date Collected: 09/12/17 08:55 **Matrix: Water**
Date Received: 09/13/17 09:30

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		09/15/17 10:28	09/20/17 07:36	1
Perfluorooctanoic acid (PFOA)	7.1	U	18	2.5	ng/L		09/15/17 10:28	09/20/17 07:36	1
Perfluorononanoic acid (PFNA)	18	U	21	7.1	ng/L		09/15/17 10:28	09/20/17 07:36	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.9	ng/L		09/15/17 10:28	09/20/17 07:36	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		09/15/17 10:28	09/20/17 07:36	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		09/15/17 10:28	09/20/17 07:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:36*	*1*
13C2 PFDA	*112*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:36*	*1*

Client Sample ID: NAWC-091217-RW-038 — Lab Sample ID: 320-31489-9

Date Collected: 09/12/17 09:25 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**24**	**J M**	38	6.5	ng/L		09/15/17 10:28	09/20/17 14:40	1
Perfluorooctanoic acid (PFOA)	**20**		19	2.7	ng/L		09/15/17 10:28	09/20/17 14:40	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		09/15/17 10:28	09/20/17 14:40	1
Perfluorohexanesulfonic acid (PFHxS)	**6.1**	**J**	29	5.3	ng/L		09/15/17 10:28	09/20/17 14:40	1
Perfluoroheptanoic acid (PFHpA)	**5.5**	**J**	9.6	1.8	ng/L		09/15/17 10:28	09/20/17 14:40	1
Perfluorobutanesulfonic acid (PFBS)	35	U	86	15	ng/L		09/15/17 10:28	09/20/17 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*73*		*70 - 130*	*09/15/17 10:28*	*09/20/17 14:40*	*1*
13C2 PFDA	*130*		*70 - 130*	*09/15/17 10:28*	*09/20/17 14:40*	*1*

Client Sample ID: NAWC-091217-FRB-038 — Lab Sample ID: 320-31489-10

Date Collected: 09/12/17 09:20 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.7	ng/L		09/15/17 10:28	09/20/17 07:55	1
Perfluorooctanoic acid (PFOA)	7.8	U	20	2.7	ng/L		09/15/17 10:28	09/20/17 07:55	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L		09/15/17 10:28	09/20/17 07:55	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		09/15/17 10:28	09/20/17 07:55	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		09/15/17 10:28	09/20/17 07:55	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		09/15/17 10:28	09/20/17 07:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:55*	*1*
13C2 PFDA	*112*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:55*	*1*

Client Sample ID: NAWC-091217-RW-315 — Lab Sample ID: 320-31489-11

Date Collected: 09/12/17 13:50 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**9.0**	**J M**	38	6.5	ng/L		09/15/17 10:28	09/20/17 07:59	1
Perfluorooctanoic acid (PFOA)	**11**	**J**	19	2.7	ng/L		09/15/17 10:28	09/20/17 07:59	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		09/15/17 10:28	09/20/17 07:59	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.3	ng/L		09/15/17 10:28	09/20/17 07:59	1
Perfluoroheptanoic acid (PFHpA)	**4.0**	**J**	9.6	1.8	ng/L		09/15/17 10:28	09/20/17 07:59	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		09/15/17 10:28	09/20/17 07:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:59*	*1*
13C2 PFDA	*129*		*70 - 130*	*09/15/17 10:28*	*09/20/17 07:59*	*1*

Client Sample ID: NAWC-091217-FRB-315 — Lab Sample ID: 320-31489-12

Date Collected: 09/12/17 13:45 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		09/15/17 10:28	09/20/17 08:14	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		09/15/17 10:28	09/20/17 08:14	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		09/15/17 10:28	09/20/17 08:14	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/15/17 10:28	09/20/17 08:14	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		09/15/17 10:28	09/20/17 08:14	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		09/15/17 10:28	09/20/17 08:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*09/15/17 10:28*	*09/20/17 08:14*	*1*
13C2 PFDA	*104*		*70 - 130*	*09/15/17 10:28*	*09/20/17 08:14*	*1*

Client Sample ID: NAWC-091217-RW-032 — Lab Sample ID: 320-31489-13

Date Collected: 09/12/17 10:35 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**20**	**J M**	39	6.7	ng/L		09/15/17 10:28	09/20/17 08:18	1
Perfluorooctanoic acid (PFOA)	**14**	**J**	20	2.7	ng/L		09/15/17 10:28	09/20/17 08:18	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		09/15/17 10:28	09/20/17 08:18	1
Perfluorohexanesulfonic acid (PFHxS)	**14**	**J**	29	5.4	ng/L		09/15/17 10:28	09/20/17 08:18	1
Perfluoroheptanoic acid (PFHpA)	**4.8**	**J**	9.8	1.9	ng/L		09/15/17 10:28	09/20/17 08:18	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		09/15/17 10:28	09/20/17 08:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*65*	*Q*	*70 - 130*	*09/15/17 10:28*	*09/20/17 08:18*	*1*
13C2 PFDA	*120*		*70 - 130*	*09/15/17 10:28*	*09/20/17 08:18*	*1*

Client Sample ID: NAWC-091217-FRB-032 — Lab Sample ID: 320-31489-14

Date Collected: 09/12/17 10:30 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		09/15/17 10:28	09/20/17 08:23	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		09/15/17 10:28	09/20/17 08:23	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		09/15/17 10:28	09/20/17 08:23	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.2	ng/L		09/15/17 10:28	09/20/17 08:23	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		09/15/17 10:28	09/20/17 08:23	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		09/15/17 10:28	09/20/17 08:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*09/15/17 10:28*	*09/20/17 08:23*	*1*
13C2 PFDA	*116*		*70 - 130*	*09/15/17 10:28*	*09/20/17 08:23*	*1*

Client Sample ID: NAWC-091217-RW-300 — Lab Sample ID: 320-31489-15

Date Collected: 09/12/17 11:30 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**24**	**J M**	38	6.4	ng/L		09/15/17 10:40	09/20/17 08:28	1
Perfluorooctanoic acid (PFOA)	**23**		19	2.6	ng/L		09/15/17 10:40	09/20/17 08:28	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		09/15/17 10:40	09/20/17 08:28	1
Perfluorohexanesulfonic acid (PFHxS)	**8.1**	**J**	28	5.2	ng/L		09/15/17 10:40	09/20/17 08:28	1
Perfluoroheptanoic acid (PFHpA)	**7.8**	**J**	9.4	1.8	ng/L		09/15/17 10:40	09/20/17 08:28	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		09/15/17 10:40	09/20/17 08:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*74*		*70 - 130*	*09/15/17 10:40*	*09/20/17 08:28*	*1*
13C2 PFDA	*107*		*70 - 130*	*09/15/17 10:40*	*09/20/17 08:28*	*1*

Client Sample ID: NAWC-091217-FRB-300 **Lab Sample ID: 320-31489-16**
Date Collected: 09/12/17 11:25 **Matrix: Water**
Date Received: 09/13/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.4	ng/L		09/15/17 10:40	09/20/17 08:32	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		09/15/17 10:40	09/20/17 08:32	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		09/15/17 10:40	09/20/17 08:32	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		09/15/17 10:40	09/20/17 08:32	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		09/15/17 10:40	09/20/17 08:32	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		09/15/17 10:40	09/20/17 08:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*70 - 130*	*09/15/17 10:40*	*09/20/17 08:32*	*1*
13C2 PFDA	*112*		*70 - 130*	*09/15/17 10:40*	*09/20/17 08:32*	*1*

Default Detection Limits

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-31489-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-31489-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx	3C2 PFDA
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
320-31489-1	NAWC-091217-RW-289	78	113
320-31489-2	NAWC-091217-FRB-289	89	109
320-31489-3	NAWC-091217-RW-029	71	127
320-31489-4	NAWC-091217-FRB-029	90	109
320-31489-5	NAWC-091217-RW-312	75	104
320-31489-6	NAWC-091217-FRB-312	90	116
320-31489-7	NAWC-091217-RW-141	78	116
320-31489-8	NAWC-091217-FRB-141	91	112
320-31489-9	NAWC-091217-RW-038	73	130
320-31489-10	NAWC-091217-FRB-038	92	112
320-31489-11	NAWC-091217-RW-315	78	129
320-31489-11 MS	NAWC-091217-RW-315	75	123
320-31489-11 MSD	NAWC-091217-RW-315	77	116
320-31489-12	NAWC-091217-FRB-315	88	104
320-31489-13	NAWC-091217-RW-032	65 Q	120
320-31489-14	NAWC-091217-FRB-032	93	116
320-31489-15	NAWC-091217-RW-300	74	107
320-31489-16	NAWC-091217-FRB-300	97	112
LCS 320-184653/2-A	Lab Control Sample	89	116
MB 320-184653/1-A	Method Blank	91	110

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-184653/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 185410 **Prep Batch: 184653**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		09/15/17 10:28	09/20/17 06:53	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		09/15/17 10:28	09/20/17 06:53	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		09/15/17 10:28	09/20/17 06:53	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/15/17 10:28	09/20/17 06:53	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		09/15/17 10:28	09/20/17 06:53	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		09/15/17 10:28	09/20/17 06:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*09/15/17 10:28*	*09/20/17 06:53*	*1*
13C2 PFDA	*110*		*70 - 130*	*09/15/17 10:28*	*09/20/17 06:53*	*1*

Lab Sample ID: LCS 320-184653/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 185410 **Prep Batch: 184653**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	133	121	M	ng/L		91	70 - 130
Perfluorooctanoic acid (PFOA)	66.7	58.9		ng/L		88	70 - 130
Perfluorononanoic acid (PFNA)	66.7	57.7		ng/L		87	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	100	91.7		ng/L		92	70 - 130
Perfluoroheptanoic acid (PFHpA)	33.3	31.8		ng/L		95	70 - 130
Perfluorobutanesulfonic acid (PFBS)	300	262		ng/L		87	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*89*		*70 - 130*
13C2 PFDA	*116*		*70 - 130*

Lab Sample ID: 320-31489-11 MS **Client Sample ID: NAWC-091217-RW-315**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 185411 **Prep Batch: 184653**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	9.0	J M	136	137		ng/L		94	70 - 130
Perfluorooctanoic acid (PFOA)	11	J	68.0	75.6		ng/L		95	70 - 130
Perfluorononanoic acid (PFNA)	19	U	68.0	67.5		ng/L		99	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	11	U	102	96.3		ng/L		94	70 - 130
Perfluoroheptanoic acid (PFHpA)	4.0	J	34.0	35.7		ng/L		93	70 - 130
Perfluorobutanesulfonic acid (PFBS)	34	U	306	259		ng/L		85	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C2 PFHxA	*75*		*70 - 130*
13C2 PFDA	*123*		*70 - 130*

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

Lab Sample ID: 320-31489-11 MSD **Client Sample ID: NAWC-091217-RW-315**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 185411 **Prep Batch: 184653**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	9.0	J M	136	133	M	ng/L		91	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	11	J	67.9	74.1		ng/L		93	70 - 130	2	30
Perfluorononanoic acid (PFNA)	19	U	67.8	67.8		ng/L		100	70 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	11	U	102	94.0		ng/L		92	70 - 130	2	30
Perfluoroheptanoic acid (PFHpA)	4.0	J	33.9	36.5		ng/L		96	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)	34	U	305	251		ng/L		82	70 - 130	3	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C2 PFHxA	*77*		*70 - 130*
13C2 PFDA	*116*		*70 - 130*

LCMS

Prep Batch: 184653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31489-1	NAWC-091217-RW-289	Total/NA	Water	537	
320-31489-2	NAWC-091217-FRB-289	Total/NA	Water	537	
320-31489-3	NAWC-091217-RW-029	Total/NA	Water	537	
320-31489-4	NAWC-091217-FRB-029	Total/NA	Water	537	
320-31489-5	NAWC-091217-RW-312	Total/NA	Water	537	
320-31489-6	NAWC-091217-FRB-312	Total/NA	Water	537	
320-31489-7	NAWC-091217-RW-141	Total/NA	Water	537	
320-31489-8	NAWC-091217-FRB-141	Total/NA	Water	537	
320-31489-9	NAWC-091217-RW-038	Total/NA	Water	537	
320-31489-10	NAWC-091217-FRB-038	Total/NA	Water	537	
320-31489-11	NAWC-091217-RW-315	Total/NA	Water	537	
320-31489-12	NAWC-091217-FRB-315	Total/NA	Water	537	
320-31489-13	NAWC-091217-RW-032	Total/NA	Water	537	
320-31489-14	NAWC-091217-FRB-032	Total/NA	Water	537	
320-31489-15	NAWC-091217-RW-300	Total/NA	Water	537	
320-31489-16	NAWC-091217-FRB-300	Total/NA	Water	537	
MB 320-184653/1-A	Method Blank	Total/NA	Water	537	
LCS 320-184653/2-A	Lab Control Sample	Total/NA	Water	537	
320-31489-11 MS	NAWC-091217-RW-315	Total/NA	Water	537	
320-31489-11 MSD	NAWC-091217-RW-315	Total/NA	Water	537	

Analysis Batch: 185410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31489-1	NAWC-091217-RW-289	Total/NA	Water	537	184653
320-31489-2	NAWC-091217-FRB-289	Total/NA	Water	537	184653
320-31489-3	NAWC-091217-RW-029	Total/NA	Water	537	184653
320-31489-4	NAWC-091217-FRB-029	Total/NA	Water	537	184653
320-31489-5	NAWC-091217-RW-312	Total/NA	Water	537	184653
320-31489-6	NAWC-091217-FRB-312	Total/NA	Water	537	184653
320-31489-7	NAWC-091217-RW-141	Total/NA	Water	537	184653
320-31489-8	NAWC-091217-FRB-141	Total/NA	Water	537	184653
MB 320-184653/1-A	Method Blank	Total/NA	Water	537	184653
LCS 320-184653/2-A	Lab Control Sample	Total/NA	Water	537	184653

Analysis Batch: 185411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31489-10	NAWC-091217-FRB-038	Total/NA	Water	537	184653
320-31489-11	NAWC-091217-RW-315	Total/NA	Water	537	184653
320-31489-12	NAWC-091217-FRB-315	Total/NA	Water	537	184653
320-31489-13	NAWC-091217-RW-032	Total/NA	Water	537	184653
320-31489-14	NAWC-091217-FRB-032	Total/NA	Water	537	184653
320-31489-15	NAWC-091217-RW-300	Total/NA	Water	537	184653
320-31489-16	NAWC-091217-FRB-300	Total/NA	Water	537	184653
320-31489-11 MS	NAWC-091217-RW-315	Total/NA	Water	537	184653
320-31489-11 MSD	NAWC-091217-RW-315	Total/NA	Water	537	184653

Analysis Batch: 185468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31489-9	NAWC-091217-RW-038	Total/NA	Water	537	184653

Client Sample ID: NAWC-091217-RW-289 — Lab Sample ID: 320-31489-1

Date Collected: 09/12/17 07:35 — **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:02	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-289 — Lab Sample ID: 320-31489-2

Date Collected: 09/12/17 07:30 — **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:07	JRB	TAL SAC

Client Sample ID: NAWC-091217-RW-029 — Lab Sample ID: 320-31489-3

Date Collected: 09/12/17 08:05 — **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:12	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-029 — Lab Sample ID: 320-31489-4

Date Collected: 09/12/17 08:00 — **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:17	JRB	TAL SAC

Client Sample ID: NAWC-091217-RW-312 — Lab Sample ID: 320-31489-5

Date Collected: 09/12/17 08:35 — **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:21	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-312 — Lab Sample ID: 320-31489-6

Date Collected: 09/12/17 08:30 — **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:26	JRB	TAL SAC

Client Sample ID: NAWC-091217-RW-141 Lab Sample ID: 320-31489-7

Date Collected: 09/12/17 09:00 **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:31	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-141 Lab Sample ID: 320-31489-8

Date Collected: 09/12/17 08:55 **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185410	09/20/17 07:36	JRB	TAL SAC

Client Sample ID: NAWC-091217-RW-038 Lab Sample ID: 320-31489-9

Date Collected: 09/12/17 09:25 **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185468	09/20/17 14:40	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-038 Lab Sample ID: 320-31489-10

Date Collected: 09/12/17 09:20 **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185411	09/20/17 07:55	JRB	TAL SAC

Client Sample ID: NAWC-091217-RW-315 Lab Sample ID: 320-31489-11

Date Collected: 09/12/17 13:50 **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185411	09/20/17 07:59	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-315 Lab Sample ID: 320-31489-12

Date Collected: 09/12/17 13:45 **Matrix: Water**
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185411	09/20/17 08:14	JRB	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-31489-1

Client Sample ID: NAWC-091217-RW-032
Lab Sample ID: 320-31489-13
Date Collected: 09/12/17 10:35
Matrix: Water
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185411	09/20/17 08:18	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-032
Lab Sample ID: 320-31489-14
Date Collected: 09/12/17 10:30
Matrix: Water
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:28	CCB	TAL SAC
Total/NA	Analysis	537		1	185411	09/20/17 08:23	JRB	TAL SAC

Client Sample ID: NAWC-091217-RW-300
Lab Sample ID: 320-31489-15
Date Collected: 09/12/17 11:30
Matrix: Water
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:40	CCB	TAL SAC
Total/NA	Analysis	537		1	185411	09/20/17 08:28	JRB	TAL SAC

Client Sample ID: NAWC-091217-FRB-300
Lab Sample ID: 320-31489-16
Date Collected: 09/12/17 11:25
Matrix: Water
Date Received: 09/13/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			184653	09/15/17 10:40	CCB	TAL SAC
Total/NA	Analysis	537		1	185411	09/20/17 08:32	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. TestAmerica Job ID: 320-31489-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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. TestAmerica Job ID: 320-31489-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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: 320-31489-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31489-1	NAWC-091217-RW-289	Water	09/12/17 07:35	09/13/17 09:30
320-31489-2	NAWC-091217-FRB-289	Water	09/12/17 07:30	09/13/17 09:30
320-31489-3	NAWC-091217-RW-029	Water	09/12/17 08:05	09/13/17 09:30
320-31489-4	NAWC-091217-FRB-029	Water	09/12/17 08:00	09/13/17 09:30
320-31489-5	NAWC-091217-RW-312	Water	09/12/17 08:35	09/13/17 09:30
320-31489-6	NAWC-091217-FRB-312	Water	09/12/17 08:30	09/13/17 09:30
320-31489-7	NAWC-091217-RW-141	Water	09/12/17 09:00	09/13/17 09:30
320-31489-8	NAWC-091217-FRB-141	Water	09/12/17 08:55	09/13/17 09:30
320-31489-9	NAWC-091217-RW-038	Water	09/12/17 09:25	09/13/17 09:30
320-31489-10	NAWC-091217-FRB-038	Water	09/12/17 09:20	09/13/17 09:30
320-31489-11	NAWC-091217-RW-315	Water	09/12/17 13:50	09/13/17 09:30
320-31489-12	NAWC-091217-FRB-315	Water	09/12/17 13:45	09/13/17 09:30
320-31489-13	NAWC-091217-RW-032	Water	09/12/17 10:35	09/13/17 09:30
320-31489-14	NAWC-091217-FRB-032	Water	09/12/17 10:30	09/13/17 09:30
320-31489-15	NAWC-091217-RW-300	Water	09/12/17 11:30	09/13/17 09:30
320-31489-16	NAWC-091217-FRB-300	Water	09/12/17 11:25	09/13/17 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 185329

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

Date Analyzed: 09/20/17 02:56 Lab File ID: 2017.09.19_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

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

Date Analyzed: 09/20/17 03:00 Lab File ID: 2017.09.19_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

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

Date Analyzed: 09/20/17 03:05 Lab File ID: 2017.09.19_537ICAL_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

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

Date Analyzed: 09/20/17 03:10 Lab File ID: 2017.09.19_537ICAL_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 185329

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

Date Analyzed: 09/20/17 03:15 Lab File ID: 2017.09.19_537ICAL_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

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

Date Analyzed: 09/20/17 03:19 Lab File ID: 2017.09.19_537ICAL_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

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

Date Analyzed: 09/20/17 03:29 Lab File ID: 2017.09.19_537ICAL_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

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

Date Analyzed: 09/20/17 03:38 Lab File ID: 2017.09.19_537ICAL_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

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

537

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 185410

Lab Sample ID: CCV 320-185410/1 CCVIS Client Sample ID:

Date Analyzed: 09/20/17 06:43 Lab File ID: 2017.09.19_537A_038.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	09/20/17 13:48

Lab Sample ID: LCS 320-184653/2-A Client Sample ID:

Date Analyzed: 09/20/17 06:58 Lab File ID: 2017.09.19_537A_041.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	09/20/17 13:50

Lab Sample ID: 320-31489-1 Client Sample ID: NAWC-091217-RW-289

Date Analyzed: 09/20/17 07:02 Lab File ID: 2017.09.19_537A_042.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	09/20/17 13:50

Lab Sample ID: 320-31489-3 Client Sample ID: NAWC-091217-RW-029

Date Analyzed: 09/20/17 07:12 Lab File ID: 2017.09.19_537A_044.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	09/20/17 13:51

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 185410

Lab Sample ID: 320-31489-5 Client Sample ID: NAWC-091217-RW-312

Date Analyzed: 09/20/17 07:21 Lab File ID: 2017.09.19_537A_046.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	09/20/17 13:52

Lab Sample ID: 320-31489-7 Client Sample ID: NAWC-091217-RW-141

Date Analyzed: 09/20/17 07:31 Lab File ID: 2017.09.19_537A_048.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	09/20/17 13:53

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 185411

Lab Sample ID: 320-31489-11 Client Sample ID: NAWC-091217-RW-315

Date Analyzed: 09/20/17 07:59 Lab File ID: 2017.09.19_537A_054.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	09/20/17 13:57

Lab Sample ID: 320-31489-11 MSD Client Sample ID: NAWC-091217-RW-315 MSD

Date Analyzed: 09/20/17 08:09 Lab File ID: 2017.09.19_537A_056.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Incomplete Integration	barnettj	09/20/17 13:58

Lab Sample ID: 320-31489-13 Client Sample ID: NAWC-091217-RW-032

Date Analyzed: 09/20/17 08:18 Lab File ID: 2017.09.19_537A_058.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	09/20/17 13:59

Lab Sample ID: 320-31489-15 Client Sample ID: NAWC-091217-RW-300

Date Analyzed: 09/20/17 08:28 Lab File ID: 2017.09.19_537A_060.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	09/20/17 14:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 185468

Lab Sample ID: 320-31489-9 Client Sample ID: NAWC-091217-RW-038

Date Analyzed: 09/20/17 14:40 Lab File ID: 2017.09.20_537A_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	09/20/17 15:34

Lab Sample ID: CCV 320-185468/9 CCVIS Client Sample ID:

Date Analyzed: 09/20/17 14:59 Lab File ID: 2017.09.20_537A_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	09/20/17 15:30

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
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
..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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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_00047	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-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
					LC537-MSP_00029	60 uL	Perfluorobutanesulfonic acid (PFBS)	9.0018 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1.00036 ng/mL
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

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 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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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
.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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
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
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFOS_00008	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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_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-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
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	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-MSP_00027	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	166.7 uL	Perfluorobutane Sulfonate	750.15 ng/mL
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	333.455 ng/mL
.LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutane Sulfonate	90 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	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	Perfluorobutane Sulfonate	2 mg/mL
							Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		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-SU_00048	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

Reagent

LC537_PFBS_00002

R: 4/1/15 SPV

SIGMA-ALDRICH®

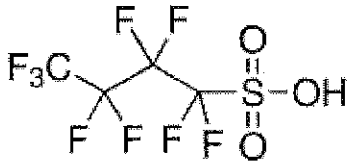
sigma-aldrich.com

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

Certificate of Analysis

Product Name:
Nonafluorobutane-1-sulfonic acid - 97%

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



PFBS

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

Jamie Gleason

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

Reagent

LC537_PFBS2_00002

1:6:17 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)	≥ 97%	101.3%
Infrared Spectrum	Conforms to structure	Complies

Reagent

LC537_PFHpA_00002

R: 4/1/15 SRV

SIGMA-ALDRICH®

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

Certificate of Analysis

PFHpA

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

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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

Reagent

LC537_PFHpA2_00002

Alfa Aesar

Certificate of analysis

r: 6.13.17 SW

PFHp A

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

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.

Reagent

LC537_PFHxS_00002

R: 4/1/15 SKV

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:	TRIDECAFLUOROHEXANE-1-SULFONIC ACID POTASSIUM SALT >= 98.0 % T
Product Number:	50929
Batch Number:	BCBL3545V
Brand:	Aldrich
CAS Number:	3871-99-6
Formula:	$C_6F_{13}KO_3S$
Formula Weight:	438.20
Quality Release Date:	20 JUN 2013

PFHxS-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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity = 90.94 / w/m.w correction

SKV 4/1/15

Reagent

LC537_PFHxS2_00002

n: 6.8.17 SKV

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%

$PFH_xS\text{-}K$

$C_6F_{13}SO_3K$ 438.201

$C_6F_{13}SO_3H$ 400.111

MW correction = $\frac{400.11}{438.201}$ = 0.91307 $\frac{PFHxS}{Cas\# 355\text{-}46\text{-}4}$

Purity & MW correction = 90.9%

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

Reagent

LC537_PFNA_00002

R: 4/1/15 SKV

Certificate of Analysis

Apr 2, 2015 (JST)

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

Chemical Name: Heptadecafluorononanoic Acid		
Product Number: H0843 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_PFNA2_00002

P: 6.14.17 SKV

SIGMA-ALDRICH®

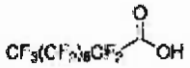
sigma-aldrich.com

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.

Version Number: 1

Reagent

LC537_PFOA_00003

R: 11/30/16 SKV
PFOA

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:	PENTADECAFLUOROOCTANOIC ACID analytical standard
Product Number:	33824
Batch Number:	BCBS1198V
Brand:	Sigma-Aldrich
CAS Number:	335-67-1
Formula:	$CF_3(CF_2)_6COOH$
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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

Reagent

LC537_PFOA2_00002

Alfa Aesar

Certificate of analysis

R: 6/9/17 SK✓

PFOA

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

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_00003

r: 11/30/16 SV

PFOS

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 22.04.2014/524107/14/08646

Order-No.:
Customer-No.:

Order-Code:

Quantity:

Production Date: 17.Apr.2014
Expiry Date: 17.Apr.2019

Article/Product: 33829 Batch : SZBE107XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

Reference Material (RM)

1. General Information

Formula: C8F17KO3S
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	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 aliqout 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

n: 6.14.17 SKV

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:	HEPTADECAFLUOROOCTANESULFONIC 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

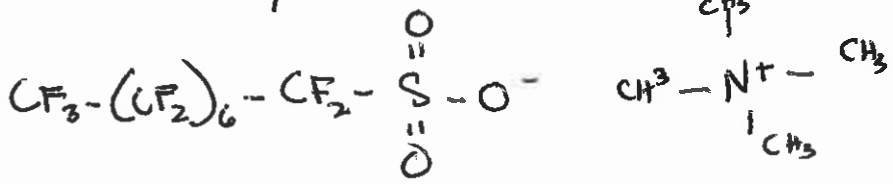
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity & MW correction = 77.87%



	$C_8F_{17}SO_3^+H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.966	—
S = 32.066	32.066	—
O = 15.999	47.997	—
H = 1.008	1.008	20.160
N = 14.007	—	14.007
	500.125	130.255

Reagent

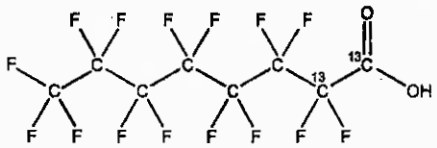
LCM2PFOA_00007

P: 5/6/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFOA	**LOT NUMBER:**	M2PFOA0216
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 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,...x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

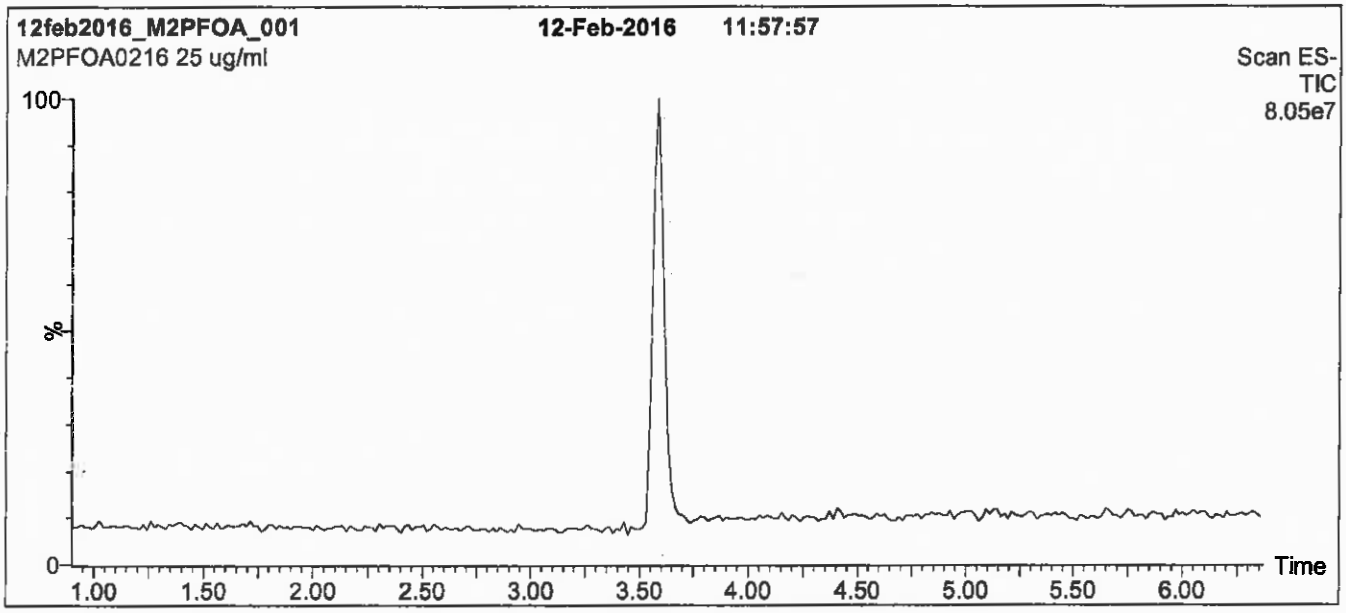
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

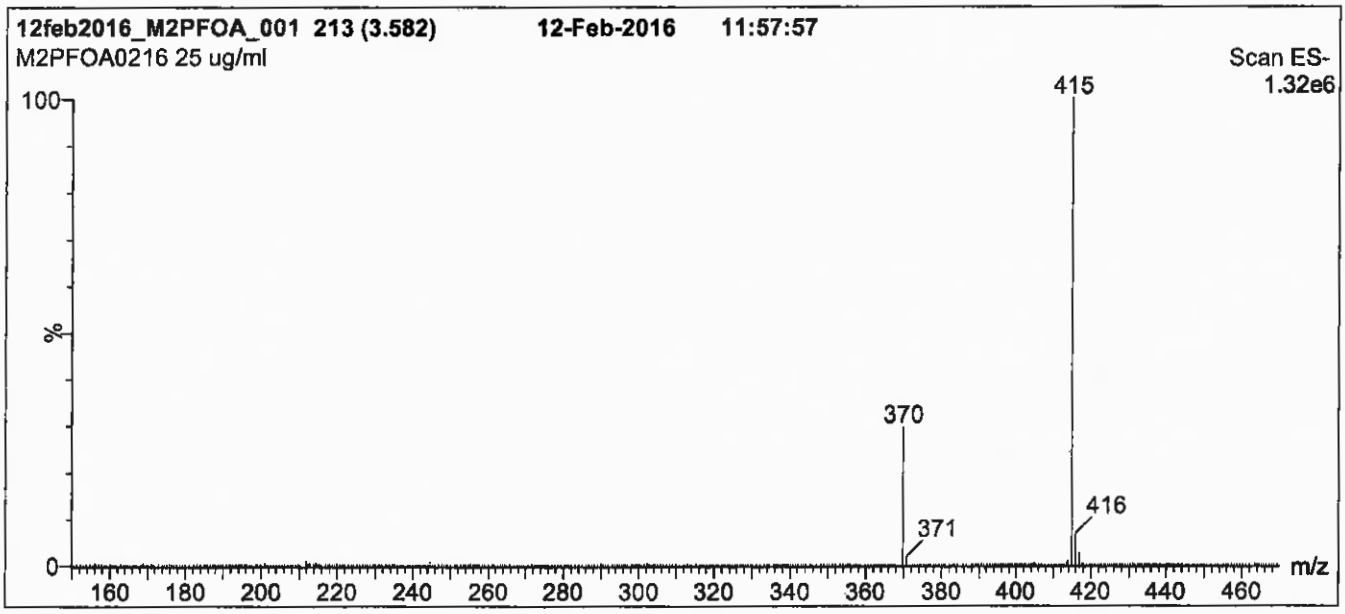
CALA

ANAB ACCREDITED

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

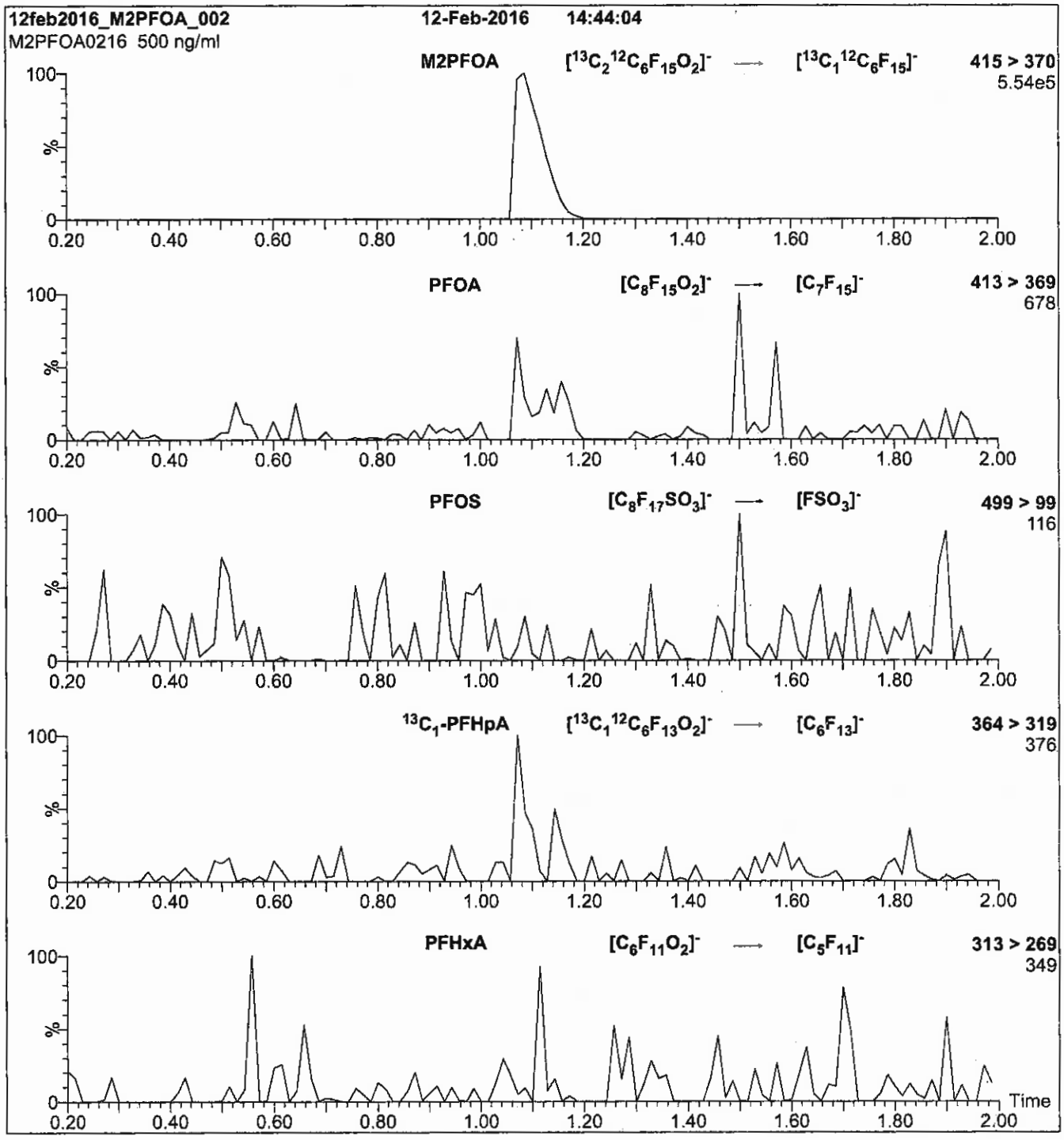
Flow: 300 µl/min

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% H_2O

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16

814255
ID: LCMPFDA_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-$^{13}C_2$]decanoic acid		
STRUCTURE:		**CAS #:**	Not available

MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
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 $^{13}C_4$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

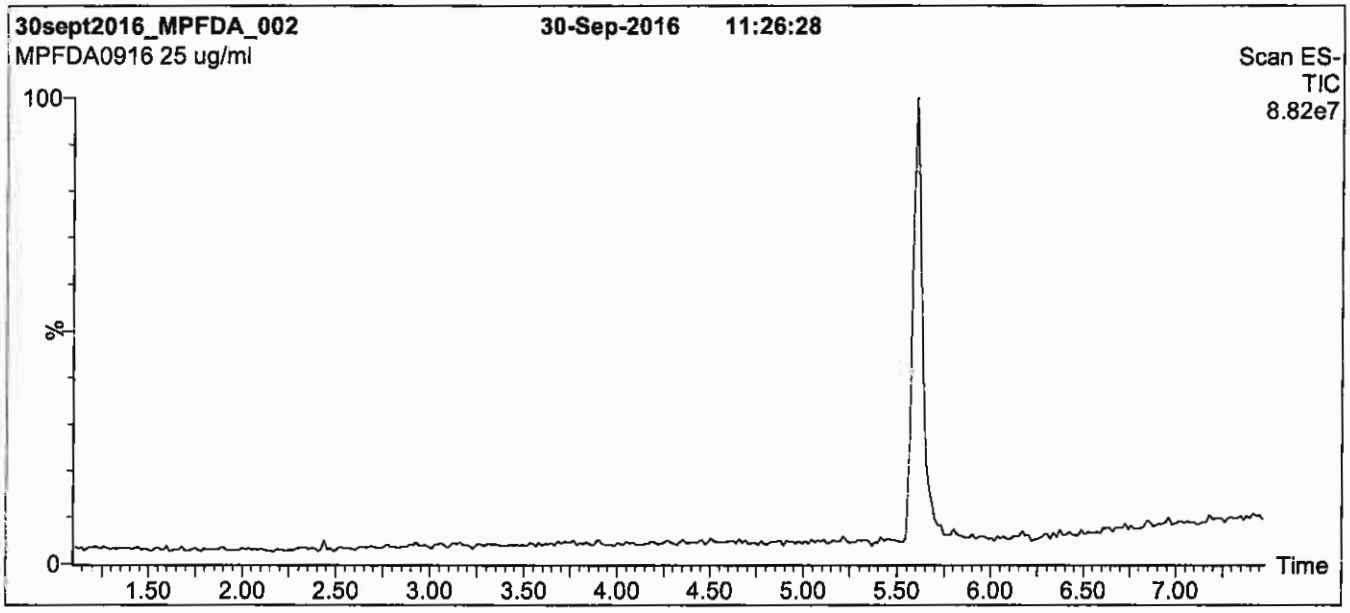
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

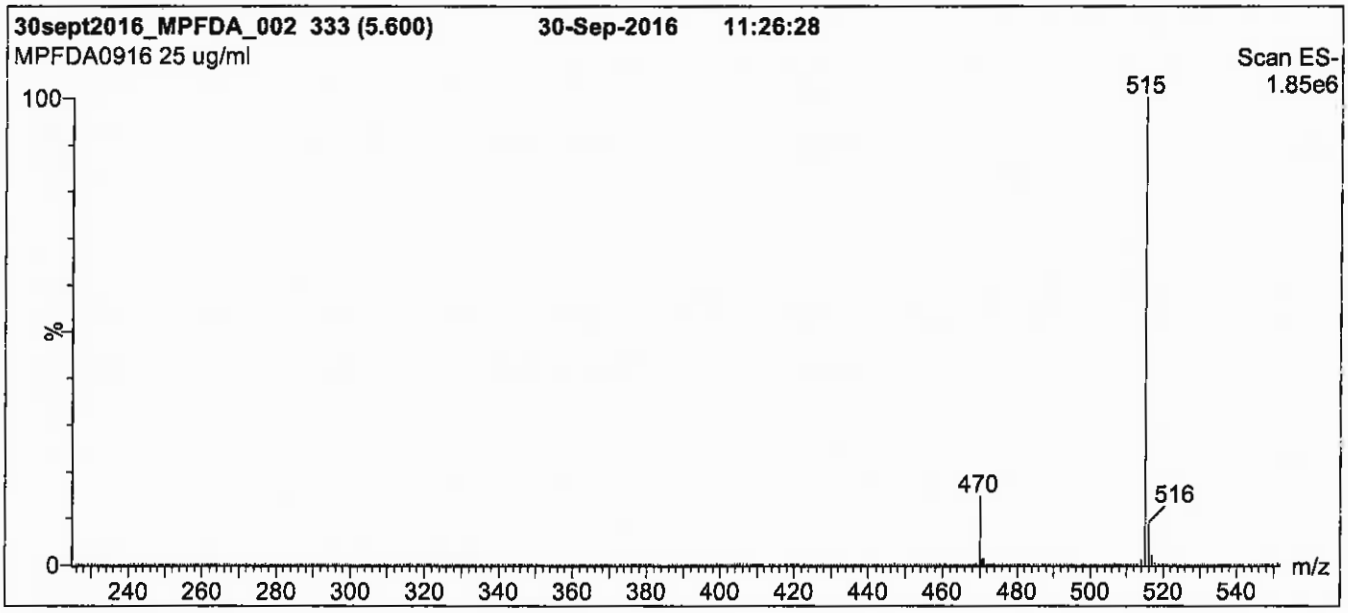
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

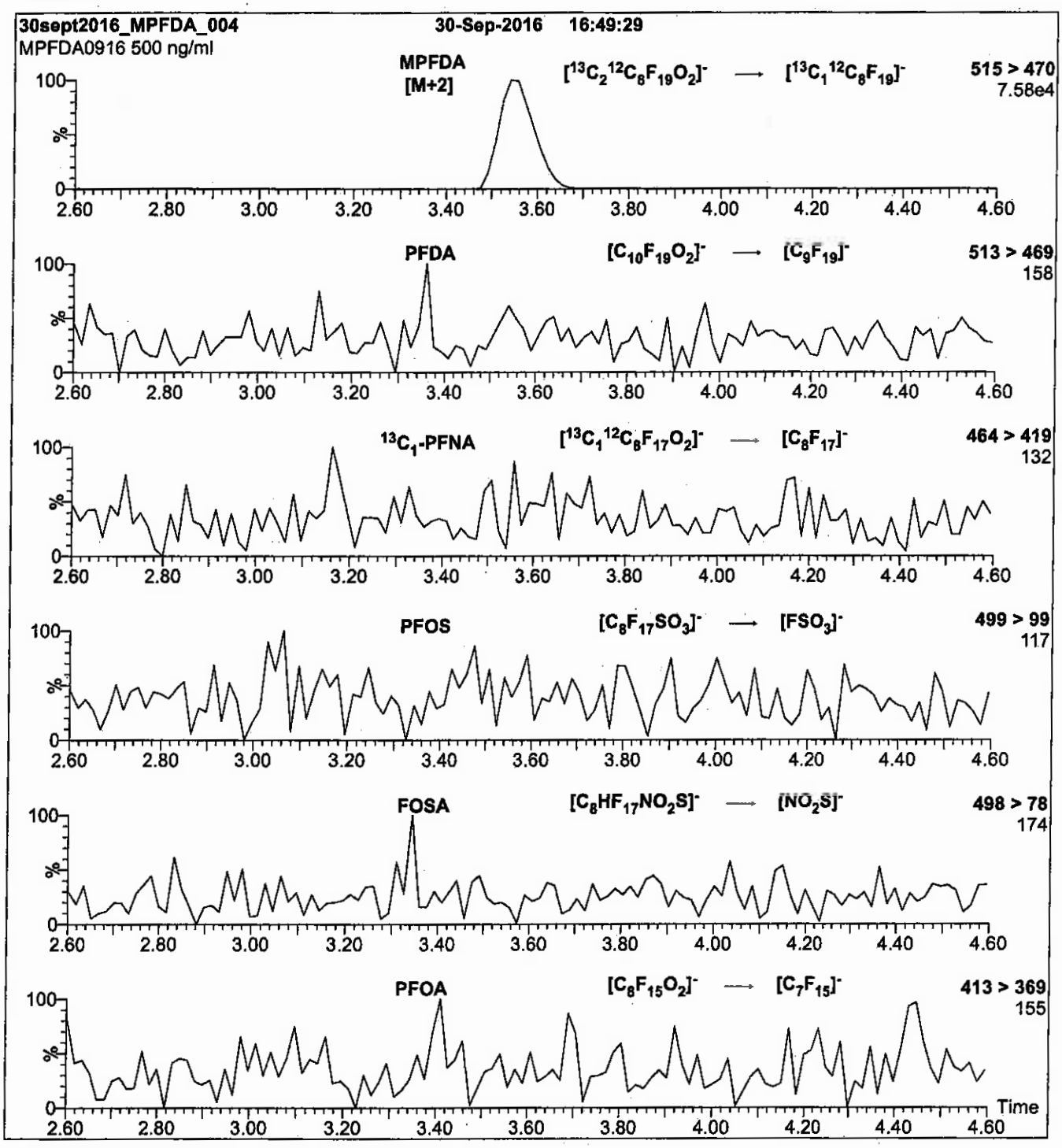
Flow: 300 µl/min

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 µl (500 ng/ml MPFDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCMPFHxA_00013

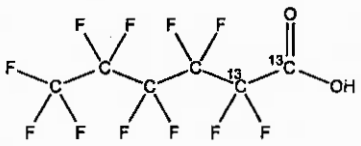
R: SBC 12/21/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA0416
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

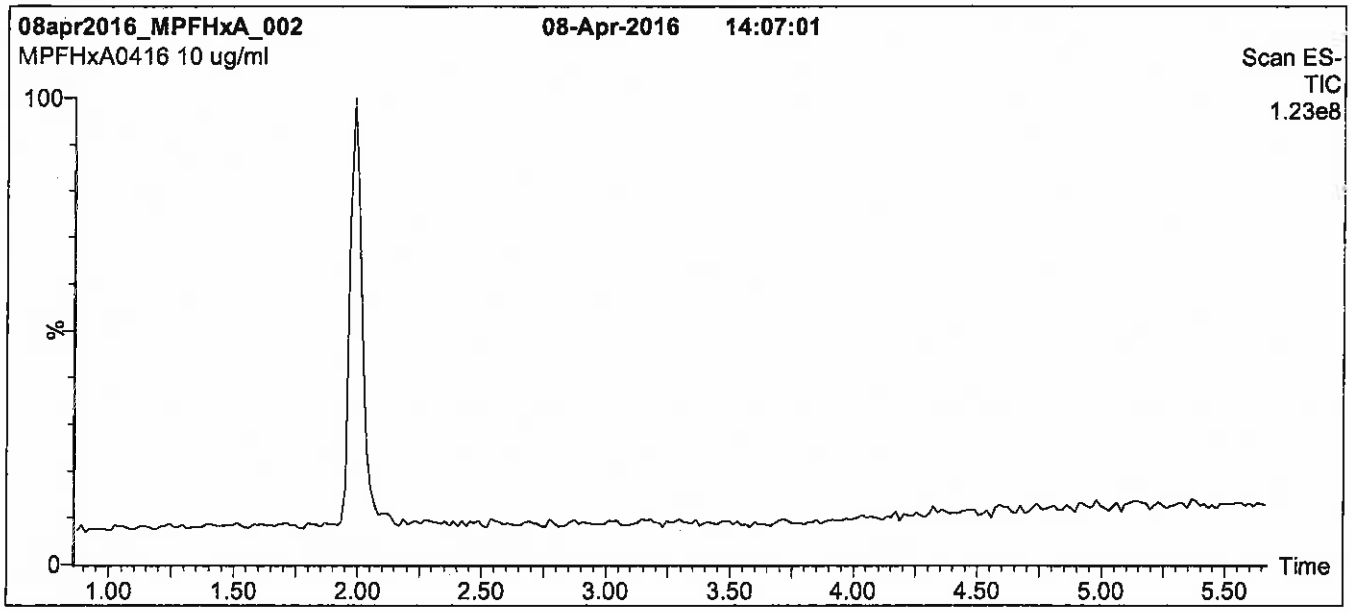
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

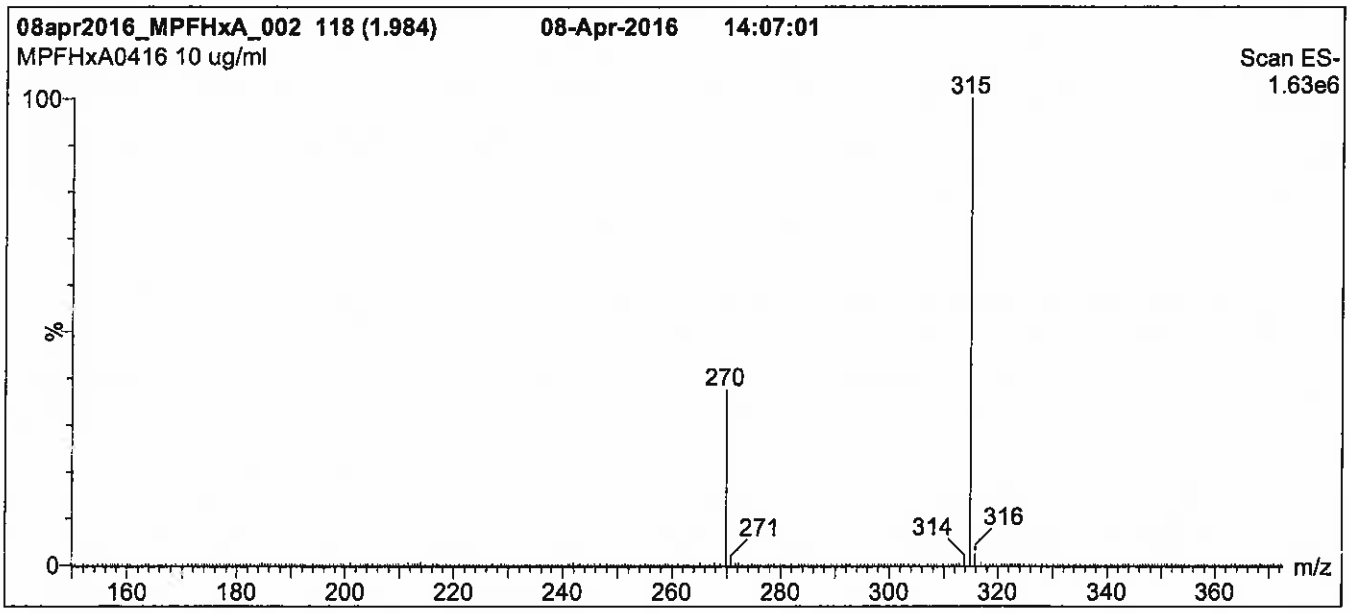
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

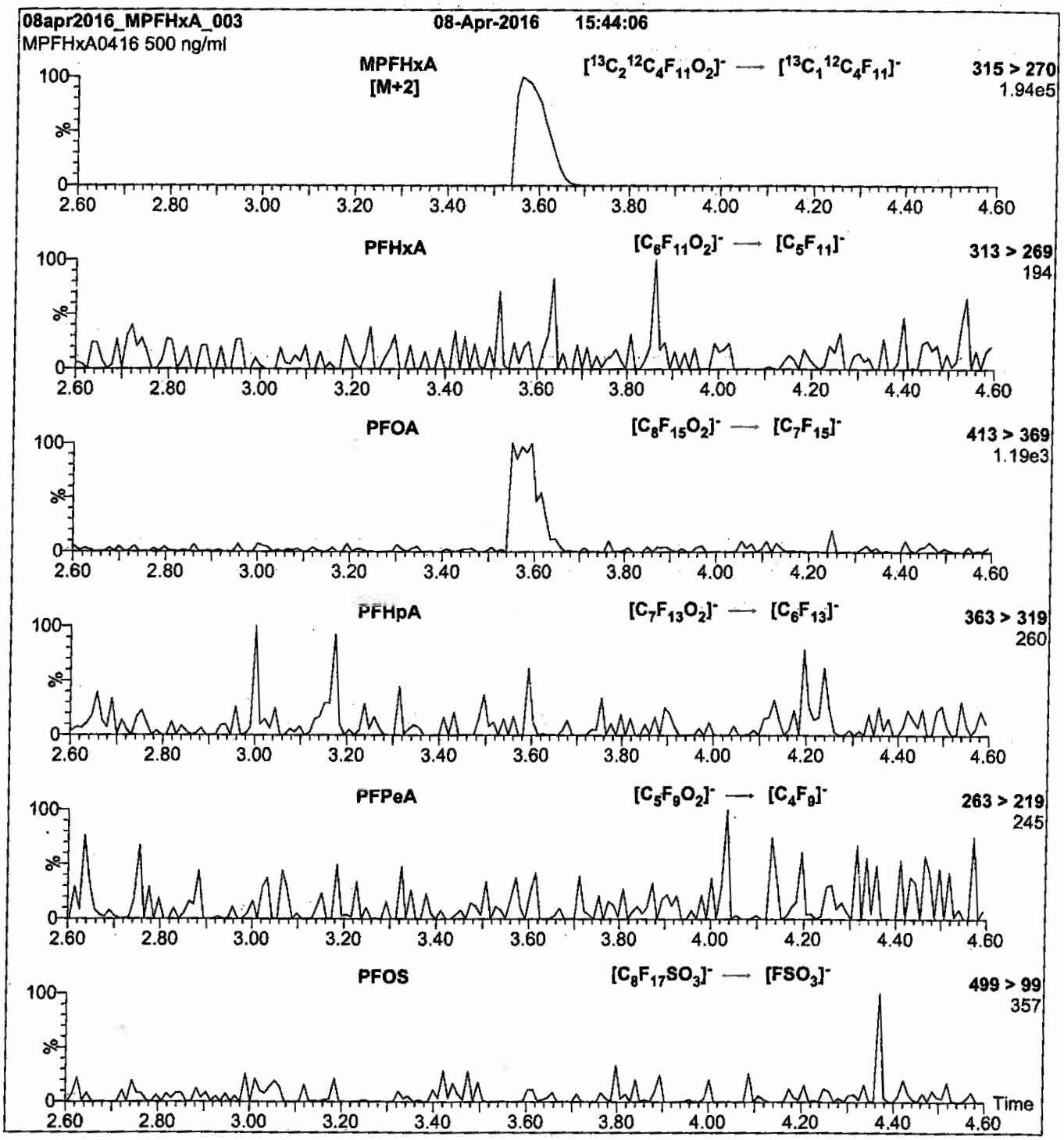
Flow: 300 µl/min

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 µl (500 ng/ml MPFHxA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFOS_00019

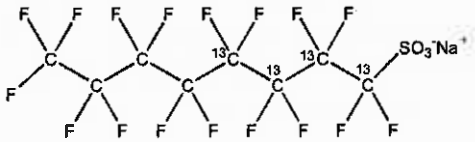
R: SBC 12/21/16

814253
ID: LCMPFOS_00019
Exp: 08/03/21 Prpd: SBC
13C4-Perfluorooctanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFOS	**LOT NUMBER:**	MPFOS0816
COMPOUND:	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	08/03/2016		
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-$^{13}C_3$]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,...x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

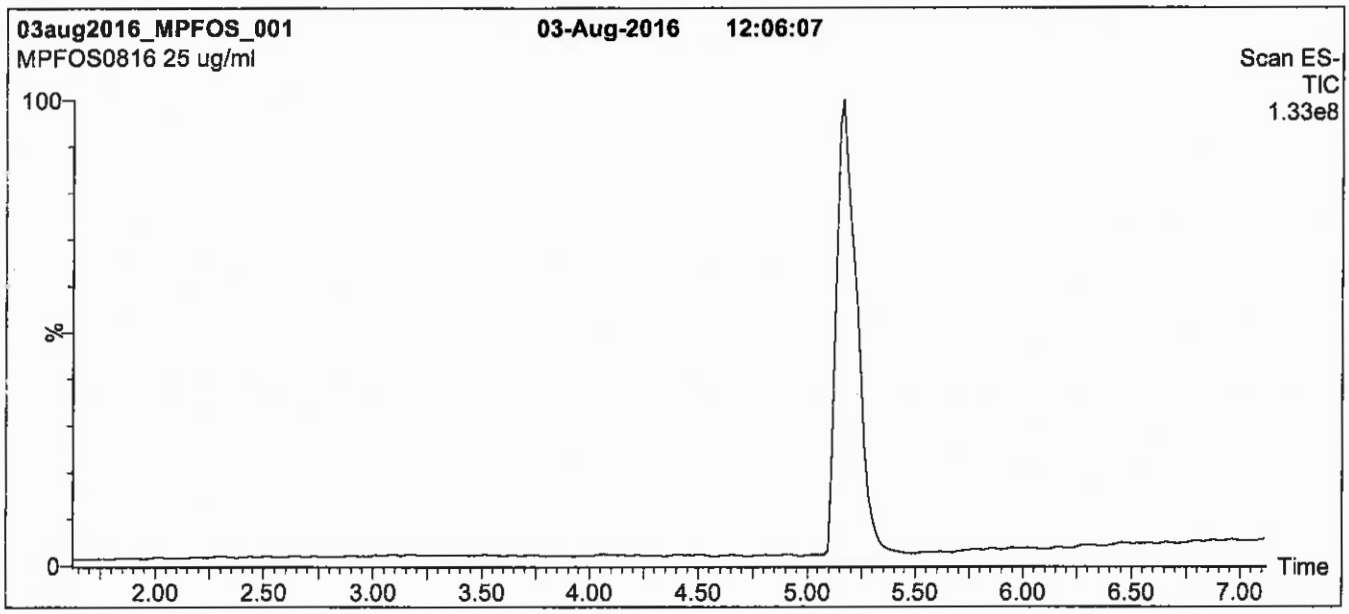
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

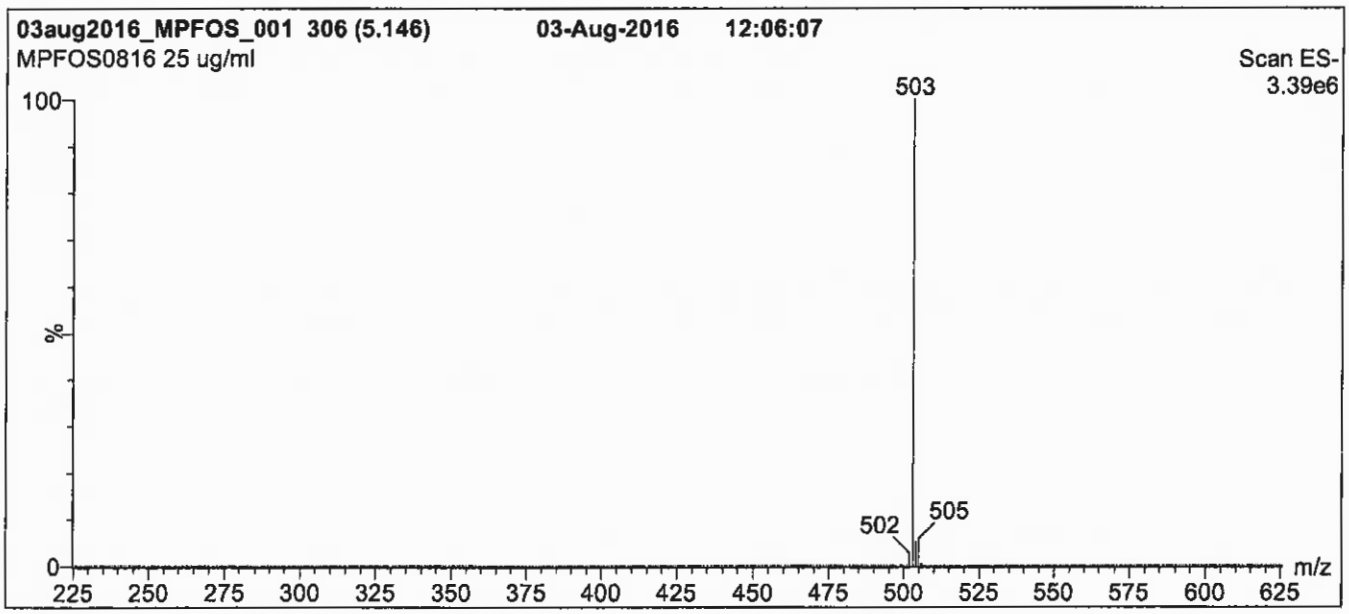
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

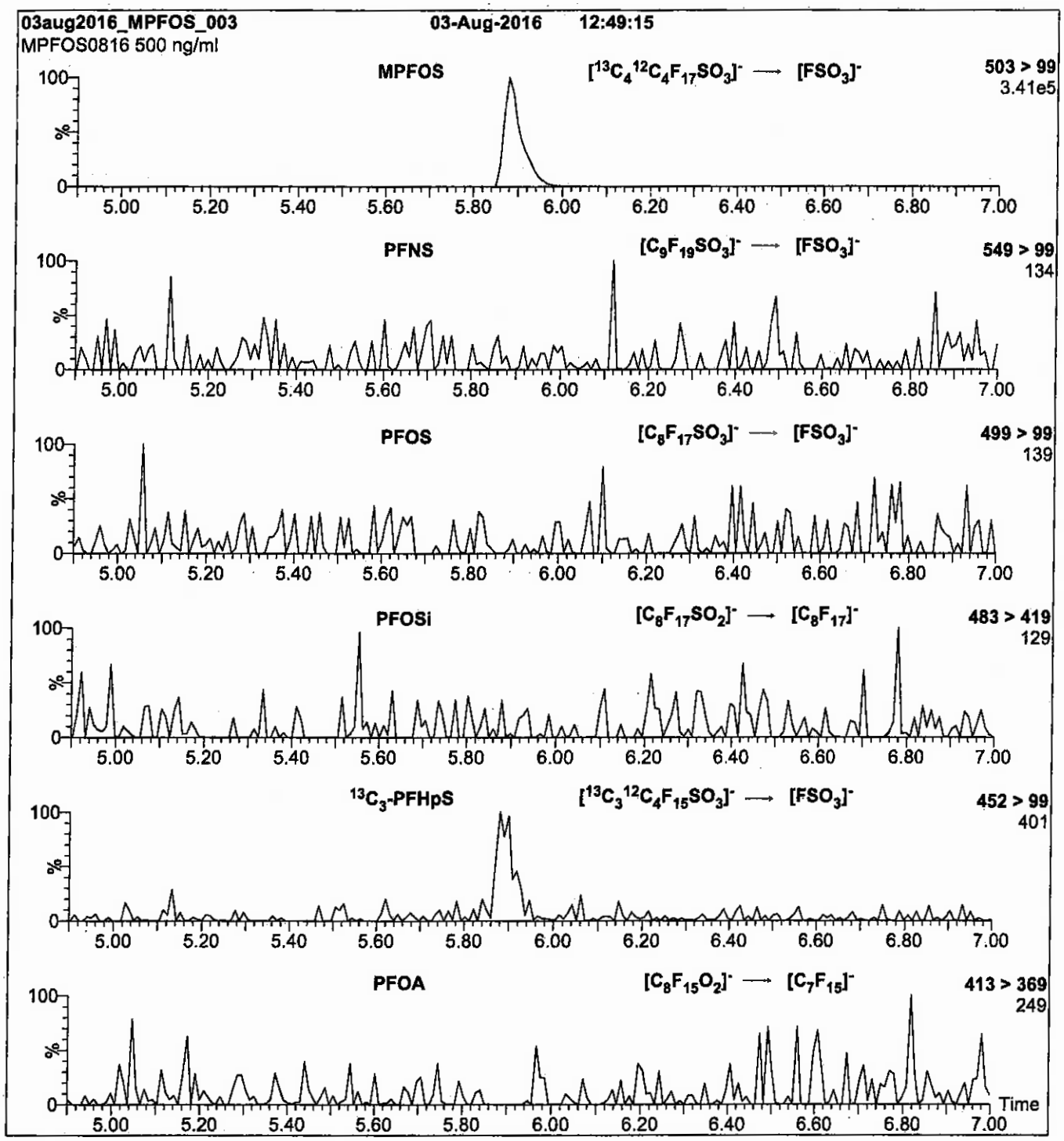
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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 µl/min

MS Parameters

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

Reagent

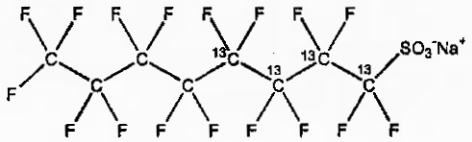
LCMPFOS_00021

r: 5/8/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFOS	**LOT NUMBER:**	MPFOS1216
COMPOUND:	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	12/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

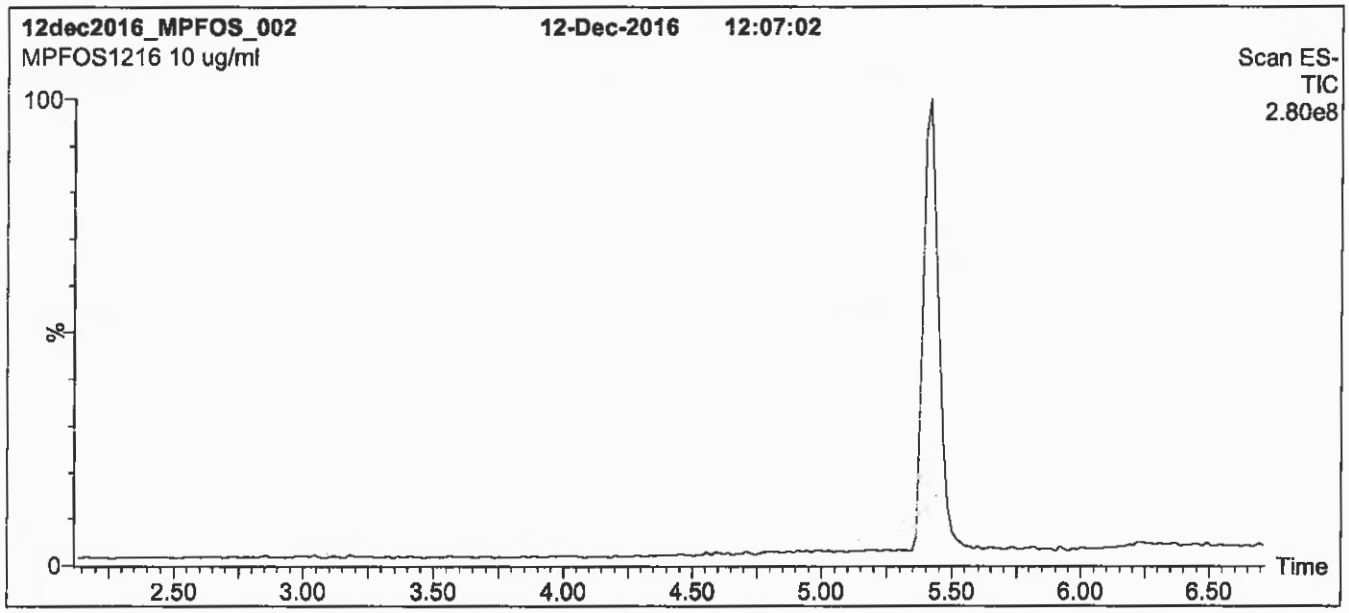
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

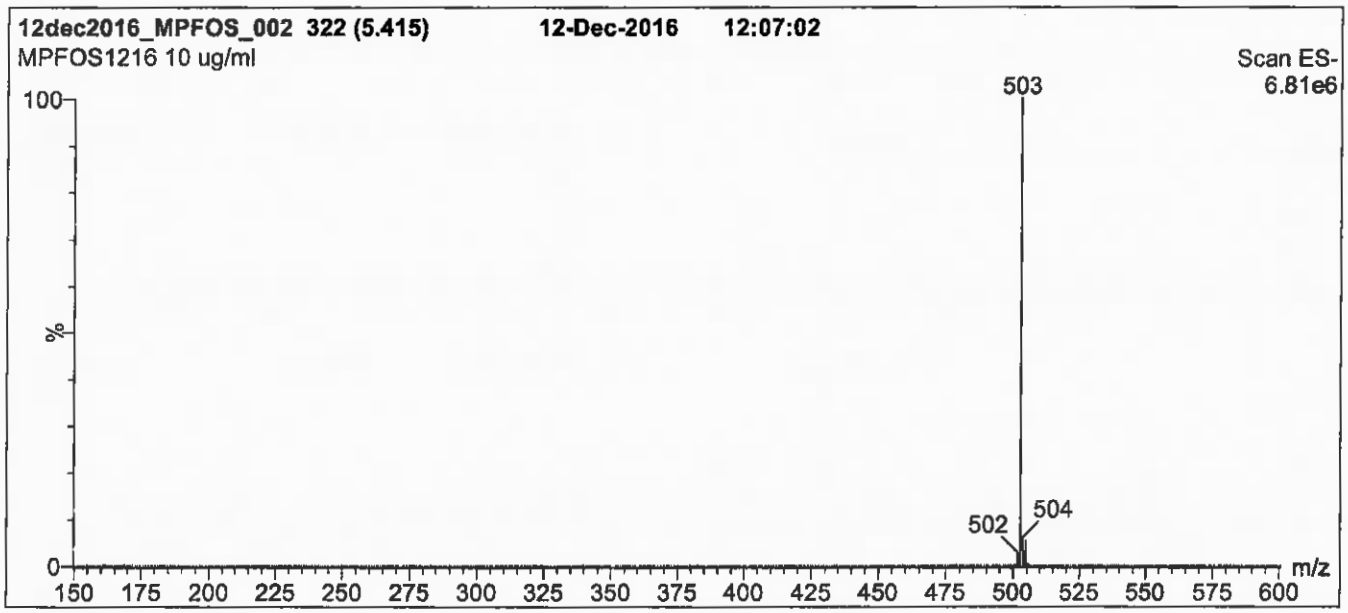
CALA

ANAB ACCREDITED

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

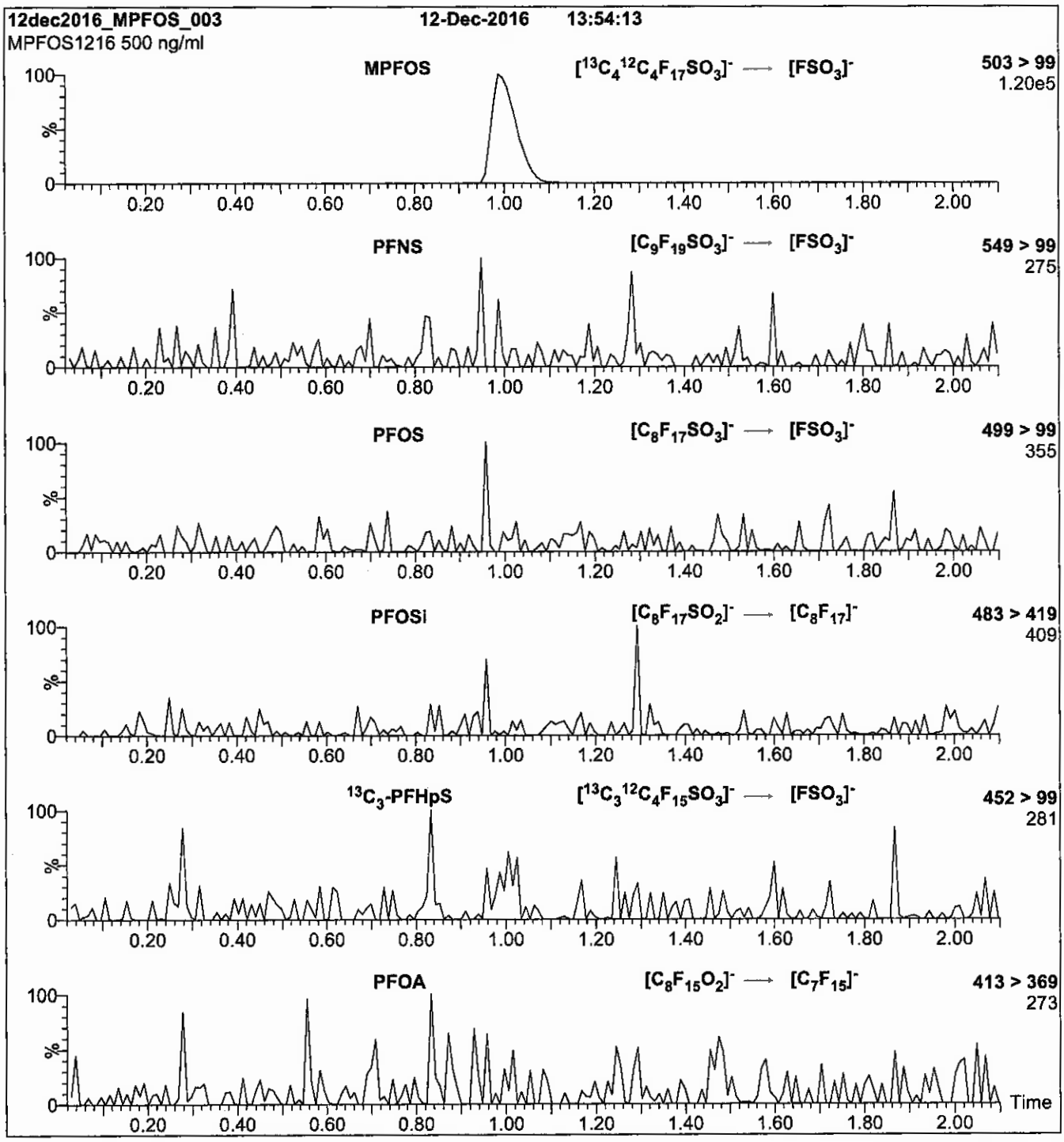
Flow: 300 µl/min

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 µl/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.: 320-31489-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-091217-RW-289	320-31489-1	78	113
NAWC-091217-FRB-289	320-31489-2	89	109
NAWC-091217-RW-029	320-31489-3	71	127
NAWC-091217-FRB-029	320-31489-4	90	109
NAWC-091217-RW-312	320-31489-5	75	104
NAWC-091217-FRB-312	320-31489-6	90	116
NAWC-091217-RW-141	320-31489-7	78	116
NAWC-091217-FRB-141	320-31489-8	91	112
NAWC-091217-RW-038	320-31489-9	73	130
NAWC-091217-FRB-038	320-31489-10	92	112
NAWC-091217-RW-315	320-31489-11	78	129
NAWC-091217-FRB-315	320-31489-12	88	104
NAWC-091217-RW-032	320-31489-13	65 Q	120
NAWC-091217-FRB-032	320-31489-14	93	116
NAWC-091217-RW-300	320-31489-15	74	107
NAWC-091217-FRB-300	320-31489-16	97	112
	MB 320-184653/1-A	91	110
	LCS 320-184653/2-A	89	116
NAWC-091217-RW-315 MS	320-31489-11 MS	75	123
NAWC-091217-RW-315 MSD	320-31489-11 MSD	77	116

	QC LIMITS
PFHxA = 13C2 PFHxA	70-130
PFDA = 13C2 PFDA	70-130

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.19_537A_041.d

Lab ID: LCS 320-184653/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	121	91	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	58.9	88	70-130	
Perfluorononanoic acid (PFNA)	66.7	57.7	87	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	91.7	92	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	31.8	95	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	262	87	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.19_537A_055.d

Lab ID: 320-31489-11 MS Client ID: NAWC-091217-RW-315 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	136	9.0 J	137	94	70-130	
Perfluorooctanoic acid (PFOA)	68.0	11 J	75.6	95	70-130	
Perfluorononanoic acid (PFNA)	68.0	19 U	67.5	99	70-130	
Perfluorohexanesulfonic acid (PFHxS)	102	11 U	96.3	94	70-130	
Perfluoroheptanoic acid (PFHpA)	34.0	4.0 J	35.7	93	70-130	
Perfluorobutanesulfonic acid (PFBS)	306	34 U	259	85	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.19_537A_056.d

Lab ID: 320-31489-11 MSD Client ID: NAWC-091217-RW-315 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	136	133	91	3	30	70-130	M
Perfluorooctanoic acid (PFOA)	67.9	74.1	93	2	30	70-130	
Perfluorononanoic acid (PFNA)	67.8	67.8	100	0	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	102	94.0	92	2	30	70-130	
Perfluoroheptanoic acid (PFHpA)	33.9	36.5	96	2	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	305	251	82	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab File ID: 2017.09.19_537A_040.d Lab Sample ID: MB 320-184653/1-A

Matrix: Water Date Extracted: 09/15/2017 10:28

Instrument ID: A8_N Date Analyzed: 09/20/2017 06:53

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-184653/2-A	2017.09.19_537A_041.d	09/20/2017 06:58
NAWC-091217-RW-289	320-31489-1	2017.09.19_537A_042.d	09/20/2017 07:02
NAWC-091217-FRB-289	320-31489-2	2017.09.19_537A_043.d	09/20/2017 07:07
NAWC-091217-RW-029	320-31489-3	2017.09.19_537A_044.d	09/20/2017 07:12
NAWC-091217-FRB-029	320-31489-4	2017.09.19_537A_045.d	09/20/2017 07:17
NAWC-091217-RW-312	320-31489-5	2017.09.19_537A_046.d	09/20/2017 07:21
NAWC-091217-FRB-312	320-31489-6	2017.09.19_537A_047.d	09/20/2017 07:26
NAWC-091217-RW-141	320-31489-7	2017.09.19_537A_048.d	09/20/2017 07:31
NAWC-091217-FRB-141	320-31489-8	2017.09.19_537A_049.d	09/20/2017 07:36
NAWC-091217-FRB-038	320-31489-10	2017.09.19_537A_053.d	09/20/2017 07:55
NAWC-091217-RW-315	320-31489-11	2017.09.19_537A_054.d	09/20/2017 07:59
NAWC-091217-RW-315 MS	320-31489-11 MS	2017.09.19_537A_055.d	09/20/2017 08:04
NAWC-091217-RW-315 MSD	320-31489-11 MSD	2017.09.19_537A_056.d	09/20/2017 08:09
NAWC-091217-FRB-315	320-31489-12	2017.09.19_537A_057.d	09/20/2017 08:14
NAWC-091217-RW-032	320-31489-13	2017.09.19_537A_058.d	09/20/2017 08:18
NAWC-091217-FRB-032	320-31489-14	2017.09.19_537A_059.d	09/20/2017 08:23
NAWC-091217-RW-300	320-31489-15	2017.09.19_537A_060.d	09/20/2017 08:28
NAWC-091217-FRB-300	320-31489-16	2017.09.19_537A_061.d	09/20/2017 08:32
NAWC-091217-RW-038	320-31489-9	2017.09.20_537A_005.d	09/20/2017 14:40

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2116635	1.86	5570738	2.11		
UPPER LIMIT		3174953	2.36	8356107	2.61		
LOWER LIMIT		1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-185329/11		2252465	1.85	5723538	2.10		
ICV 320-185329/13		2616480	1.85	7294448	2.10		
CCV 320-185410/1 CCVIS		2137164	1.84	5388320	2.09		
MB 320-184653/1-A		2453694	1.84	6328167	2.09		
LCS 320-184653/2-A		2584758	1.84	6348829	2.09		
320-31489-1	NAWC-091217-RW-289	2447459	1.84	6406738	2.09		
320-31489-2	NAWC-091217-FRB-289	2514373	1.85	6300338	2.09		
320-31489-3	NAWC-091217-RW-029	2509210	1.84	6273970	2.09		
320-31489-4	NAWC-091217-FRB-029	2619610	1.84	6478781	2.09		
320-31489-5	NAWC-091217-RW-312	2499261	1.84	6593134	2.09		
320-31489-6	NAWC-091217-FRB-312	2612263	1.84	6435336	2.09		
320-31489-7	NAWC-091217-RW-141	2551724	1.84	6381647	2.09		
320-31489-8	NAWC-091217-FRB-141	2459724	1.84	6133899	2.09		
CCV 320-185410/13 CCVIS		2165650	1.84	5591851	2.09		
CCV 320-185411/13 CCVIS		2165650	1.84	5591851	2.09		
320-31489-10	NAWC-091217-FRB-038	2474435	1.84	6053950	2.09		
320-31489-11	NAWC-091217-RW-315	2392232	1.84	6404955	2.09		
320-31489-11 MS	NAWC-091217-RW-315 MS	2386931	1.84	6215415	2.09		
320-31489-11 MSD	NAWC-091217-RW-315 MSD	2359481	1.84	6451817	2.09		
320-31489-12	NAWC-091217-FRB-315	2517989	1.84	6073560	2.09		
320-31489-13	NAWC-091217-RW-032	2324777	1.84	6126952	2.09		
320-31489-14	NAWC-091217-FRB-032	2637436	1.84	6735507	2.09		
320-31489-15	NAWC-091217-RW-300	2494391	1.84	6721558	2.09		
320-31489-16	NAWC-091217-FRB-300	2439474	1.84	6432248	2.09		
CCV 320-185411/25 CCVIS		2222421	1.84	5821646	2.09		
CCV 320-185468/1 CCVIS		1864090	1.89	4938119	2.15		
320-31489-9	NAWC-091217-RW-038	1918184	1.87	5497337	2.13		

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

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2116635	1.86	5570738	2.11		
UPPER LIMIT		3174953	2.36	8356107	2.61		
LOWER LIMIT		1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 320-185468/9 CCVIS		1754947	1.87	4946062	2.12		

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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185410/1 Date Analyzed: 09/20/2017 06:43

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_038 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2137164	1.84	5388320	2.09		
UPPER LIMIT		2992030	2.34	7543648	2.59		
LOWER LIMIT		1496015	1.34	3771824	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-184653/1-A		2453694	1.84	6328167	2.09		
LCS 320-184653/2-A		2584758	1.84	6348829	2.09		
320-31489-1	NAWC-091217-RW-289	2447459	1.84	6406738	2.09		
320-31489-2	NAWC-091217-FRB-289	2514373	1.85	6300338	2.09		
320-31489-3	NAWC-091217-RW-029	2509210	1.84	6273970	2.09		
320-31489-4	NAWC-091217-FRB-029	2619610	1.84	6478781	2.09		
320-31489-5	NAWC-091217-RW-312	2499261	1.84	6593134	2.09		
320-31489-6	NAWC-091217-FRB-312	2612263	1.84	6435336	2.09		
320-31489-7	NAWC-091217-RW-141	2551724	1.84	6381647	2.09		
320-31489-8	NAWC-091217-FRB-141	2459724	1.84	6133899	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185410/13 Date Analyzed: 09/20/2017 07:40

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_050 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2165650	1.84	5591851	2.09		
UPPER LIMIT		3031910	2.34	7828591	2.59		
LOWER LIMIT		1515955	1.34	3914296	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-184653/1-A		2453694	1.84	6328167	2.09		
LCS 320-184653/2-A		2584758	1.84	6348829	2.09		
320-31489-1	NAWC-091217-RW-289	2447459	1.84	6406738	2.09		
320-31489-2	NAWC-091217-FRB-289	2514373	1.85	6300338	2.09		
320-31489-3	NAWC-091217-RW-029	2509210	1.84	6273970	2.09		
320-31489-4	NAWC-091217-FRB-029	2619610	1.84	6478781	2.09		
320-31489-5	NAWC-091217-RW-312	2499261	1.84	6593134	2.09		
320-31489-6	NAWC-091217-FRB-312	2612263	1.84	6435336	2.09		
320-31489-7	NAWC-091217-RW-141	2551724	1.84	6381647	2.09		
320-31489-8	NAWC-091217-FRB-141	2459724	1.84	6133899	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185411/13 Date Analyzed: 09/20/2017 07:40

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_050 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2165650	1.84	5591851	2.09		
UPPER LIMIT		3031910	2.34	7828591	2.59		
LOWER LIMIT		1515955	1.34	3914296	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-10	NAWC-091217-FRB-038	2474435	1.84	6053950	2.09		
320-31489-11	NAWC-091217-RW-315	2392232	1.84	6404955	2.09		
320-31489-11 MS	NAWC-091217-RW-315 MS	2386931	1.84	6215415	2.09		
320-31489-11 MSD	NAWC-091217-RW-315 MSD	2359481	1.84	6451817	2.09		
320-31489-12	NAWC-091217-FRB-315	2517989	1.84	6073560	2.09		
320-31489-13	NAWC-091217-RW-032	2324777	1.84	6126952	2.09		
320-31489-14	NAWC-091217-FRB-032	2637436	1.84	6735507	2.09		
320-31489-15	NAWC-091217-RW-300	2494391	1.84	6721558	2.09		
320-31489-16	NAWC-091217-FRB-300	2439474	1.84	6432248	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185411/25 Date Analyzed: 09/20/2017 08:37

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_062 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2222421	1.84	5821646	2.09		
UPPER LIMIT		3111389	2.34	8150304	2.59		
LOWER LIMIT		1555695	1.34	4075152	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-10	NAWC-091217-FRB-038	2474435	1.84	6053950	2.09		
320-31489-11	NAWC-091217-RW-315	2392232	1.84	6404955	2.09		
320-31489-11 MS	NAWC-091217-RW-315 MS	2386931	1.84	6215415	2.09		
320-31489-11 MSD	NAWC-091217-RW-315 MSD	2359481	1.84	6451817	2.09		
320-31489-12	NAWC-091217-FRB-315	2517989	1.84	6073560	2.09		
320-31489-13	NAWC-091217-RW-032	2324777	1.84	6126952	2.09		
320-31489-14	NAWC-091217-FRB-032	2637436	1.84	6735507	2.09		
320-31489-15	NAWC-091217-RW-300	2494391	1.84	6721558	2.09		
320-31489-16	NAWC-091217-FRB-300	2439474	1.84	6432248	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185468/1 Date Analyzed: 09/20/2017 14:21

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.20_537A_001 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1864090	1.89	4938119	2.15		
UPPER LIMIT		2609726	2.39	6913367	2.65		
LOWER LIMIT		1304863	1.39	3456683	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-9	NAWC-091217-RW-038	1918184	1.87	5497337	2.13		

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

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185468/9 Date Analyzed: 09/20/2017 14:59

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.20_537A_009 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1754947	1.87	4946062	2.12		
UPPER LIMIT		2456926	2.37	6924487	2.62		
LOWER LIMIT		1228463	1.37	3462243	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-9	NAWC-091217-RW-038	1918184	1.87	5497337	2.13		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-289 | Lab Sample ID: 320-31489-1

Matrix: Water | Lab File ID: 2017.09.19_537A_042.d

Analysis Method: 537 | Date Collected: 09/12/2017 07:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 256.1(mL) | Date Analyzed: 09/20/2017 07:02

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	6.4	J	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_042.d
Lims ID: 320-31489-A-1-A
Client ID: NAWC-091217-RW-289
Sample Type: Client
Inject. Date: 20-Sep-2017 07:02:50 ALS Bottle#: 32 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:51:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	210108	0.7768		182	
298.90 > 99.00	1.396	1.402	-0.006	1.000	141254		1.49(0.00-0.00)	262	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2239088	7.81		9615	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	316633	0.8652		130	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	99619	0.4322		15.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2447459	10.0		9996	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	367881	1.63		13.5	
413.00 > 169.00	1.844	1.856	-0.012	1.000	205855		1.79(0.00-0.00)	598	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.094	2.094	0.0	1.000	633370	3.04		165	M
499.00 > 99.00	2.094	2.094	0.0	1.000	110886		5.71(0.00-0.00)	68.3	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6406738	28.7		3526	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1545219	11.3		12869	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:17:34 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_042.d

Injection Date: 20-Sep-2017 07:02:50 Instrument ID: A8_N

Lims ID: 320-31489-A-1-A Lab Sample ID: 320-31489-1

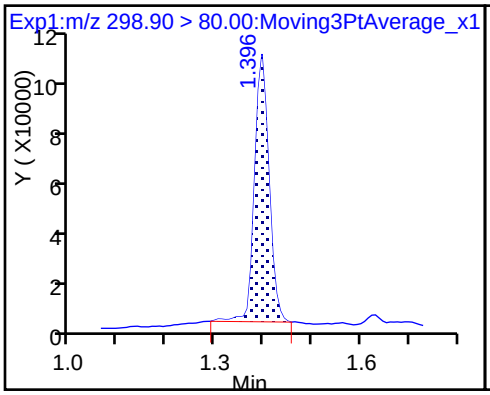
Client ID: NAWC-091217-RW-289

Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 5

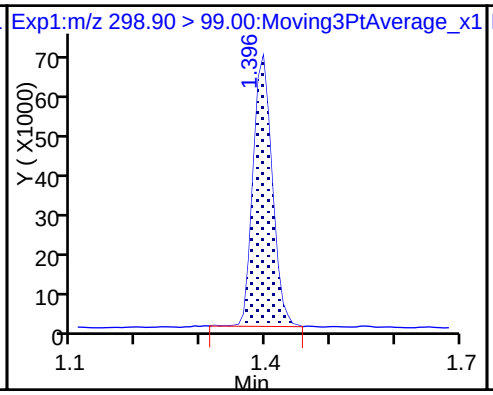
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

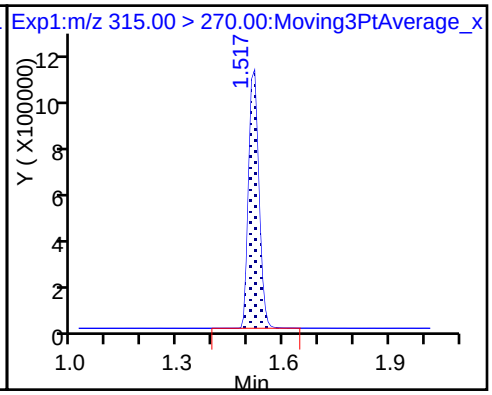
1 Perfluorobutanesulfonic acid



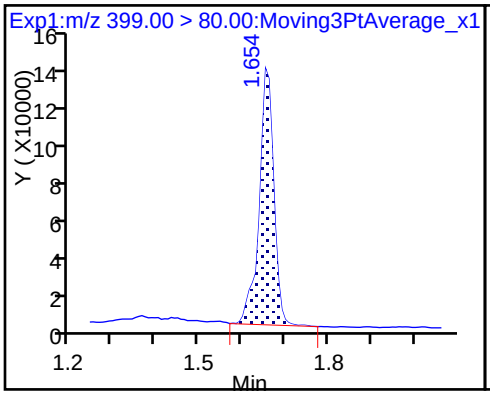
1 Perfluorobutanesulfonic acid



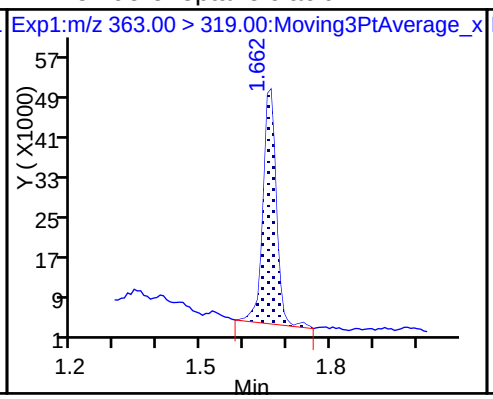
$ 2 13C2 PFHxA



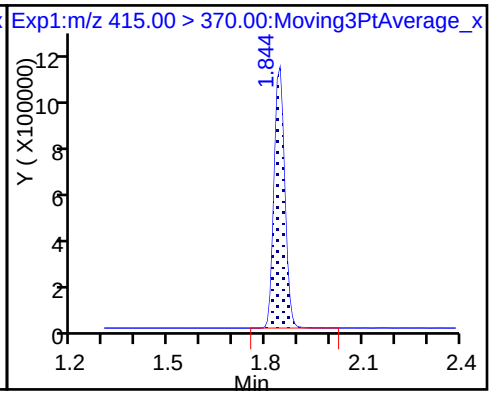
3 Perfluorohexanesulfonic acid



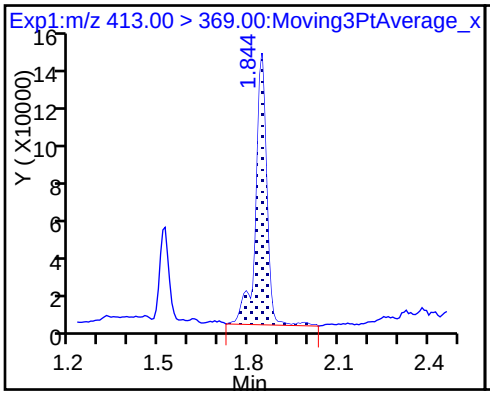
4 Perfluoroheptanoic acid



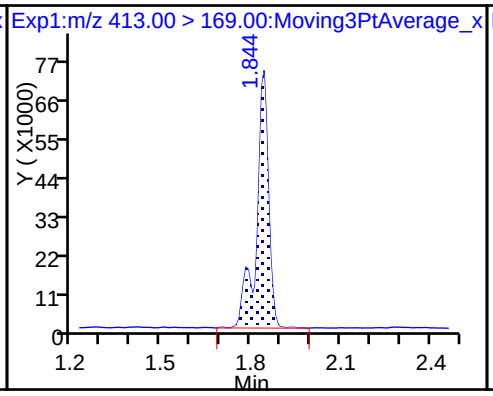
* 6 13C2-PFOA



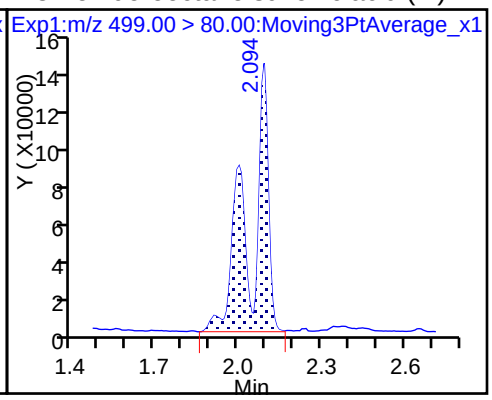
5 Perfluorooctanoic acid



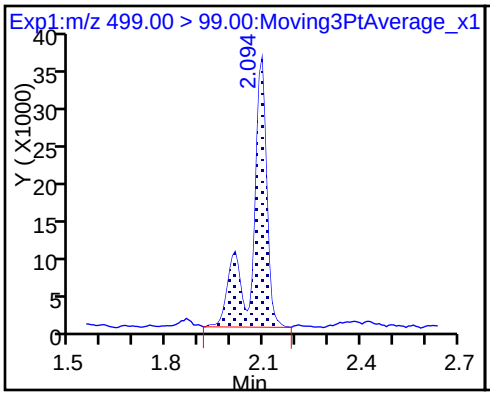
5 Perfluorooctanoic acid



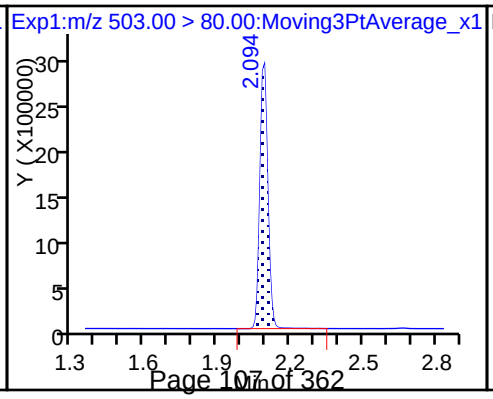
8 Perfluorooctane sulfonic acid (M)



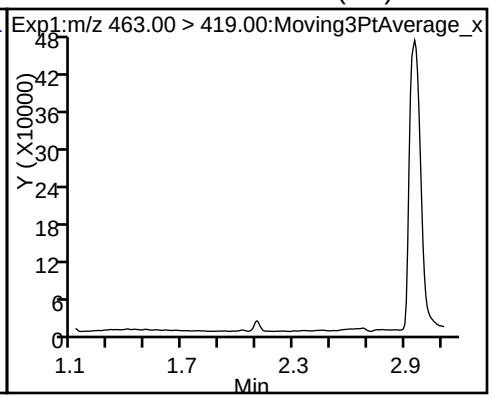
8 Perfluorooctane sulfonic acid



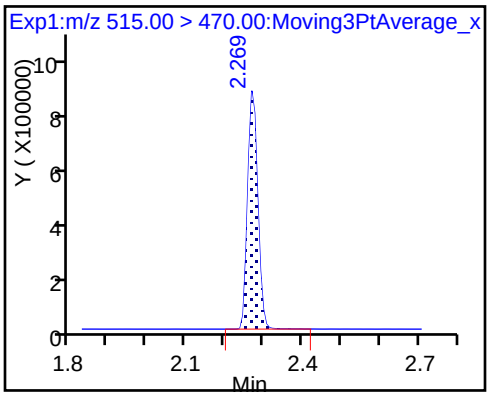
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_042.d
Lims ID: 320-31489-A-1-A
Client ID: NAWC-091217-RW-289
Sample Type: Client
Inject. Date: 20-Sep-2017 07:02:50 ALS Bottle#: 32 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:51:05

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.81	78.08
$ 10 13C2 PFDA	10.0	11.3	113.19

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

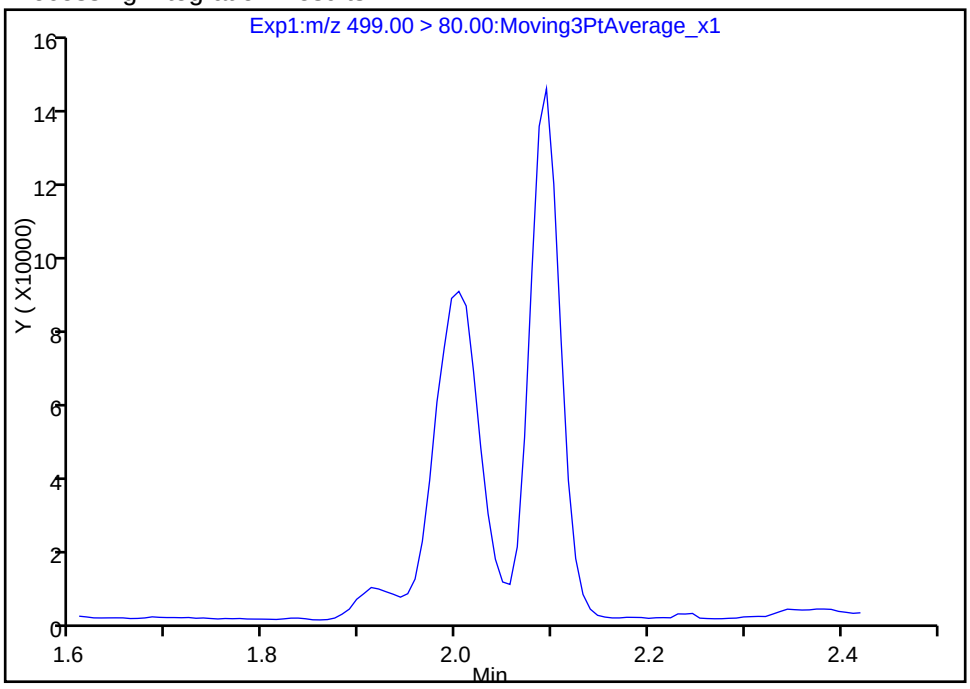
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_042.d				
Injection Date:	20-Sep-2017 07:02:50	Instrument ID:	A8_N		
Lims ID:	320-31489-A-1-A	Lab Sample ID:	320-31489-1		
Client ID:	NAWC-091217-RW-289				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

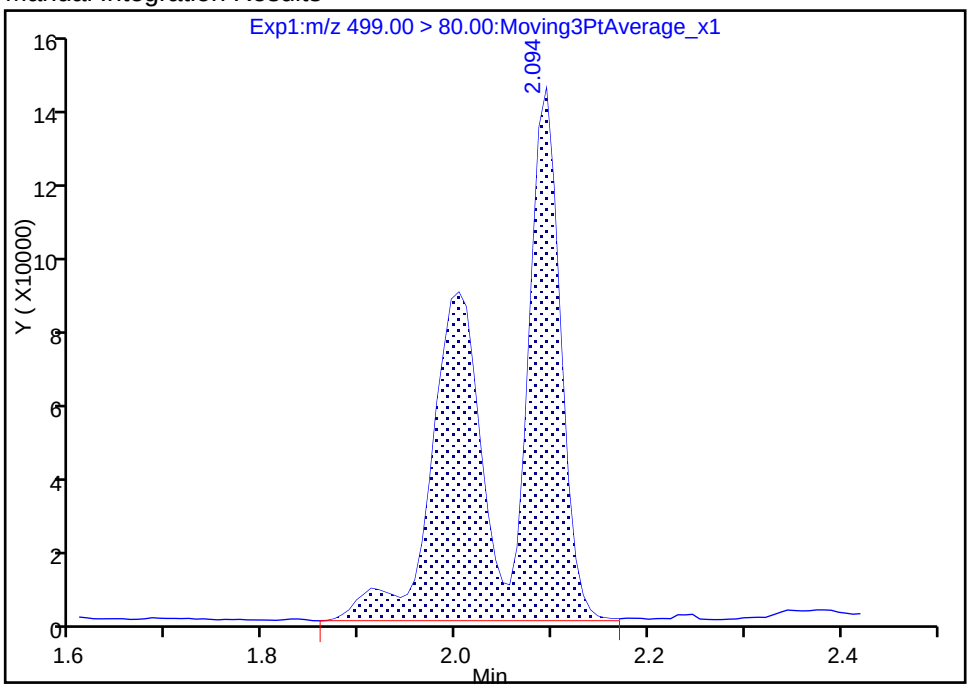
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 633370
Amount: 3.043151
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:50:34
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

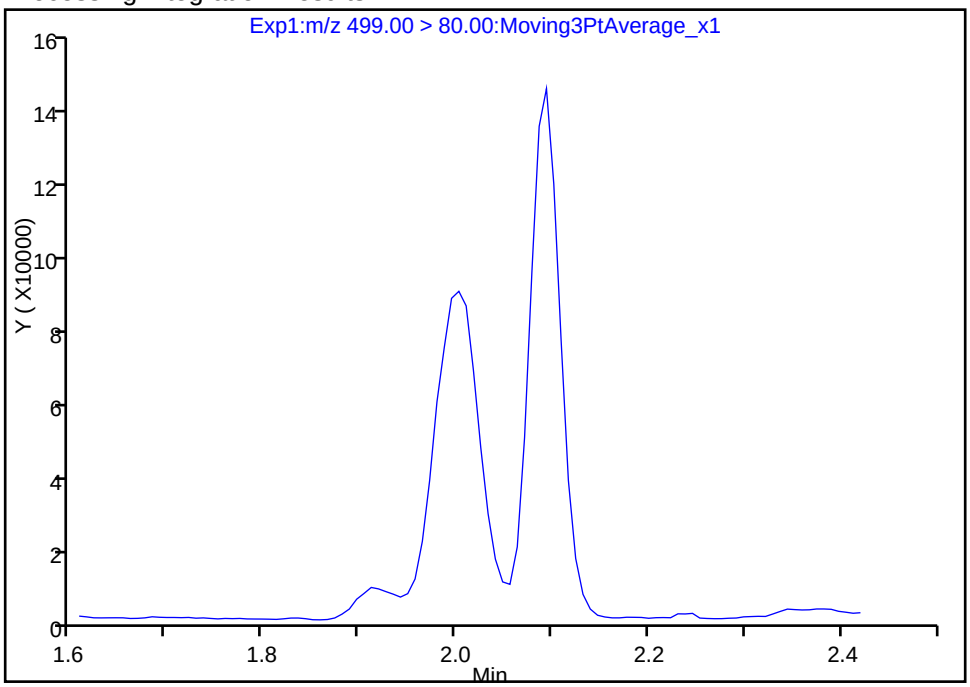
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_042.d				
Injection Date:	20-Sep-2017 07:02:50	Instrument ID:	A8_N		
Lims ID:	320-31489-A-1-A	Lab Sample ID:	320-31489-1		
Client ID:	NAWC-091217-RW-289				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

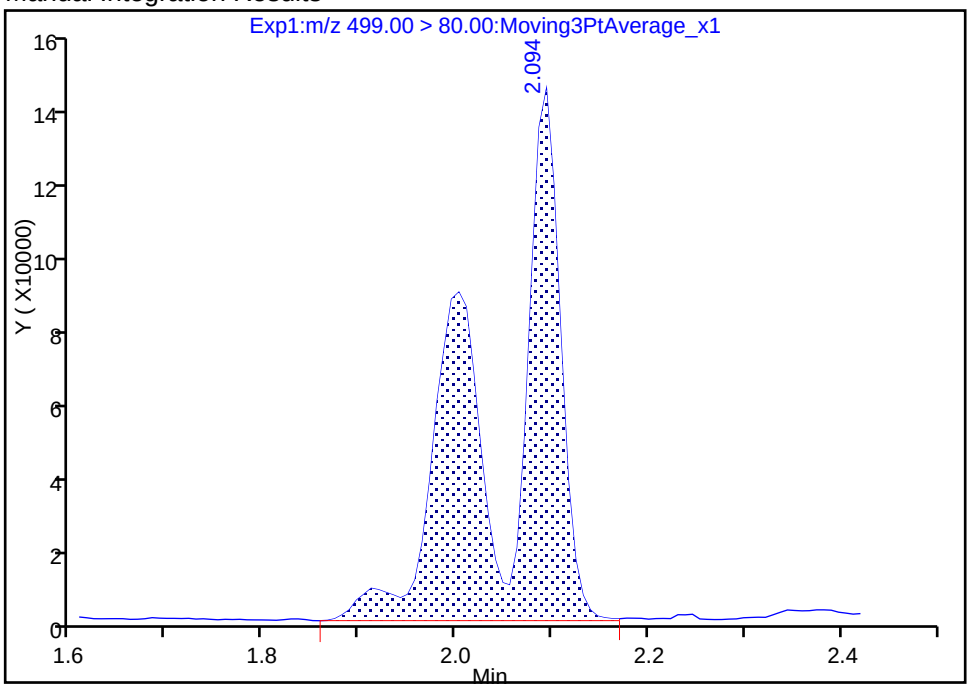
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.09
Area: 633370
Amount: 3.043151
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:50:46
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-289 | Lab Sample ID: 320-31489-2

Matrix: Water | Lab File ID: 2017.09.19_537A_043.d

Analysis Method: 537 | Date Collected: 09/12/2017 07:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254(mL) | Date Analyzed: 09/20/2017 07:07

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	89	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_043.d
Lims ID: 320-31489-A-2-A
Client ID: NAWC-091217-FRB-289
Sample Type: Client
Inject. Date: 20-Sep-2017 07:07:33 ALS Bottle#: 33 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2622351	8.90		12959	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2514373	10.0		10852	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6300338	28.7		5012	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1524728	10.9		13977	

Report Date: 20-Sep-2017 14:17:36 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_043.d

Injection Date: 20-Sep-2017 07:07:33 Instrument ID: A8_N

Lims ID: 320-31489-A-2-A Lab Sample ID: 320-31489-2

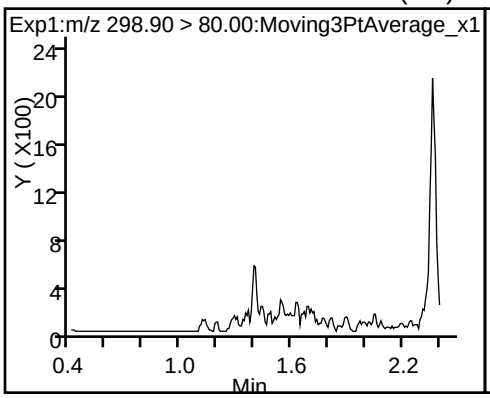
Client ID: NAWC-091217-FRB-289

Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 6

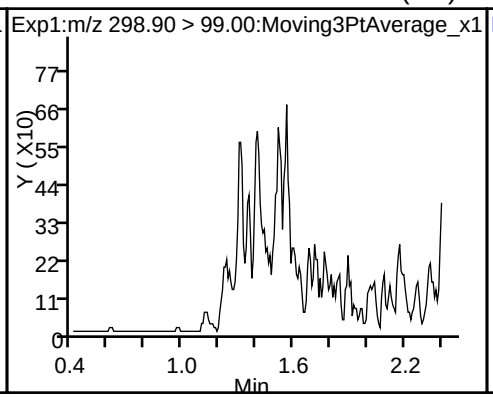
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

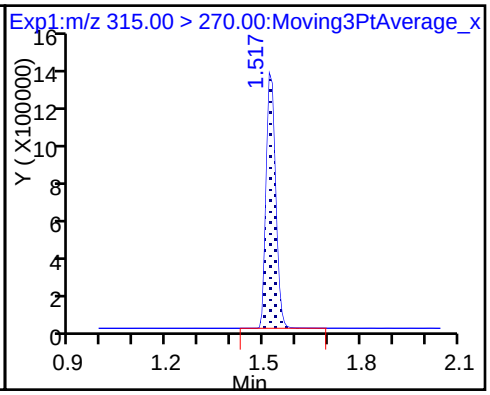
1 Perfluorobutanesulfonic acid (ND)



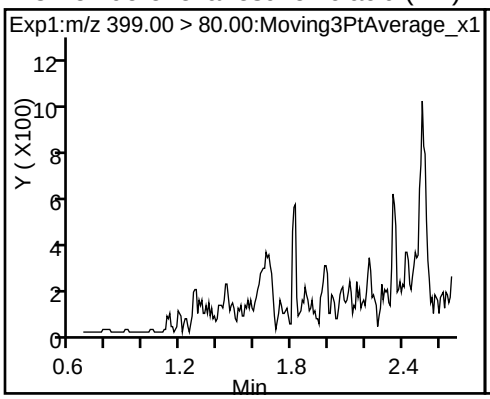
1 Perfluorobutanesulfonic acid (ND)



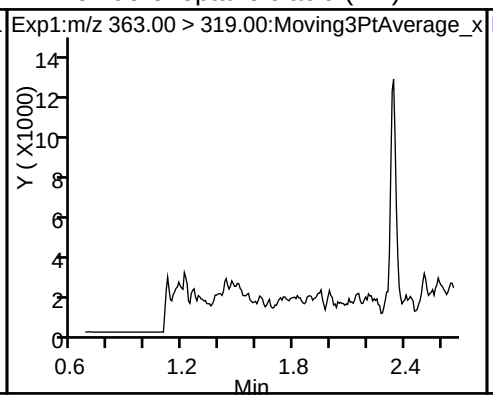
$ 2 13C2 PFHxA



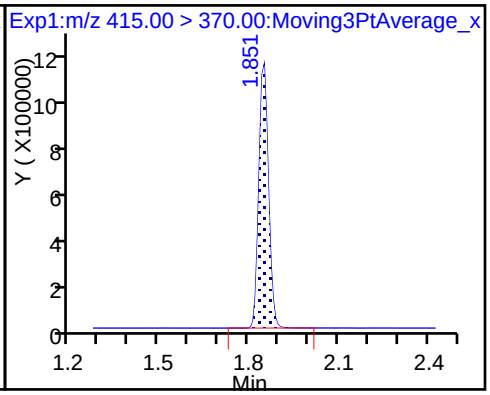
3 Perfluorohexanesulfonic acid (ND)



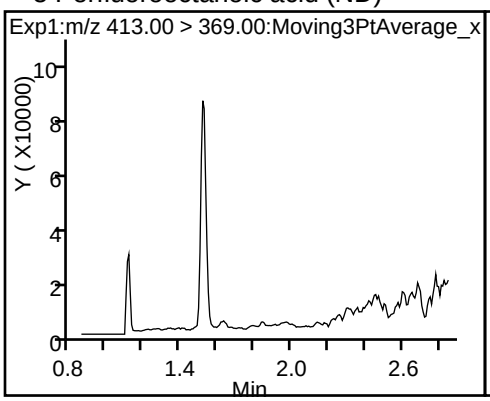
4 Perfluoroheptanoic acid (ND)



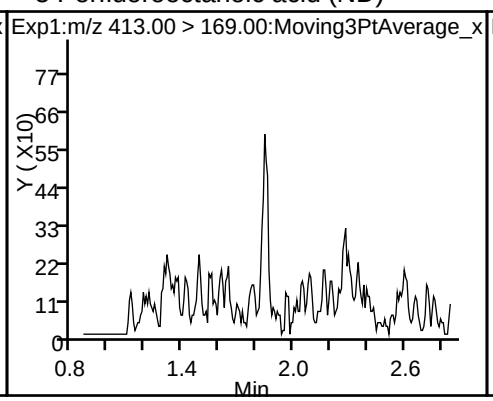
* 6 13C2-PFOA



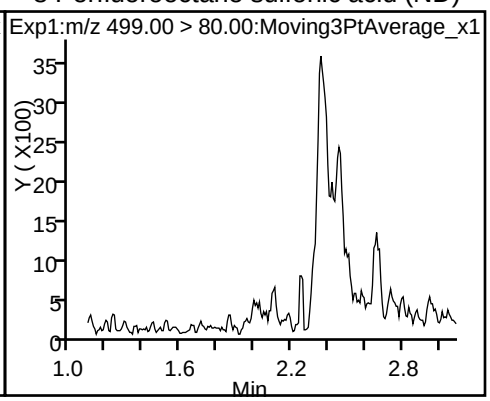
5 Perfluorooctanoic acid (ND)



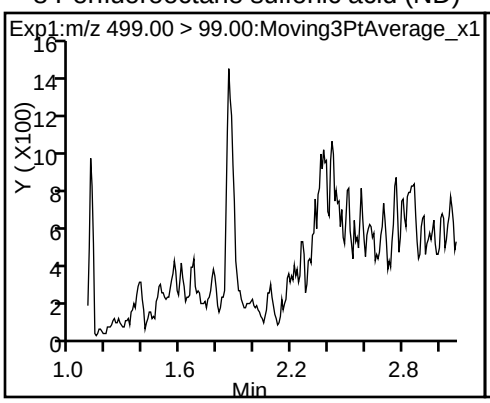
5 Perfluorooctanoic acid (ND)



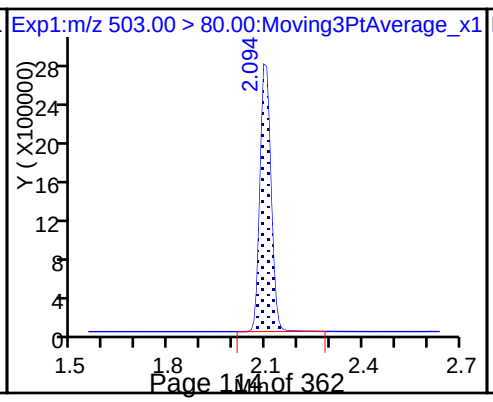
8 Perfluorooctane sulfonic acid (ND)



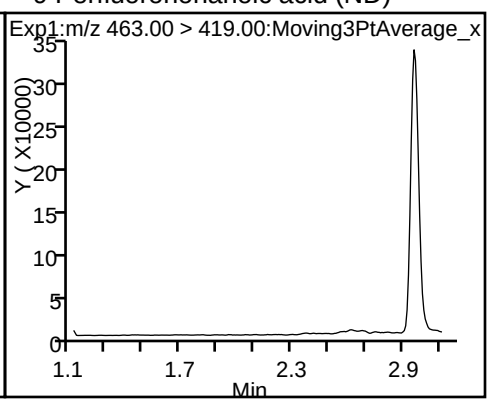
8 Perfluorooctane sulfonic acid (ND)



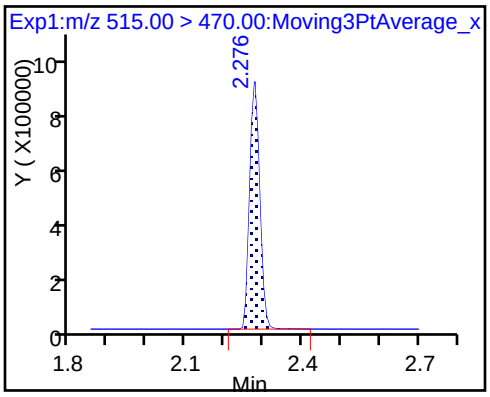
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_043.d				
Lims ID:	320-31489-A-2-A				
Client ID:	NAWC-091217-FRB-289				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 07:07:33	ALS Bottle#:	33	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-2-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:22	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.90	89.01
$ 10 13C2 PFDA	10.0	10.9	108.72

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-029 | Lab Sample ID: 320-31489-3

Matrix: Water | Lab File ID: 2017.09.19_537A_044.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:05

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.4(mL) | Date Analyzed: 09/20/2017 07:12

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	18	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.5	J	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.1	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	71		70-130
STL00996	13C2 PFDA	127		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_044.d
Lims ID: 320-31489-A-3-A
Client ID: NAWC-091217-RW-029
Sample Type: Client
Inject. Date: 20-Sep-2017 07:12:17 ALS Bottle#: 34 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:52:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	339413	1.28		224	
298.90 > 99.00	1.396	1.402	-0.006	1.000	218270		1.56(0.00-0.00)	341	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2074315	7.06		8688	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	607862	1.70		206	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	314957	1.33		30.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2509210	10.0		11624	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	1071351	4.64		39.0	
413.00 > 169.00	1.844	1.856	-0.012	1.000	617484		1.74(0.00-0.00)	1702	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.102	2.094	0.008	1.000	1124033	5.51		118	M
499.00 > 99.00	2.094	2.094	0.0	0.996	187152		6.01(0.00-0.00)	108	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6273970	28.7		3181	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1774593	12.7		14304	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:17:38 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_044.d

Injection Date: 20-Sep-2017 07:12:17 Instrument ID: A8_N

Lims ID: 320-31489-A-3-A Lab Sample ID: 320-31489-3

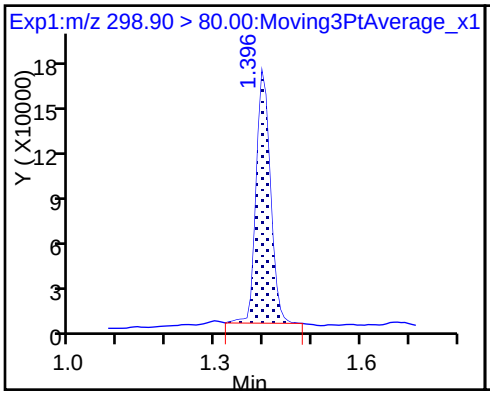
Client ID: NAWC-091217-RW-029

Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 7

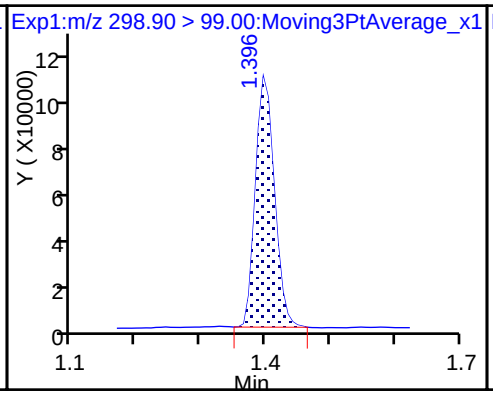
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

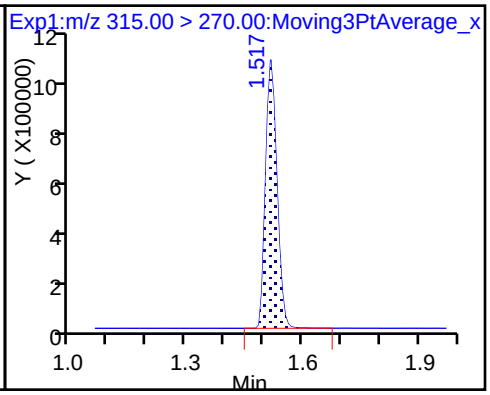
1 Perfluorobutanesulfonic acid



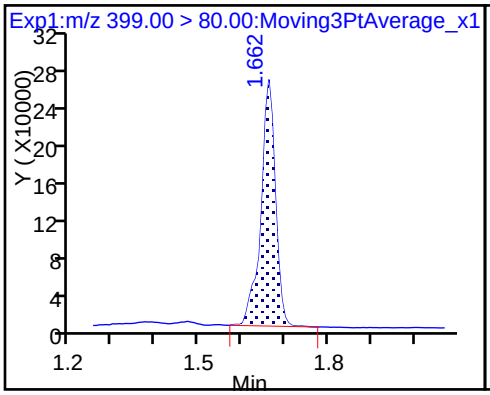
1 Perfluorobutanesulfonic acid



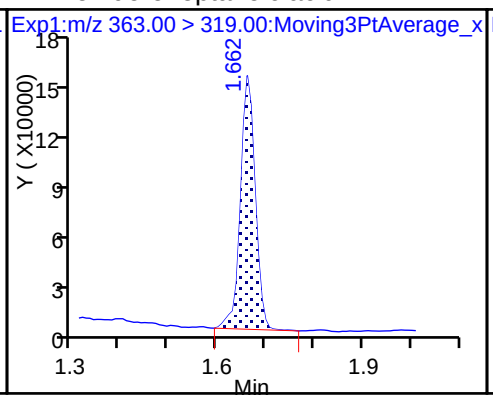
$ 2 13C2 PFHxA



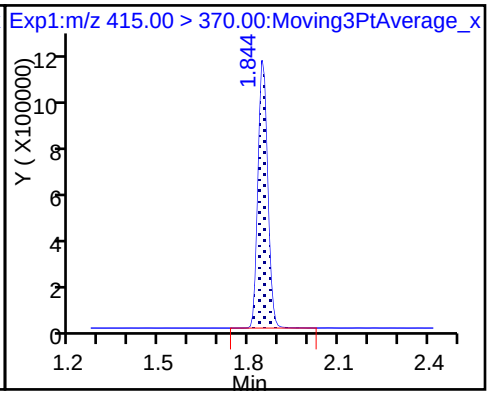
3 Perfluorohexanesulfonic acid



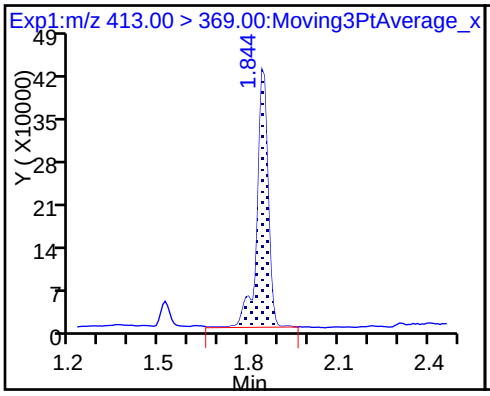
4 Perfluoroheptanoic acid



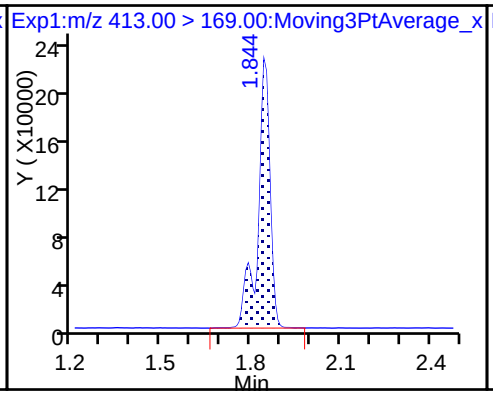
* 6 13C2-PFOA



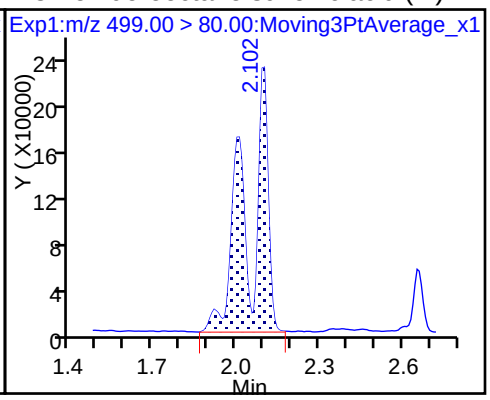
5 Perfluorooctanoic acid



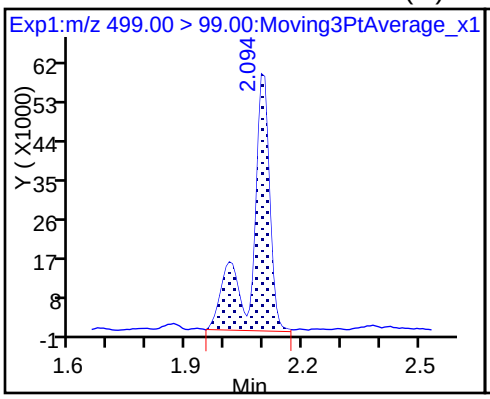
5 Perfluorooctanoic acid



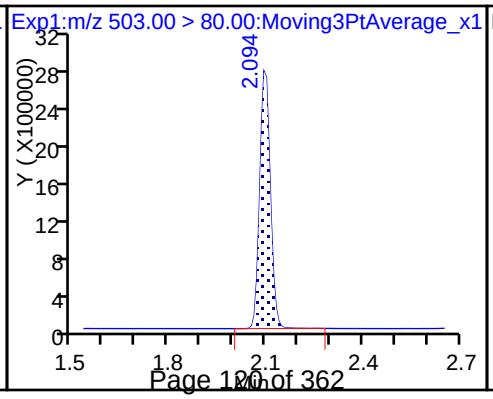
8 Perfluorooctane sulfonic acid (M)



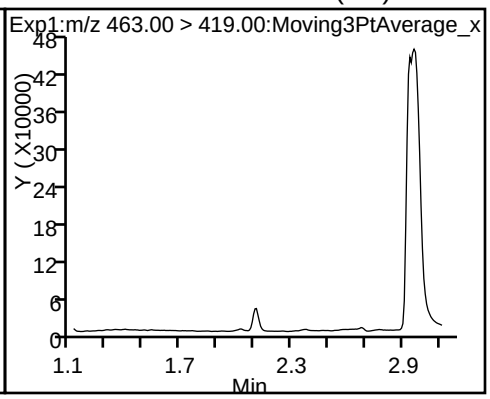
8 Perfluorooctane sulfonic acid (M)



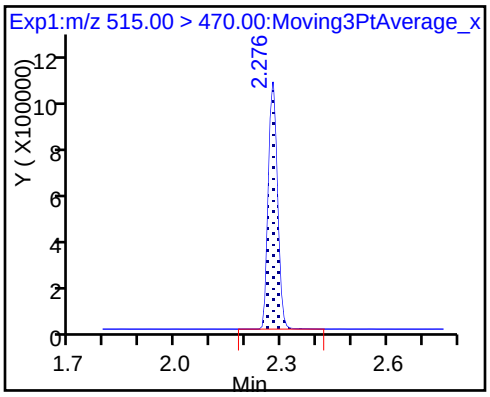
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X100000)
12
10
8
6
4
2
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_044.d
Lims ID: 320-31489-A-3-A
Client ID: NAWC-091217-RW-029
Sample Type: Client
Inject. Date: 20-Sep-2017 07:12:17 ALS Bottle#: 34 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:52:10

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.06	70.55
$ 10 13C2 PFDA	10.0	12.7	126.80

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

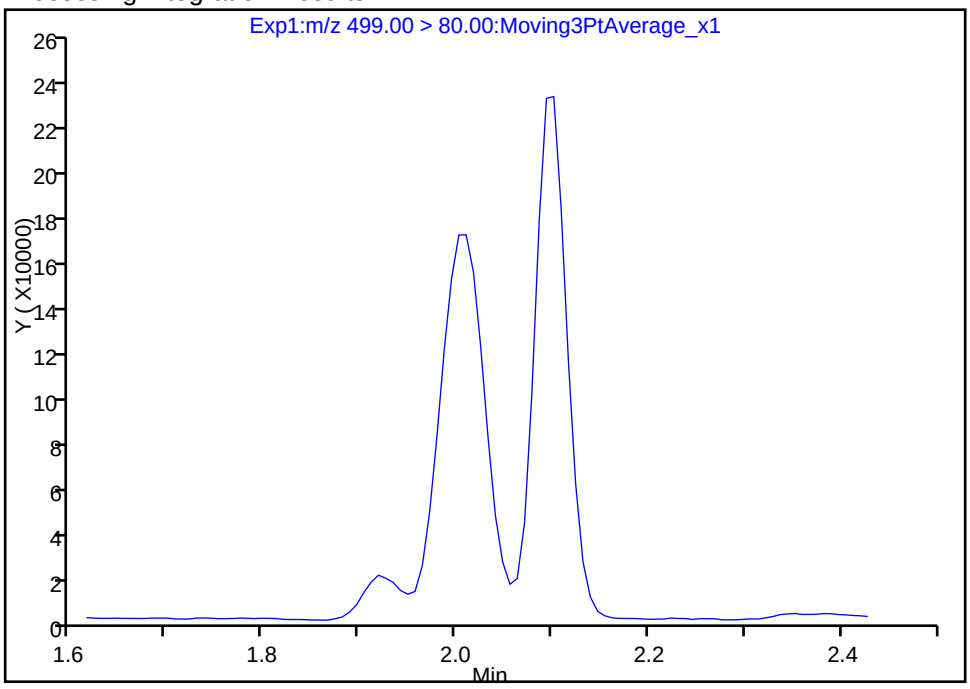
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_044.d				
Injection Date:	20-Sep-2017 07:12:17	Instrument ID:	A8_N		
Lims ID:	320-31489-A-3-A	Lab Sample ID:	320-31489-3		
Client ID:	NAWC-091217-RW-029				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

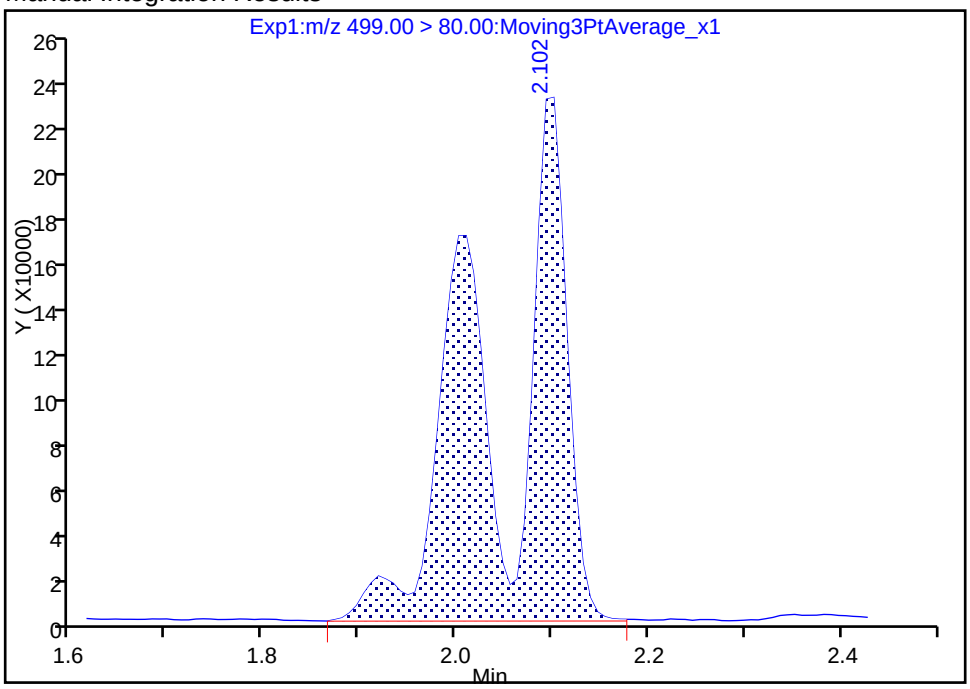
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1124033
Amount: 5.514925
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:51:18
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_044.d

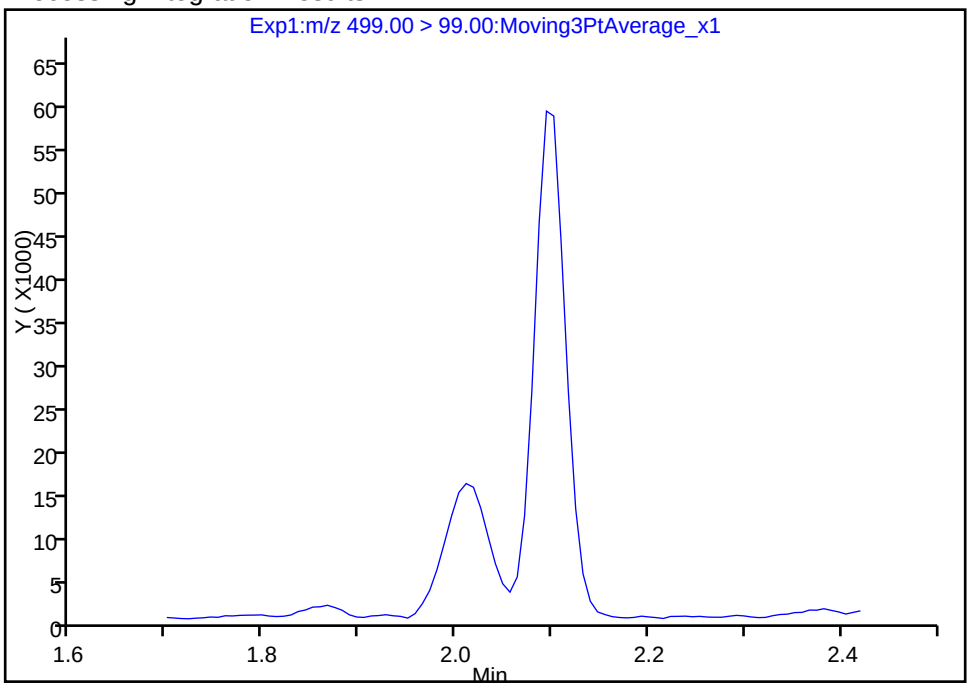
Injection Date:	20-Sep-2017 07:12:17	Instrument ID:	A8_N		
Lims ID:	320-31489-A-3-A	Lab Sample ID:	320-31489-3		
Client ID:	NAWC-091217-RW-029				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

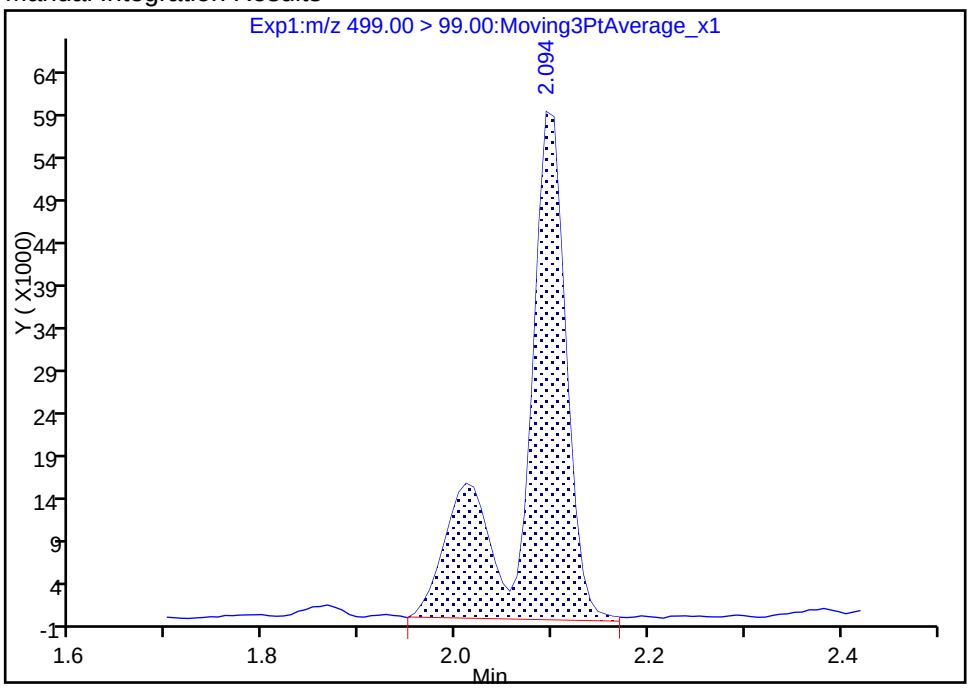
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 187152
Amount: 5.514925
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:51:47
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_044.d

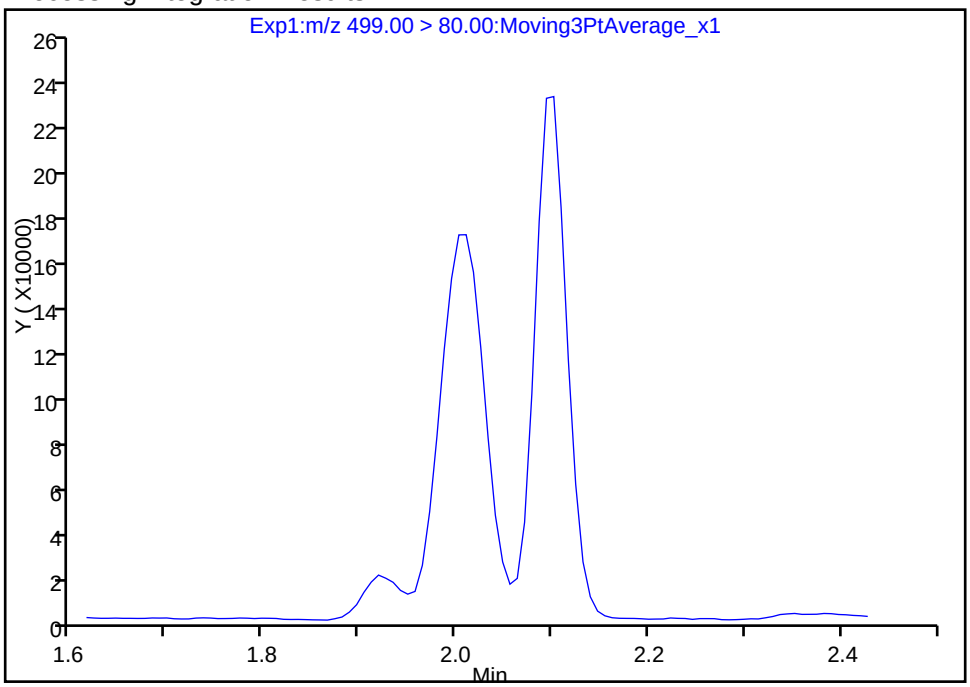
Injection Date:	20-Sep-2017 07:12:17	Instrument ID:	A8_N		
Lims ID:	320-31489-A-3-A	Lab Sample ID:	320-31489-3		
Client ID:	NAWC-091217-RW-029				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

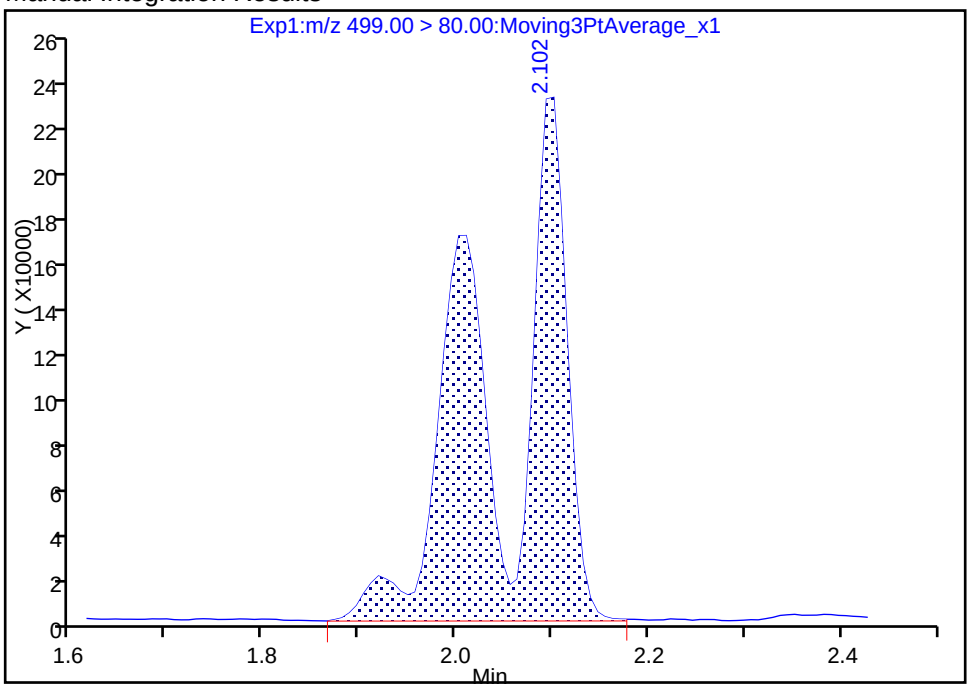
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.10
Area: 1124033
Amount: 5.514925
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:51:47
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-029 | Lab Sample ID: 320-31489-4

Matrix: Water | Lab File ID: 2017.09.19_537A_045.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:00

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254.9(mL) | Date Analyzed: 09/20/2017 07:17

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_045.d
Lims ID: 320-31489-A-4-A
Client ID: NAWC-091217-FRB-029
Sample Type: Client
Inject. Date: 20-Sep-2017 07:17:02 ALS Bottle#: 35 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2759692	8.99		12199	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2619610	10.0		10682	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6478781	28.7		5440	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1589119	10.9		11725	

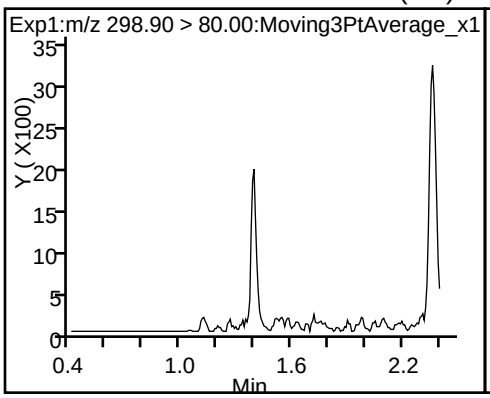
Report Date: 20-Sep-2017 14:17:39 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

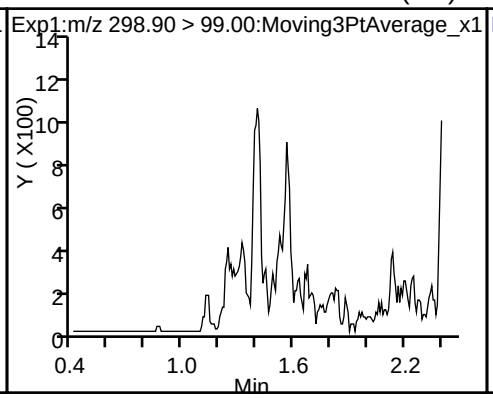
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_045.d

Injection Date:	20-Sep-2017 07:17:02	Instrument ID:	A8_N		
Lims ID:	320-31489-A-4-A	Lab Sample ID:	320-31489-4		
Client ID:	NAWC-091217-FRB-029				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

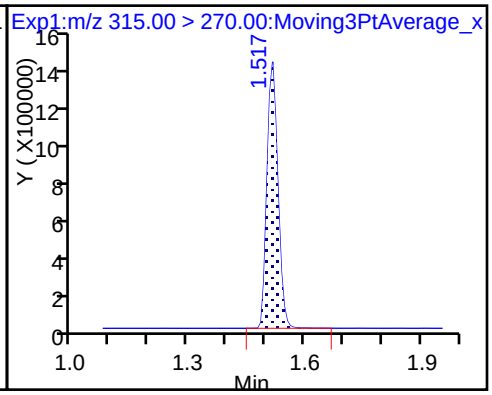
1 Perfluorobutanesulfonic acid (ND)



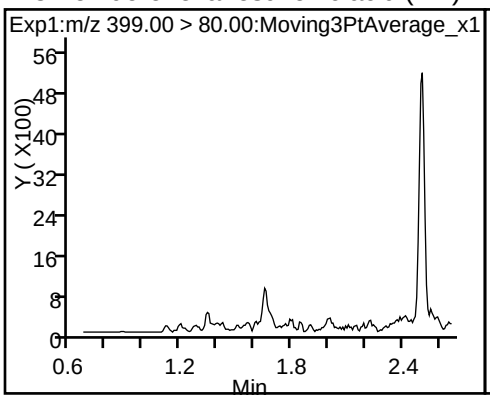
1 Perfluorobutanesulfonic acid (ND)



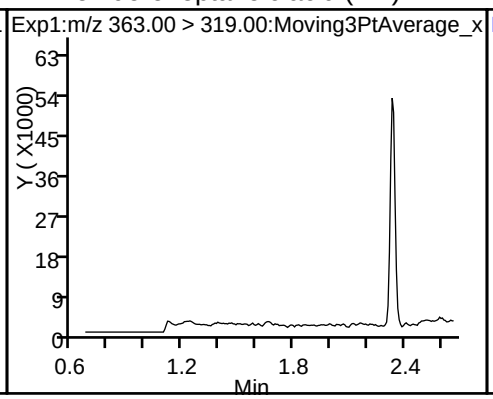
$ 2 13C2 PFHxA



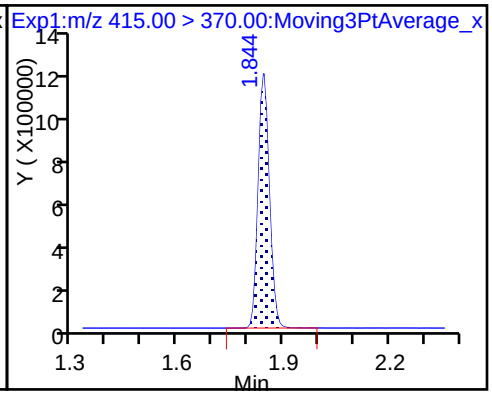
3 Perfluorohexanesulfonic acid (ND)



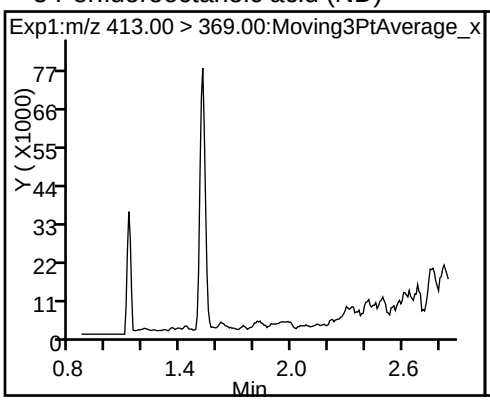
4 Perfluoroheptanoic acid (ND)



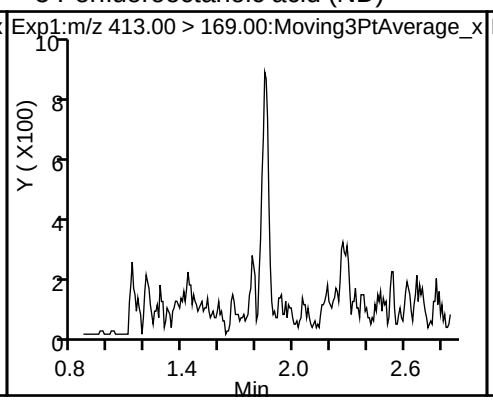
* 6 13C2-PFOA



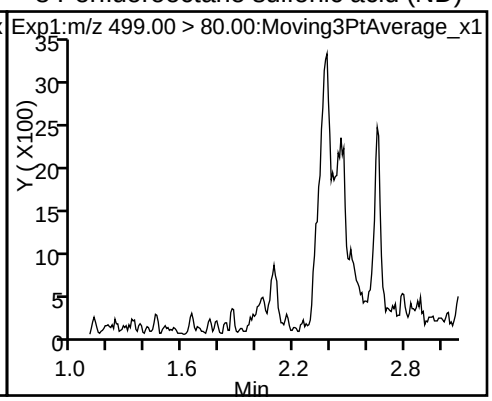
5 Perfluorooctanoic acid (ND)



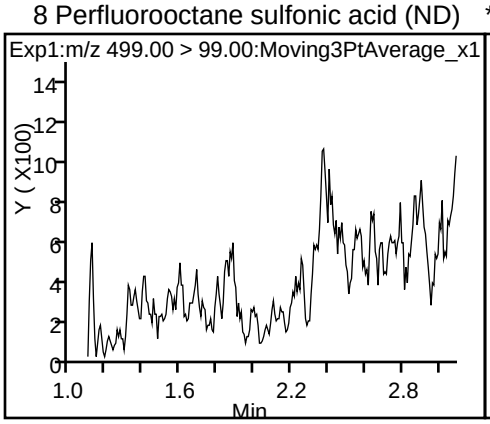
5 Perfluorooctanoic acid (ND)



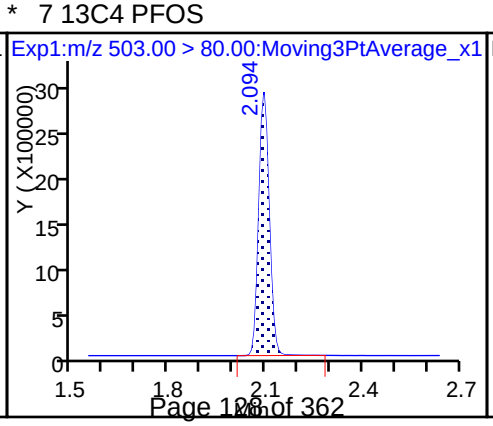
8 Perfluorooctane sulfonic acid (ND)



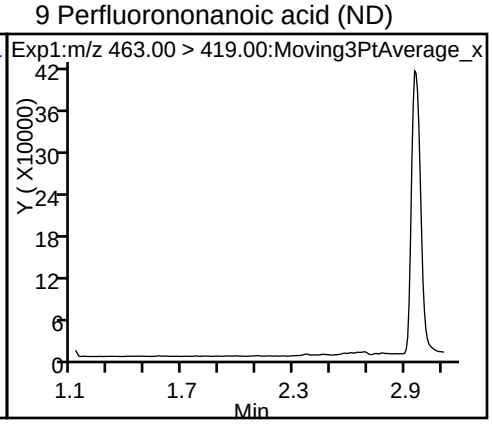
8 Perfluorooctane sulfonic acid (ND)



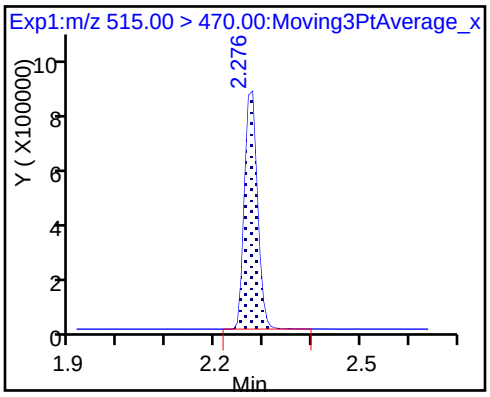
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X100000)
10
8
6
4
2
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_045.d				
Lims ID:	320-31489-A-4-A				
Client ID:	NAWC-091217-FRB-029				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 07:17:02	ALS Bottle#:	35	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-4-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:22	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.99	89.91
$ 10 13C2 PFDA	10.0	10.9	108.76

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-312 | Lab Sample ID: 320-31489-5

Matrix: Water | Lab File ID: 2017.09.19_537A_046.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 252.7(mL) | Date Analyzed: 09/20/2017 07:21

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	17	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	75		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_046.d
Lims ID: 320-31489-A-5-A
Client ID: NAWC-091217-RW-312
Sample Type: Client
Inject. Date: 20-Sep-2017 07:21:46 ALS Bottle#: 36 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:53:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	526303	1.90		312	
298.90 > 99.00	1.396	1.402	-0.006	1.000	363921		1.45(0.00-0.00)	548	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2204079	7.53		8381	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	545901	1.45		162	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	447148	1.90		60.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2499261	10.0		9278	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	982624	4.28		37.5	
413.00 > 169.00	1.844	1.856	-0.012	1.000	556400		1.77(0.00-0.00)	1550	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.102	2.094	0.008	1.000	896844	4.19		213	M
499.00 > 99.00	2.094	2.094	0.0	0.996	152730		5.87(0.00-0.00)	85.4	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6593134	28.7		2887	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	116804	0.7516		2.8	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1447636	10.4		11549	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:17:40 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_046.d

Injection Date: 20-Sep-2017 07:21:46 Instrument ID: A8_N

Lims ID: 320-31489-A-5-A Lab Sample ID: 320-31489-5

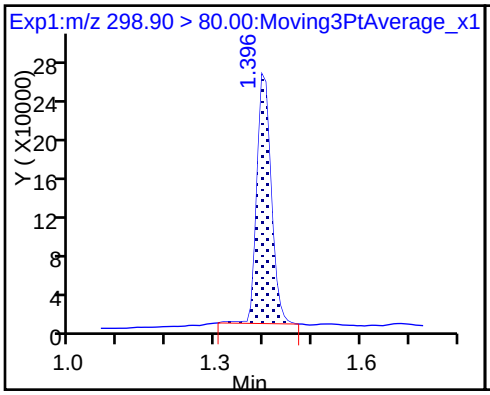
Client ID: NAWC-091217-RW-312

Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 9

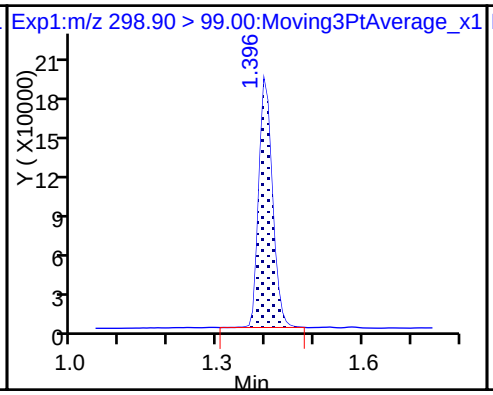
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

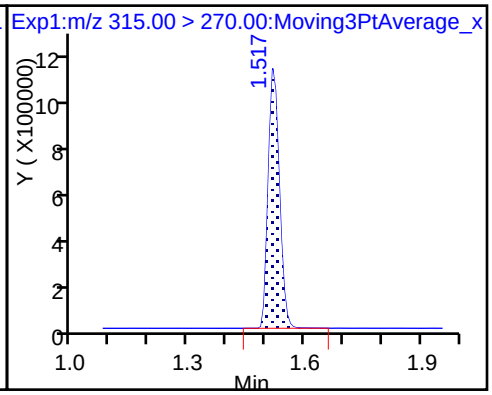
1 Perfluorobutanesulfonic acid



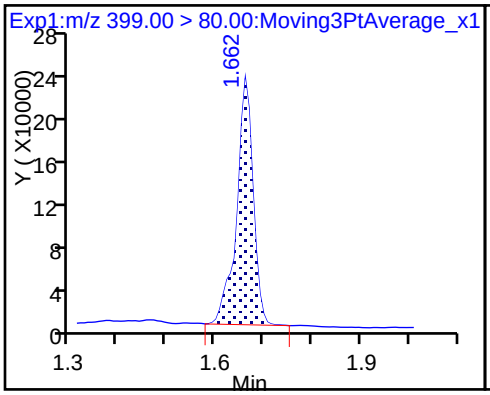
1 Perfluorobutanesulfonic acid



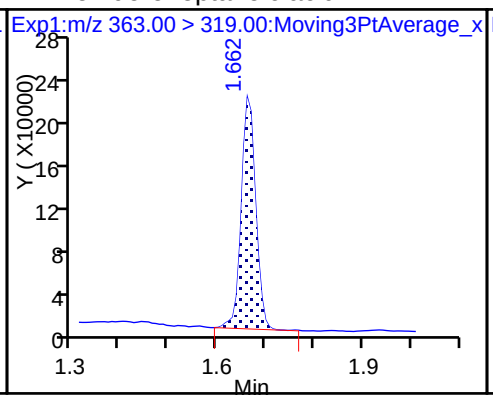
$ 2 13C2 PFHxA



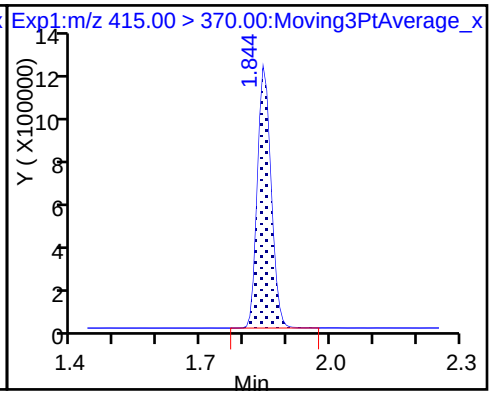
3 Perfluorohexanesulfonic acid



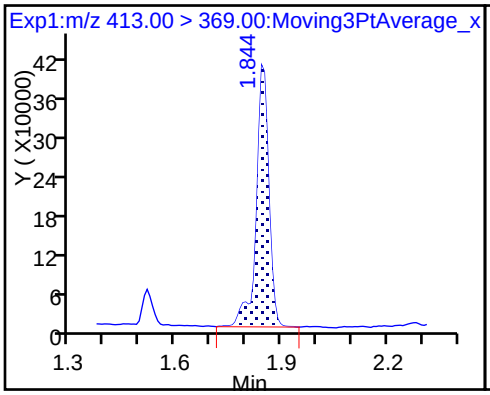
4 Perfluoroheptanoic acid



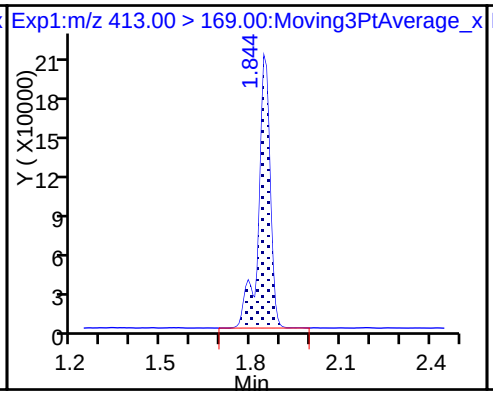
* 6 13C2-PFOA



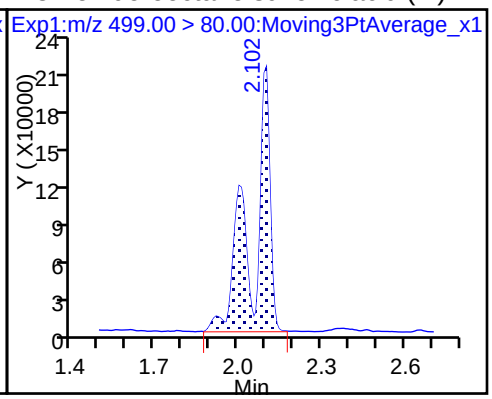
5 Perfluorooctanoic acid



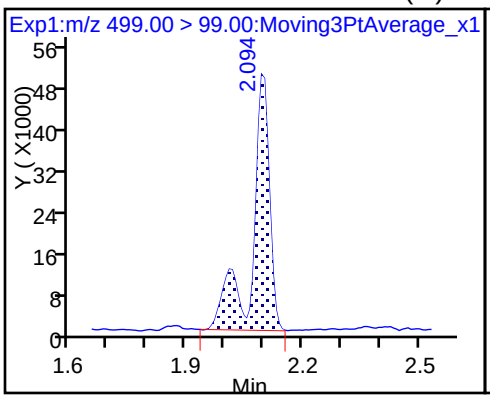
5 Perfluorooctanoic acid



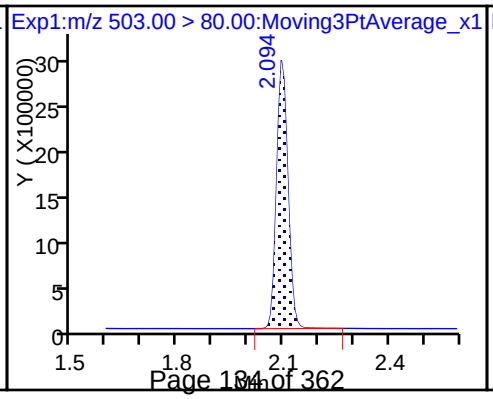
8 Perfluorooctane sulfonic acid (M)



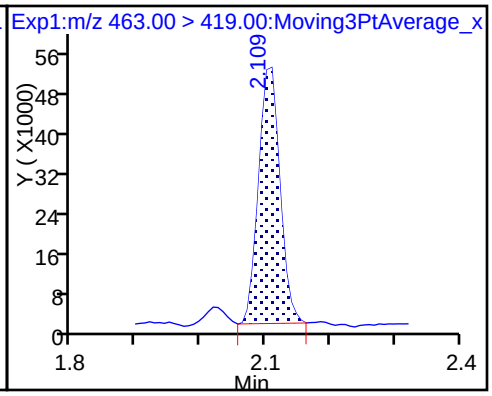
8 Perfluorooctane sulfonic acid (M)



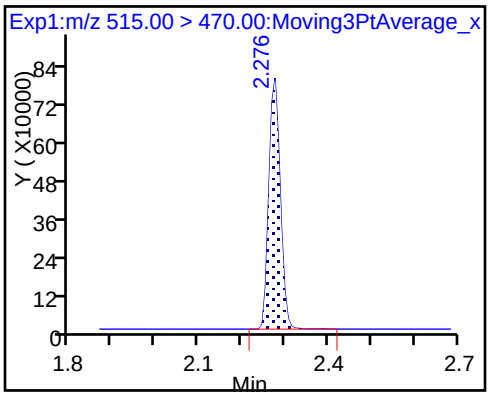
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
84
72
60
48
36
24
12
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_046.d				
Lims ID:	320-31489-A-5-A				
Client ID:	NAWC-091217-RW-312				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 07:21:46	ALS Bottle#:	36	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-5-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:22	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

First Level Reviewer: barnettj Date: 20-Sep-2017 13:53:14

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.53	75.26
$ 10 13C2 PFDA	10.0	10.4	103.85

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

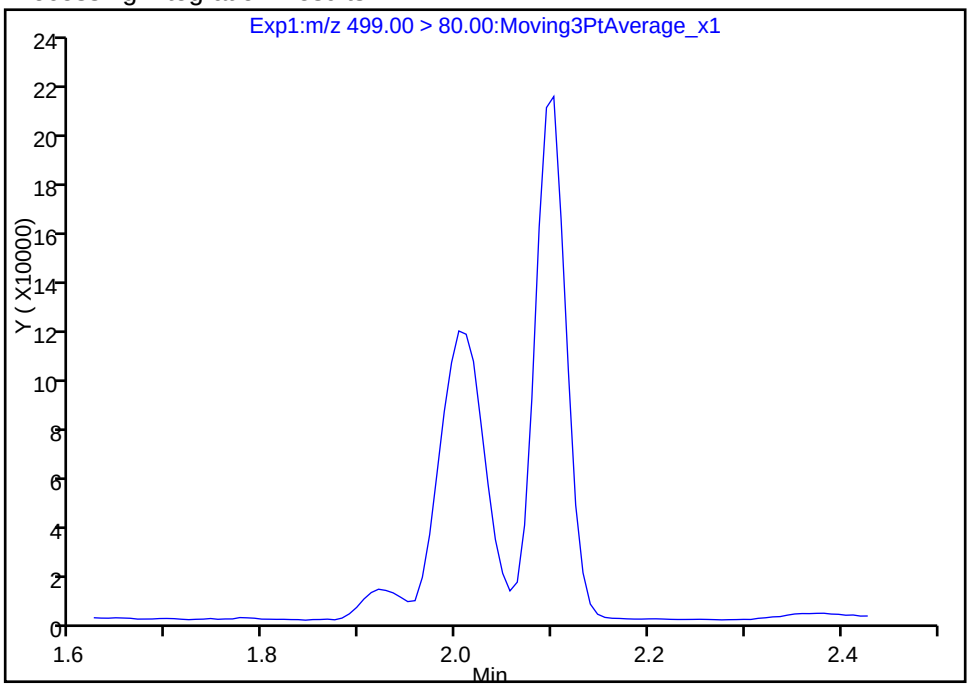
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_046.d				
Injection Date:	20-Sep-2017 07:21:46	Instrument ID:	A8_N		
Lims ID:	320-31489-A-5-A	Lab Sample ID:	320-31489-5		
Client ID:	NAWC-091217-RW-312				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

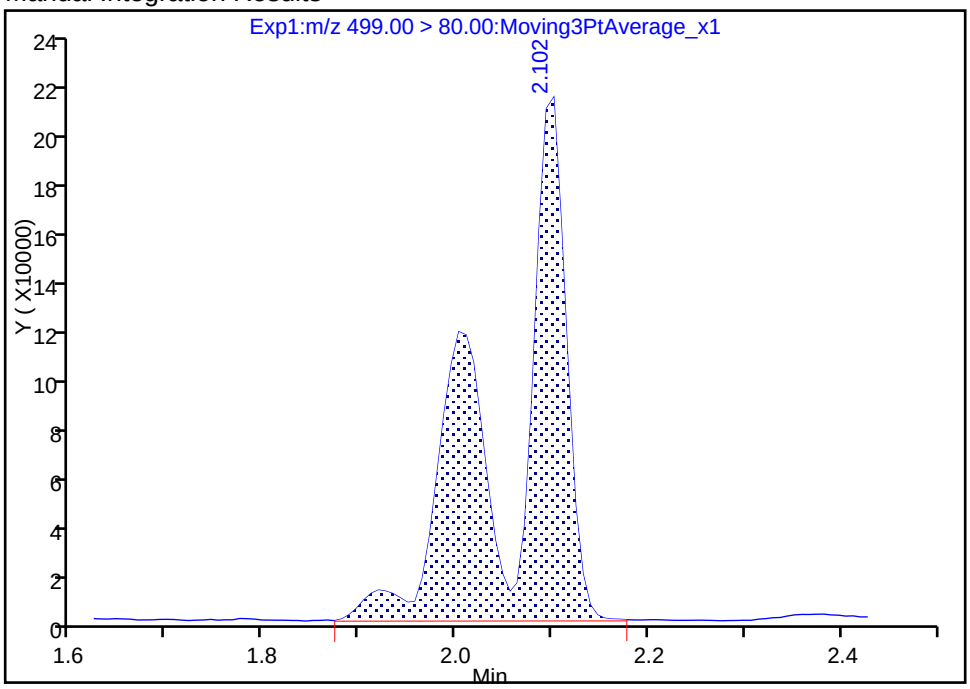
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 896844
Amount: 4.187241
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:52:31
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

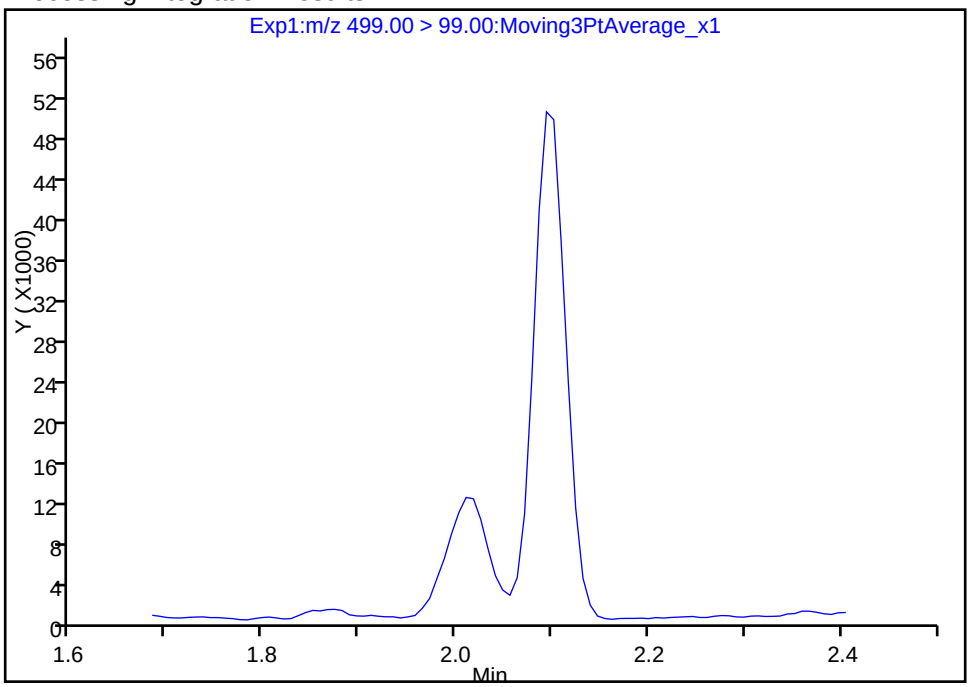
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_046.d				
Injection Date:	20-Sep-2017 07:21:46	Instrument ID:	A8_N		
Lims ID:	320-31489-A-5-A	Lab Sample ID:	320-31489-5		
Client ID:	NAWC-091217-RW-312				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

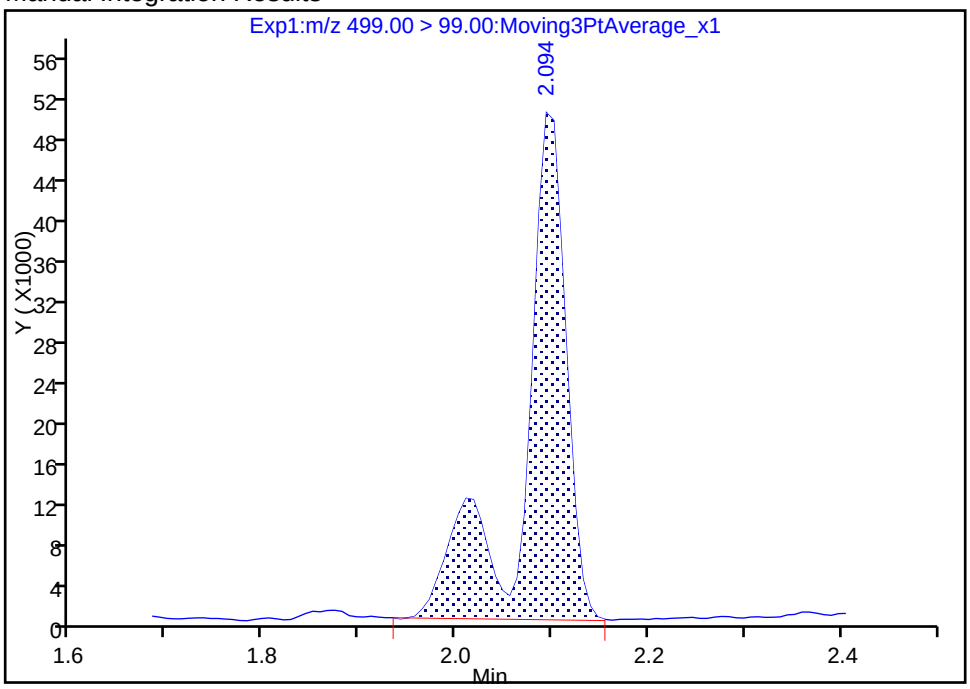
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 152730
Amount: 4.187241
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:52:54
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_046.d

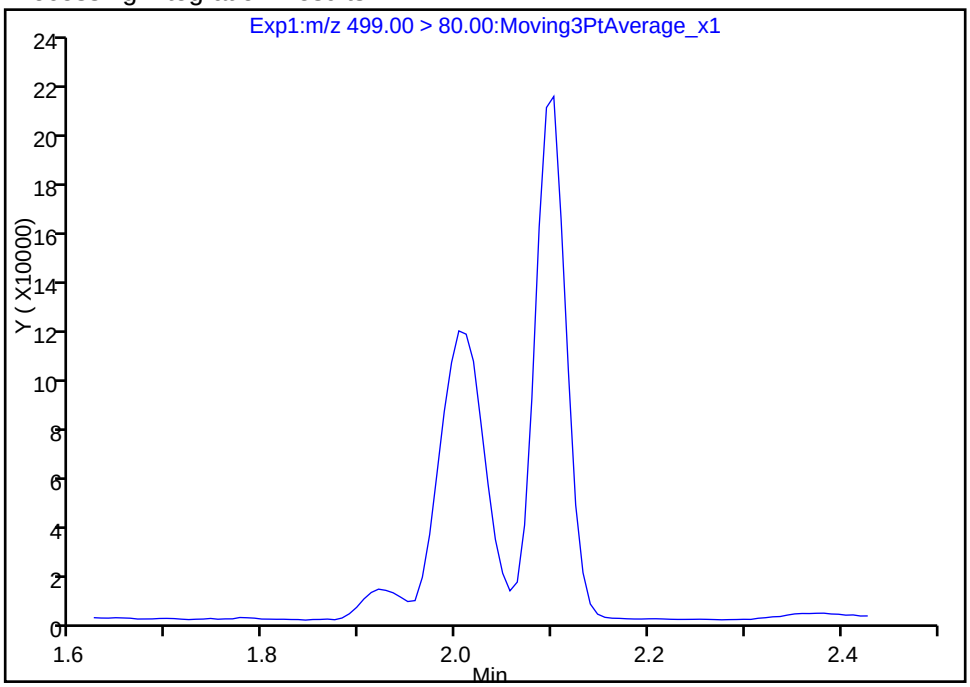
Injection Date:	20-Sep-2017 07:21:46	Instrument ID:	A8_N		
Lims ID:	320-31489-A-5-A	Lab Sample ID:	320-31489-5		
Client ID:	NAWC-091217-RW-312				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

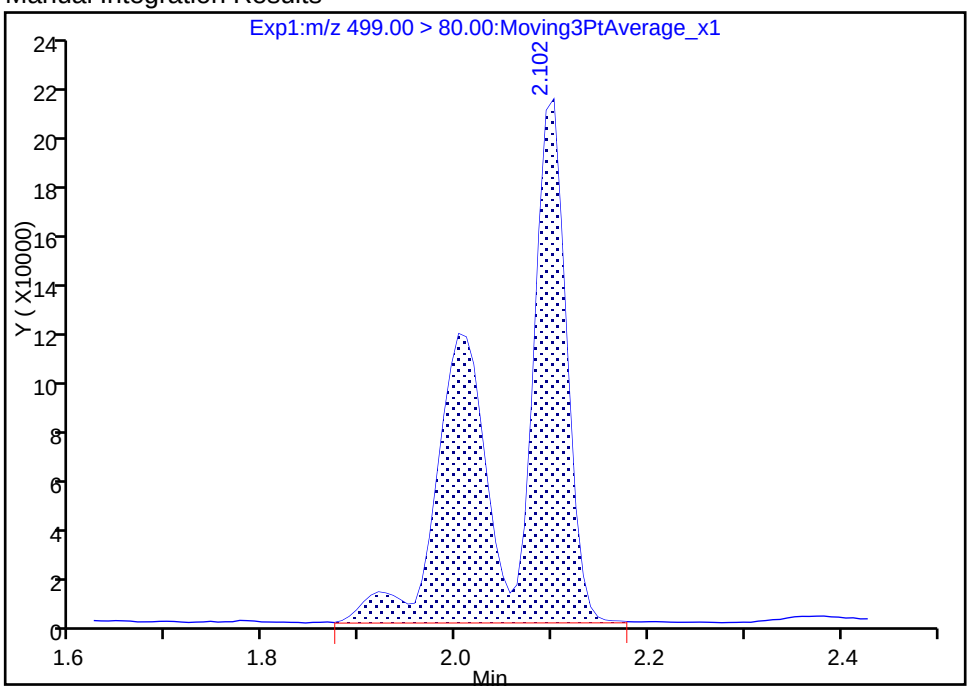
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.10
Area: 896844
Amount: 4.187241
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:52:54
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-312 | Lab Sample ID: 320-31489-6

Matrix: Water | Lab File ID: 2017.09.19_537A_047.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 255.6(mL) | Date Analyzed: 09/20/2017 07:26

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_047.d
Lims ID: 320-31489-A-6-A
Client ID: NAWC-091217-FRB-312
Sample Type: Client
Inject. Date: 20-Sep-2017 07:26:31 ALS Bottle#: 37 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2764373	9.03		10469	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2612263	10.0		9388	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6435336	28.7		3550	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1695717	11.6		15087	

Report Date: 20-Sep-2017 14:17:42 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_047.d

Injection Date: 20-Sep-2017 07:26:31 Instrument ID: A8_N

Lims ID: 320-31489-A-6-A Lab Sample ID: 320-31489-6

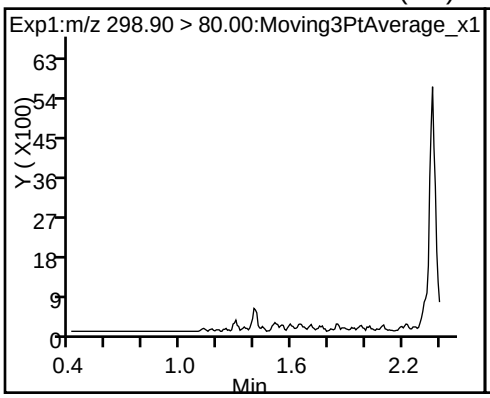
Client ID: NAWC-091217-FRB-312

Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 10

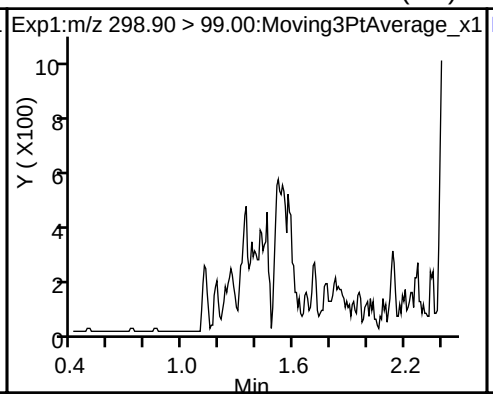
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

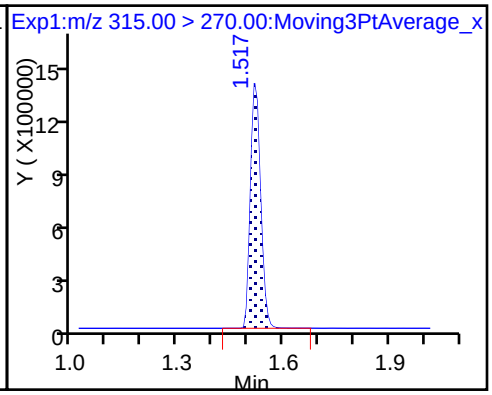
1 Perfluorobutanesulfonic acid (ND)



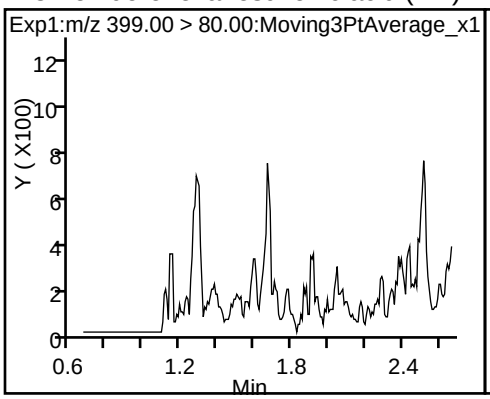
1 Perfluorobutanesulfonic acid (ND)



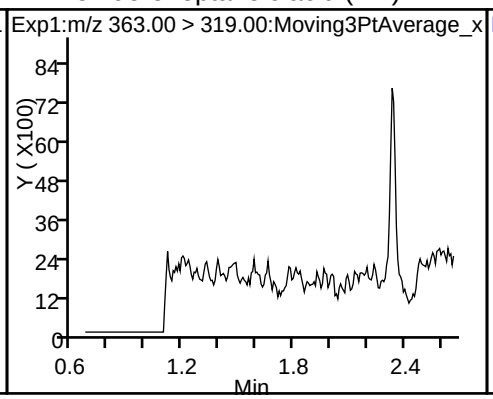
$ 2 13C2 PFHxA



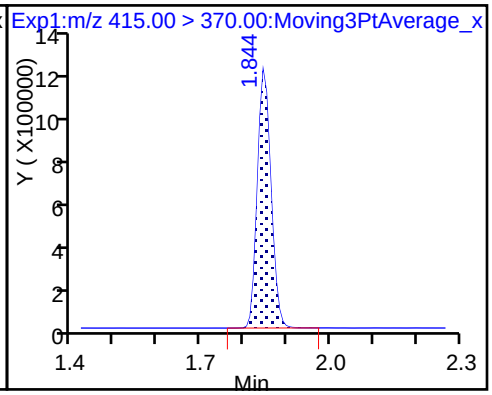
3 Perfluorohexanesulfonic acid (ND)



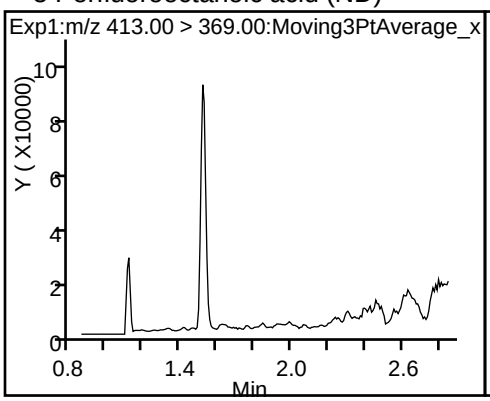
4 Perfluoroheptanoic acid (ND)



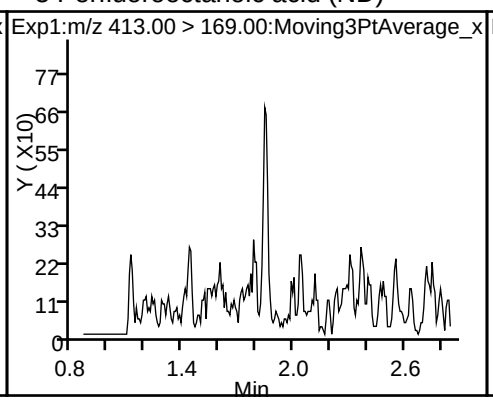
* 6 13C2-PFOA



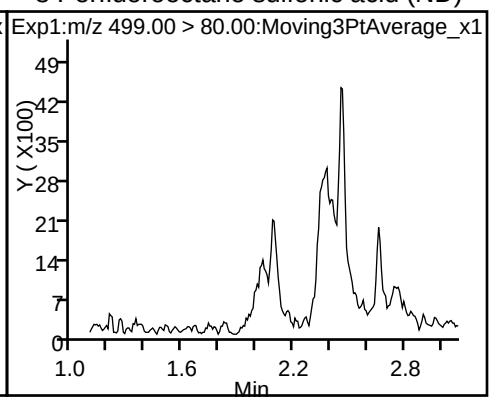
5 Perfluorooctanoic acid (ND)



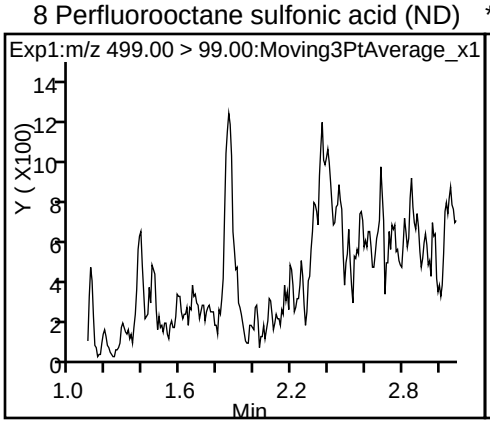
5 Perfluorooctanoic acid (ND)



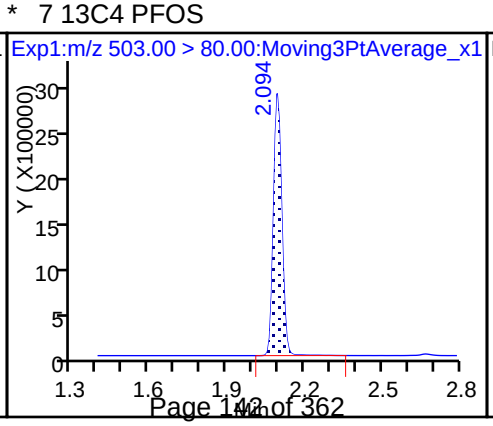
8 Perfluorooctane sulfonic acid (ND)



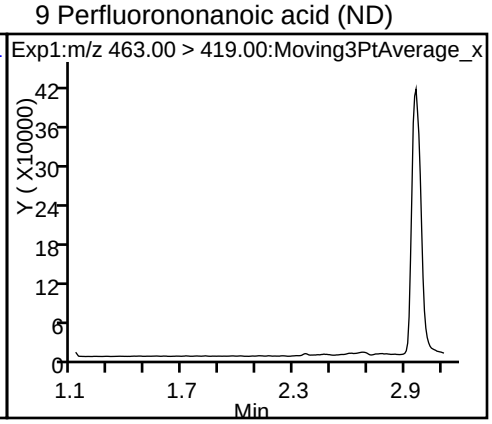
8 Perfluorooctane sulfonic acid (ND)



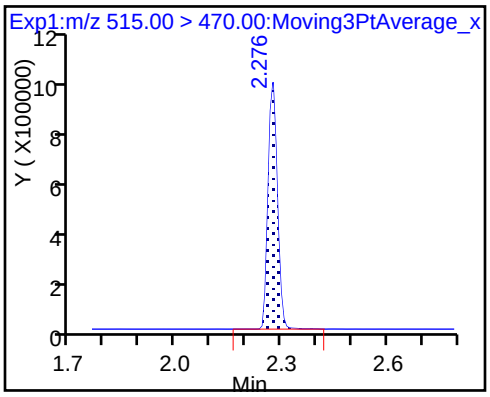
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X100000)
12
10
8
6
4
2
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_047.d				
Lims ID:	320-31489-A-6-A				
Client ID:	NAWC-091217-FRB-312				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 07:26:31	ALS Bottle#:	37	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-6-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:22	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.03	90.31
$ 10 13C2 PFDA	10.0	11.6	116.38

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-141 | Lab Sample ID: 320-31489-7

Matrix: Water | Lab File ID: 2017.09.19_537A_048.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:00

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.6(mL) | Date Analyzed: 09/20/2017 07:31

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	23	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_048.d
Lims ID: 320-31489-A-7-A
Client ID: NAWC-091217-RW-141
Sample Type: Client
Inject. Date: 20-Sep-2017 07:31:16 ALS Bottle#: 38 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:53:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	514017	1.91		333	
298.90 > 99.00	1.396	1.402	-0.006	1.000	353027		1.46(0.00-0.00)	548	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.524	-0.014	1.000	2333694	7.80		9565	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	1430708	3.92		482	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	452425	1.88		61.7	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2551724	10.0		9938	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	932700	3.98		31.4	
413.00 > 169.00	1.836	1.856	-0.020	0.996	550326		1.69(0.00-0.00)	1305	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.086	2.094	-0.008	1.000	1240923	5.99		297	M
499.00 > 99.00	2.086	2.094	-0.008	1.000	209603		5.92(0.00-0.00)	123	M
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		6381647	28.7		3382	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.116	-0.022	1.000	79392	0.5003		1.8	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1647435	11.6		13172	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:17:44 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_048.d

Injection Date: 20-Sep-2017 07:31:16 Instrument ID: A8_N

Lims ID: 320-31489-A-7-A Lab Sample ID: 320-31489-7

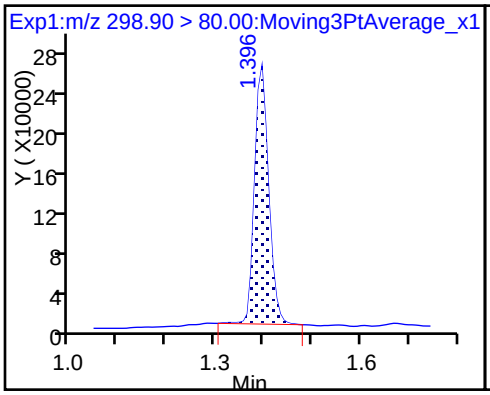
Client ID: NAWC-091217-RW-141

Operator ID: SACINSTLCMS01 ALS Bottle#: 38 Worklist Smp#: 11

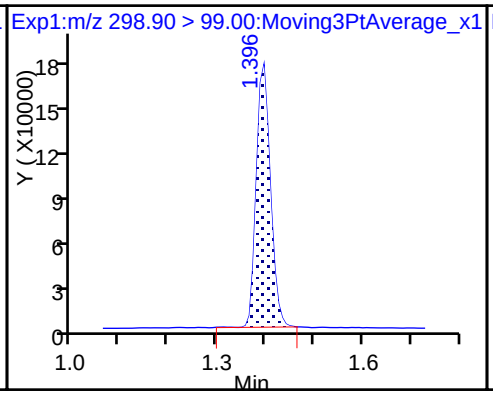
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

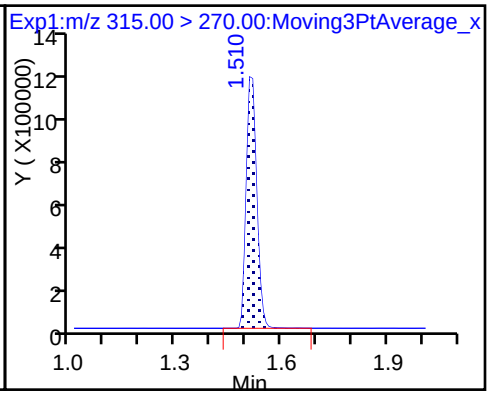
1 Perfluorobutanesulfonic acid



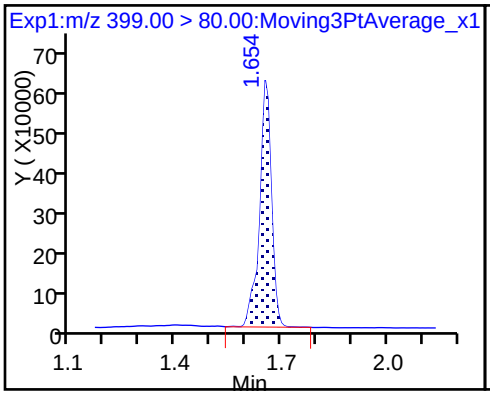
1 Perfluorobutanesulfonic acid



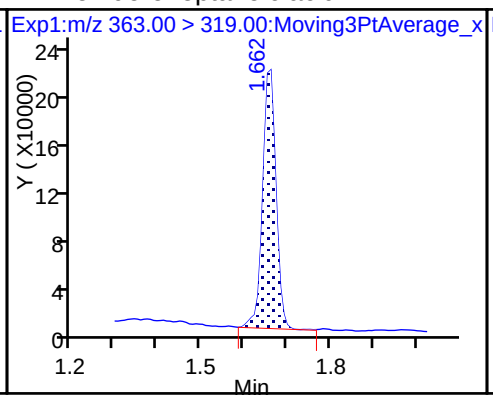
$ 2 13C2 PFHxA



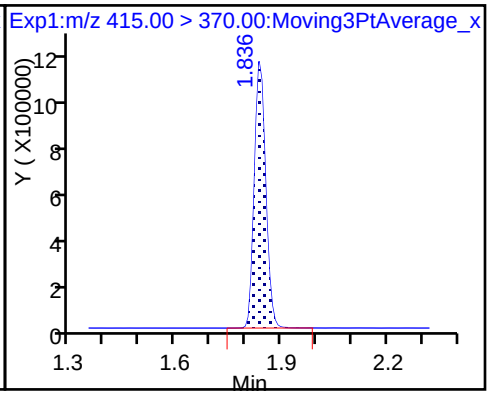
3 Perfluorohexanesulfonic acid



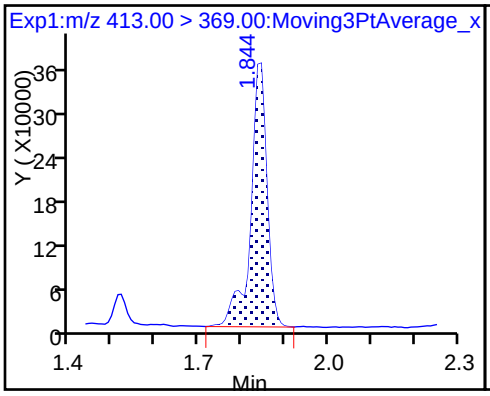
4 Perfluoroheptanoic acid



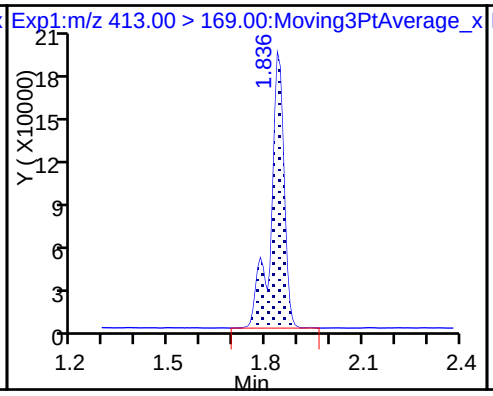
* 6 13C2-PFOA



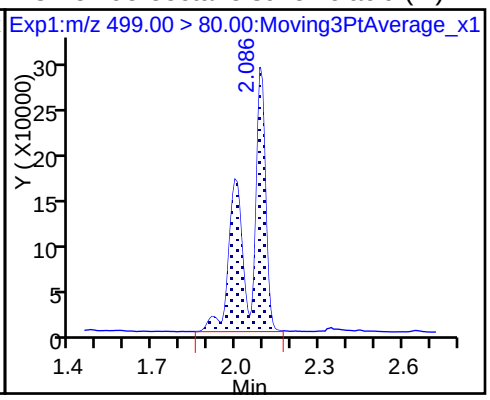
5 Perfluorooctanoic acid



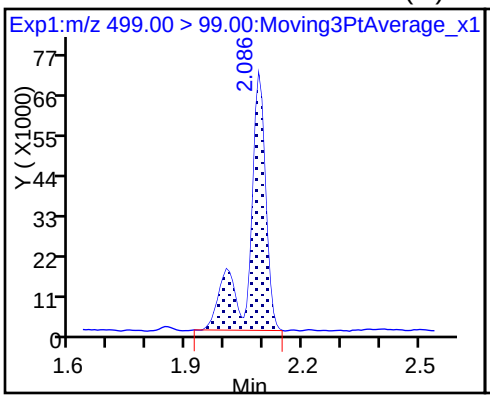
5 Perfluorooctanoic acid



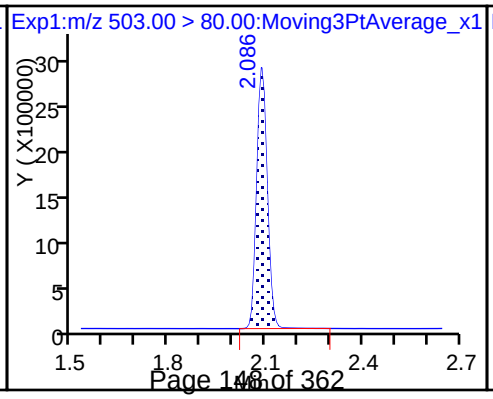
8 Perfluorooctane sulfonic acid (M)



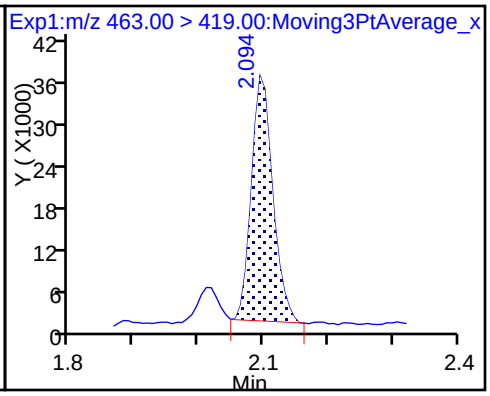
8 Perfluorooctane sulfonic acid (M)



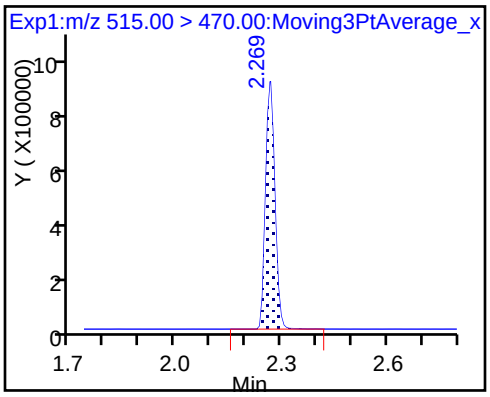
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
10
8
6
4
2
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_048.d
Lims ID: 320-31489-A-7-A
Client ID: NAWC-091217-RW-141
Sample Type: Client
Inject. Date: 20-Sep-2017 07:31:16 ALS Bottle#: 38 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:53:53

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.80	78.05
$ 10 13C2 PFDA	10.0	11.6	115.75

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

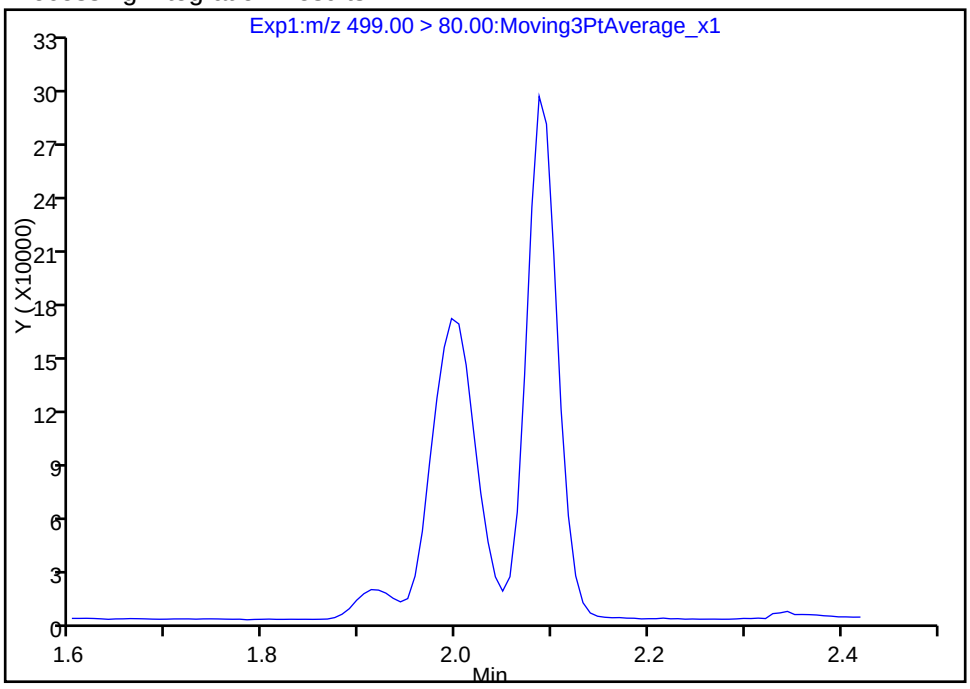
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_048.d				
Injection Date:	20-Sep-2017 07:31:16	Instrument ID:	A8_N		
Lims ID:	320-31489-A-7-A	Lab Sample ID:	320-31489-7		
Client ID:	NAWC-091217-RW-141				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

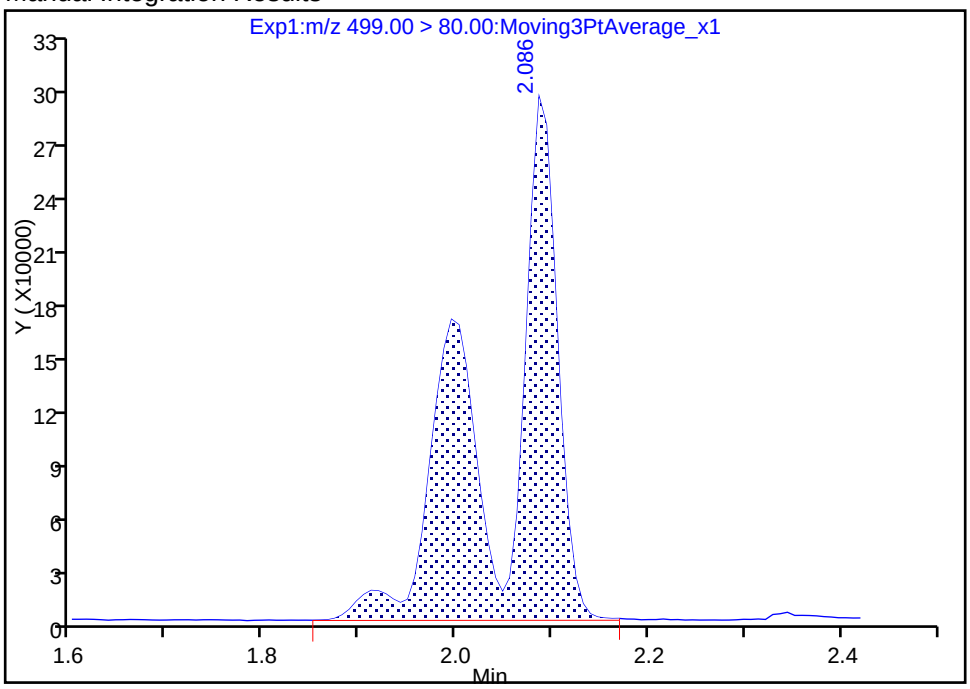
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 1240923
Amount: 5.985701
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:53:25
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

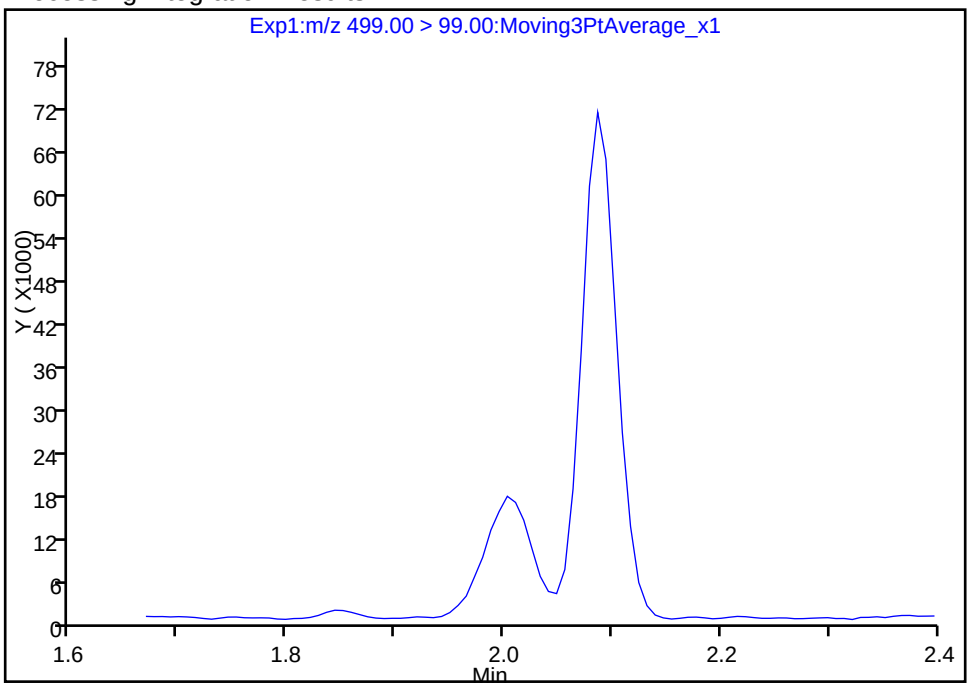
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_048.d				
Injection Date:	20-Sep-2017 07:31:16	Instrument ID:	A8_N		
Lims ID:	320-31489-A-7-A	Lab Sample ID:	320-31489-7		
Client ID:	NAWC-091217-RW-141				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

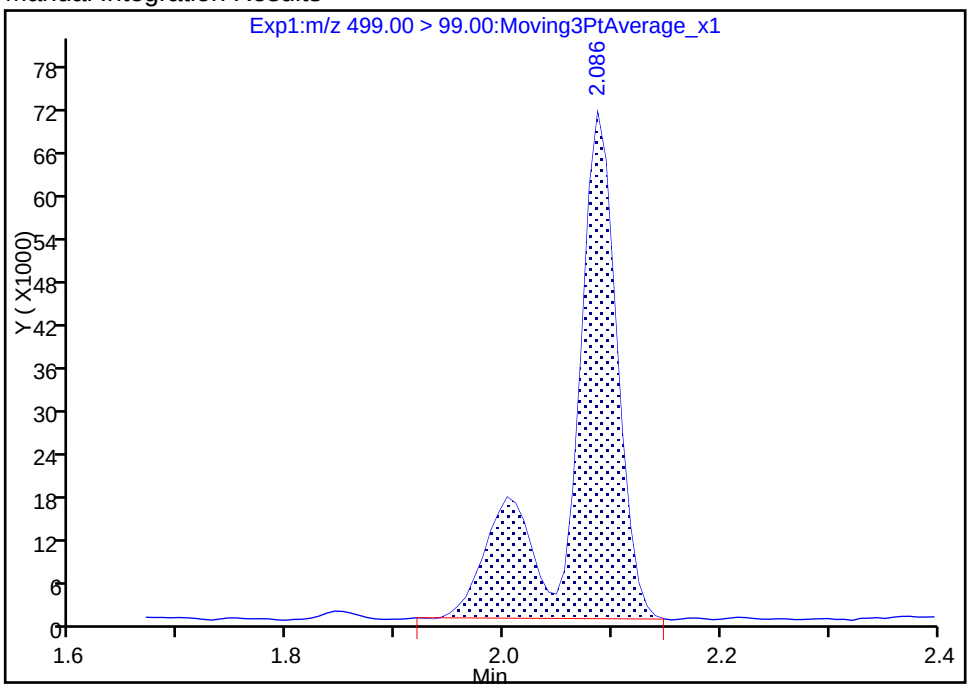
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.09
Area: 209603
Amount: 5.985701
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:53:44
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

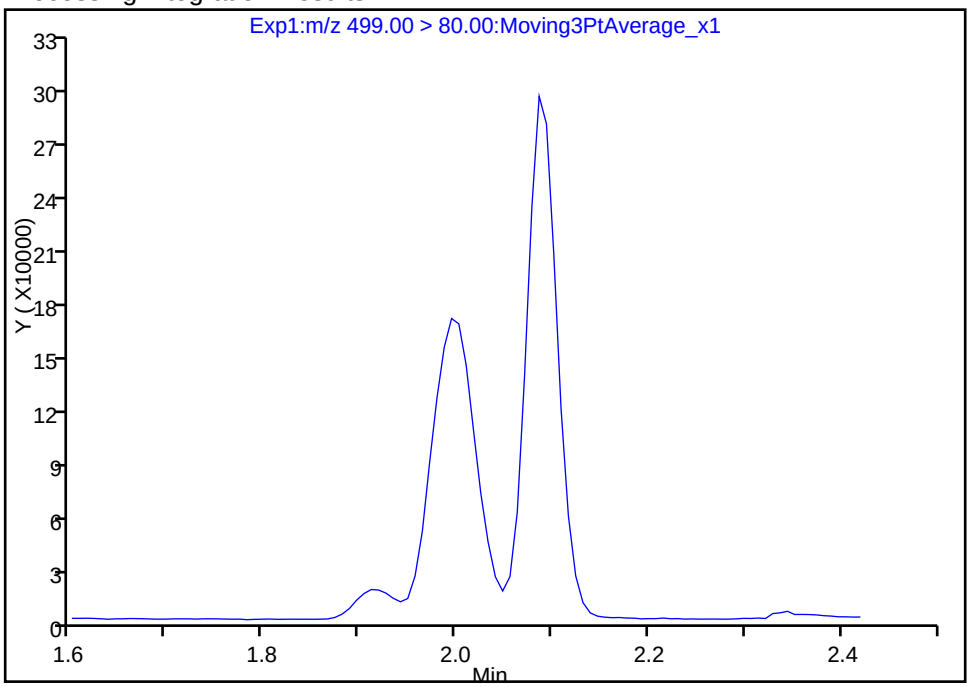
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_048.d				
Injection Date:	20-Sep-2017 07:31:16	Instrument ID:	A8_N		
Lims ID:	320-31489-A-7-A	Lab Sample ID:	320-31489-7		
Client ID:	NAWC-091217-RW-141				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

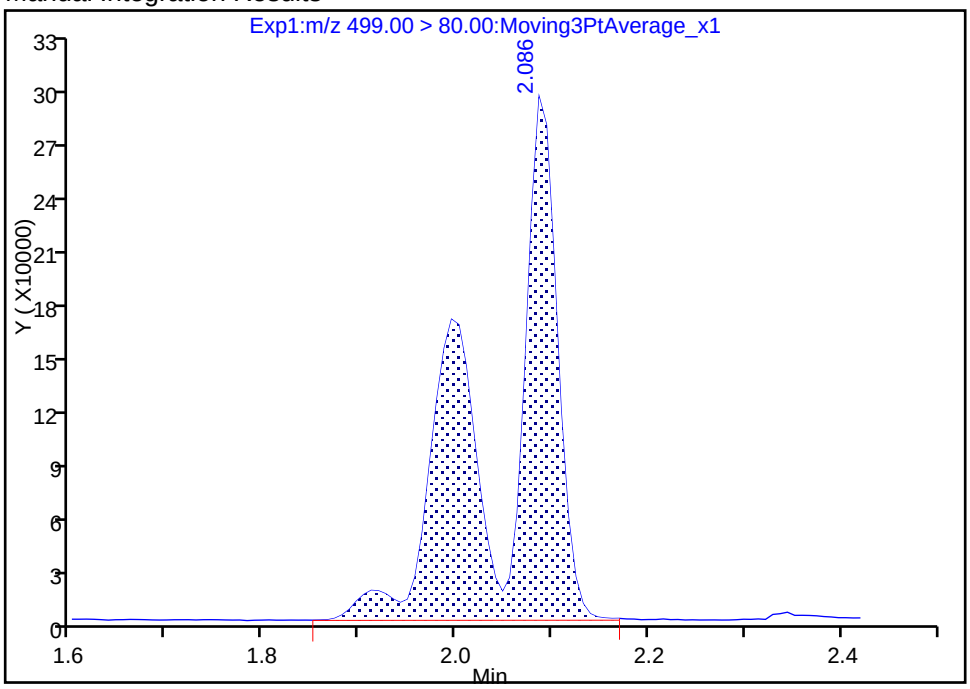
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.09
Area: 1240923
Amount: 5.985701
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:53:44
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-141 | Lab Sample ID: 320-31489-8

Matrix: Water | Lab File ID: 2017.09.19_537A_049.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:55

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 283.4(mL) | Date Analyzed: 09/20/2017 07:36

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.: 185410 | 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)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.9
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	91		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_049.d
Lims ID: 320-31489-A-8-A
Client ID: NAWC-091217-FRB-141
Sample Type: Client
Inject. Date: 20-Sep-2017 07:36:01 ALS Bottle#: 39 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.524	-0.014	1.000	2635094	9.14		13163	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2459724	10.0		9726	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		6133899	28.7		5687	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1533812	11.2		12104	

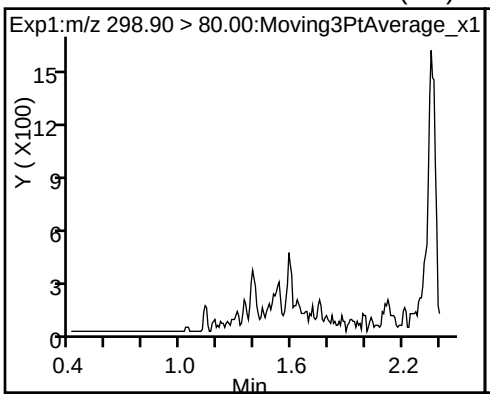
Report Date: 20-Sep-2017 14:17:46 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

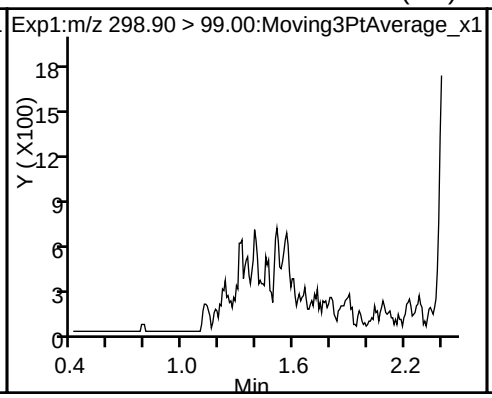
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_049.d

Injection Date:	20-Sep-2017 07:36:01	Instrument ID:	A8_N		
Lims ID:	320-31489-A-8-A	Lab Sample ID:	320-31489-8		
Client ID:	NAWC-091217-FRB-141				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	39	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

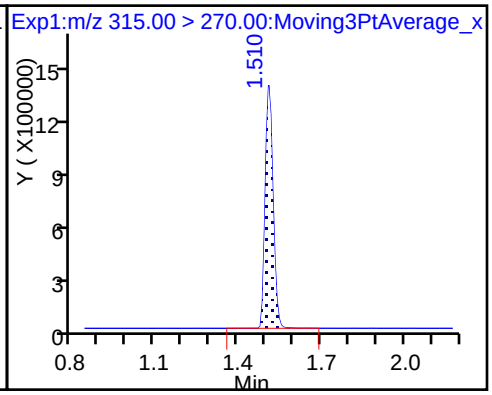
1 Perfluorobutanesulfonic acid (ND)



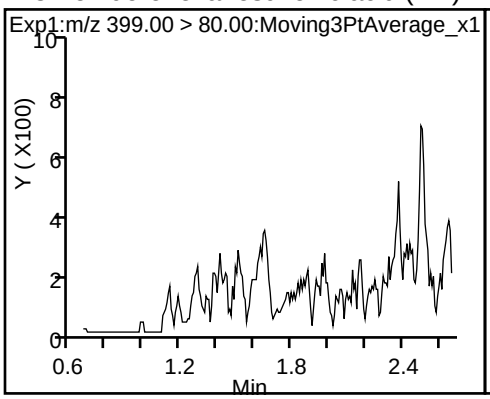
1 Perfluorobutanesulfonic acid (ND)



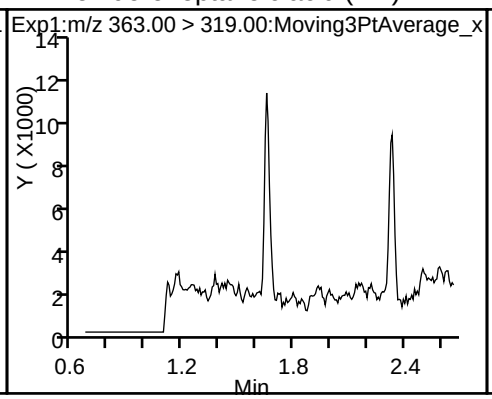
$ 2 13C2 PFHxA



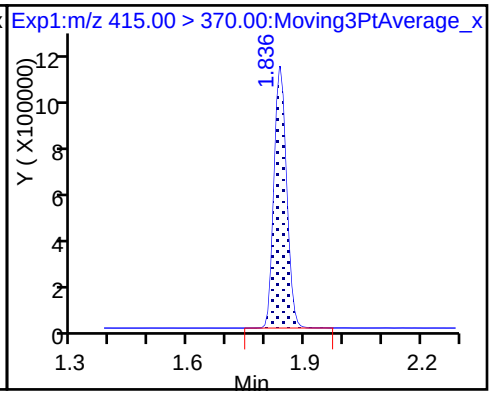
3 Perfluorohexanesulfonic acid (ND)



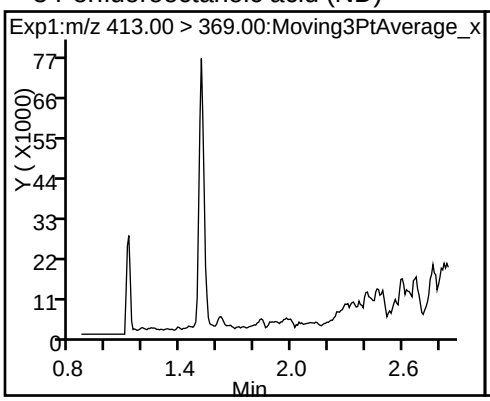
4 Perfluoroheptanoic acid (ND)



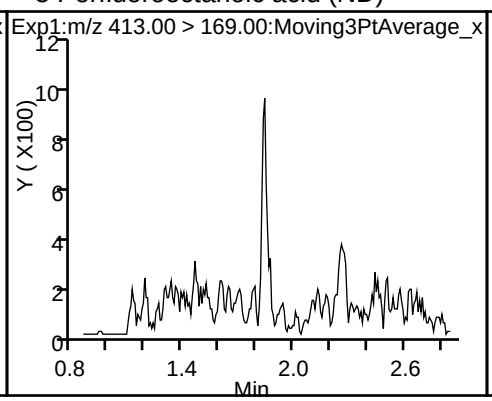
* 6 13C2-PFOA



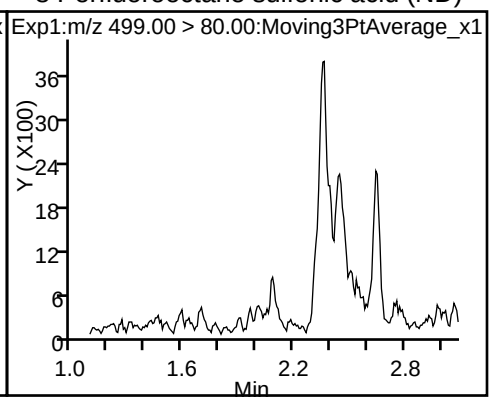
5 Perfluorooctanoic acid (ND)



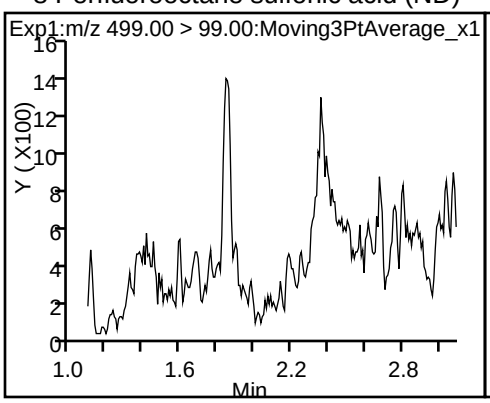
5 Perfluorooctanoic acid (ND)



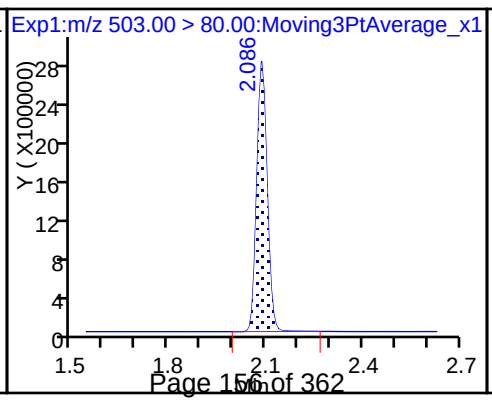
8 Perfluorooctane sulfonic acid (ND)



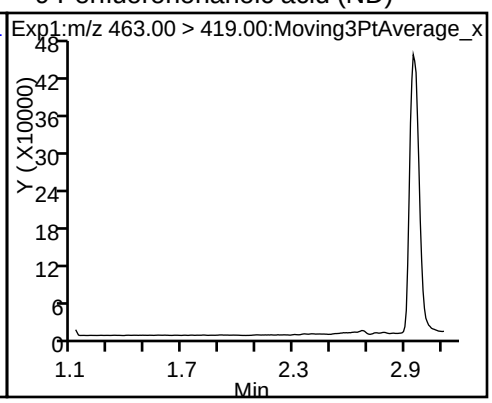
8 Perfluorooctane sulfonic acid (ND)



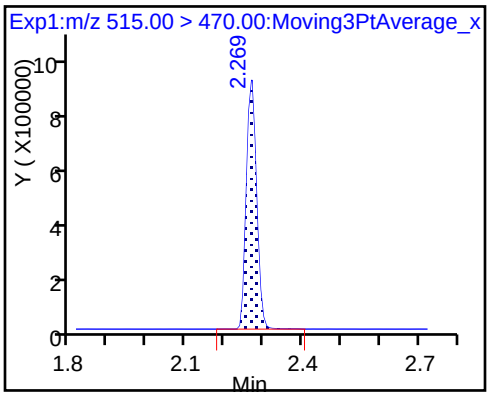
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_049.d				
Lims ID:	320-31489-A-8-A				
Client ID:	NAWC-091217-FRB-141				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 07:36:01	ALS Bottle#:	39	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-8-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:22	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.14	91.43
$ 10 13C2 PFDA	10.0	11.2	111.80

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-038 | Lab Sample ID: 320-31489-9

Matrix: Water | Lab File ID: 2017.09.20_537A_005.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:25

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 260.5(mL) | Date Analyzed: 09/20/2017 14:40

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 185468 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.1	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	73		70-130
STL00996	13C2 PFDA	130		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_005.d
Lims ID: 320-31489-A-9-A
Client ID: NAWC-091217-RW-038
Sample Type: Client
Inject. Date: 20-Sep-2017 14:40:33 ALS Bottle#: 40 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 15:37:57 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 15:35:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.402	0.009	1.000	523195	2.26		92.9	
298.90 > 99.00	1.411	1.402	0.009	1.000	377877		1.38(0.00-0.00)	487	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.524	0.009	1.000	1642467	7.31		6040	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.668	0.016	1.000	496292	1.58		52.3	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.668	0.016	1.000	260460	1.44		19.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1918184	10.0		6377	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.856	0.018	1.000	928701	5.27		30.2	
413.00 > 169.00	1.874	1.856	0.018	1.000	561181		1.65(0.00-0.00)	1098	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.108	0.024		5497337	28.7		1212	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.116	0.024	1.000	99789	0.8366		3.5	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.132	2.124	0.008	1.000	1130698	6.33		111	M
499.00 > 99.00	2.132	2.124	0.008	1.000	179166		6.31(0.00-0.00)	87.0	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.282	0.017	1.000	1394571	13.0		12957	

QC Flag Legend

Review Flags

M - Manually Integrated

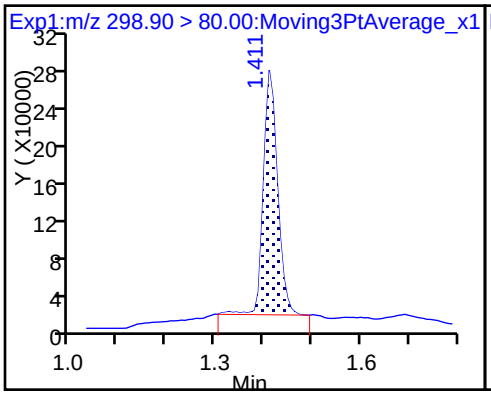
Report Date: 20-Sep-2017 15:38:00 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

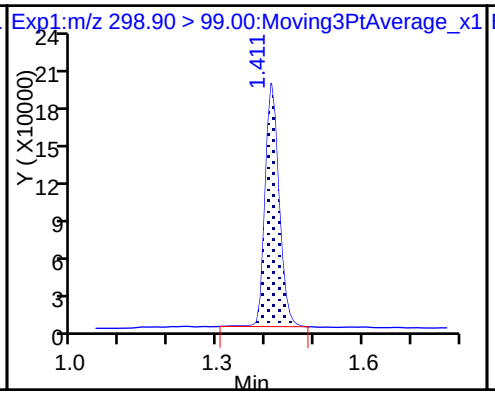
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_005.d

Injection Date:	20-Sep-2017 14:40:33	Instrument ID:	A8_N		
Lims ID:	320-31489-A-9-A	Lab Sample ID:	320-31489-9		
Client ID:	NAWC-091217-RW-038				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

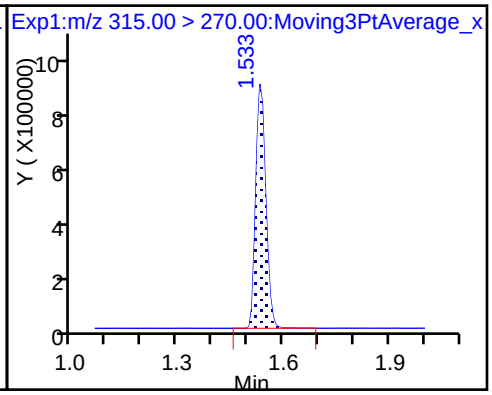
1 Perfluorobutanesulfonic acid



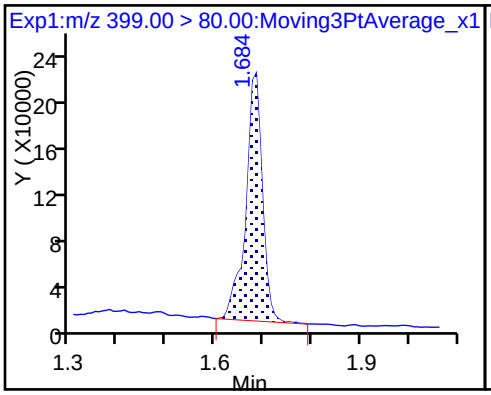
1 Perfluorobutanesulfonic acid



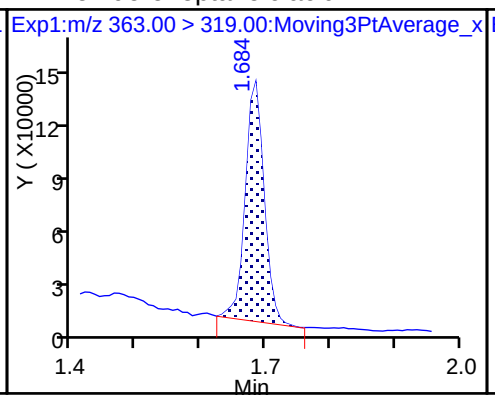
$ 2 13C2 PFHxA



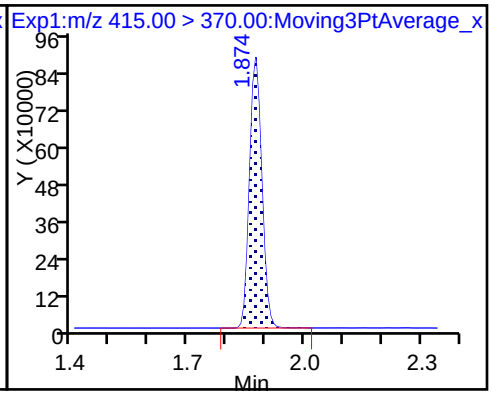
3 Perfluorohexanesulfonic acid



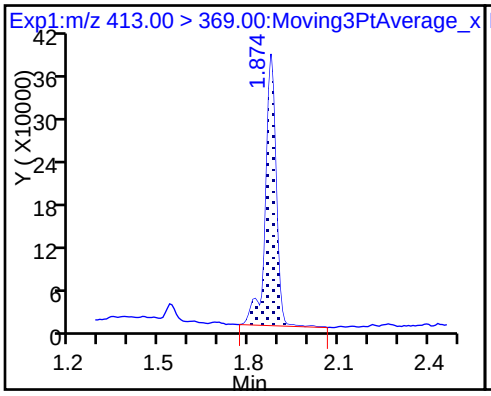
4 Perfluoroheptanoic acid



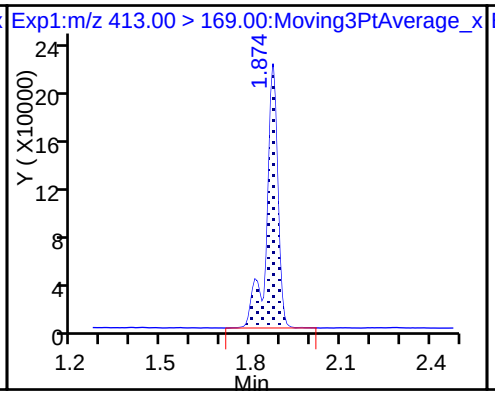
* 6 13C2-PFOA



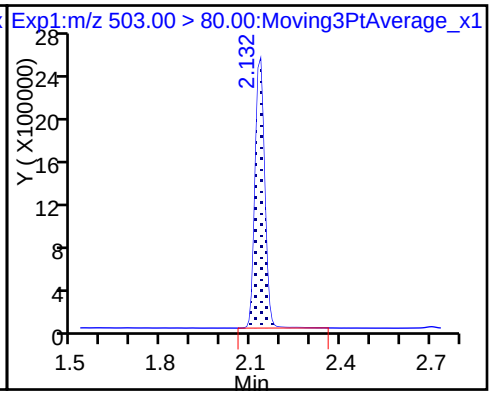
5 Perfluorooctanoic acid



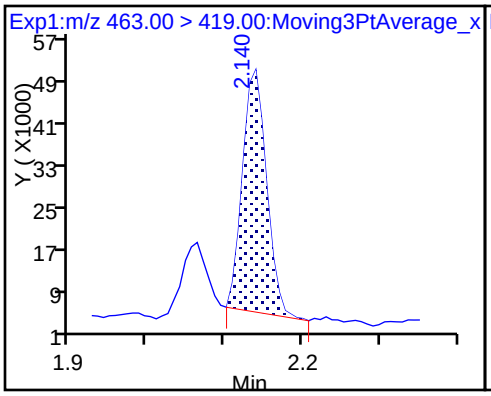
5 Perfluorooctanoic acid



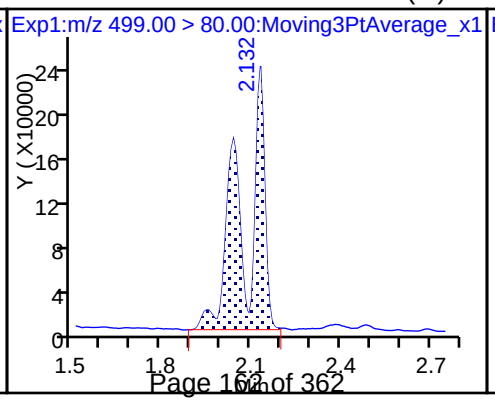
* 7 13C4 PFOS



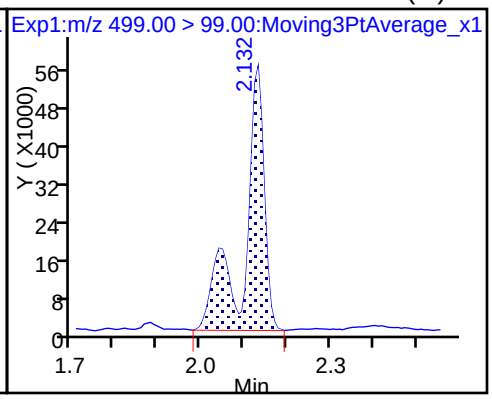
9 Perfluorononanoic acid



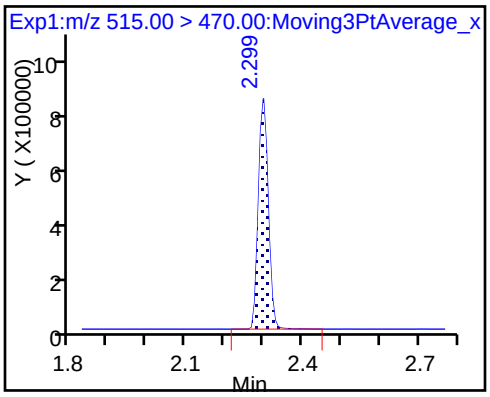
8 Perfluorooctane sulfonic acid (M)



8 Perfluorooctane sulfonic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.299
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_005.d
Lims ID: 320-31489-A-9-A
Client ID: NAWC-091217-RW-038
Sample Type: Client
Inject. Date: 20-Sep-2017 14:40:33 ALS Bottle#: 40 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 15:37:57 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 15:35:07

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.31	73.07
$ 10 13C2 PFDA	10.0	13.0	130.34

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

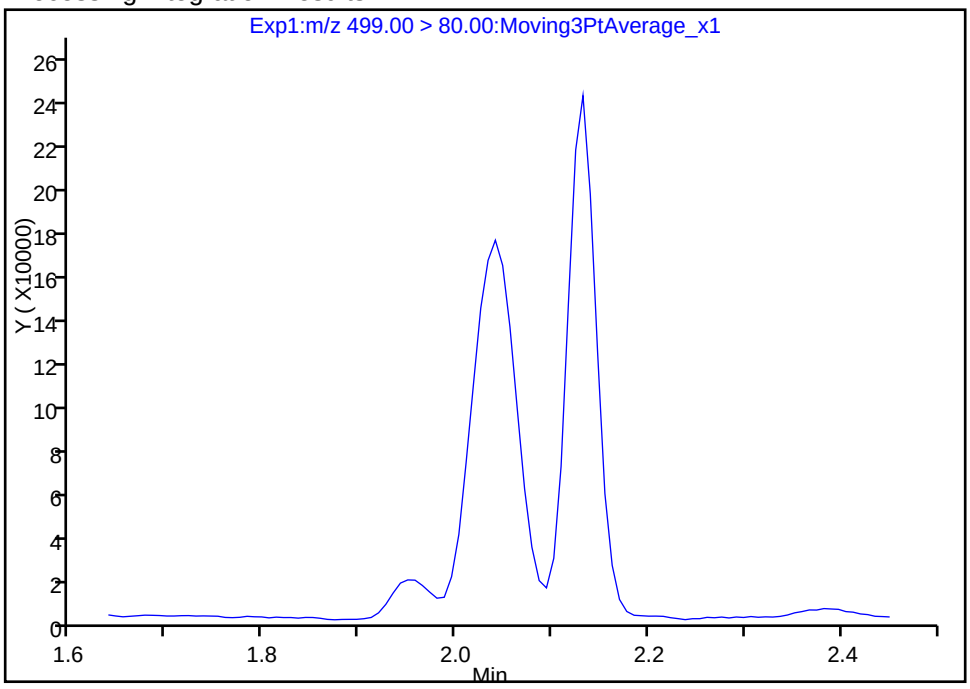
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_005.d				
Injection Date:	20-Sep-2017 14:40:33	Instrument ID:	A8_N		
Lims ID:	320-31489-A-9-A	Lab Sample ID:	320-31489-9		
Client ID:	NAWC-091217-RW-038				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

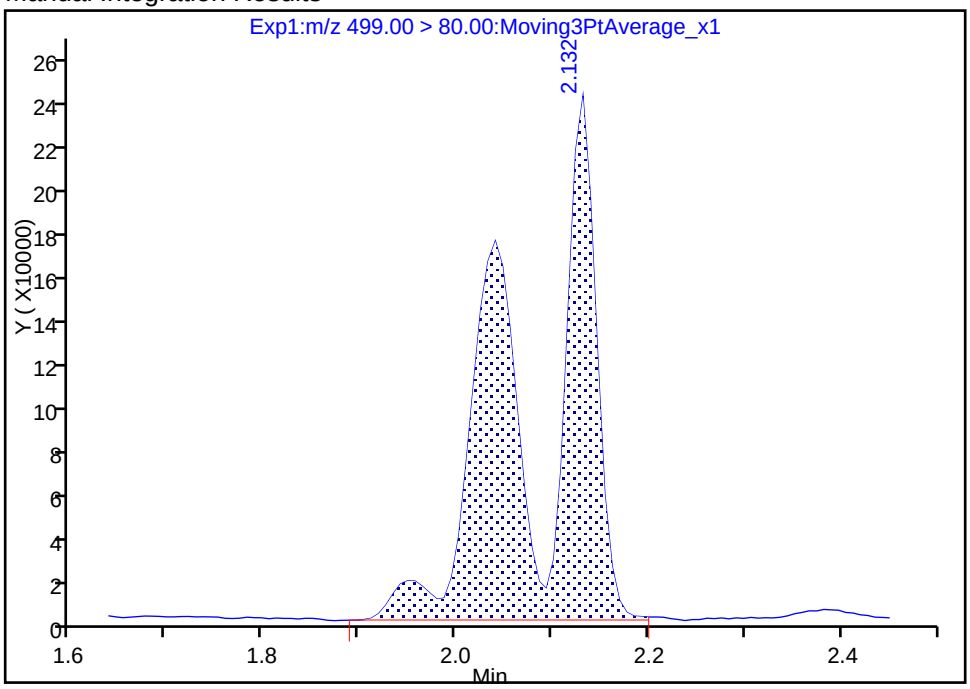
Processing Integration Results

Not Detected
Expected RT: 2.12



Manual Integration Results

RT: 2.13
Area: 1130698
Amount: 6.331363
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 15:34:29
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

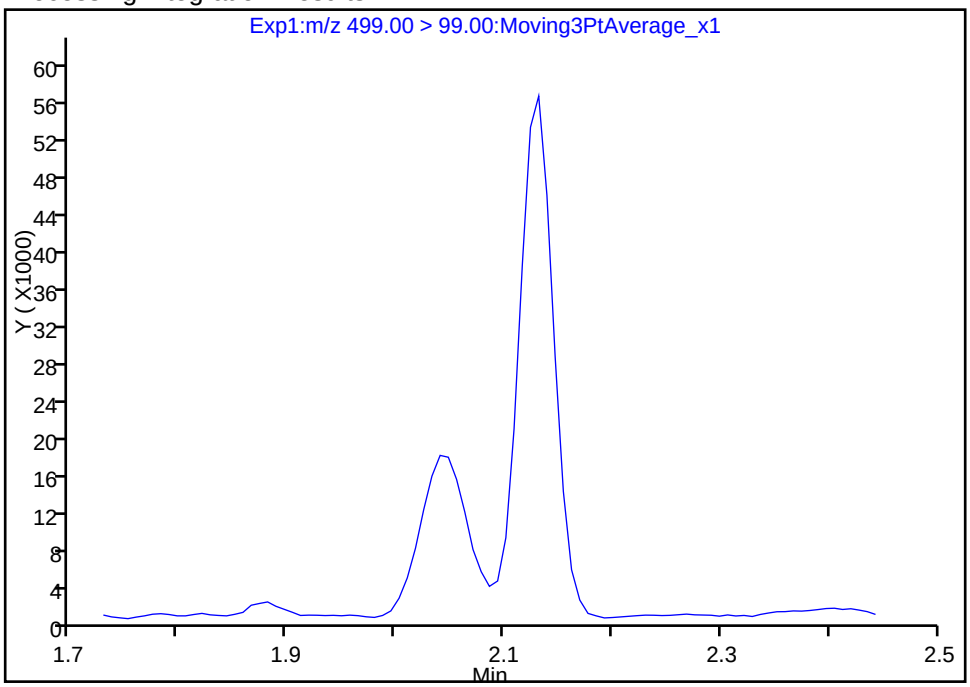
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_005.d				
Injection Date:	20-Sep-2017 14:40:33	Instrument ID:	A8_N		
Lims ID:	320-31489-A-9-A	Lab Sample ID:	320-31489-9		
Client ID:	NAWC-091217-RW-038				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

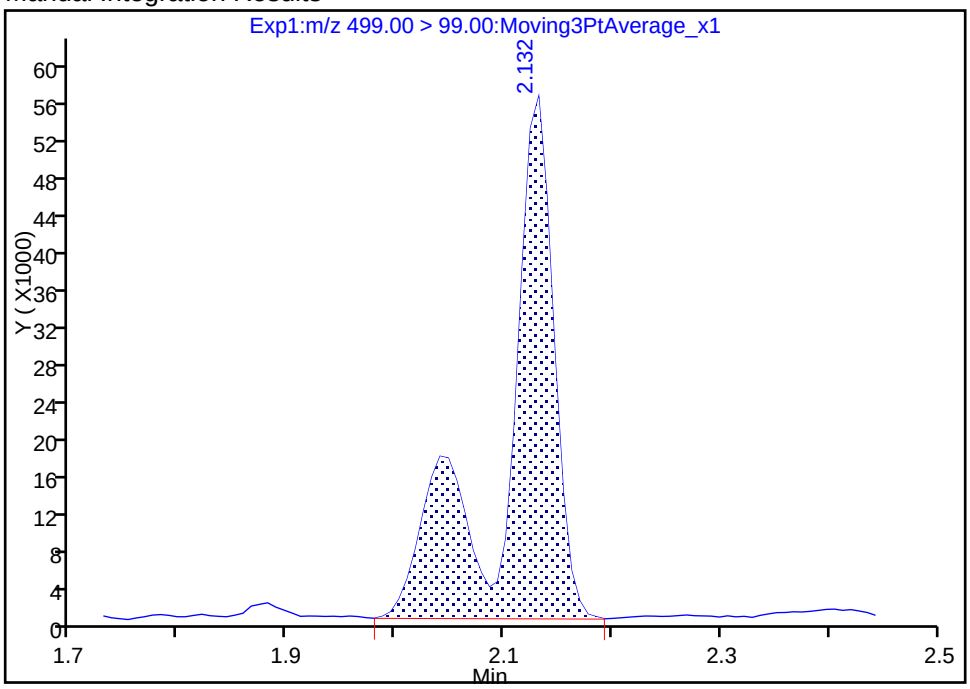
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 179166
Amount: 6.331363
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 15:34:47
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

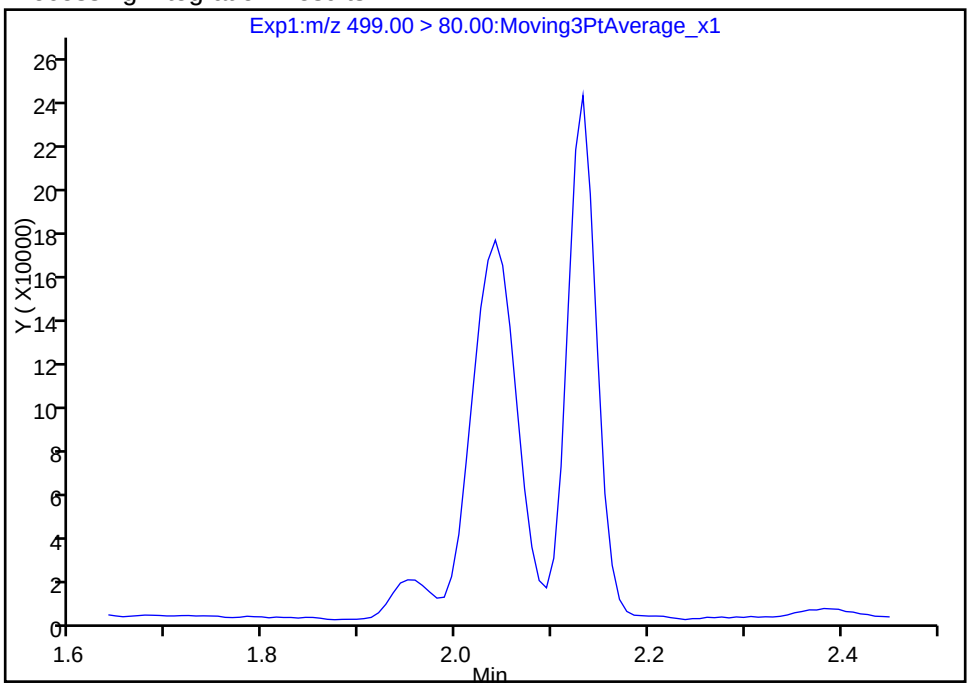
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_005.d				
Injection Date:	20-Sep-2017 14:40:33	Instrument ID:	A8_N		
Lims ID:	320-31489-A-9-A	Lab Sample ID:	320-31489-9		
Client ID:	NAWC-091217-RW-038				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

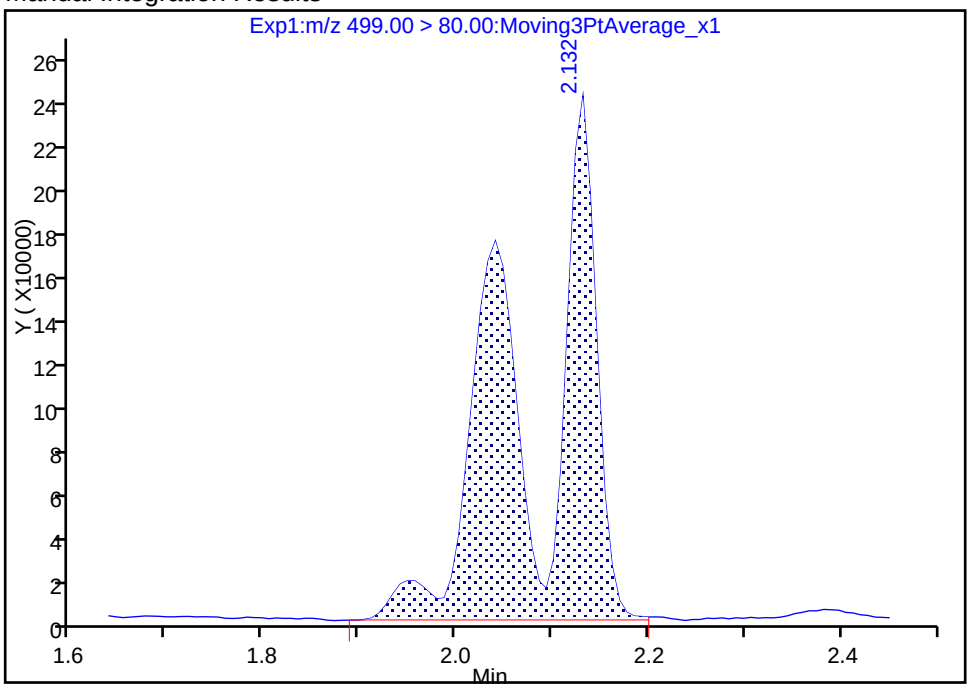
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 1130698
Amount: 6.331363
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 15:34:56
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-038 | Lab Sample ID: 320-31489-10

Matrix: Water | Lab File ID: 2017.09.19_537A_053.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:20

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 255.4(mL) | Date Analyzed: 09/20/2017 07:55

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_053.d
Lims ID: 320-31489-A-10-A
Client ID: NAWC-091217-FRB-038
Sample Type: Client
Inject. Date: 20-Sep-2017 07:55:00 ALS Bottle#: 41 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2678188	9.24		10145	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2474435	10.0		7515	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6053950	28.7		4259	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1539438	11.2		11601	

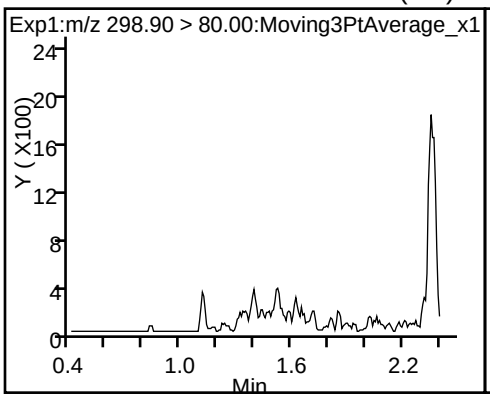
Report Date: 20-Sep-2017 14:17:53 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

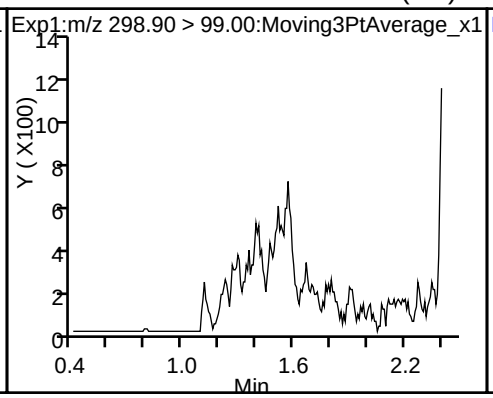
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_053.d

Injection Date:	20-Sep-2017 07:55:00	Instrument ID:	A8_N		
Lims ID:	320-31489-A-10-A	Lab Sample ID:	320-31489-10		
Client ID:	NAWC-091217-FRB-038				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	41	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

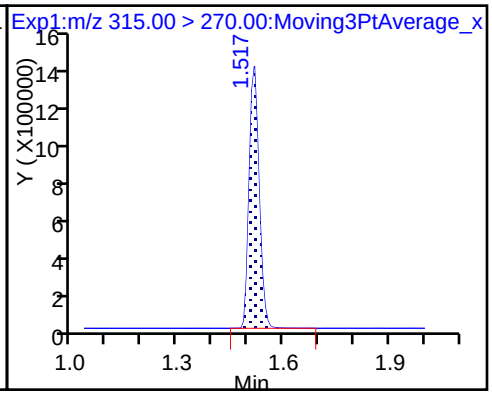
1 Perfluorobutanesulfonic acid (ND)



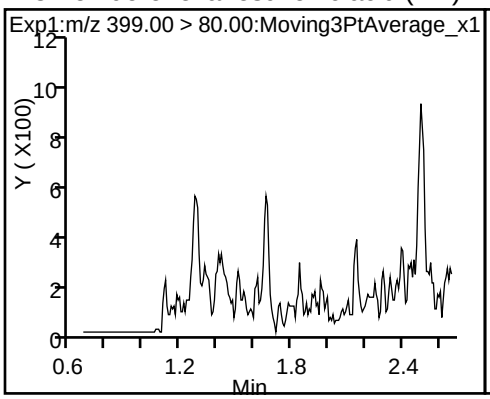
1 Perfluorobutanesulfonic acid (ND)



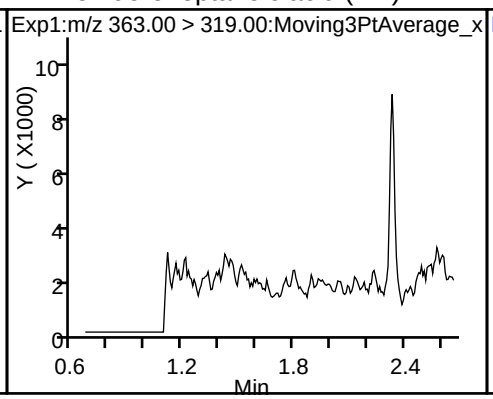
$ 2 13C2 PFHxA



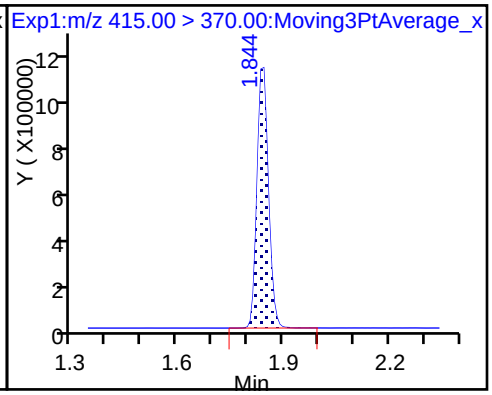
3 Perfluorohexanesulfonic acid (ND)



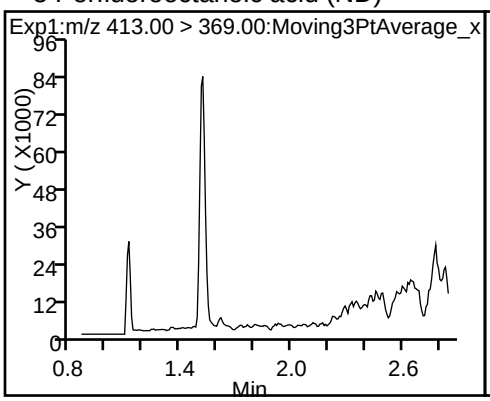
4 Perfluoroheptanoic acid (ND)



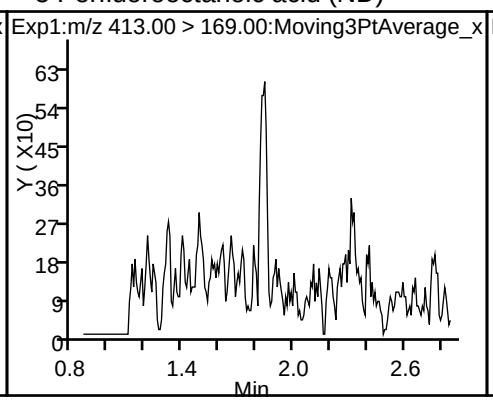
* 6 13C2-PFOA



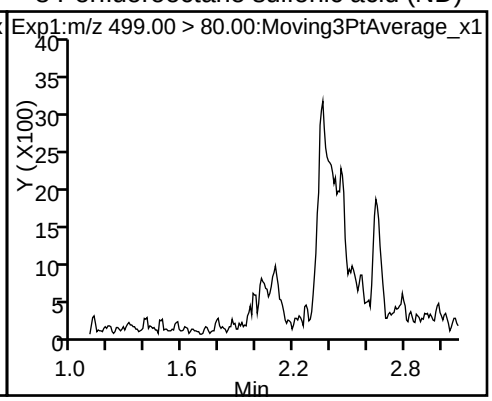
5 Perfluorooctanoic acid (ND)



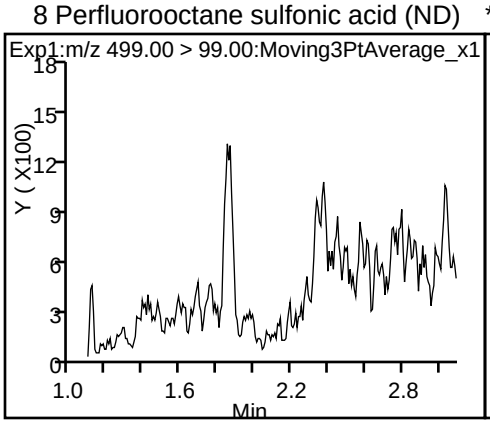
5 Perfluorooctanoic acid (ND)



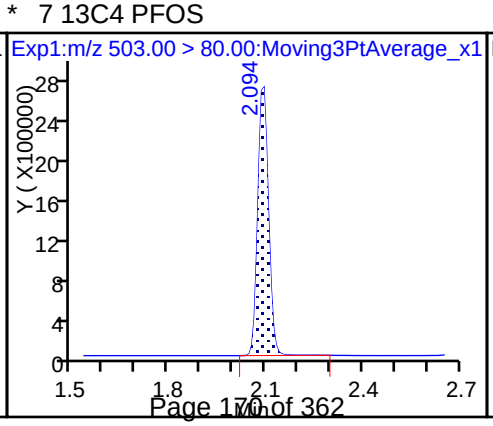
8 Perfluorooctane sulfonic acid (ND)



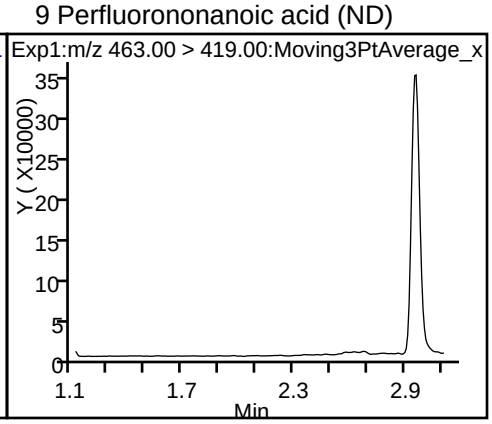
8 Perfluorooctane sulfonic acid (ND)



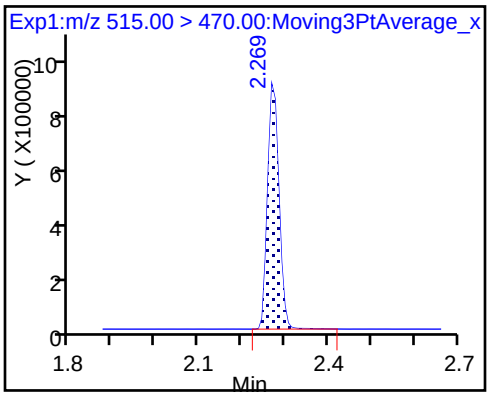
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_053.d
Lims ID: 320-31489-A-10-A
Client ID: NAWC-091217-FRB-038
Sample Type: Client
Inject. Date: 20-Sep-2017 07:55:00 ALS Bottle#: 41 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.24	92.37
$ 10 13C2 PFDA	10.0	11.2	111.54

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-315 | Lab Sample ID: 320-31489-11

Matrix: Water | Lab File ID: 2017.09.19_537A_054.d

Analysis Method: 537 | Date Collected: 09/12/2017 13:50

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.5(mL) | Date Analyzed: 09/20/2017 07:59

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.0	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	129		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_054.d
Lims ID: 320-31489-A-11-A
Client ID: NAWC-091217-RW-315
Sample Type: Client
Inject. Date: 20-Sep-2017 07:59:45 ALS Bottle#: 42 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:57:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	212368	0.7854		133	
298.90 > 99.00	1.396	1.402	-0.006	0.995	145100		1.46(0.00-0.00)	215	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2199280	7.85		10661	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	210253	0.5747		81.2	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	235366	1.04		31.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2392232	10.0		11684	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	635908	2.89		20.8	
413.00 > 169.00	1.844	1.856	-0.012	1.000	381578		1.67(0.00-0.00)	985	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.094	2.094	0.0	1.000	488993	2.35		116	M
499.00 > 99.00	2.094	2.094	0.0	1.000	74747		6.54(0.00-0.00)	41.5	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6404955	28.7		3055	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1724874	12.9		14317	

QC Flag Legend

Review Flags

M - Manually Integrated

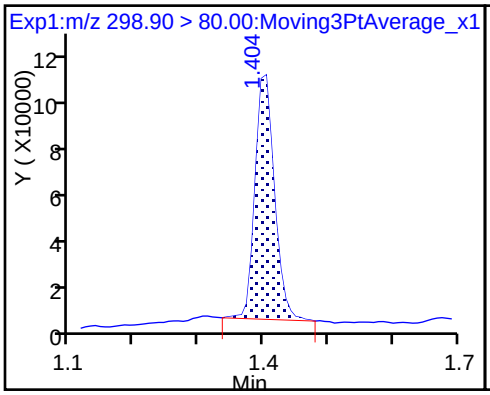
Report Date: 20-Sep-2017 14:17:54 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

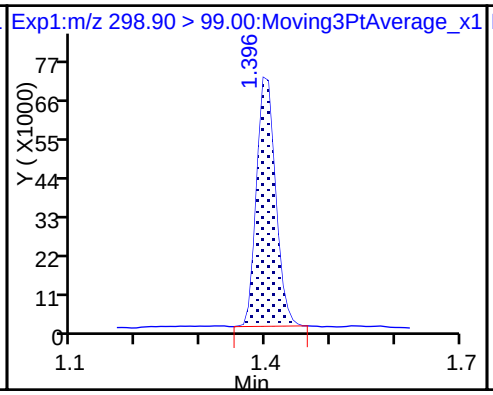
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_054.d

Injection Date:	20-Sep-2017 07:59:45	Instrument ID:	A8_N		
Lims ID:	320-31489-A-11-A	Lab Sample ID:	320-31489-11		
Client ID:	NAWC-091217-RW-315				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

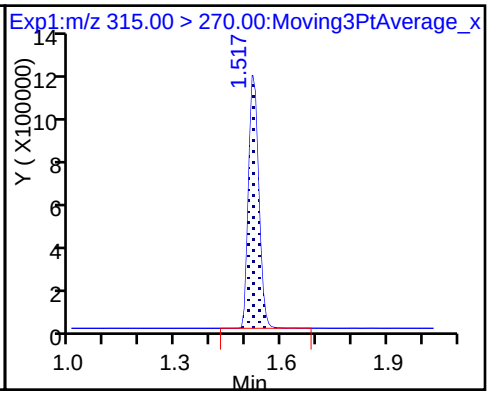
1 Perfluorobutanesulfonic acid



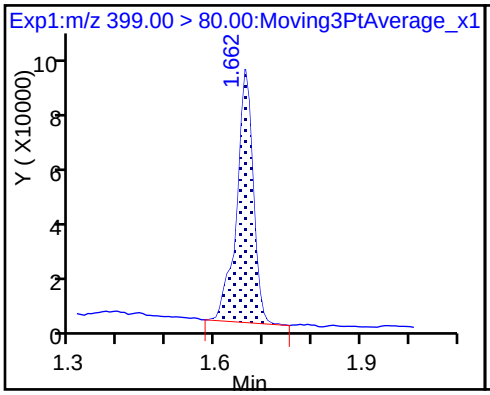
1 Perfluorobutanesulfonic acid



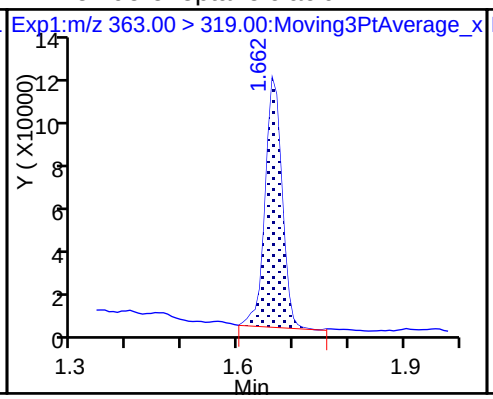
$ 2 13C2 PFHxA



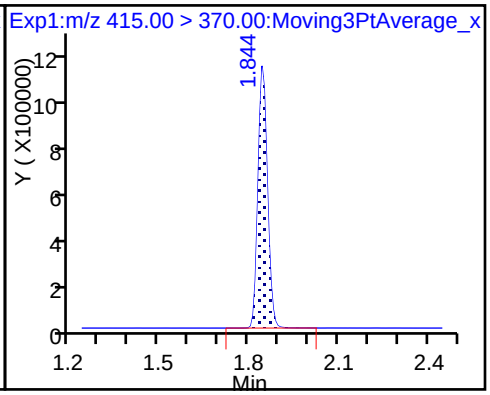
3 Perfluorohexanesulfonic acid



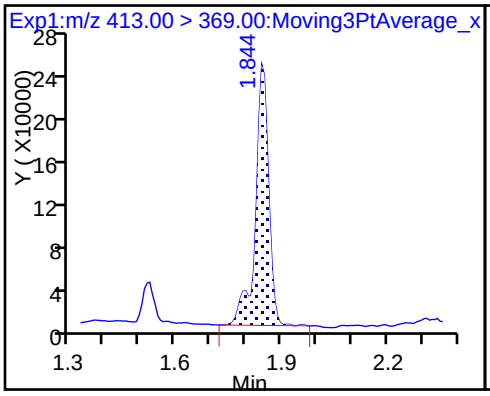
4 Perfluoroheptanoic acid



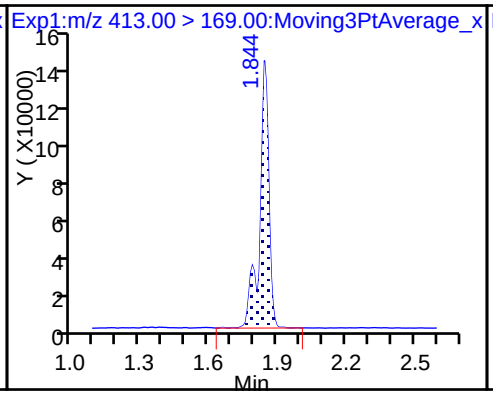
* 6 13C2-PFOA



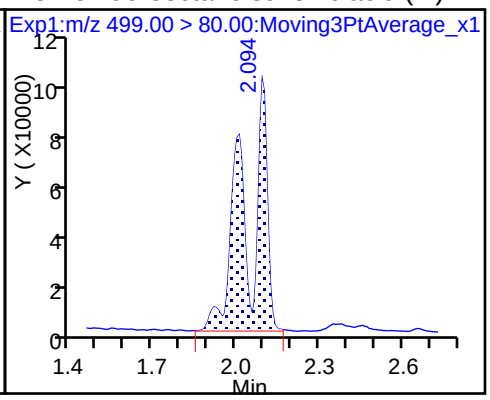
5 Perfluorooctanoic acid



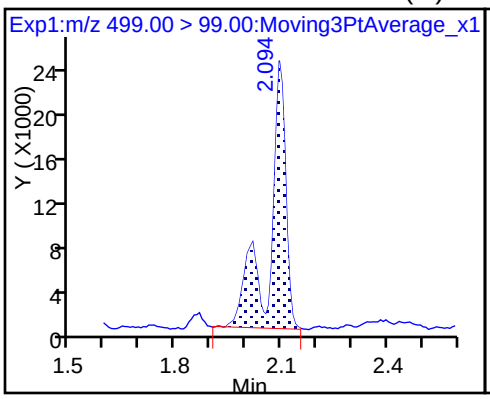
5 Perfluorooctanoic acid



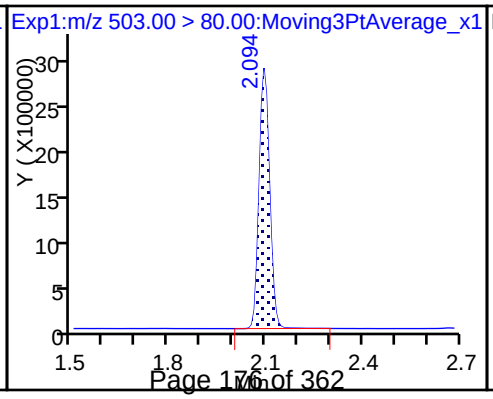
8 Perfluorooctane sulfonic acid (M)



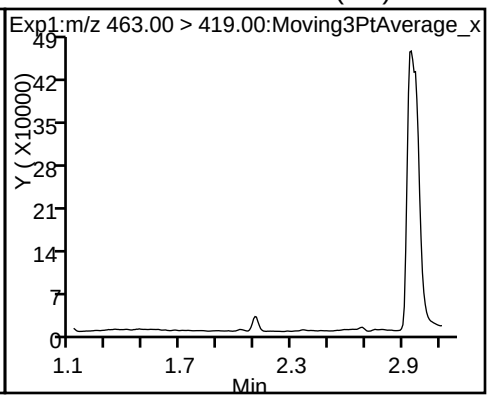
8 Perfluorooctane sulfonic acid (M)



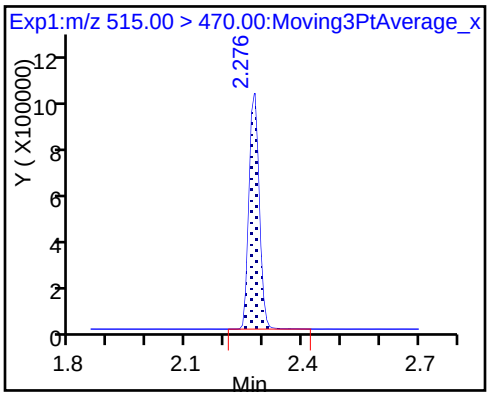
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X100000)
12
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

Report Date: 20-Sep-2017 14:17:54 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_054.d				
Lims ID:	320-31489-A-11-A				
Client ID:	NAWC-091217-RW-315				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 07:59:45	ALS Bottle#:	42	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-11-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:48	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

First Level Reviewer: barnettj Date: 20-Sep-2017 13:57:50

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.85	78.46
$ 10 13C2 PFDA	10.0	12.9	129.27

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

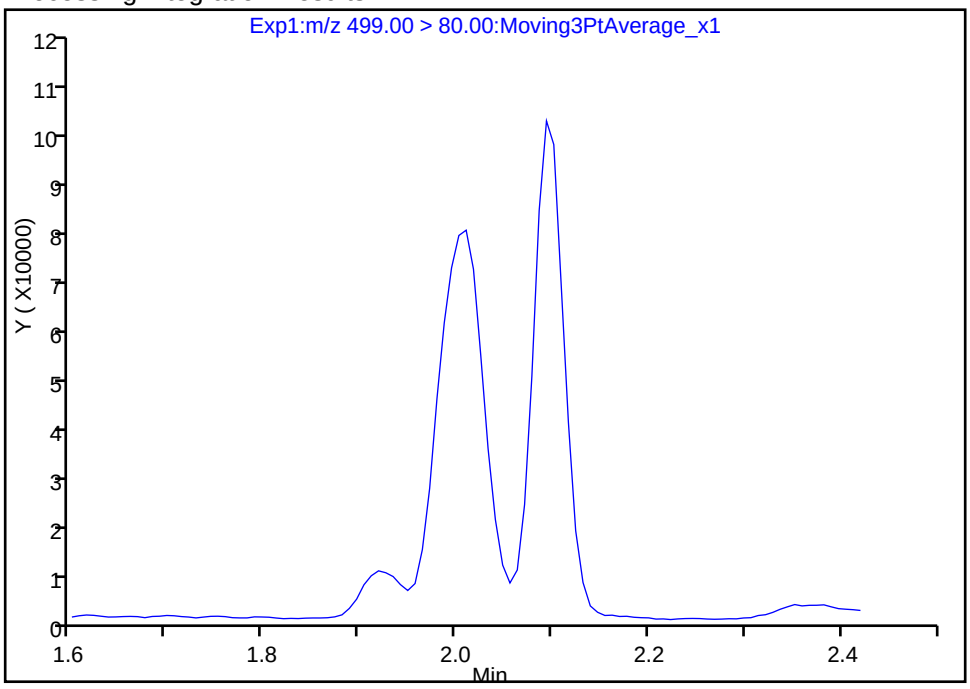
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_054.d				
Injection Date:	20-Sep-2017 07:59:45	Instrument ID:	A8_N		
Lims ID:	320-31489-A-11-A	Lab Sample ID:	320-31489-11		
Client ID:	NAWC-091217-RW-315				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	17
Injection 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

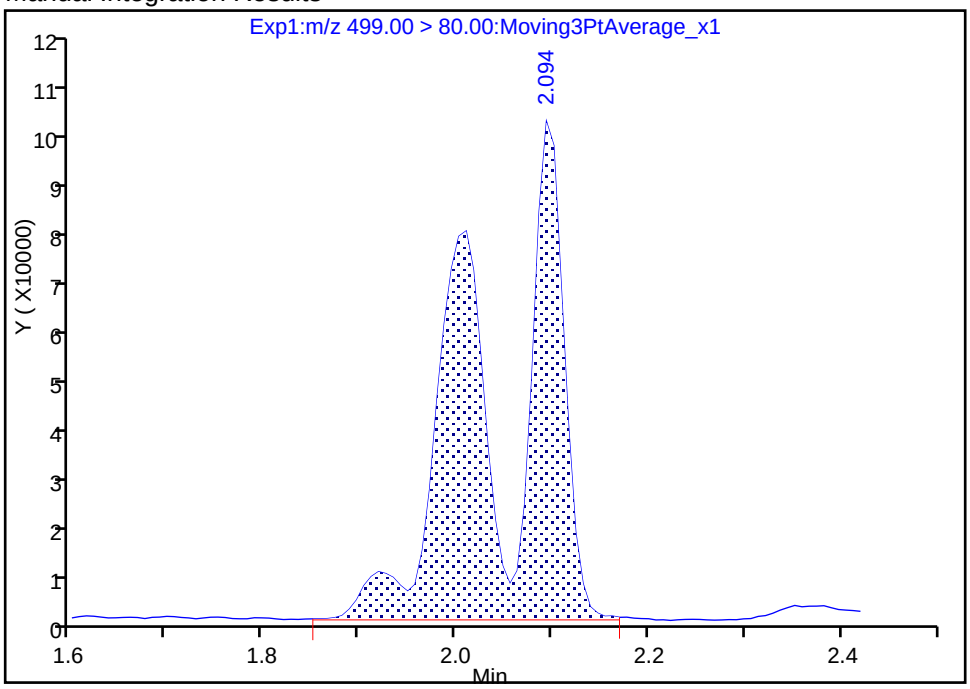
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 488993
Amount: 2.350117
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:57:06
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

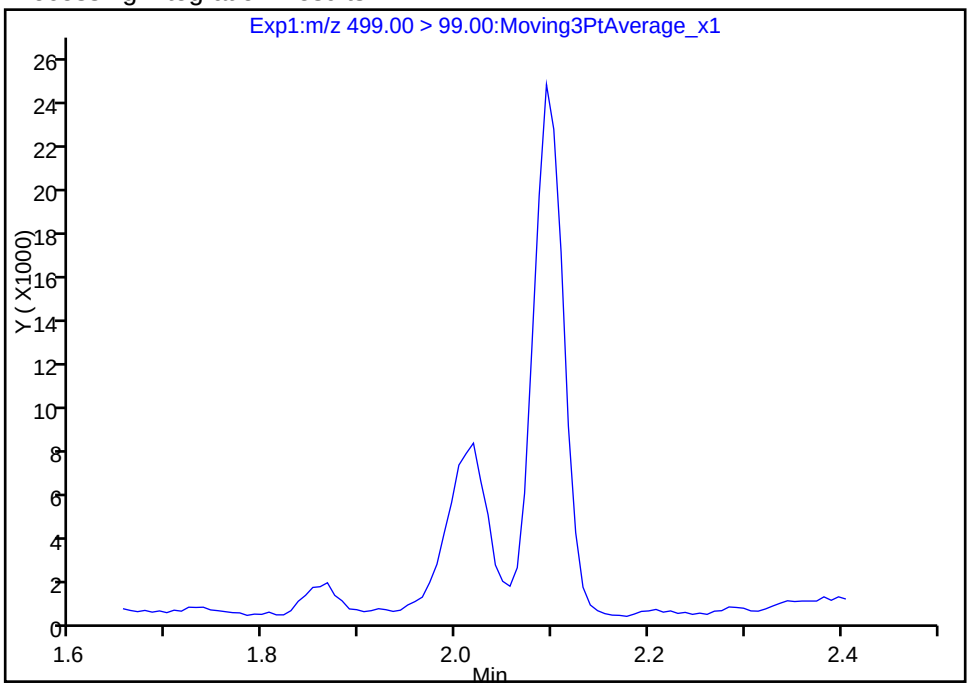
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_054.d				
Injection Date:	20-Sep-2017 07:59:45	Instrument ID:	A8_N		
Lims ID:	320-31489-A-11-A	Lab Sample ID:	320-31489-11		
Client ID:	NAWC-091217-RW-315				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	17
Injection 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

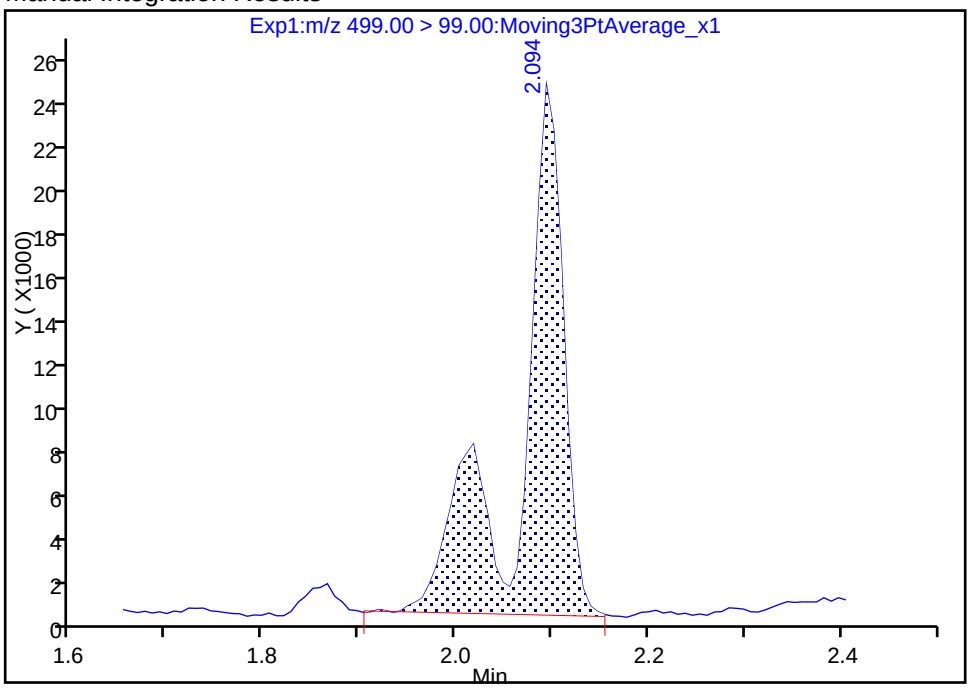
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.09
Area: 74747
Amount: 2.350117
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:57:30
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

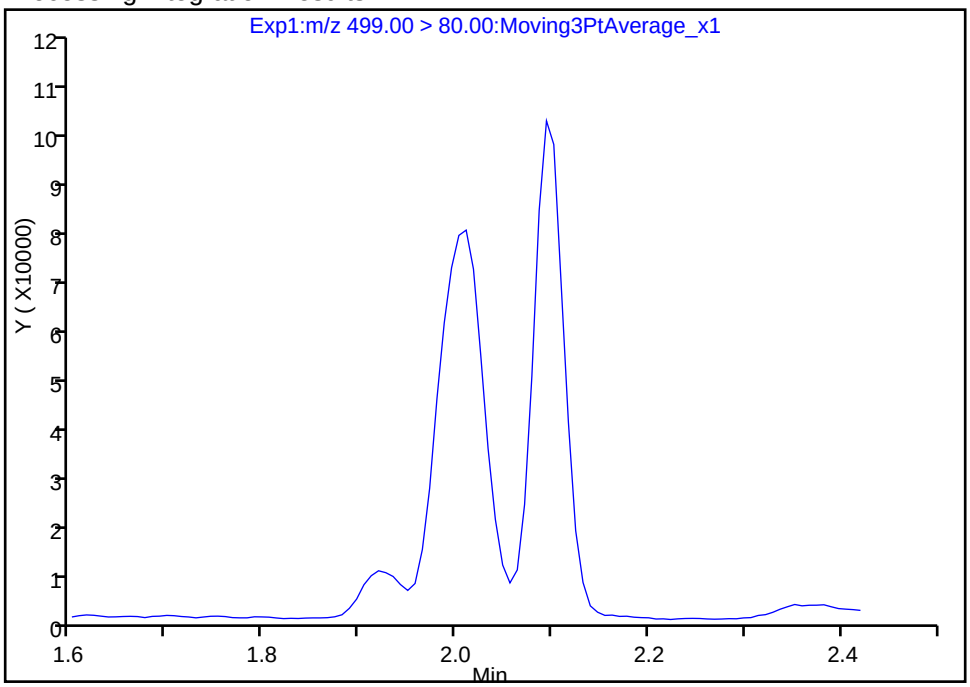
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_054.d				
Injection Date:	20-Sep-2017 07:59:45	Instrument ID:	A8_N		
Lims ID:	320-31489-A-11-A	Lab Sample ID:	320-31489-11		
Client ID:	NAWC-091217-RW-315				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	17
Injection 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

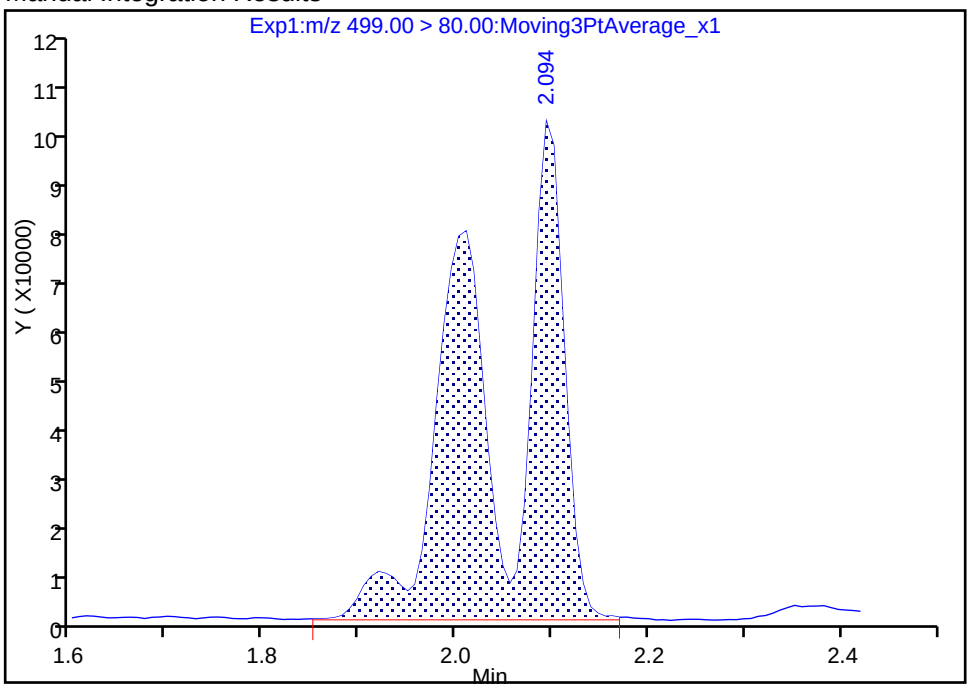
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 488993
Amount: 2.350117
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:57:30
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-315 | Lab Sample ID: 320-31489-12

Matrix: Water | Lab File ID: 2017.09.19_537A_057.d

Analysis Method: 537 | Date Collected: 09/12/2017 13:45

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 250.3(mL) | Date Analyzed: 09/20/2017 08:14

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.: 185411 | 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	88		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_057.d
Lims ID: 320-31489-A-12-A
Client ID: NAWC-091217-FRB-315
Sample Type: Client
Inject. Date: 20-Sep-2017 08:14:00 ALS Bottle#: 45 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2585739	8.76		9088	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2517989	10.0		8731	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		6073560	28.7		5131	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1466859	10.4		10906	

Report Date: 20-Sep-2017 14:17:59 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_057.d

Injection Date: 20-Sep-2017 08:14:00 Instrument ID: A8_N

Lims ID: 320-31489-A-12-A Lab Sample ID: 320-31489-12

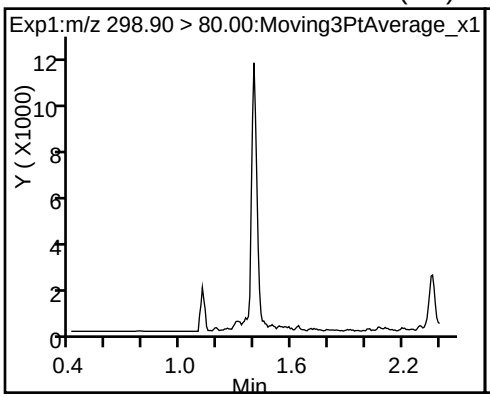
Client ID: NAWC-091217-FRB-315

Operator ID: SACINSTLCMS01 ALS Bottle#: 45 Worklist Smp#: 20

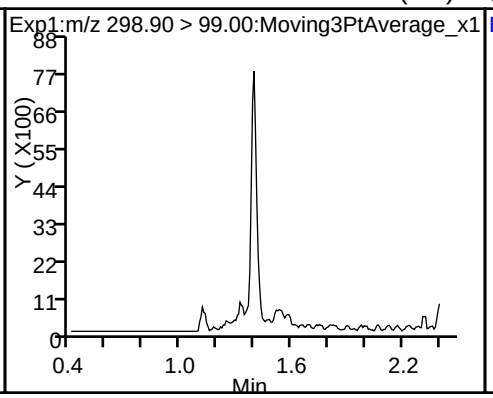
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

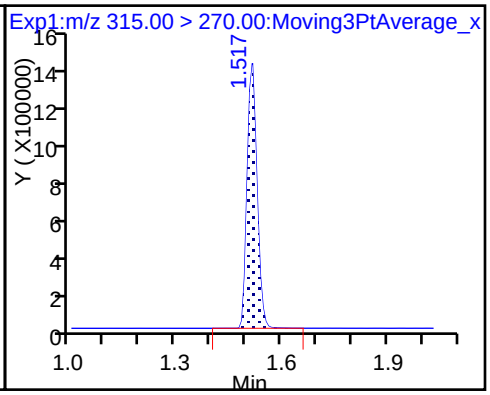
1 Perfluorobutanesulfonic acid (ND)



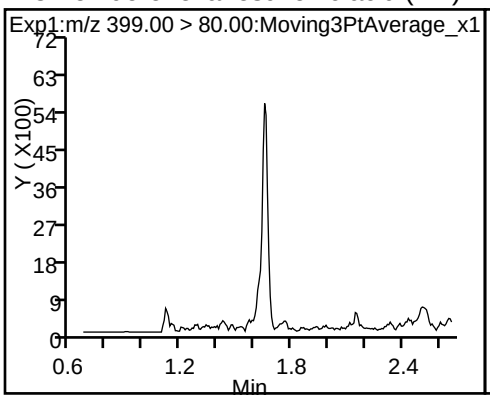
1 Perfluorobutanesulfonic acid (ND)



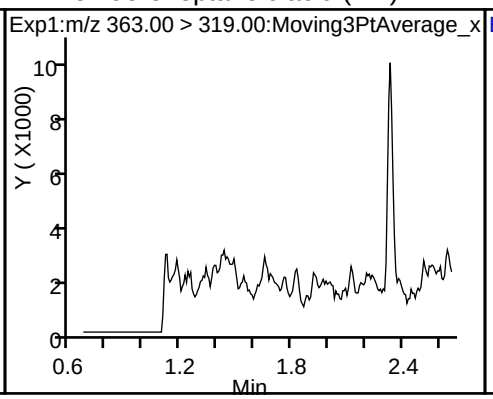
$ 2 13C2 PFHxA



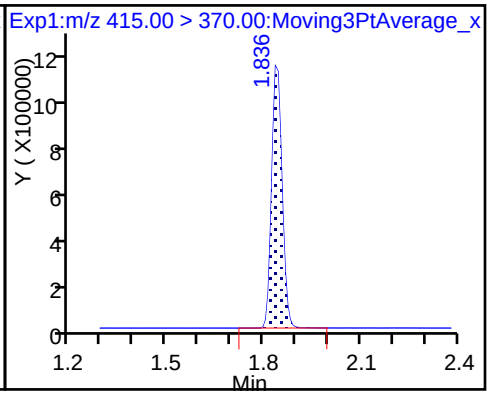
3 Perfluorohexanesulfonic acid (ND)



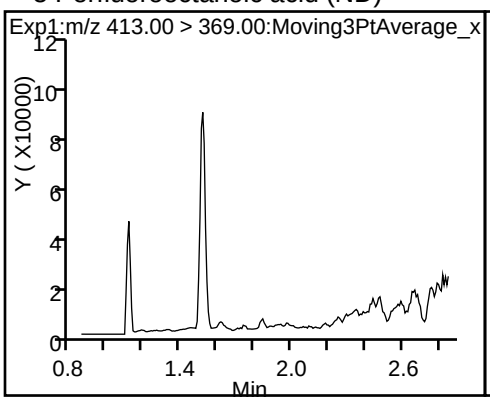
4 Perfluoroheptanoic acid (ND)



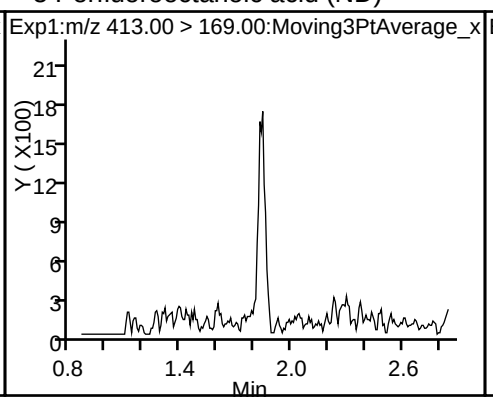
* 6 13C2-PFOA



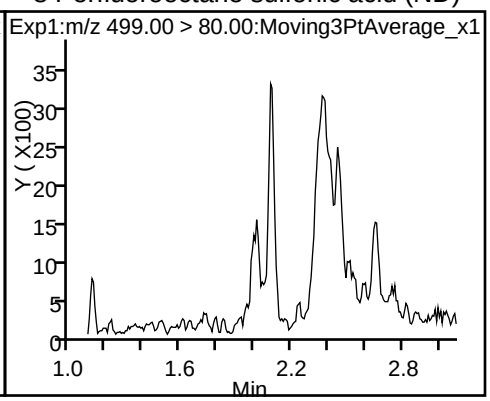
5 Perfluorooctanoic acid (ND)



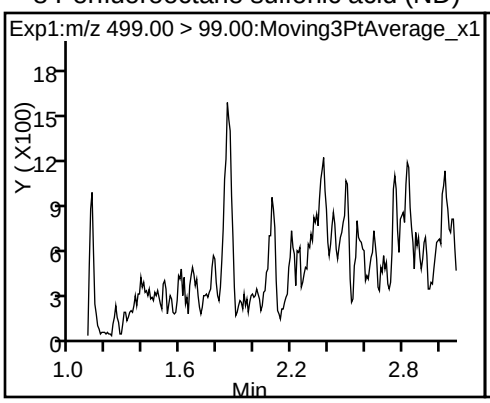
5 Perfluorooctanoic acid (ND)



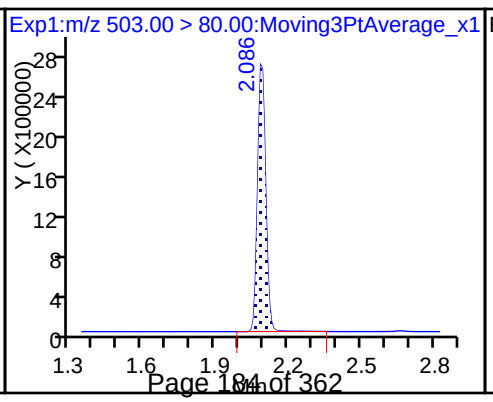
8 Perfluorooctane sulfonic acid (ND)



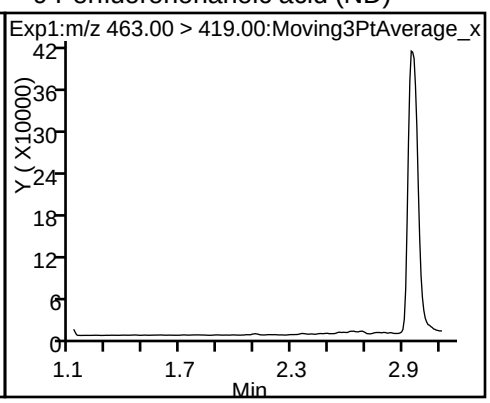
8 Perfluorooctane sulfonic acid (ND)



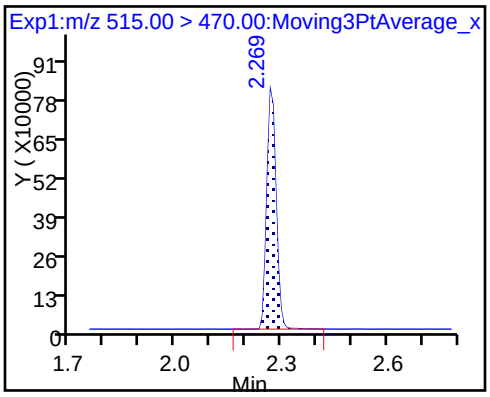
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
91
78
65
52
39
26
13
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_057.d
Lims ID: 320-31489-A-12-A
Client ID: NAWC-091217-FRB-315
Sample Type: Client
Inject. Date: 20-Sep-2017 08:14:00 ALS Bottle#: 45 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.76	87.64
$ 10 13C2 PFDA	10.0	10.4	104.44

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-032 | Lab Sample ID: 320-31489-13

Matrix: Water | Lab File ID: 2017.09.19_537A_058.d

Analysis Method: 537 | Date Collected: 09/12/2017 10:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254.7(mL) | Date Analyzed: 09/20/2017 08:18

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	20	7.9	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	65	Q	70-130
STL00996	13C2 PFDA	120		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_058.d
Lims ID: 320-31489-A-13-A
Client ID: NAWC-091217-RW-032
Sample Type: Client
Inject. Date: 20-Sep-2017 08:18:45 ALS Bottle#: 46 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:59:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	351463	1.36		299	
298.90 > 99.00	1.396	1.402	-0.006	1.000	238077		1.48(0.00-0.00)	453	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	1780276	6.54		6100	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	1216786	3.48		544	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	267131	1.22		41.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2324777	10.0		7879	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	761938	3.56		25.1	
413.00 > 169.00	1.844	1.856	-0.012	1.000	452584		1.68(0.00-0.00)	1222	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.094	2.094	0.0	1.000	1019275	5.12		318	M
499.00 > 99.00	2.086	2.094	-0.008	0.996	206787		4.93(0.00-0.00)	128	M
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		6126952	28.7		3201	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.116	-0.014	1.000	71165	0.4923		2.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1562097	12.0		12516	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:18:00 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_058.d

Injection Date: 20-Sep-2017 08:18:45 Instrument ID: A8_N

Lims ID: 320-31489-A-13-A Lab Sample ID: 320-31489-13

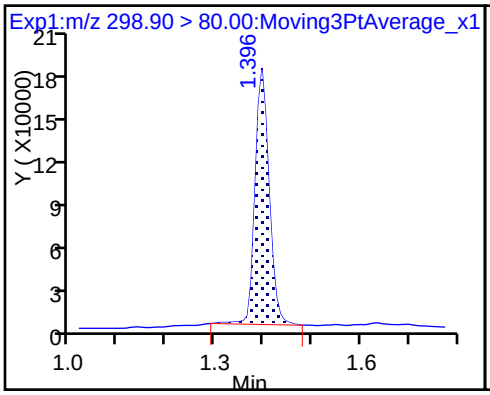
Client ID: NAWC-091217-RW-032

Operator ID: SACINSTLCMS01 ALS Bottle#: 46 Worklist Smp#: 21

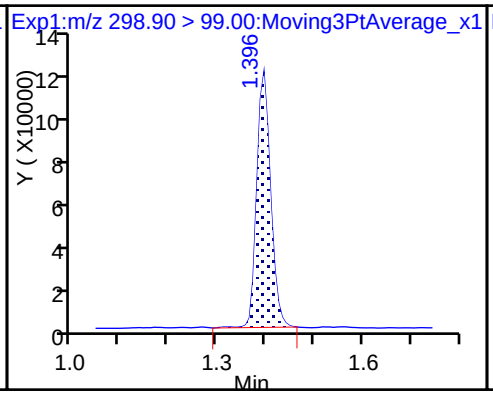
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

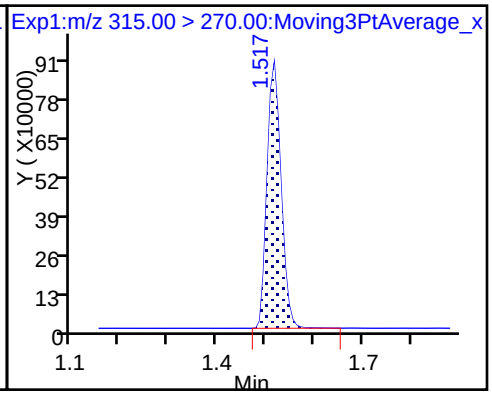
1 Perfluorobutanesulfonic acid



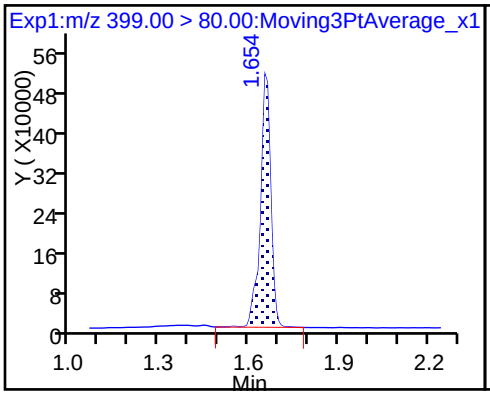
1 Perfluorobutanesulfonic acid



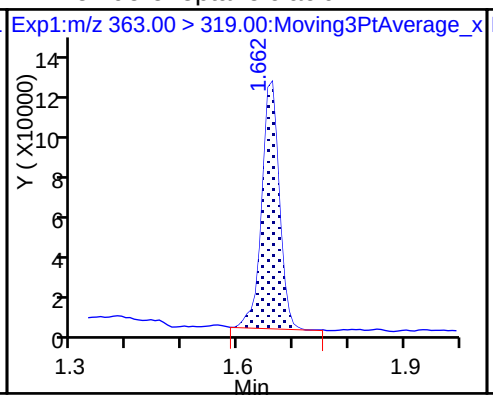
$ 2 13C2 PFHxA



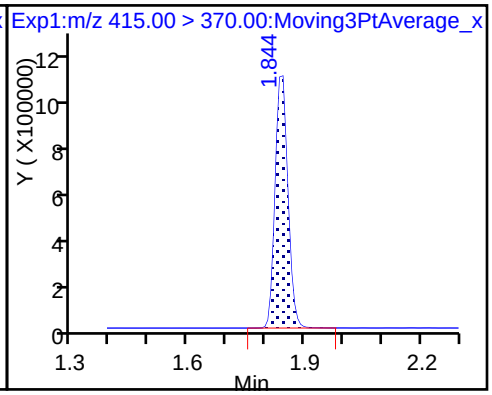
3 Perfluorohexanesulfonic acid



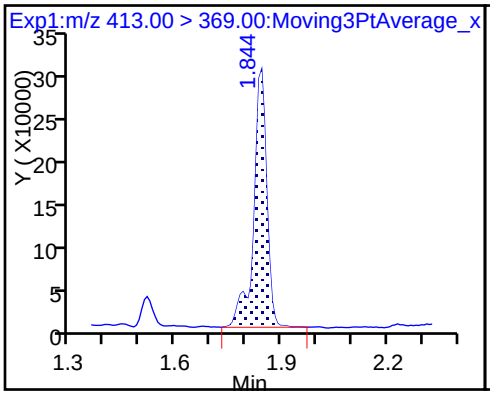
4 Perfluoroheptanoic acid



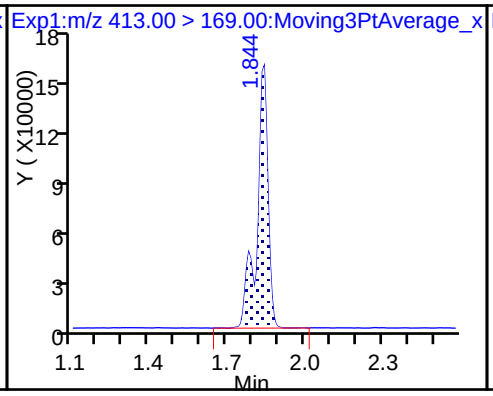
* 6 13C2-PFOA



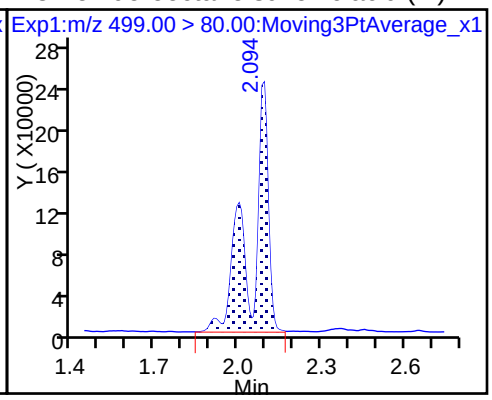
5 Perfluorooctanoic acid



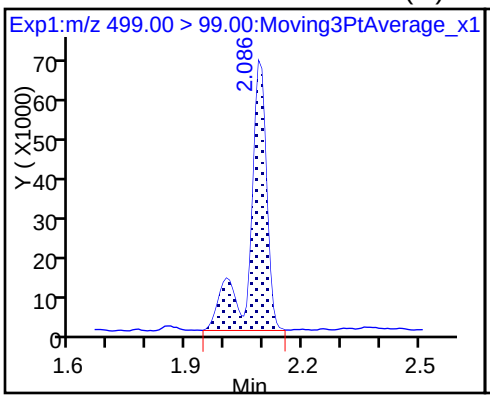
5 Perfluorooctanoic acid



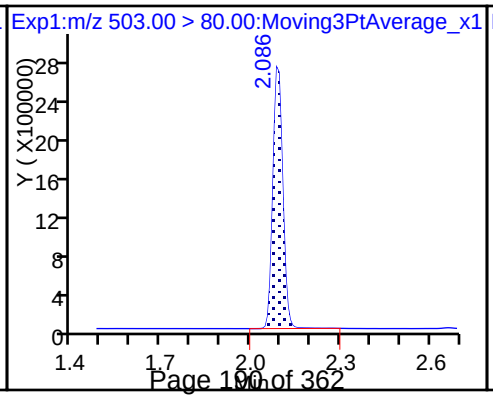
8 Perfluorooctane sulfonic acid (M)



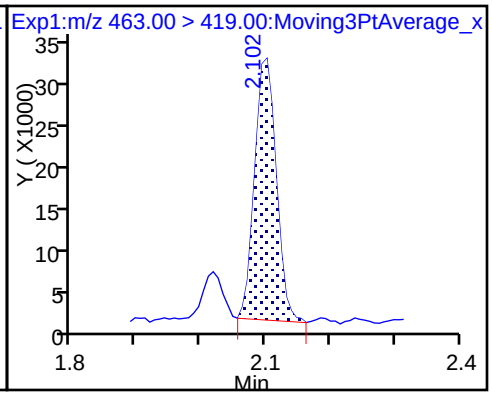
8 Perfluorooctane sulfonic acid (M)



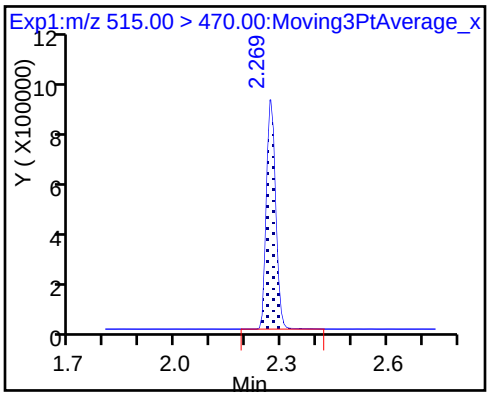
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
12
10
8
6
4
2
0
1.7
2.0
2.3
2.6
Min

Report Date: 20-Sep-2017 14:18:00 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_058.d				
Lims ID:	320-31489-A-13-A				
Client ID:	NAWC-091217-RW-032				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 08:18:45	ALS Bottle#:	46	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-13-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:48	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

First Level Reviewer: barnettj Date: 20-Sep-2017 13:59:53

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	6.54	65.35
$ 10 13C2 PFDA	10.0	12.0	120.47

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

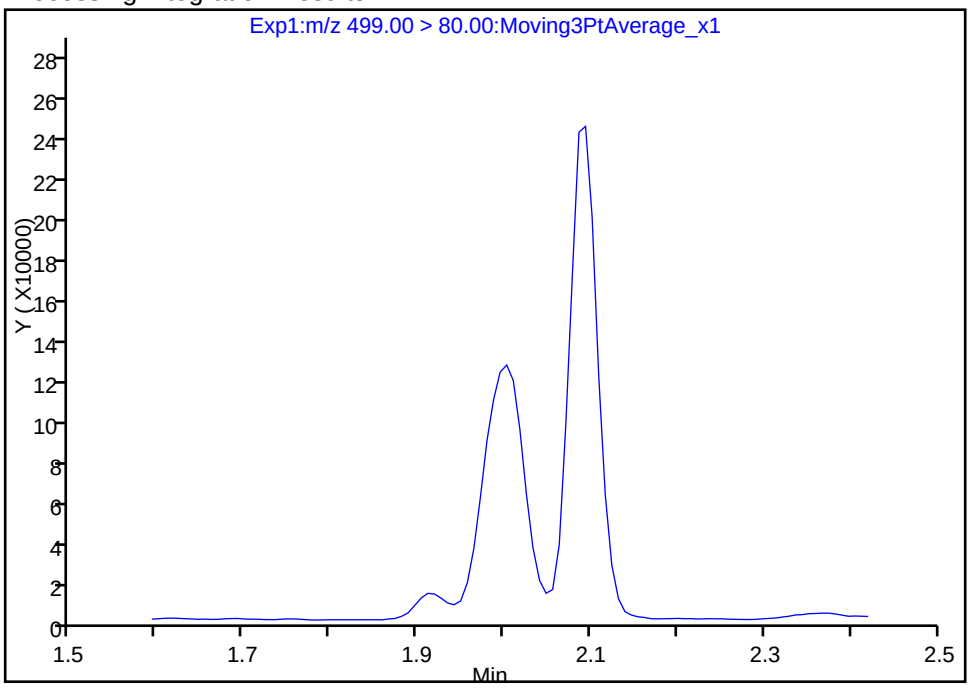
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_058.d				
Injection Date:	20-Sep-2017 08:18:45	Instrument ID:	A8_N		
Lims ID:	320-31489-A-13-A	Lab Sample ID:	320-31489-13		
Client ID:	NAWC-091217-RW-032				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	21
Injection 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

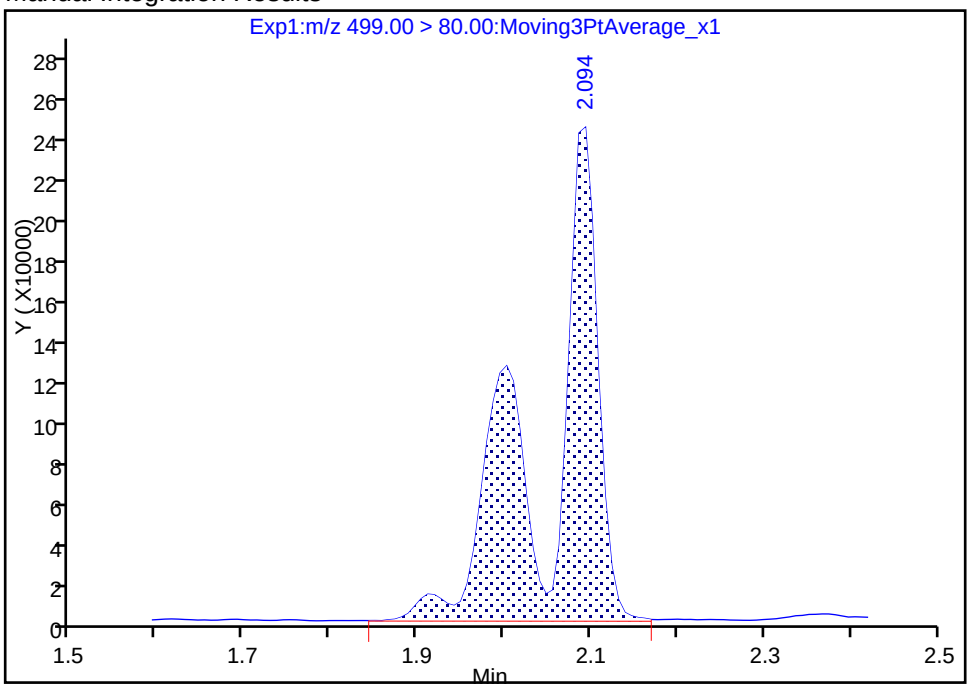
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 1019275
Amount: 5.120942
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:59:15
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

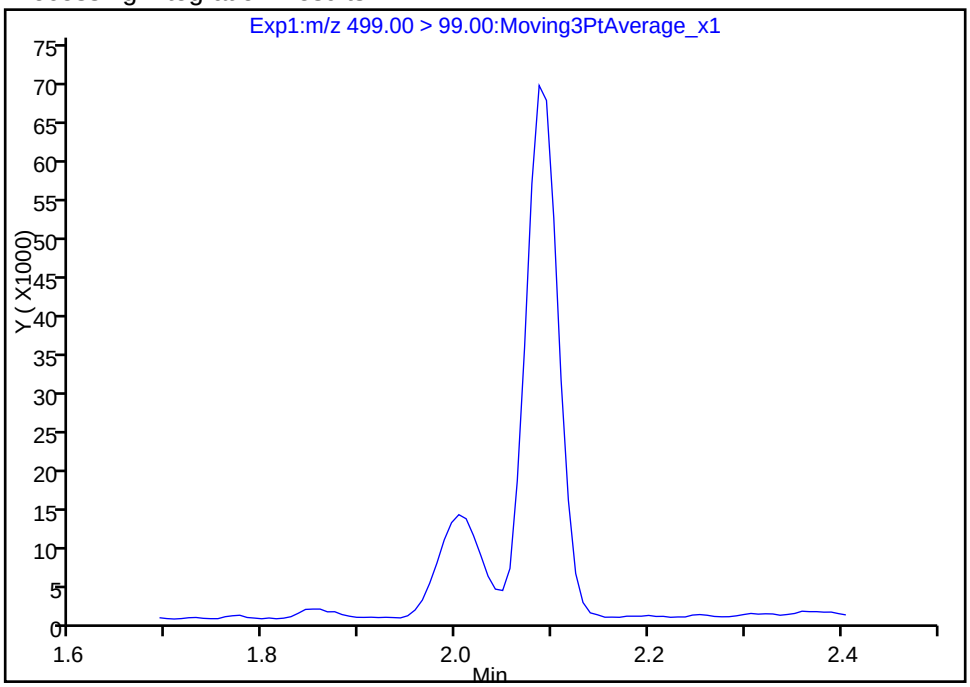
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_058.d				
Injection Date:	20-Sep-2017 08:18:45	Instrument ID:	A8_N		
Lims ID:	320-31489-A-13-A	Lab Sample ID:	320-31489-13		
Client ID:	NAWC-091217-RW-032				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	21
Injection 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

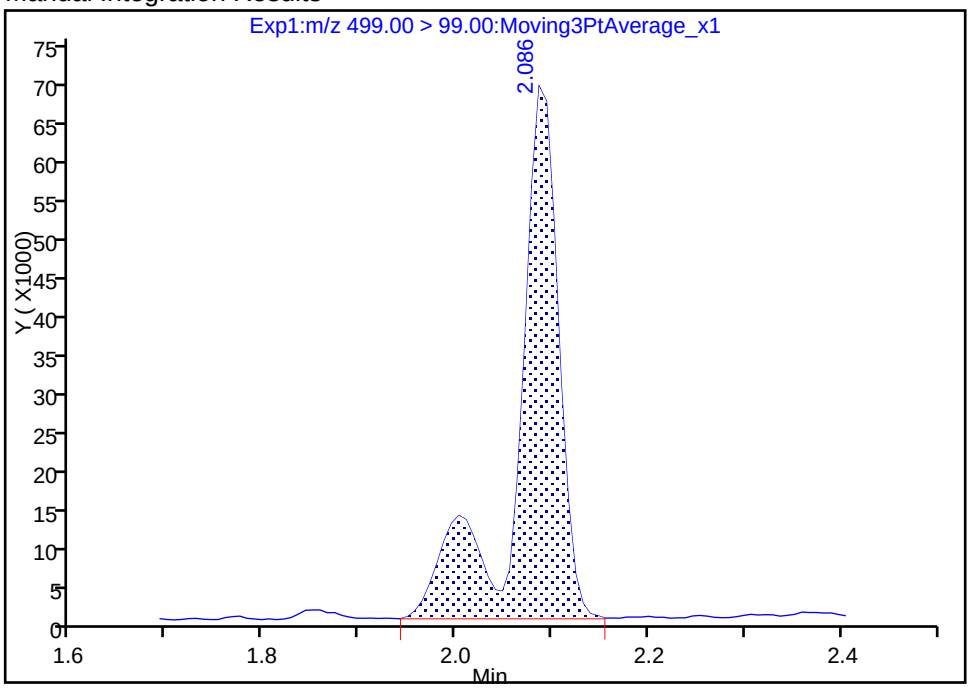
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.09
Area: 206787
Amount: 5.120942
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:59:45
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

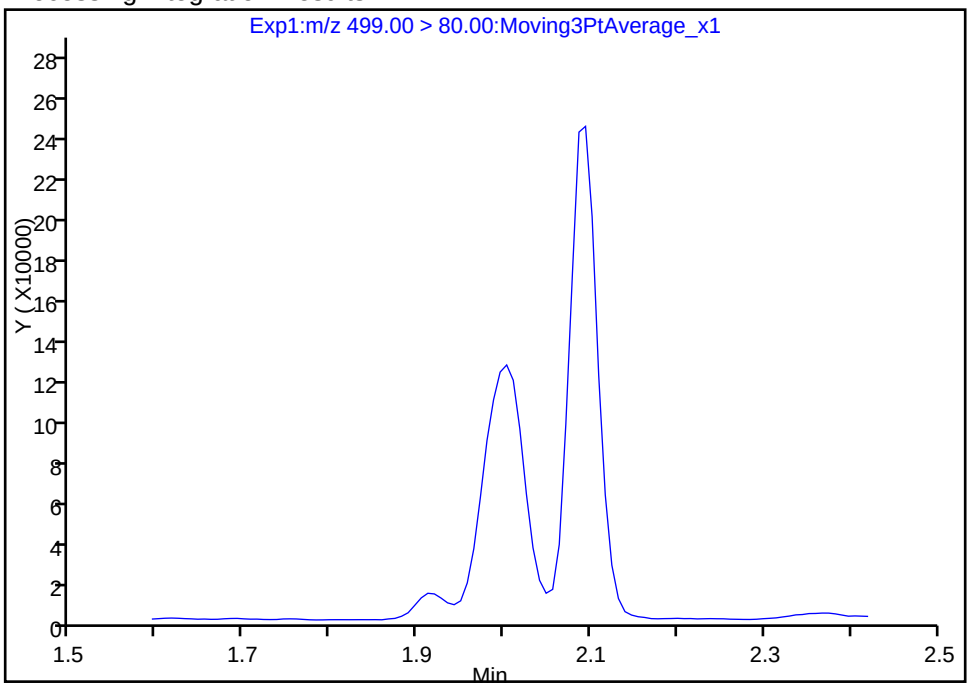
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_058.d				
Injection Date:	20-Sep-2017 08:18:45	Instrument ID:	A8_N		
Lims ID:	320-31489-A-13-A	Lab Sample ID:	320-31489-13		
Client ID:	NAWC-091217-RW-032				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	21
Injection 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

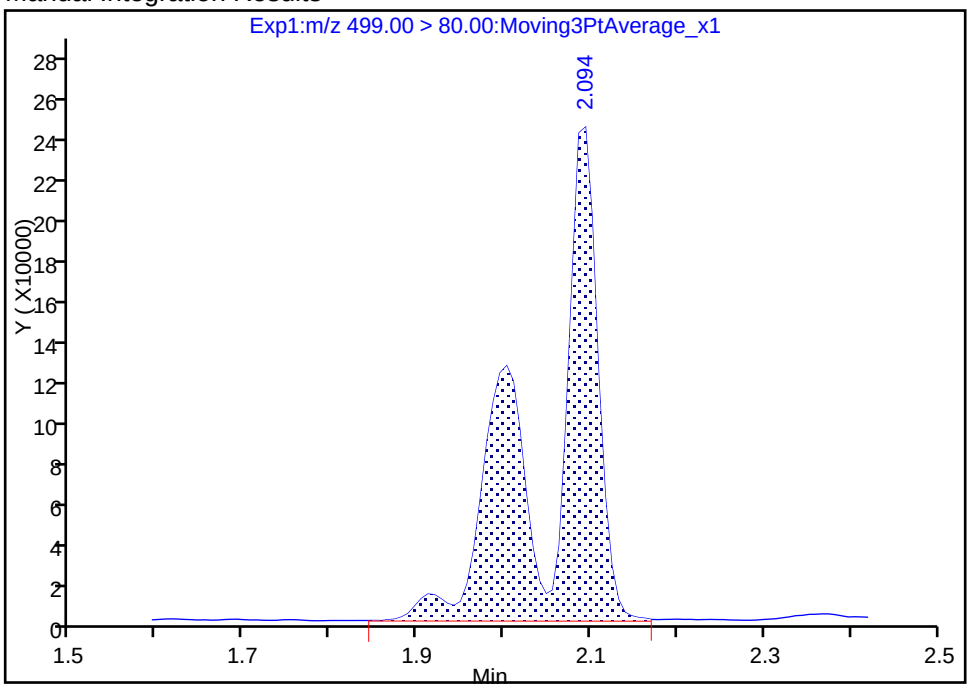
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 1019275
Amount: 5.120942
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:59:45
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-032 | Lab Sample ID: 320-31489-14

Matrix: Water | Lab File ID: 2017.09.19_537A_059.d

Analysis Method: 537 | Date Collected: 09/12/2017 10:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 262.3(mL) | Date Analyzed: 09/20/2017 08:23

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_059.d
Lims ID: 320-31489-A-14-A
Client ID: NAWC-091217-FRB-032
Sample Type: Client
Inject. Date: 20-Sep-2017 08:23:29 ALS Bottle#: 47 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2879826	9.32		11601	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2637436	10.0		11107	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		6735507	28.7		4692	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1704238	11.6		12927	

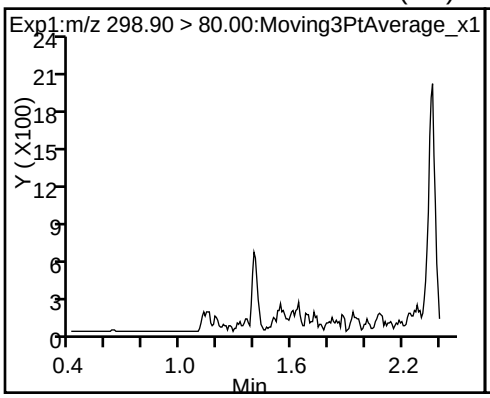
Report Date: 20-Sep-2017 14:18:02 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

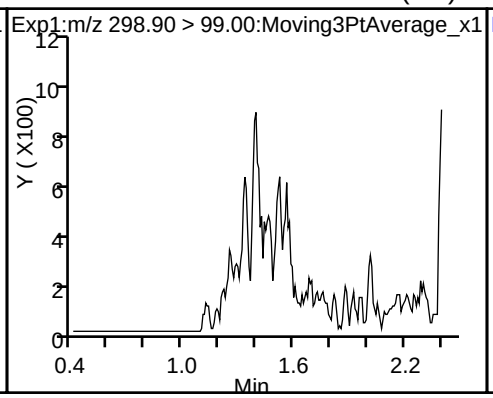
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_059.d

Injection Date:	20-Sep-2017 08:23:29	Instrument ID:	A8_N		
Lims ID:	320-31489-A-14-A	Lab Sample ID:	320-31489-14		
Client ID:	NAWC-091217-FRB-032				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	47	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

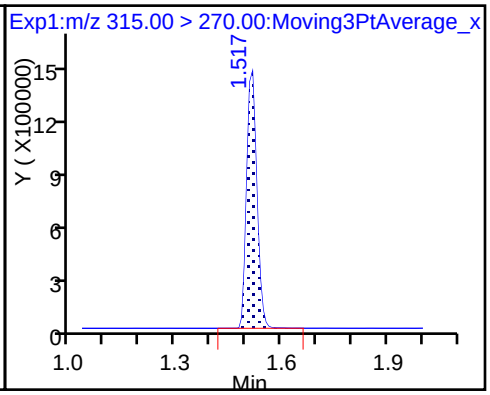
1 Perfluorobutanesulfonic acid (ND)



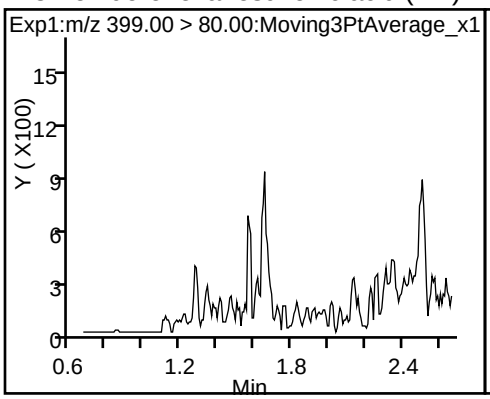
1 Perfluorobutanesulfonic acid (ND)



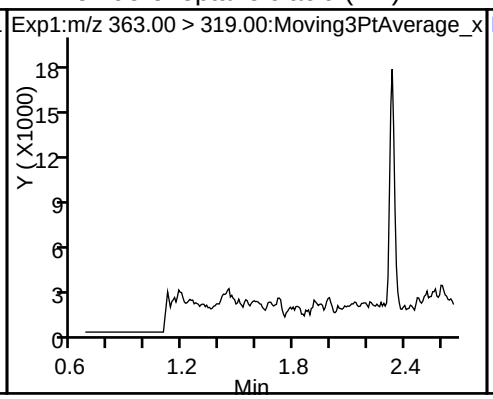
$ 2 13C2 PFHxA



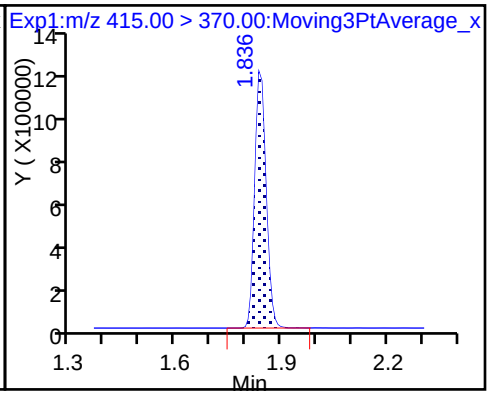
3 Perfluorohexanesulfonic acid (ND)



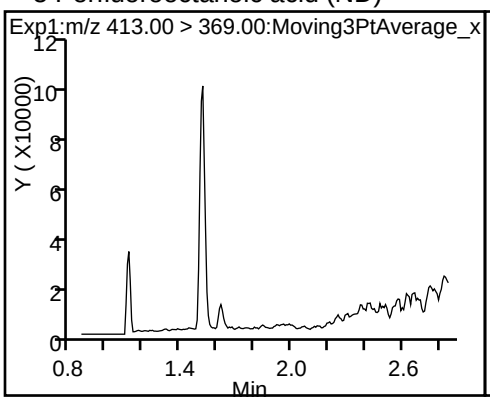
4 Perfluoroheptanoic acid (ND)



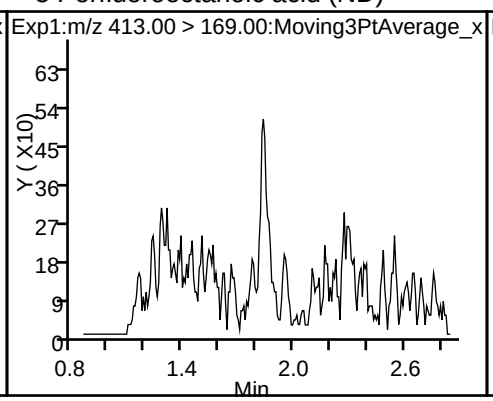
* 6 13C2-PFOA



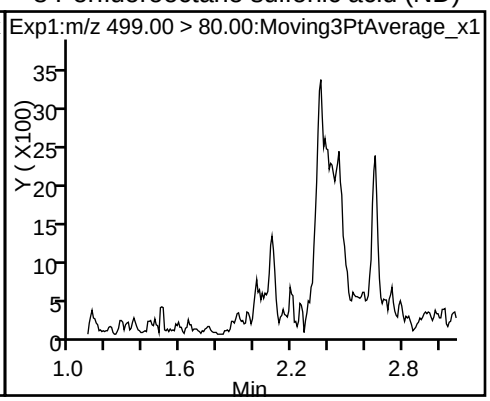
5 Perfluorooctanoic acid (ND)



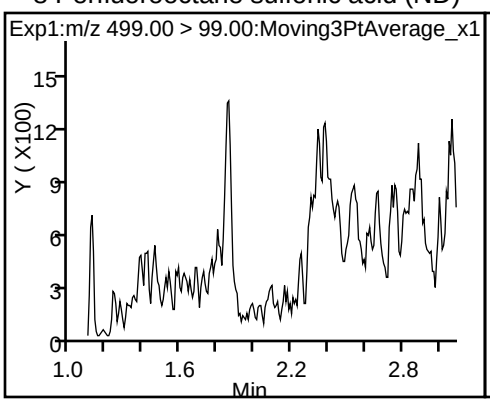
5 Perfluorooctanoic acid (ND)



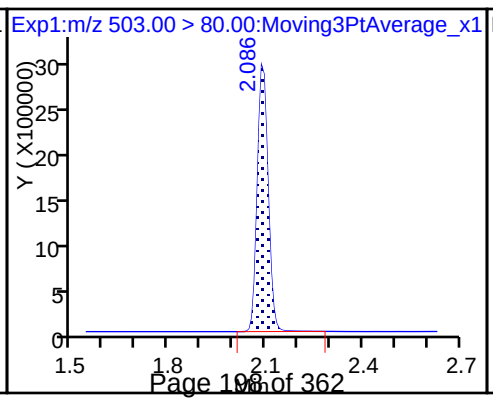
8 Perfluorooctane sulfonic acid (ND)



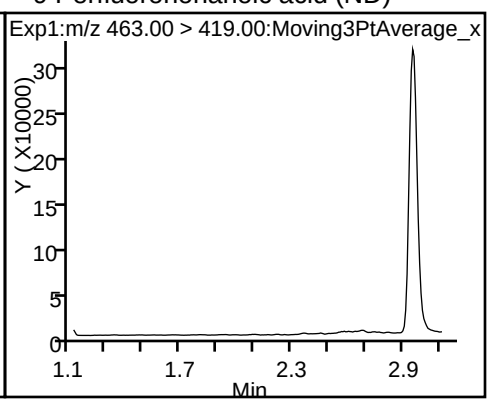
8 Perfluorooctane sulfonic acid (ND)



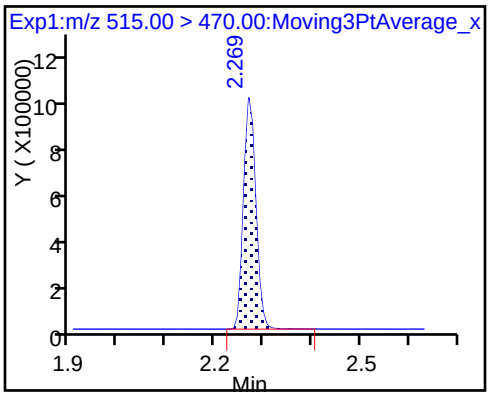
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
12
10
8
6
4
2
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_059.d				
Lims ID:	320-31489-A-14-A				
Client ID:	NAWC-091217-FRB-032				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 08:23:29	ALS Bottle#:	47	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-14-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:48	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.32	93.19
$ 10 13C2 PFDA	10.0	11.6	115.85

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-300 | Lab Sample ID: 320-31489-15

Matrix: Water | Lab File ID: 2017.09.19_537A_060.d

Analysis Method: 537 | Date Collected: 09/12/2017 11:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:40

Sample wt/vol: 265.9(mL) | Date Analyzed: 09/20/2017 08:28

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	23		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.8	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	107		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_060.d
Lims ID: 320-31489-A-15-A
Client ID: NAWC-091217-RW-300
Sample Type: Client
Inject. Date: 20-Sep-2017 08:28:14 ALS Bottle#: 48 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-15-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 14:00:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	489407	1.73		160	
298.90 > 99.00	1.396	1.402	-0.006	1.000	318111		1.54(0.00-0.00)	516	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2155204	7.37		7210	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	828392	2.16		156	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	487369	2.07		61.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2494391	10.0		6872	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	1397922	6.10		49.5	
413.00 > 169.00	1.844	1.856	-0.012	1.000	821197		1.70(0.00-0.00)	1994	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.094	2.094	0.0	1.000	1388787	6.36		213	M
499.00 > 99.00	2.094	2.094	0.0	1.000	236884		5.86(0.00-0.00)	123	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6721558	28.7		2156	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.116	-0.014	1.000	148485	0.9573		3.8	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1483986	10.7		10134	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:18:03 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_060.d

Injection Date: 20-Sep-2017 08:28:14 Instrument ID: A8_N

Lims ID: 320-31489-A-15-A Lab Sample ID: 320-31489-15

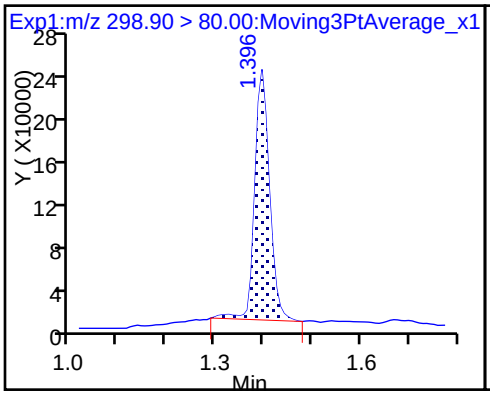
Client ID: NAWC-091217-RW-300

Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 23

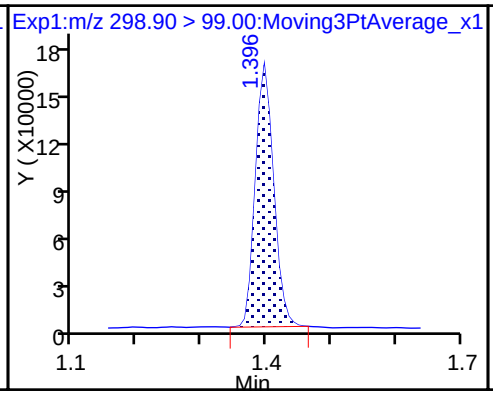
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

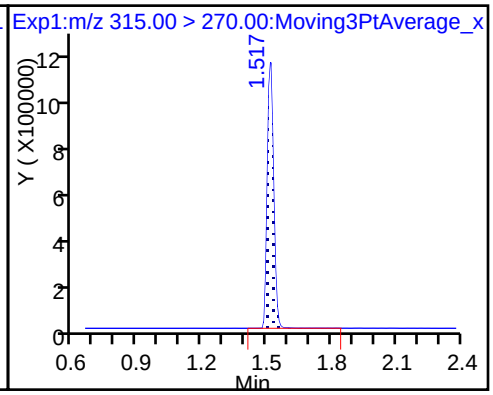
1 Perfluorobutanesulfonic acid



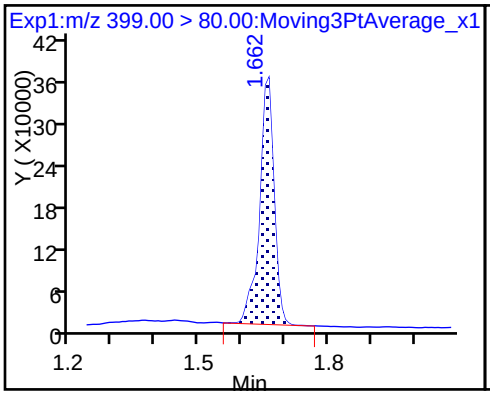
1 Perfluorobutanesulfonic acid



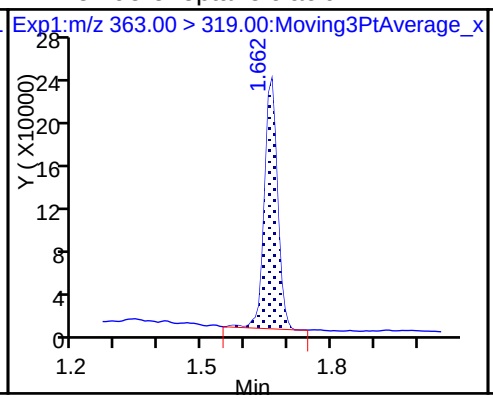
$ 2 13C2 PFHxA



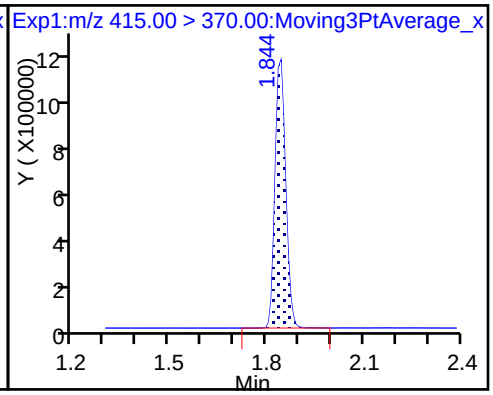
3 Perfluorohexanesulfonic acid



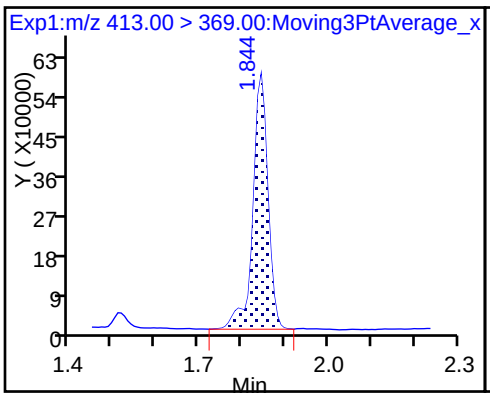
4 Perfluoroheptanoic acid



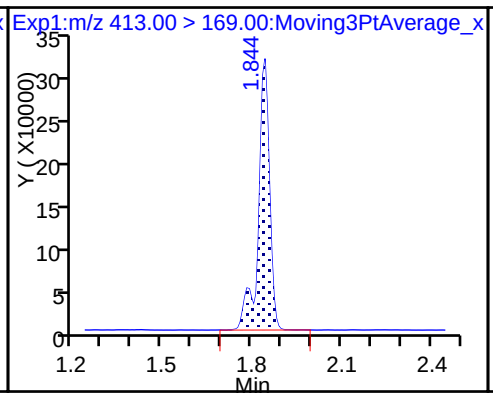
* 6 13C2-PFOA



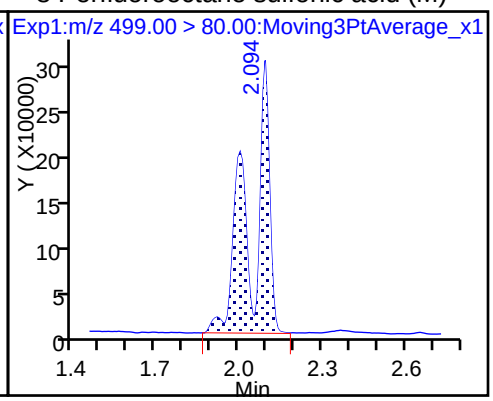
5 Perfluorooctanoic acid



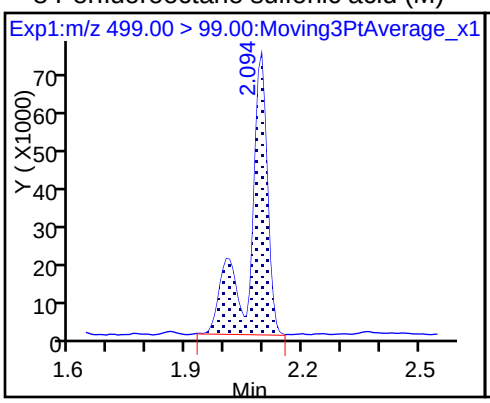
5 Perfluorooctanoic acid



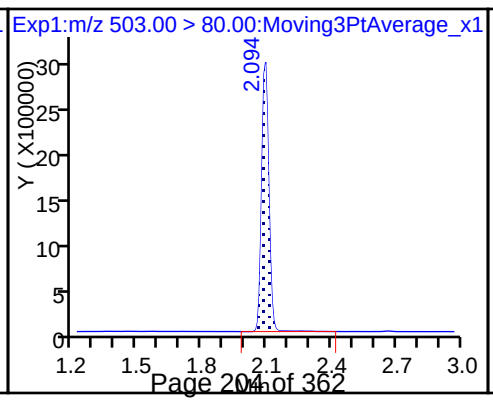
8 Perfluorooctane sulfonic acid (M)



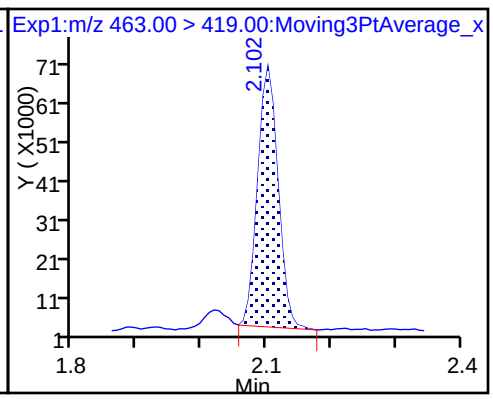
8 Perfluorooctane sulfonic acid (M)



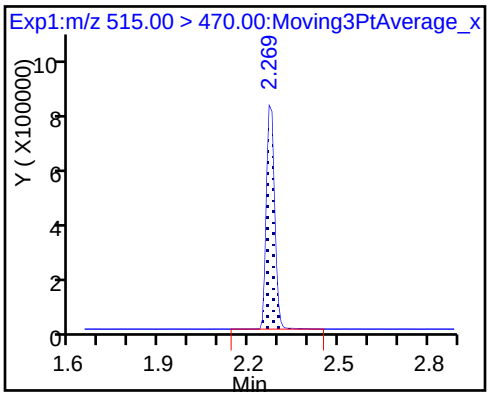
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
10
8
6
4
2
0
1.6
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_060.d				
Lims ID:	320-31489-A-15-A				
Client ID:	NAWC-091217-RW-300				
Sample Type:	Client				
Inject. Date:	20-Sep-2017 08:28:14	ALS Bottle#:	48	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-15-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:48	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

First Level Reviewer: barnettj Date: 20-Sep-2017 14:00:42

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.37	73.74
$ 10 13C2 PFDA	10.0	10.7	106.66

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

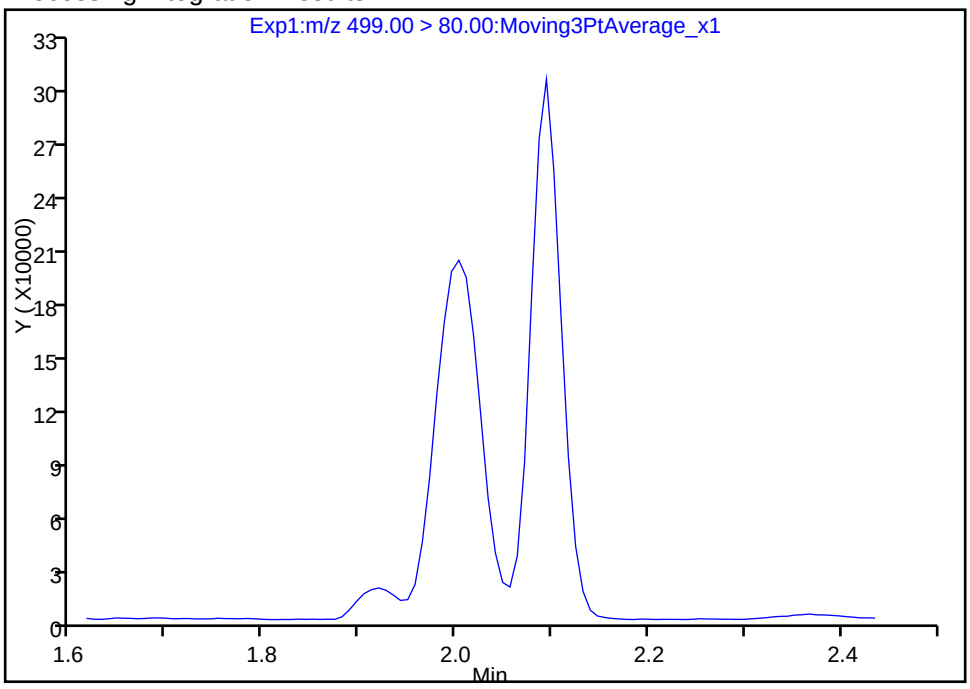
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_060.d				
Injection Date:	20-Sep-2017 08:28:14	Instrument ID:	A8_N		
Lims ID:	320-31489-A-15-A	Lab Sample ID:	320-31489-15		
Client ID:	NAWC-091217-RW-300				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

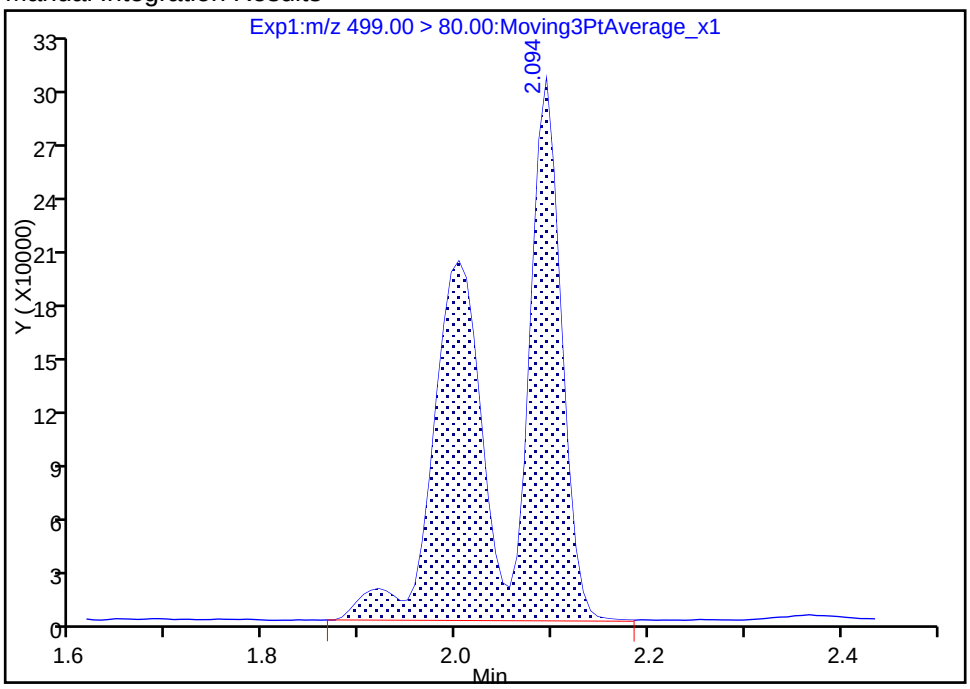
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 1388787
Amount: 6.360169
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 14:00:04
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

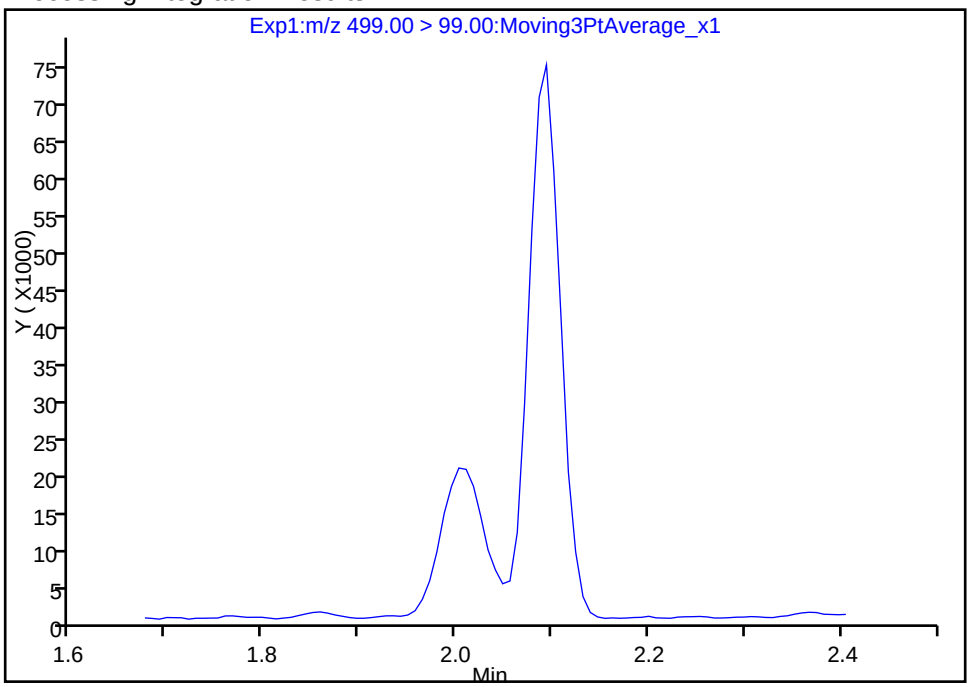
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_060.d				
Injection Date:	20-Sep-2017 08:28:14	Instrument ID:	A8_N		
Lims ID:	320-31489-A-15-A	Lab Sample ID:	320-31489-15		
Client ID:	NAWC-091217-RW-300				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

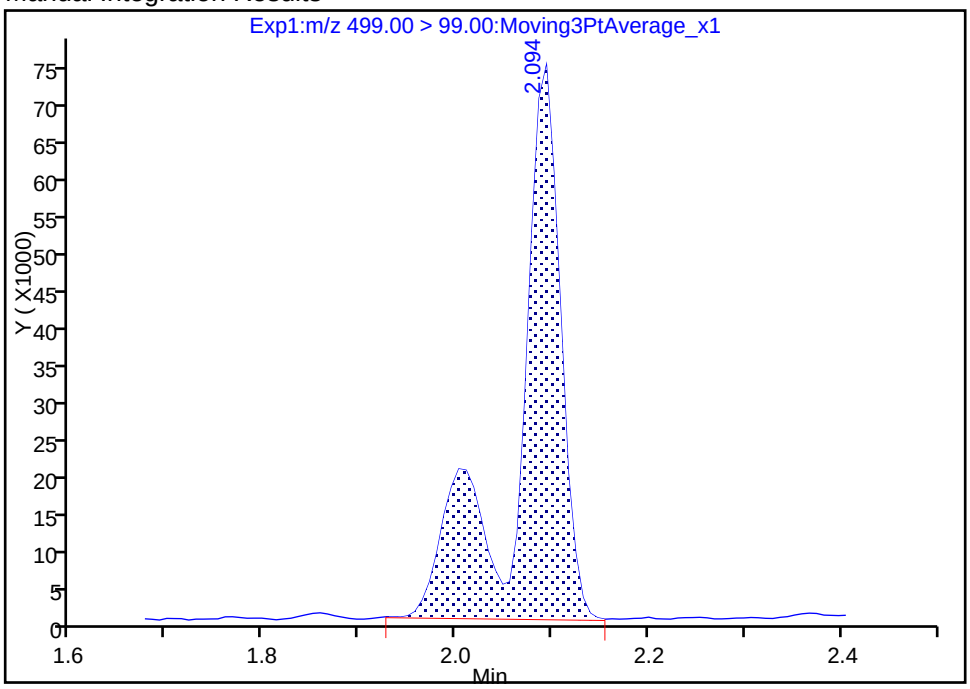
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 236884
Amount: 6.360169
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 14:00:27
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

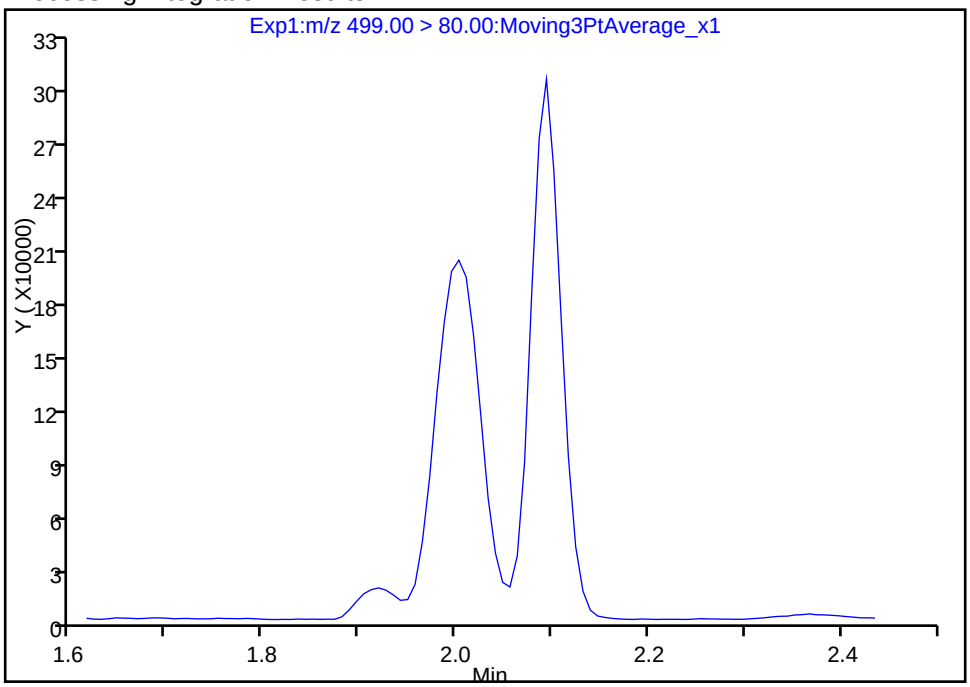
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_060.d				
Injection Date:	20-Sep-2017 08:28:14	Instrument ID:	A8_N		
Lims ID:	320-31489-A-15-A	Lab Sample ID:	320-31489-15		
Client ID:	NAWC-091217-RW-300				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

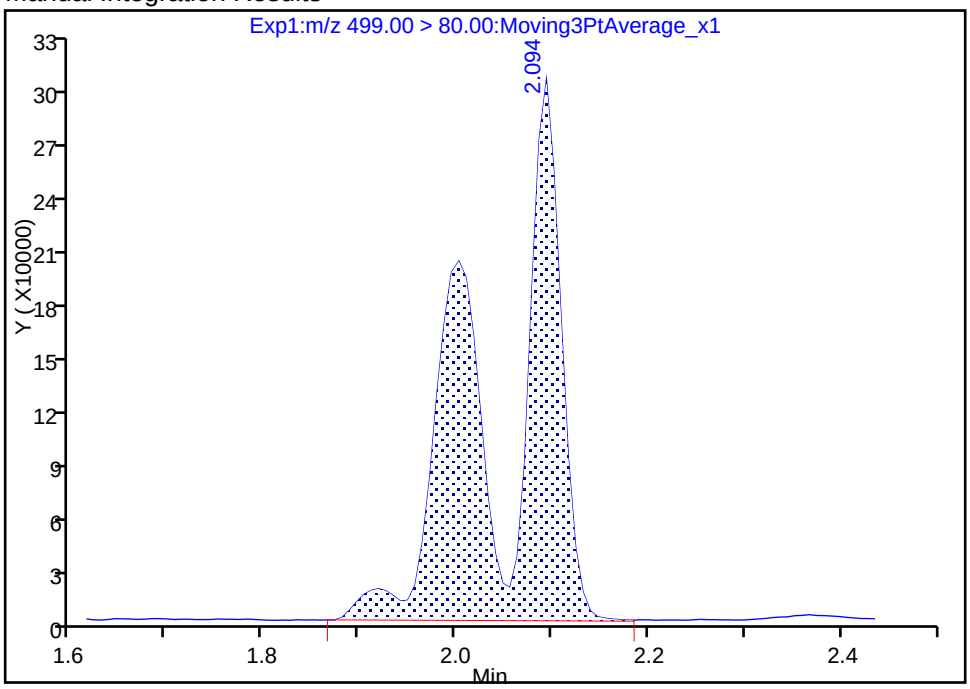
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 1388787
Amount: 6.360169
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 14:00:27
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-300 | Lab Sample ID: 320-31489-16

Matrix: Water | Lab File ID: 2017.09.19_537A_061.d

Analysis Method: 537 | Date Collected: 09/12/2017 11:25

Extraction Method: 537 | Date Extracted: 09/15/2017 10:40

Sample wt/vol: 264.1(mL) | Date Analyzed: 09/20/2017 08:32

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_061.d
Lims ID: 320-31489-A-16-B
Client ID: NAWC-091217-FRB-300
Sample Type: Client
Inject. Date: 20-Sep-2017 08:32:59 ALS Bottle#: 49 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-16-b
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2777175	9.72		12947	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2439474	10.0		9844	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6432248	28.7		6271	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1522178	11.2		11954	

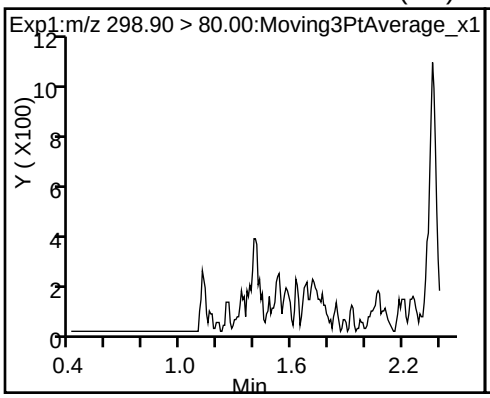
Report Date: 20-Sep-2017 14:18:05 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

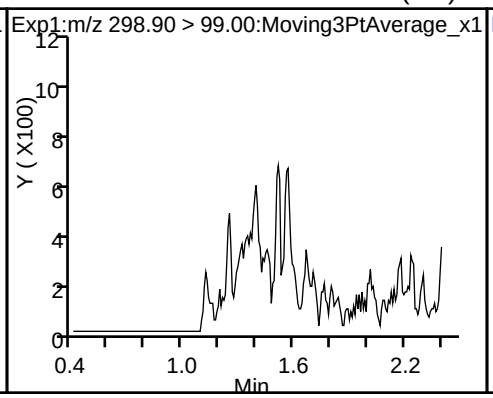
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_061.d

Injection Date:	20-Sep-2017 08:32:59	Instrument ID:	A8_N		
Lims ID:	320-31489-A-16-B	Lab Sample ID:	320-31489-16		
Client ID:	NAWC-091217-FRB-300				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	49	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

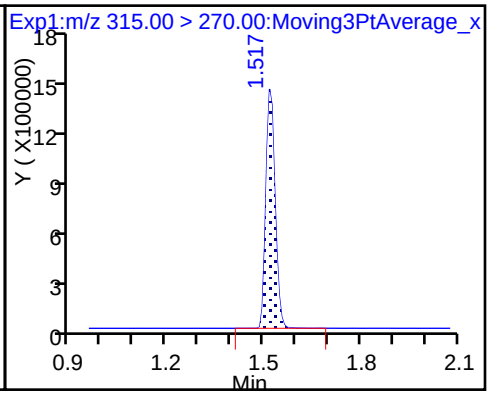
1 Perfluorobutanesulfonic acid (ND)



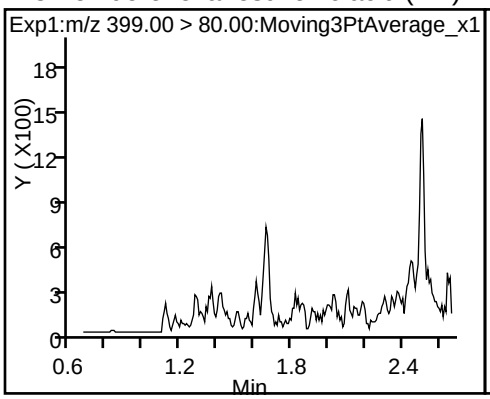
1 Perfluorobutanesulfonic acid (ND)



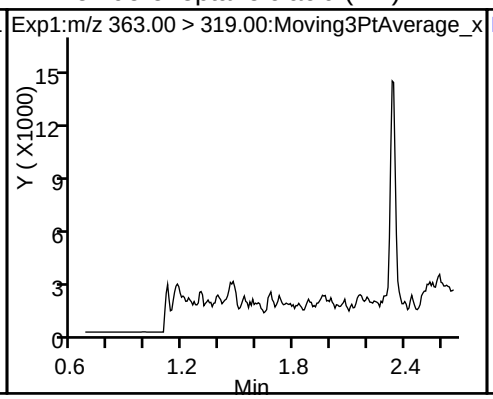
$ 2 13C2 PFHxA



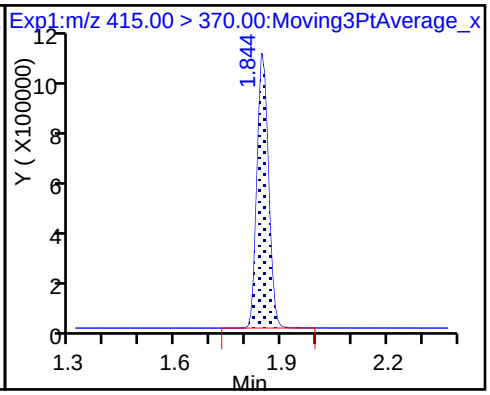
3 Perfluorohexanesulfonic acid (ND)



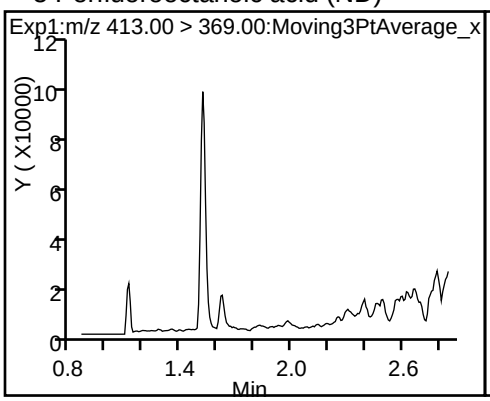
4 Perfluoroheptanoic acid (ND)



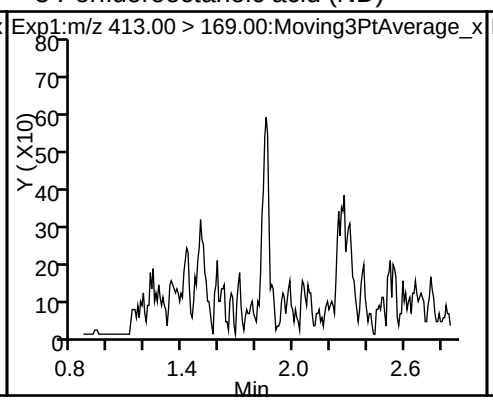
* 6 13C2-PFOA



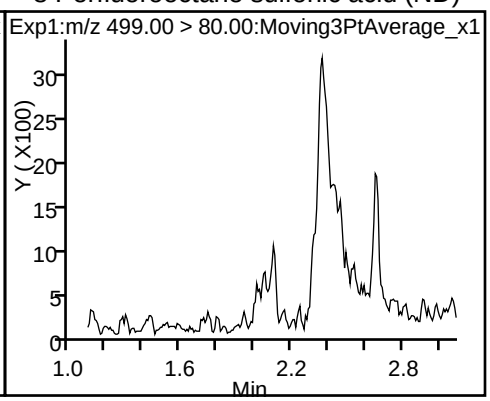
5 Perfluorooctanoic acid (ND)



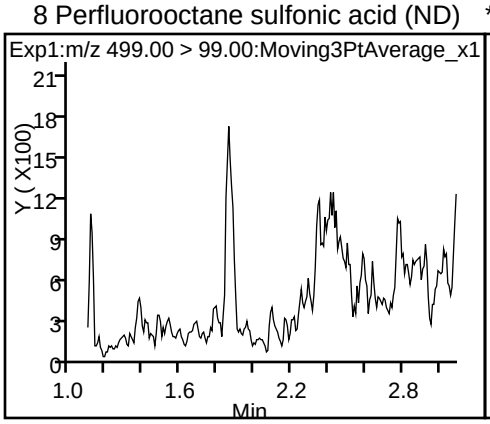
5 Perfluorooctanoic acid (ND)



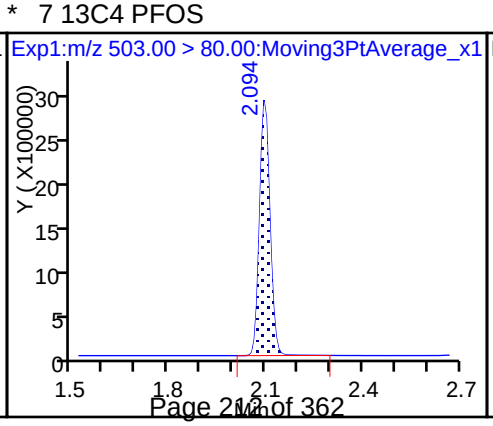
8 Perfluorooctane sulfonic acid (ND)



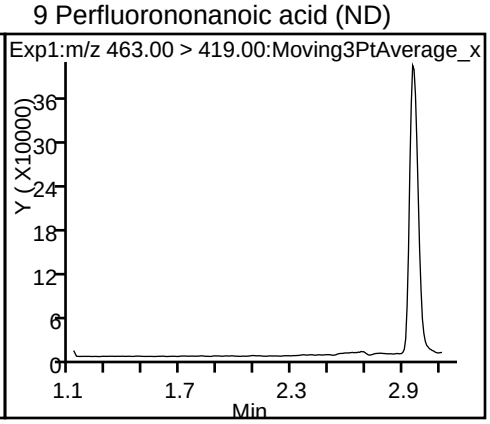
8 Perfluorooctane sulfonic acid (ND)



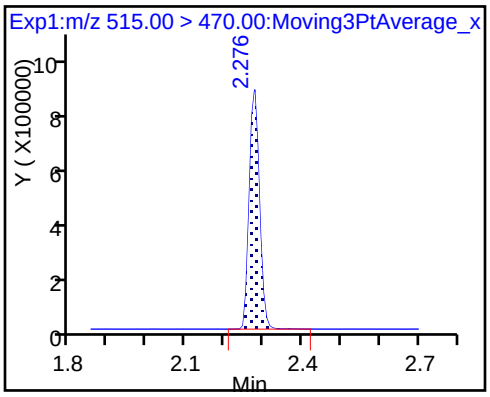
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_061.d
Lims ID: 320-31489-A-16-B
Client ID: NAWC-091217-FRB-300
Sample Type: Client
Inject. Date: 20-Sep-2017 08:32:59 ALS Bottle#: 49 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-16-b
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.72	97.16
$ 10 13C2 PFDA	10.0	11.2	111.87

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

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1 Analy Batch No.: 185329

SDG No.:

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

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

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1549 0.7675	1.2218	1.1299	0.9825	0.8671	QuaF		1.2127	-0.002495						1.0000		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9156 0.9157	1.0104	0.9599	0.9323	0.9167	Ave		0.9418				4.0		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6240 1.5024	1.7562	1.6778	1.6725	1.5962	Ave		1.6382				5.3		30.0			
Perfluorooctanoic acid (PFOA)	0.8827 0.9310	0.9355	0.9297	0.9101	0.9278	Ave		0.9195				2.2		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8786 0.9472	0.9205	0.9514	0.9450	0.9475	Ave		0.9317				3.0		30.0			
Perfluorononanoic acid (PFNA)	0.6171 0.6192	0.6458	0.6231	0.6183	0.6076	Ave		0.6218				2.1		30.0			
13C2 PFHxA	1.1170 1.2085	1.1856	1.1778	1.1659	1.1757	Ave		1.1718				2.6		30.0			
13C2 PFDA	0.5262 0.5719	0.5663	0.5603	0.5520	0.5699	Ave		0.5578				3.1		30.0			

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1 Analy Batch No.: 185329

SDG No.:

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

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

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	2072419 26277877	5031340	9714039	16708415	22246597	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	202553 3731330	492336	996370	1954380	2871658	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	971572 17148552	2411042	4809005	9481986	13653533	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	390753 7591950	912252	1931186	3817782	5816384	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	700862 14414630	1684976	3635963	7143258	10806665	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	273016 5046017	629304	1293375	2592159	3806555	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	2470192 2461679	2599092	2444565	2443470	2454801	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1163662 1164862	1241510	1162968	1156914	1189895	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

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

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1 Analy Batch No.: 185329

SDG No.:

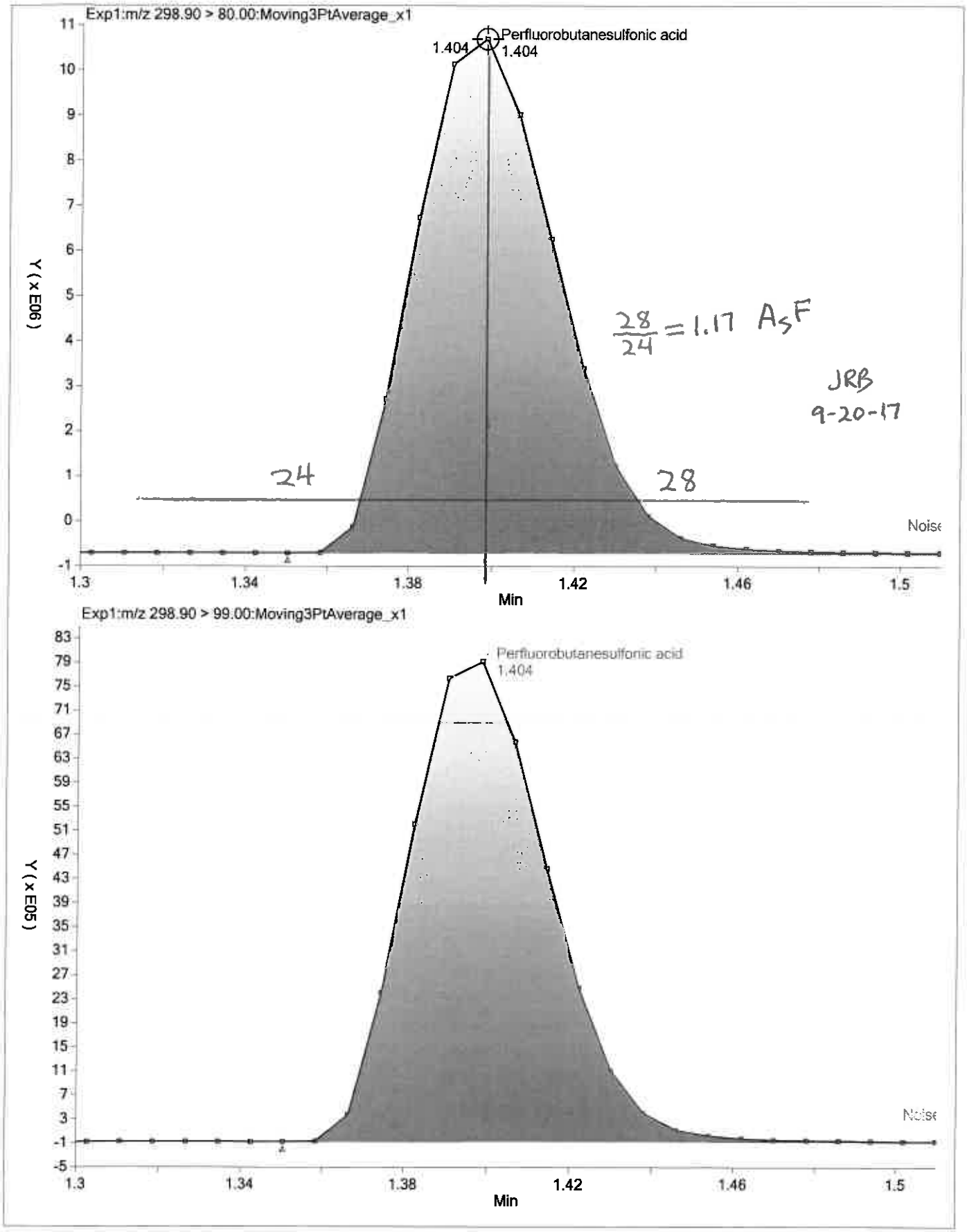
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

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

Calibration Files:

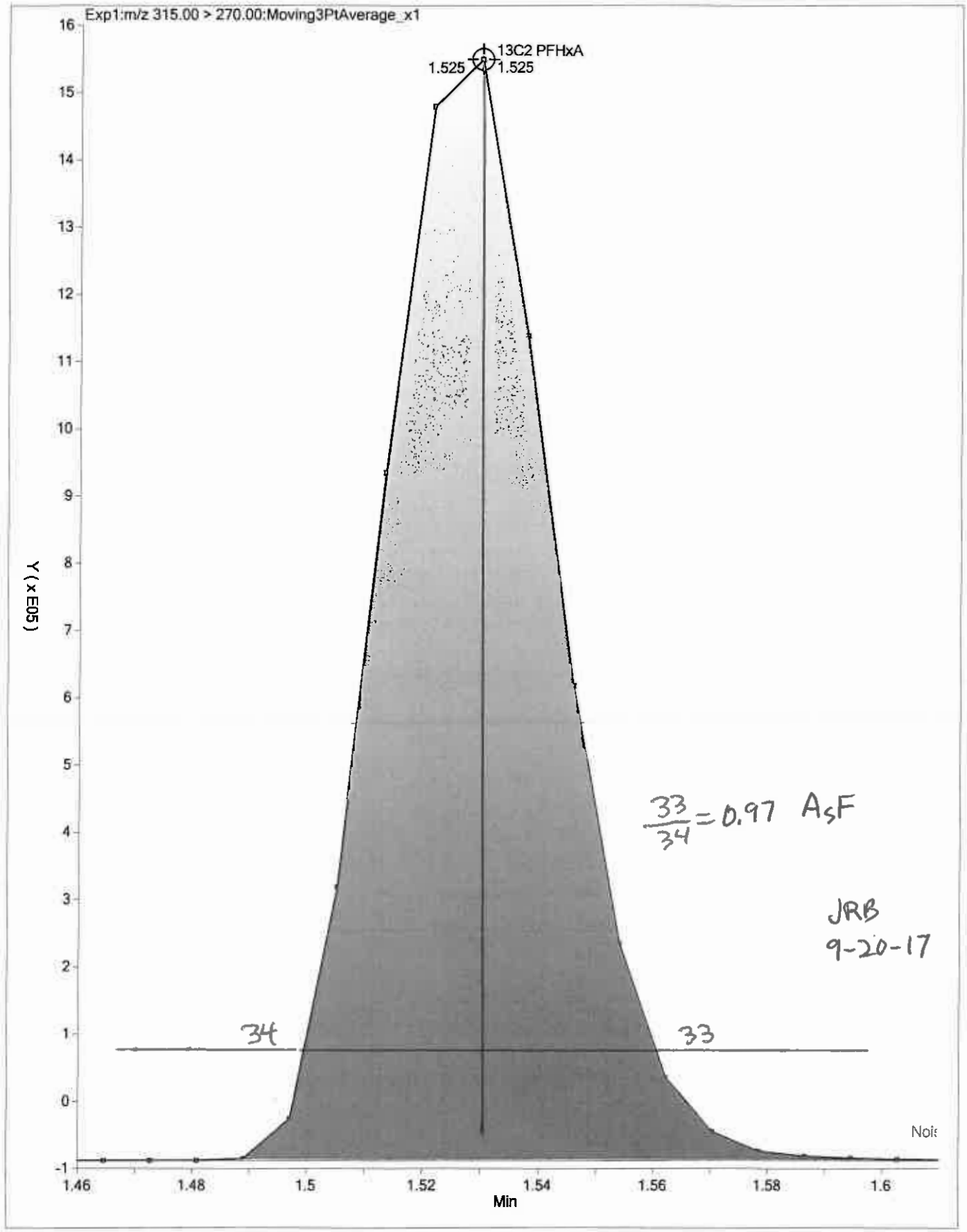
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-3.0	5.3	3.0	-0.7	-1.6	1.3	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-2.8	7.3	1.9	-1.0	-2.7	-2.8	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.9	7.2	2.4	2.1	-2.6	-8.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-4.0	1.7	1.1	-1.0	0.9	1.3	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.7	-1.2	2.1	1.4	1.7	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.8	3.8	0.2	-0.6	-2.3	-0.4	50	30	30	30	30	30
13C2 PFHxA	-4.7	1.2	0.5	-0.5	0.3	3.1	30	30	30	30	30	30
13C2 PFDA	-5.7	1.5	0.5	-1.0	2.2	2.5	30	30	30	30	30	30



$\frac{28}{24} = 1.17$ A_SF

JRB
9-20-17


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.525
1.525
Y (x E05)
Min
34
33
$\frac{33}{34} = 0.97$ A_SF
JRB
9-20-17

TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 19SEP2017_537_ICAL Worklist Num: 48154
Instrument: A8_N Method: 537_A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b
Limit Group: LC 537 ICAL
Analysis Type: SemiVOA
Inj Volume: 2.00 Inj Vol Units: ul

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

$ 2 13C2 PFHxA
$ 10 13C2 PFDA

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

13C2-PFOA

$$RPD = \frac{2211369 - 2036942}{\frac{2211369 + 2036942}{2}} = 8.2$$

13C4-PFOS

$$RPD = \frac{5904759 - 5418565}{\frac{5904759 + 5418565}{2}} = 8.6$$

JRB
9-20-17

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 20-Sep-2017 02:56:02 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:29 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00020 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:29 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d

Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8_N

Lims ID: IC L1

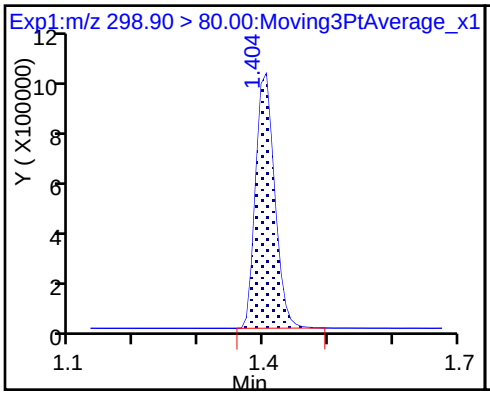
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4

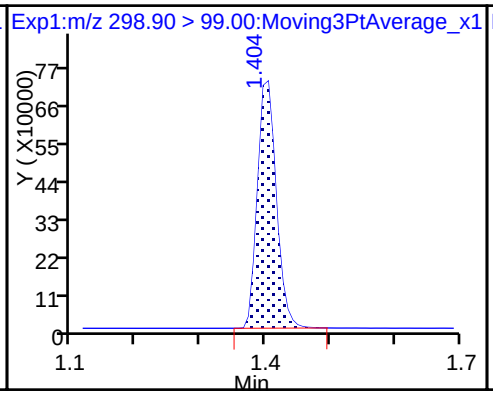
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

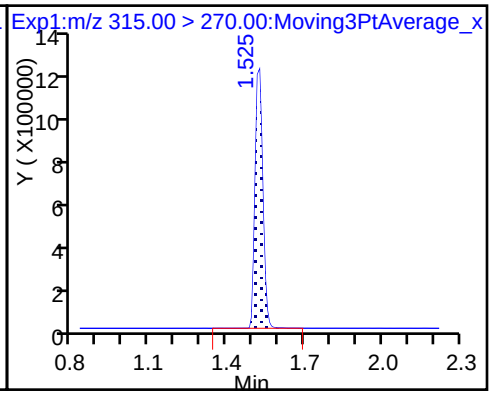
1 Perfluorobutanesulfonic acid



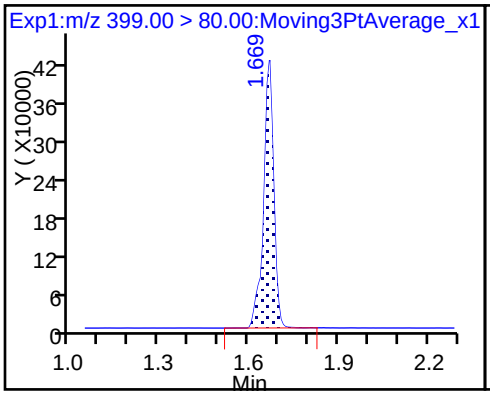
1 Perfluorobutanesulfonic acid



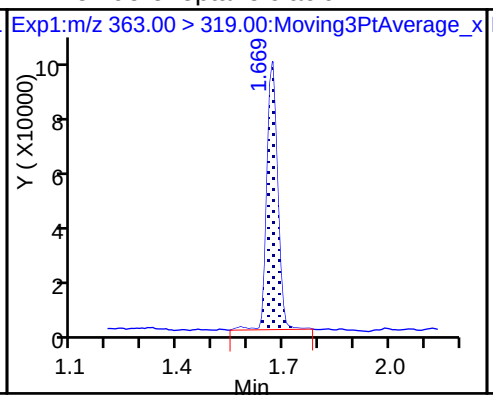
$ 2 13C2 PFHxA



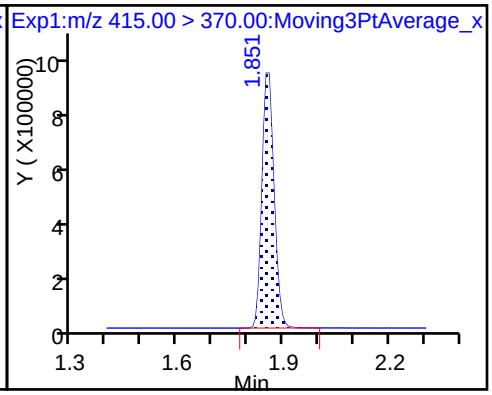
3 Perfluorohexanesulfonic acid



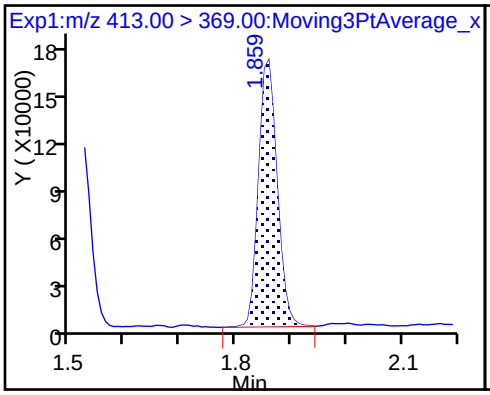
4 Perfluoroheptanoic acid



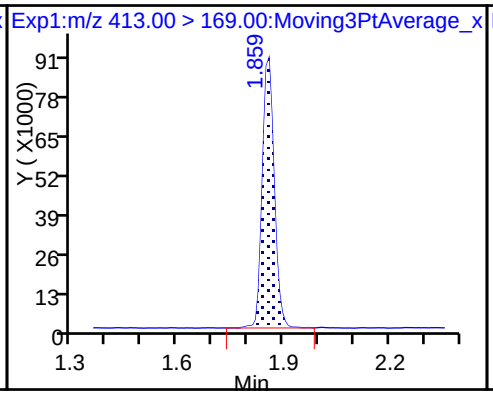
* 6 13C2-PFOA



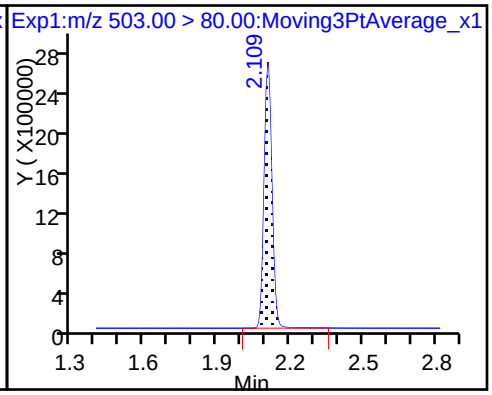
5 Perfluorooctanoic acid



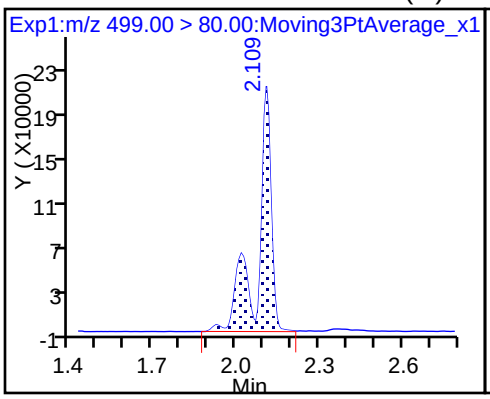
5 Perfluorooctanoic acid



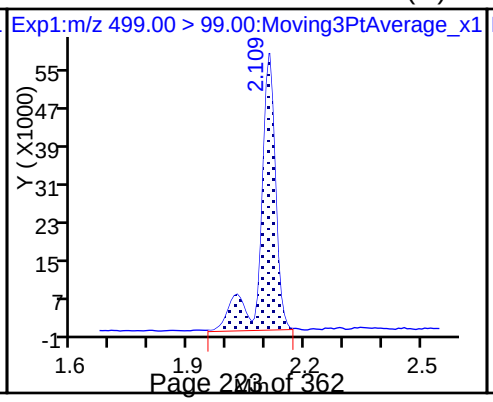
* 7 13C4 PFOS



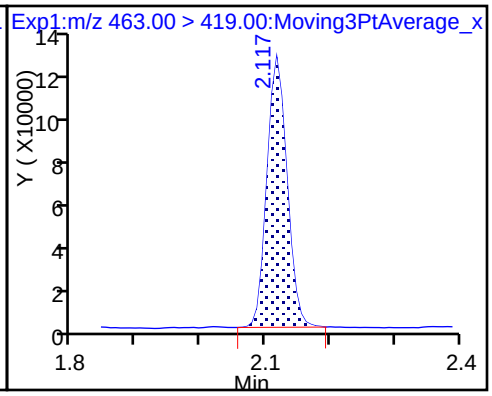
8 Perfluorooctane sulfonic acid (M)



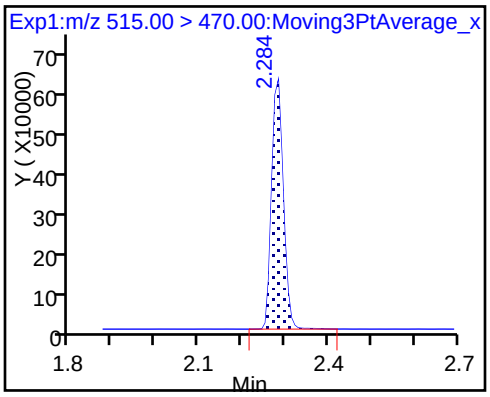
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

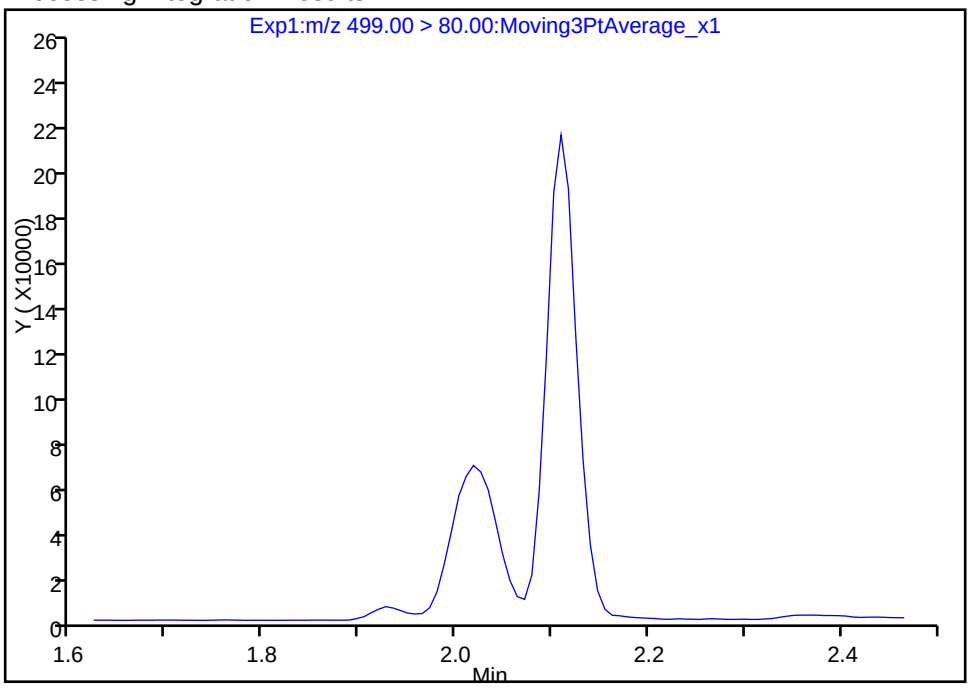
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

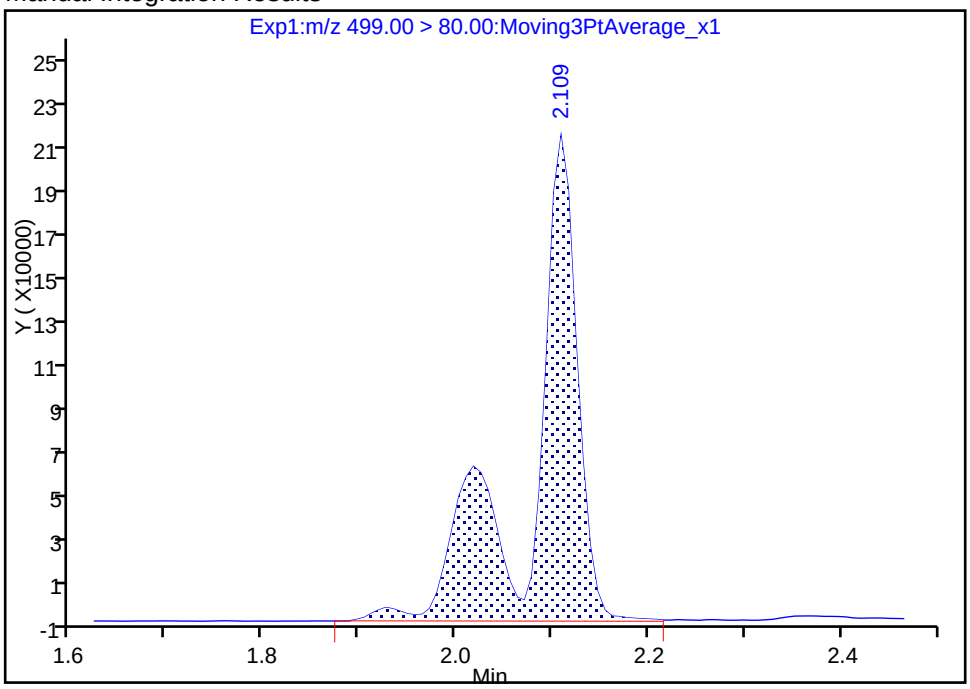
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

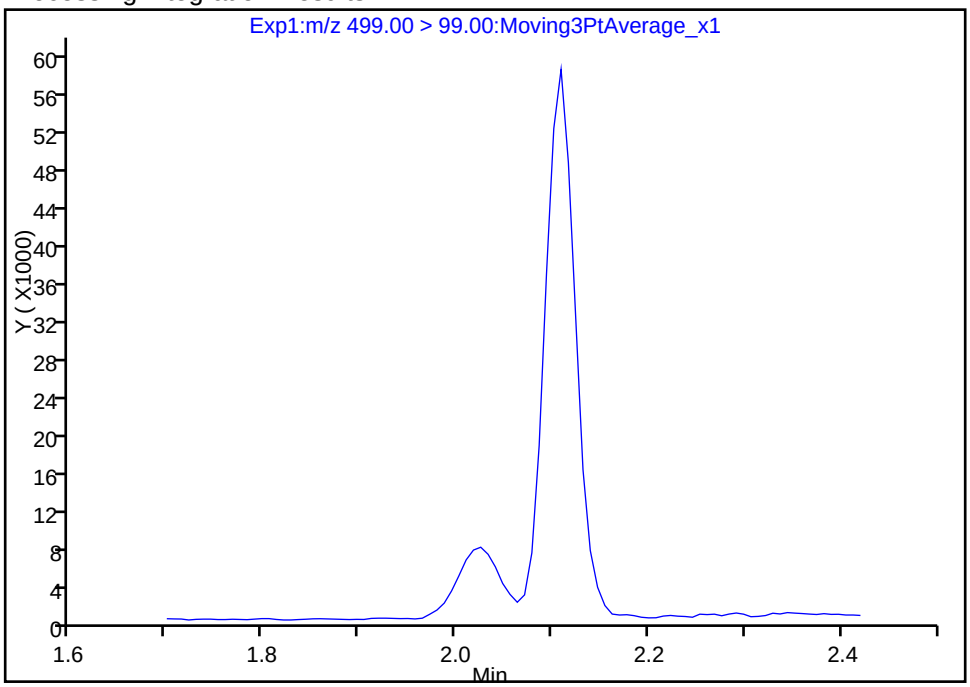
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

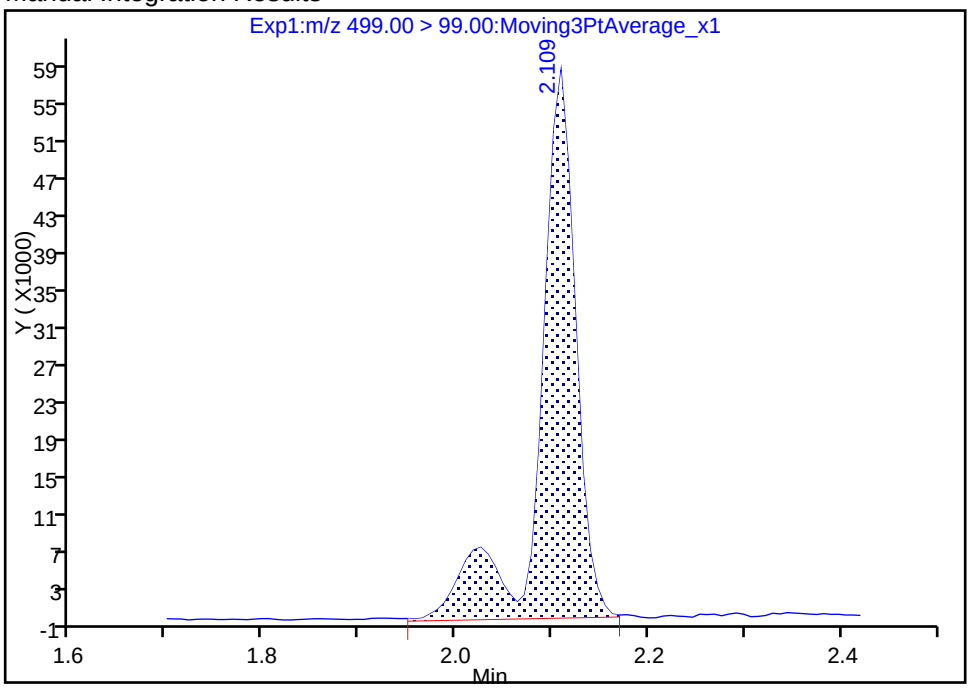
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:03:37
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

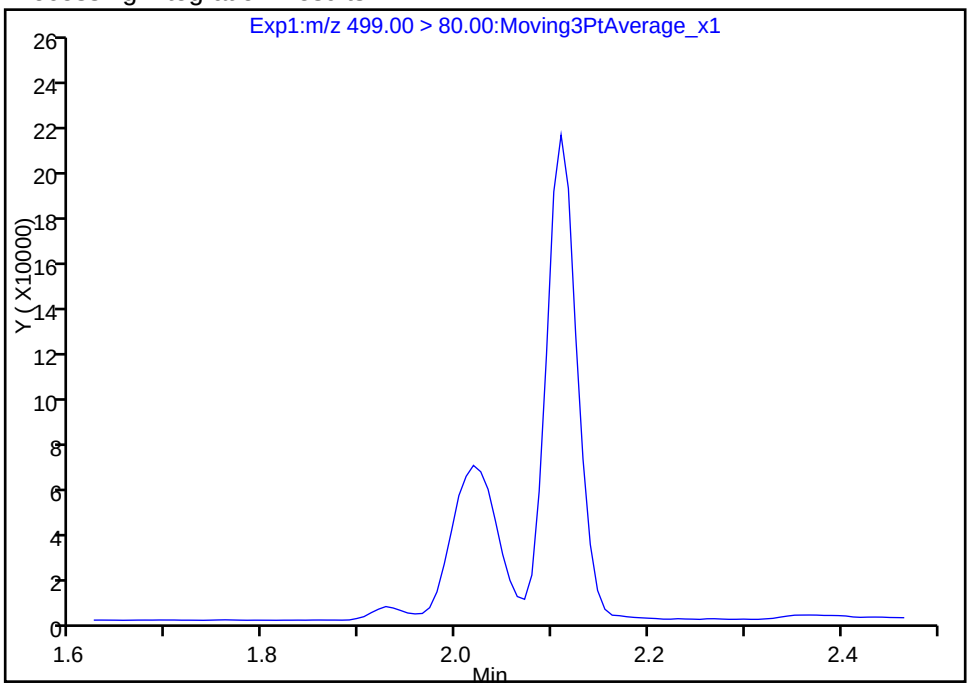
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

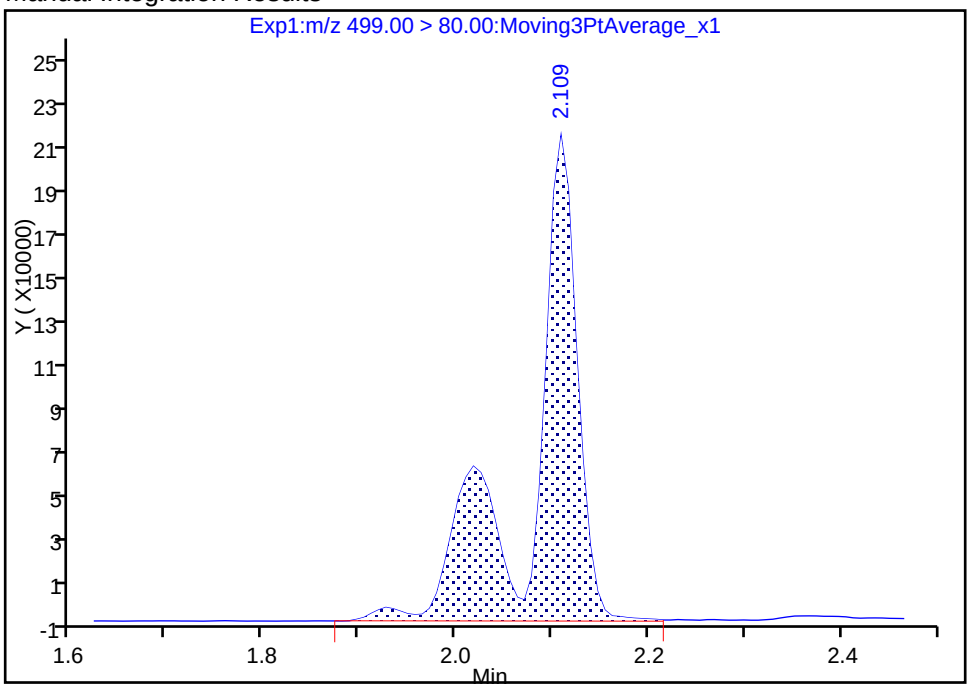
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:03:36
Audit Action: Manually Integrated Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 20-Sep-2017 03:00:47 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:30 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:30 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d

Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8_N

Lims ID: IC L2

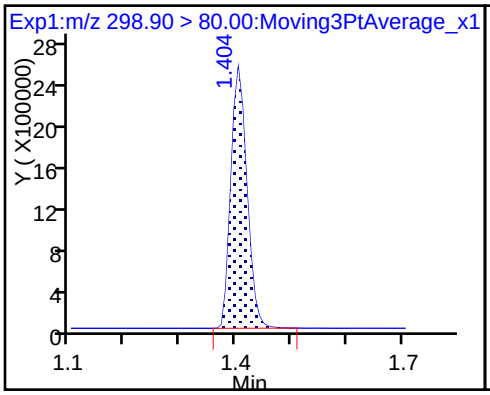
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5

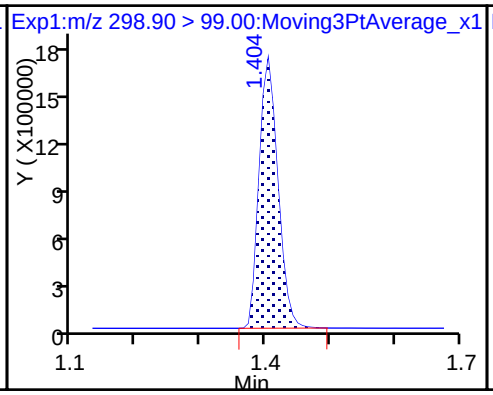
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

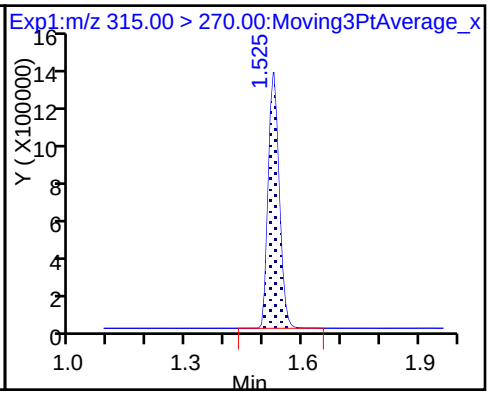
1 Perfluorobutanesulfonic acid



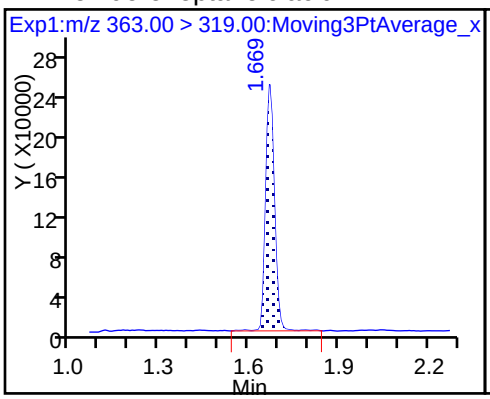
1 Perfluorobutanesulfonic acid



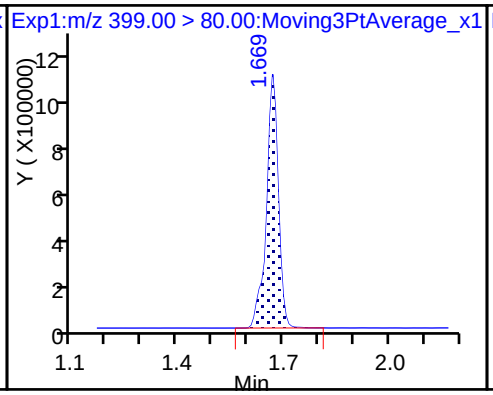
$ 2 13C2 PFHxA



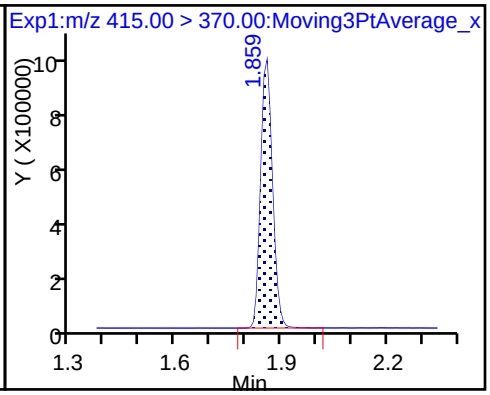
4 Perfluoroheptanoic acid



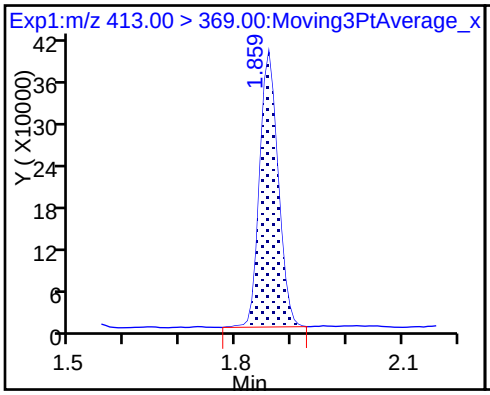
3 Perfluorohexanesulfonic acid



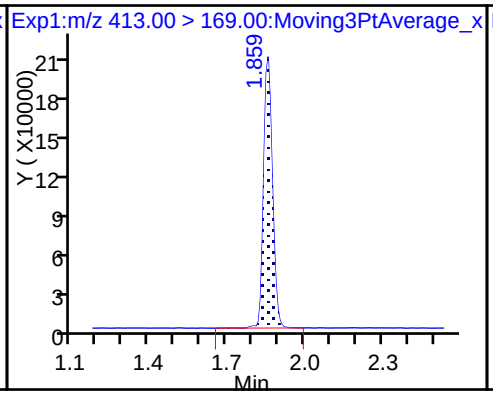
* 6 13C2-PFOA



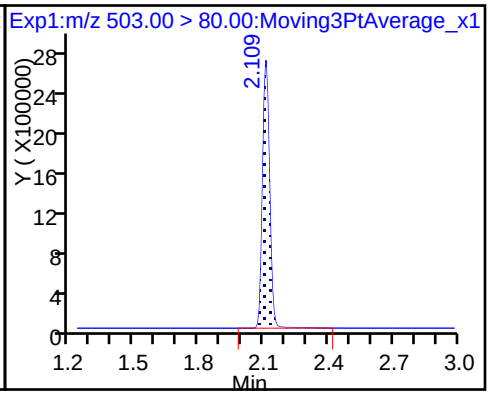
5 Perfluorooctanoic acid



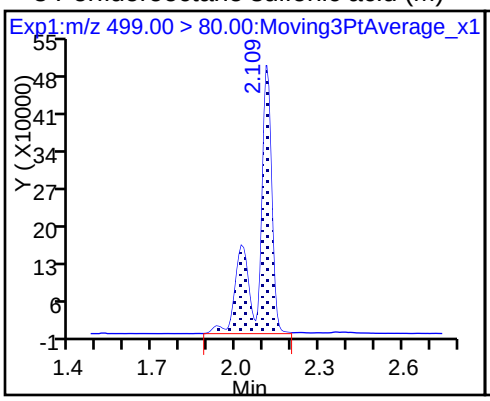
5 Perfluorooctanoic acid



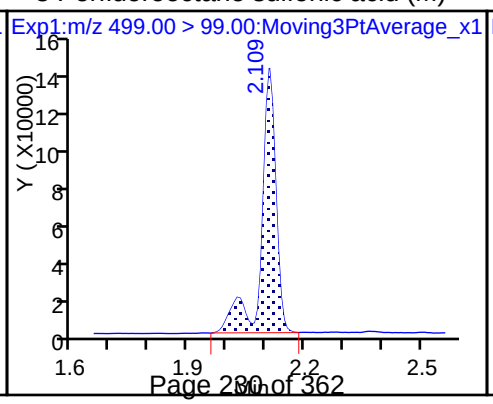
* 7 13C4 PFOS



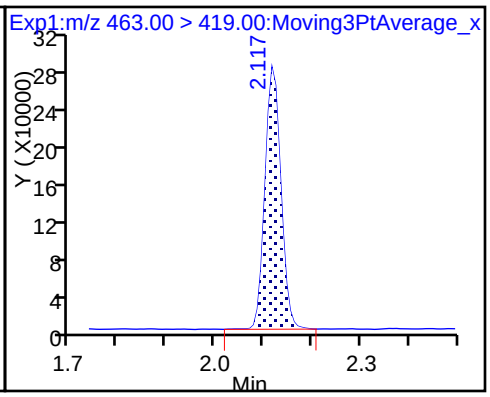
8 Perfluorooctane sulfonic acid (M)



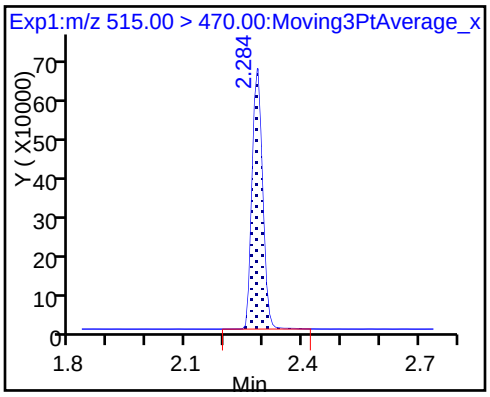
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

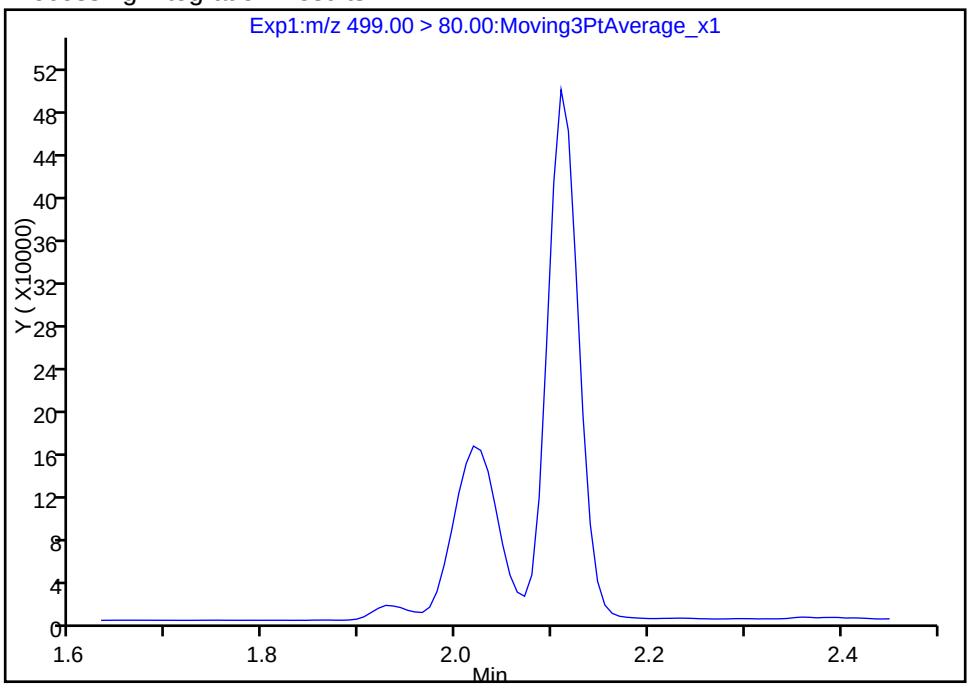
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

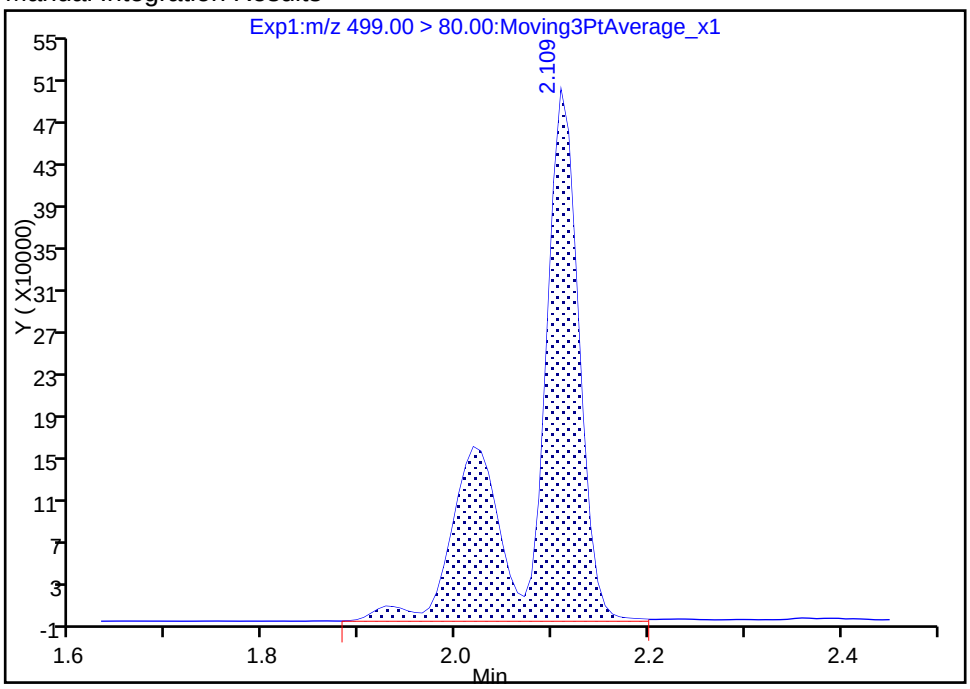
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

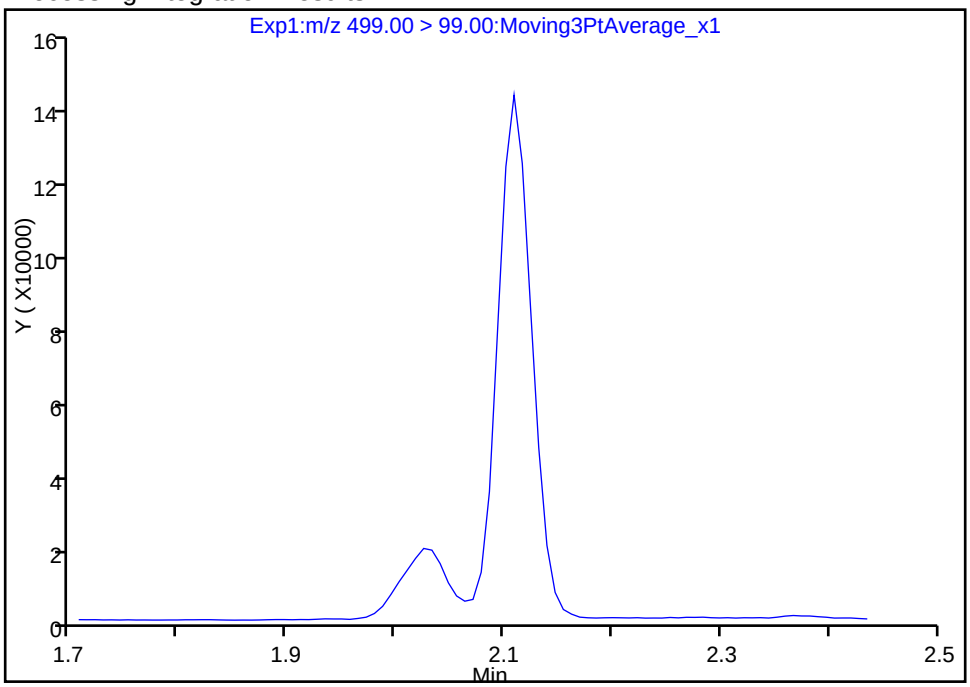
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

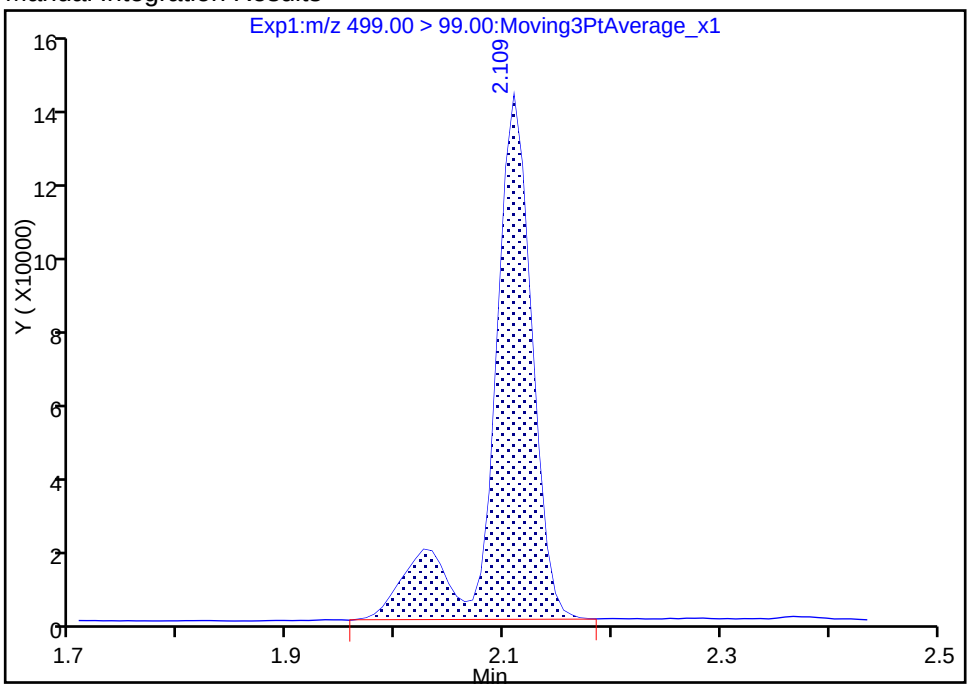
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:04:48
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

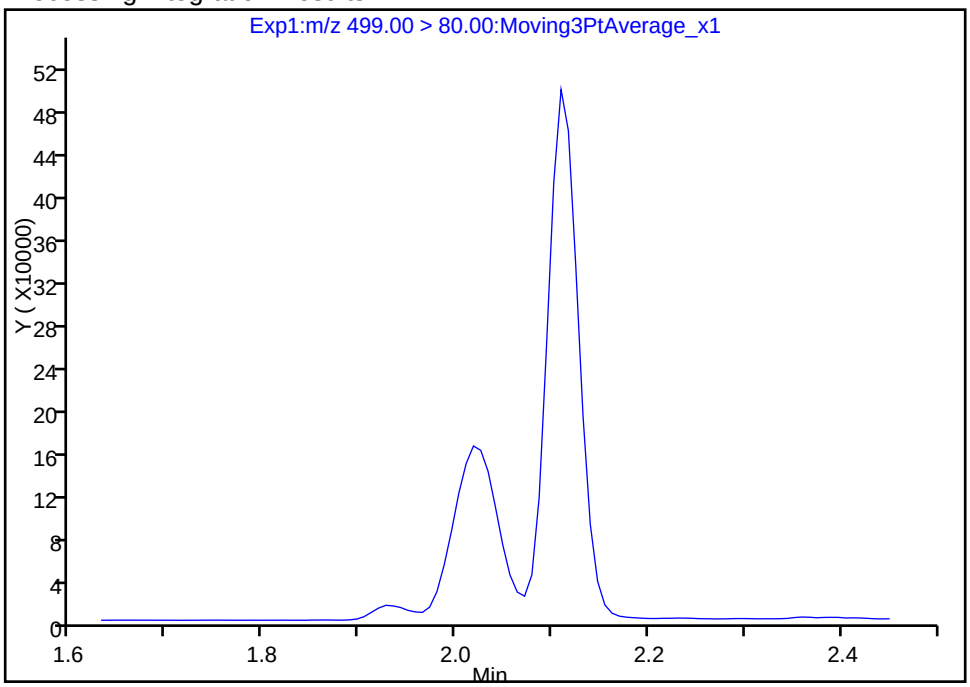
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

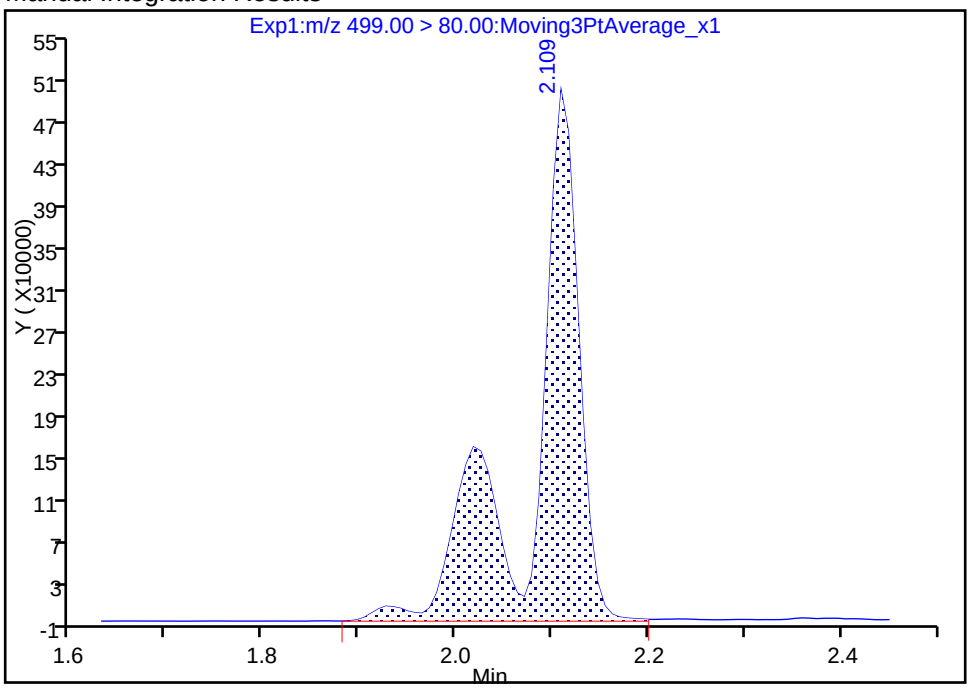
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:04:48
Audit Action: Manually Integrated Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 20-Sep-2017 03:05:32 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:31 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d

Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8_N

Lims ID: IC L3

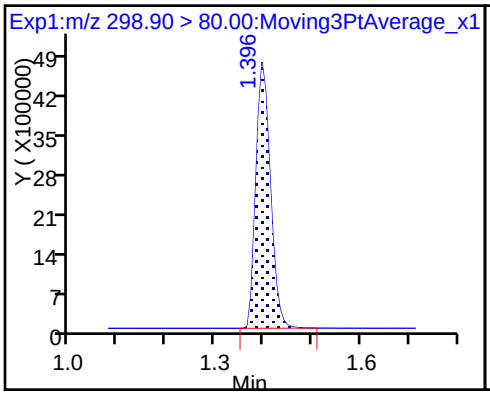
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6

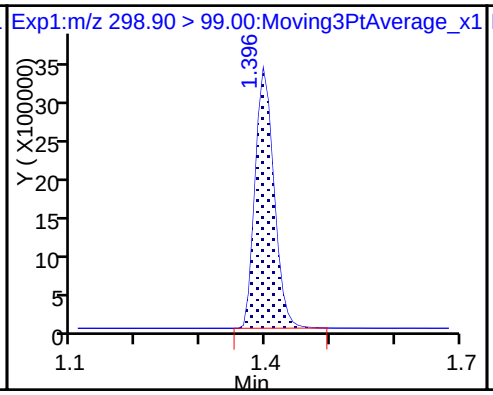
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

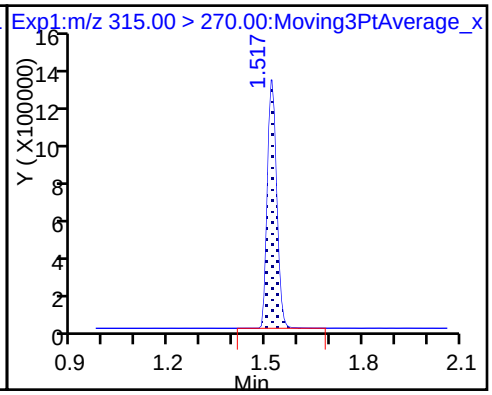
1 Perfluorobutanesulfonic acid



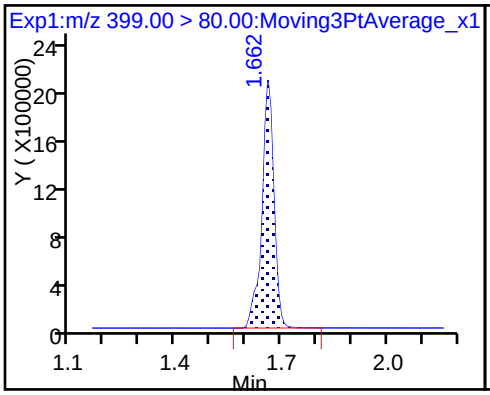
1 Perfluorobutanesulfonic acid



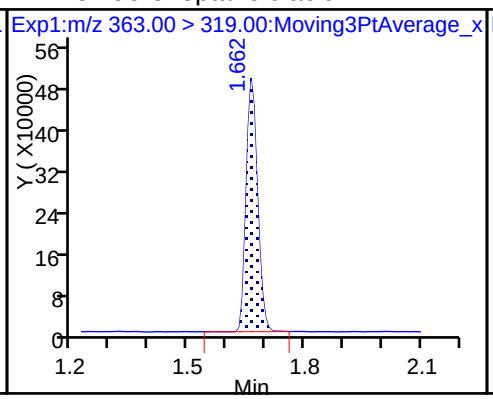
$ 2 13C2 PFHxA



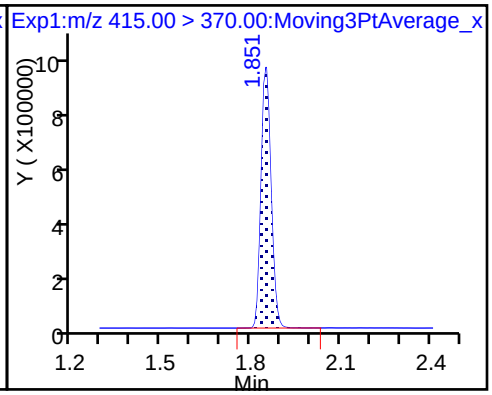
3 Perfluorohexanesulfonic acid



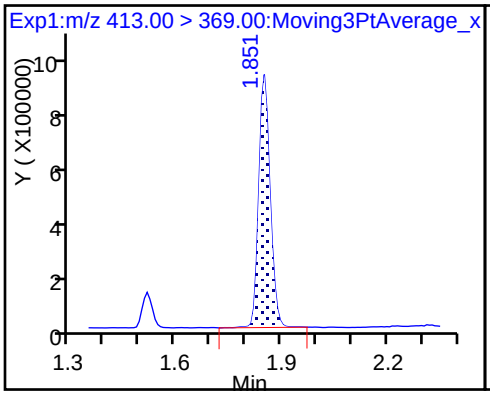
4 Perfluoroheptanoic acid



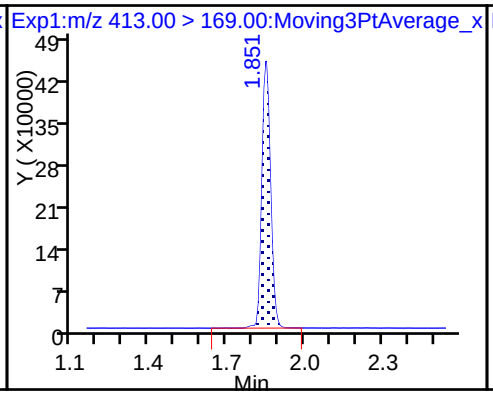
* 6 13C2-PFOA



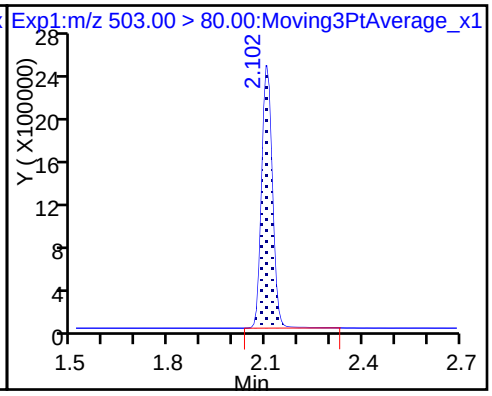
5 Perfluorooctanoic acid



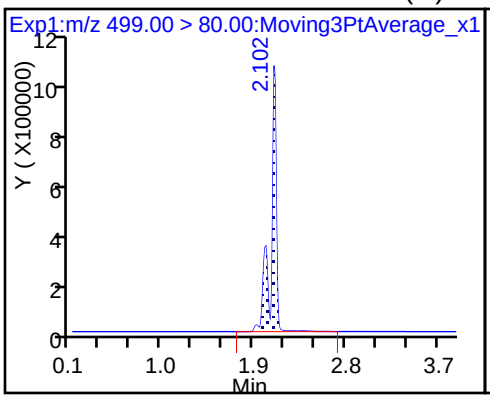
5 Perfluorooctanoic acid



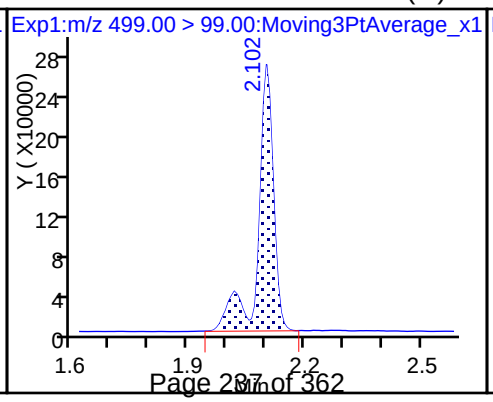
* 7 13C4 PFOS



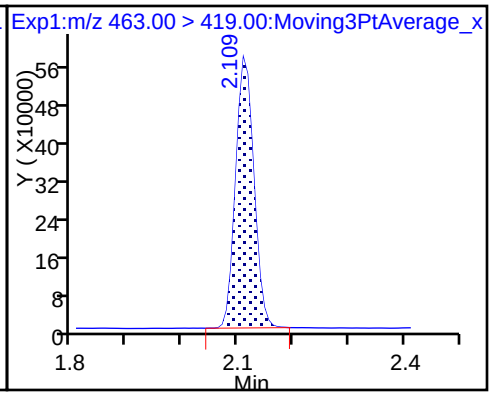
8 Perfluorooctane sulfonic acid (M)



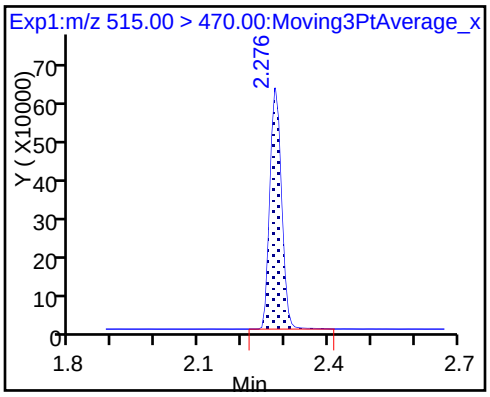
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

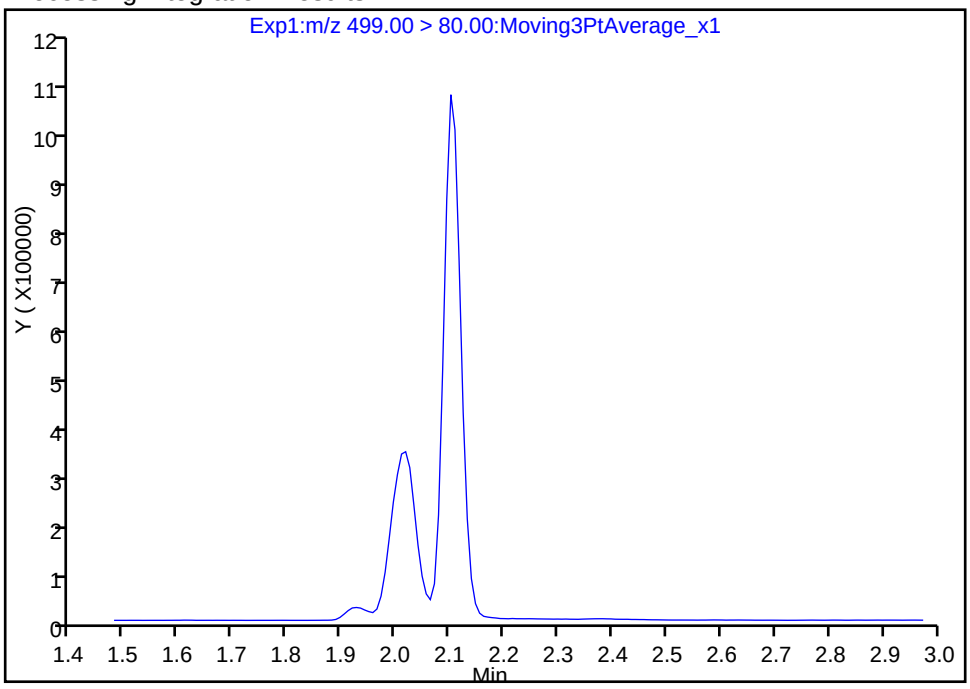
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

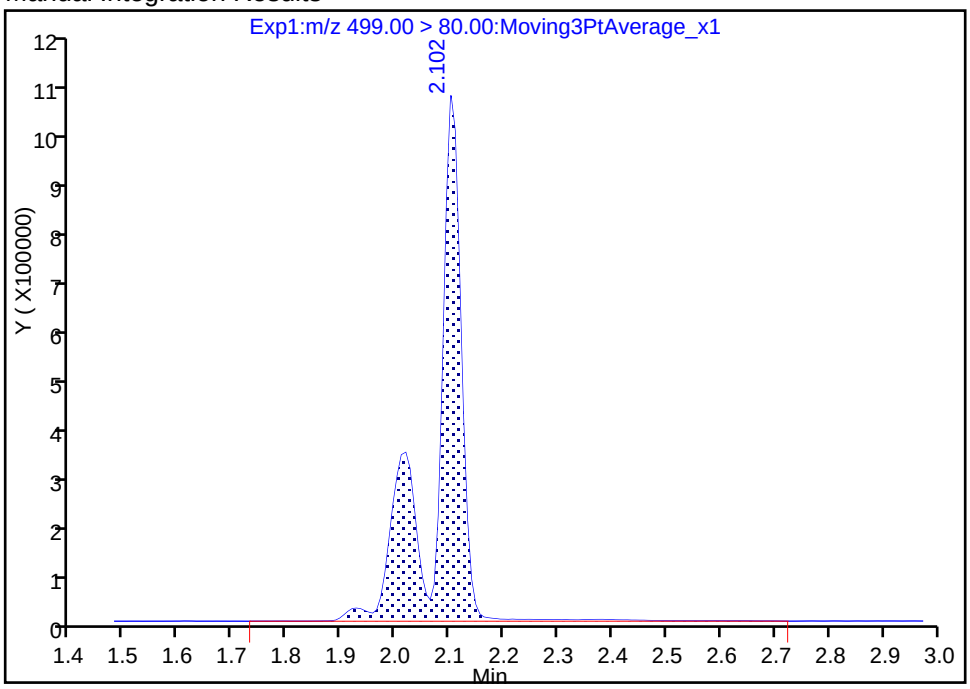
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

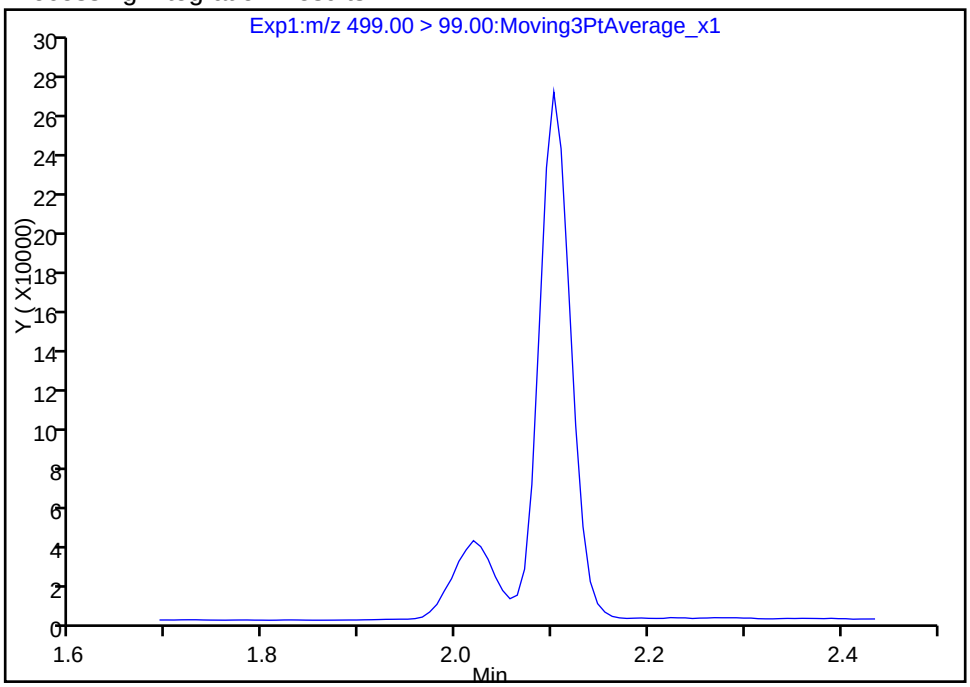
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

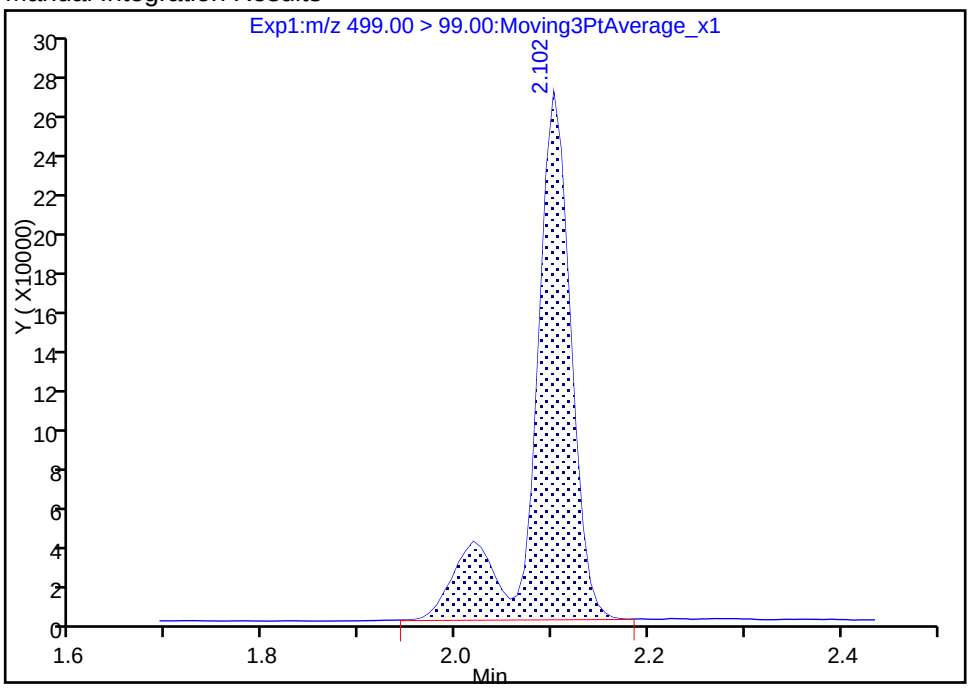
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:05:21
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

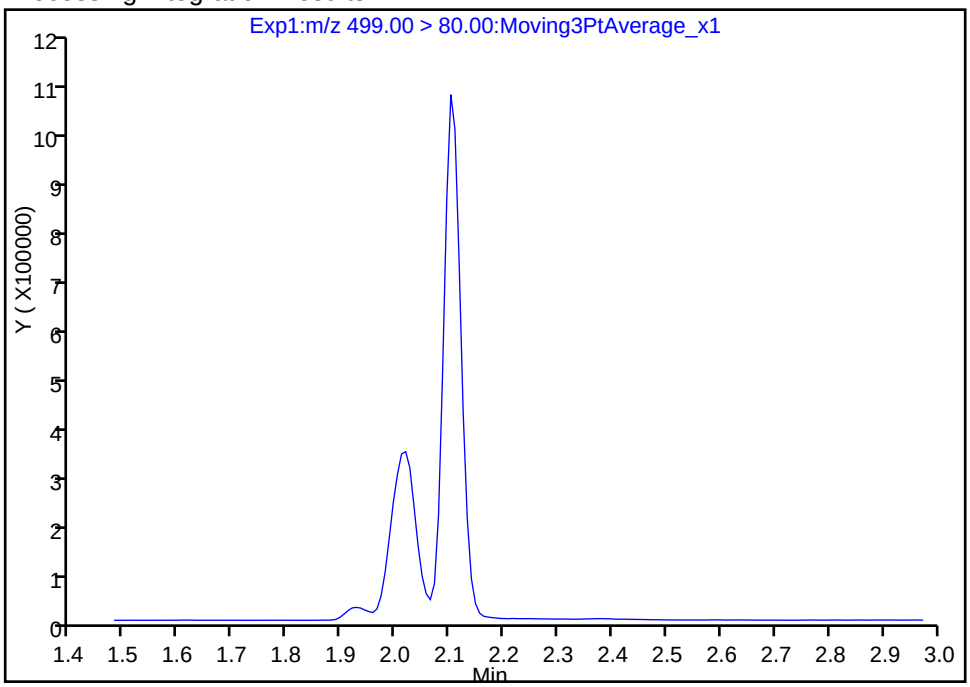
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

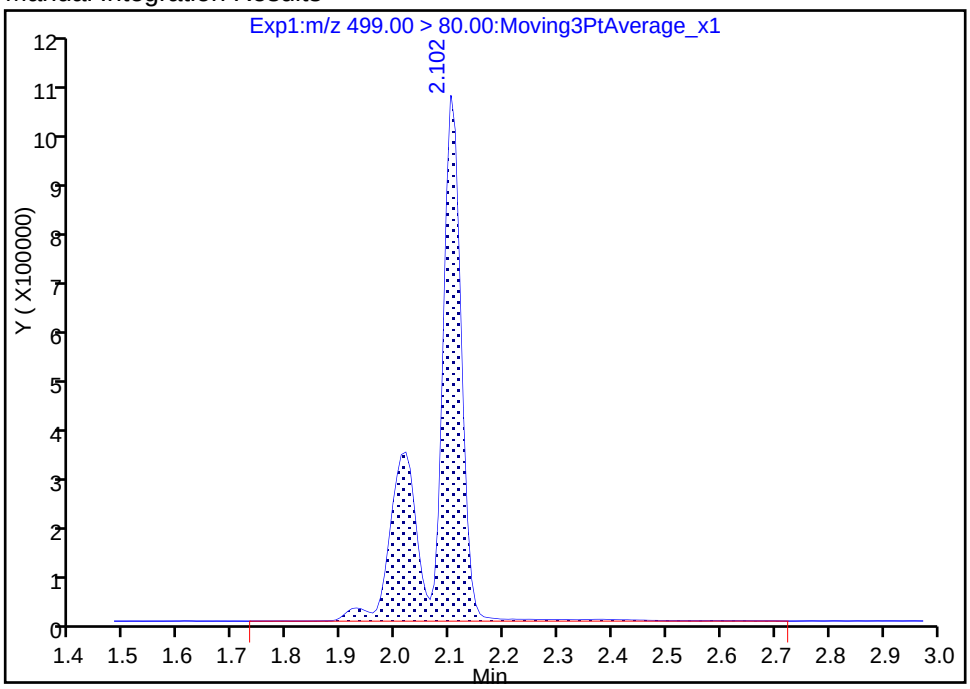
Processing Integration Results

Not Detected
Expected RT: 2.11



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:05:21
Audit Action: Manually Integrated Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 20-Sep-2017 03:10:16 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:32 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:32 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d

Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8_N

Lims ID: IC L4

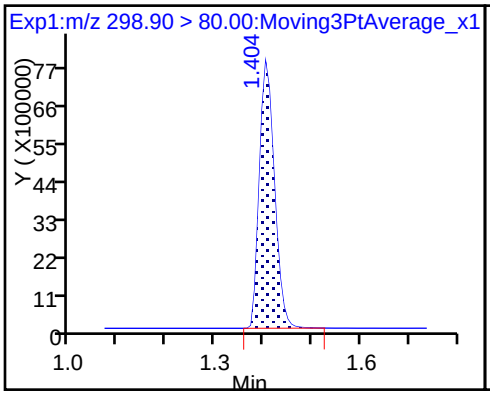
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7

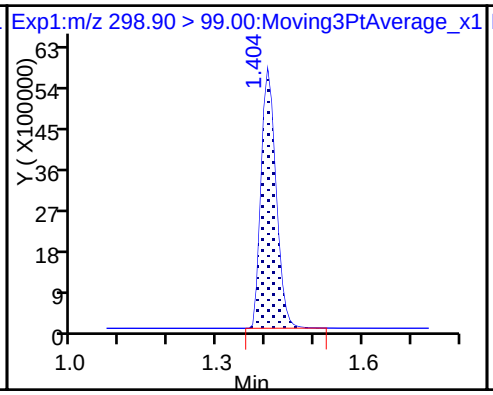
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

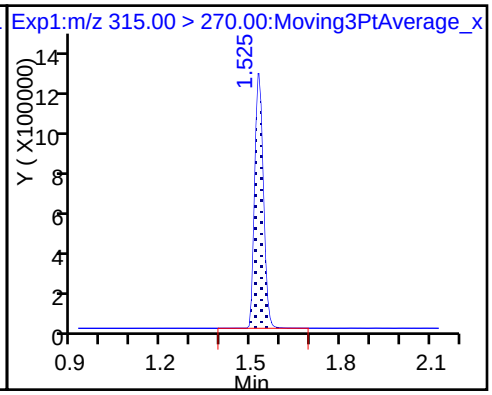
1 Perfluorobutanesulfonic acid



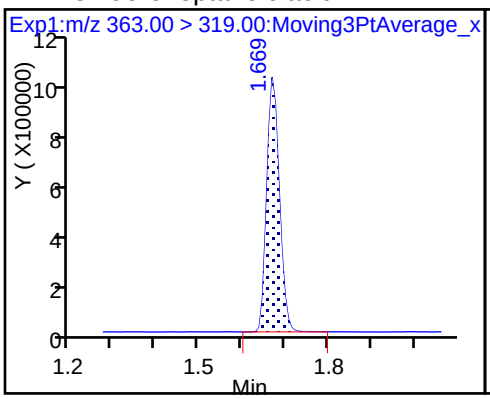
1 Perfluorobutanesulfonic acid



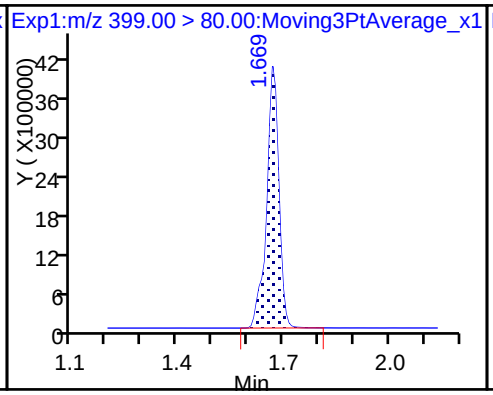
$ 2 13C2 PFHxA



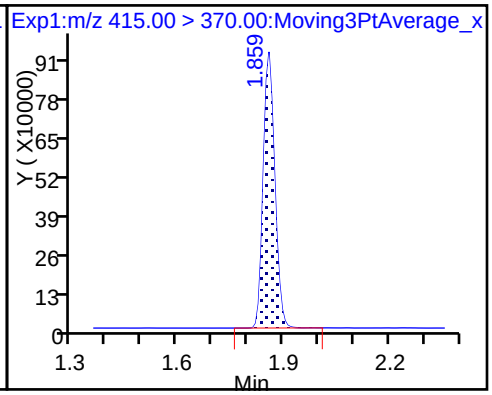
4 Perfluoroheptanoic acid



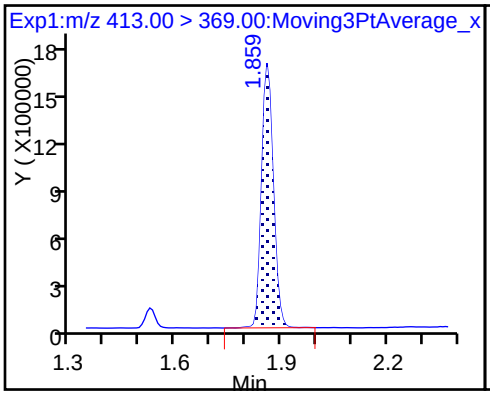
3 Perfluorohexanesulfonic acid



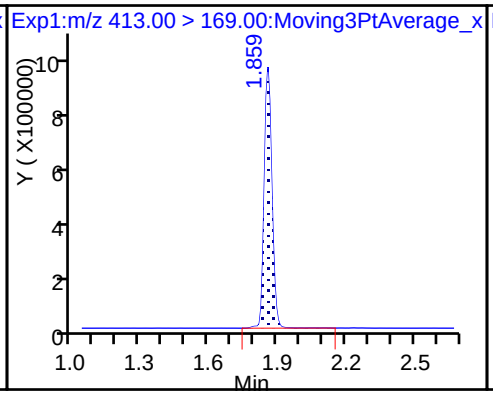
* 6 13C2-PFOA



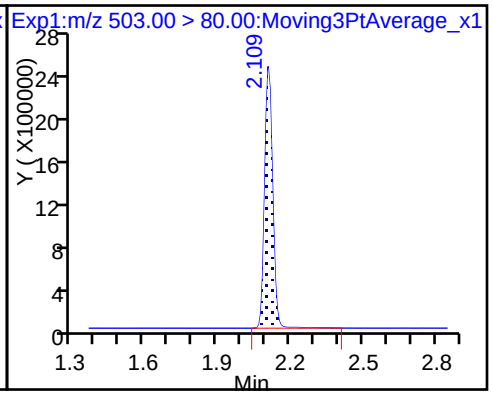
5 Perfluorooctanoic acid



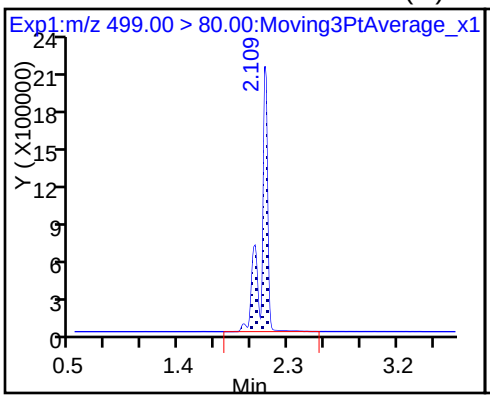
5 Perfluorooctanoic acid



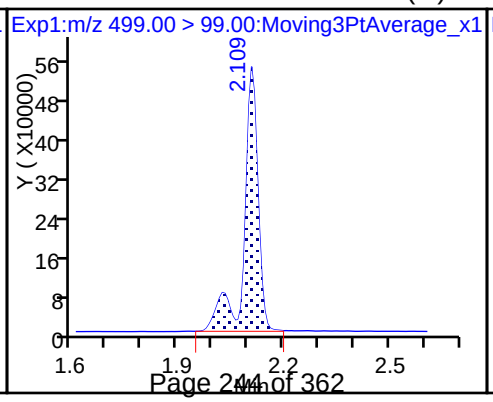
* 7 13C4 PFOS



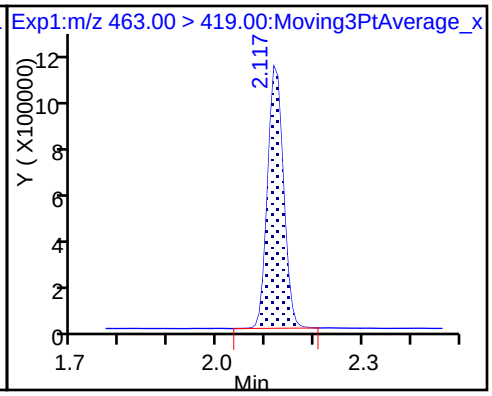
8 Perfluorooctane sulfonic acid (M)



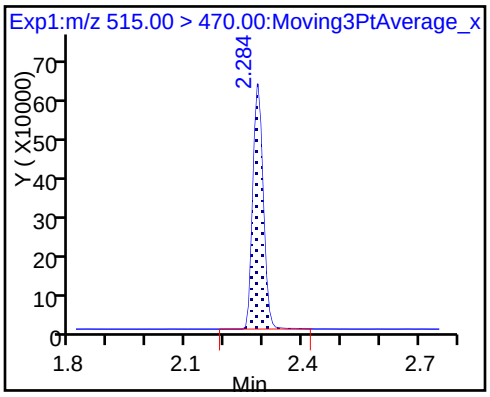
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

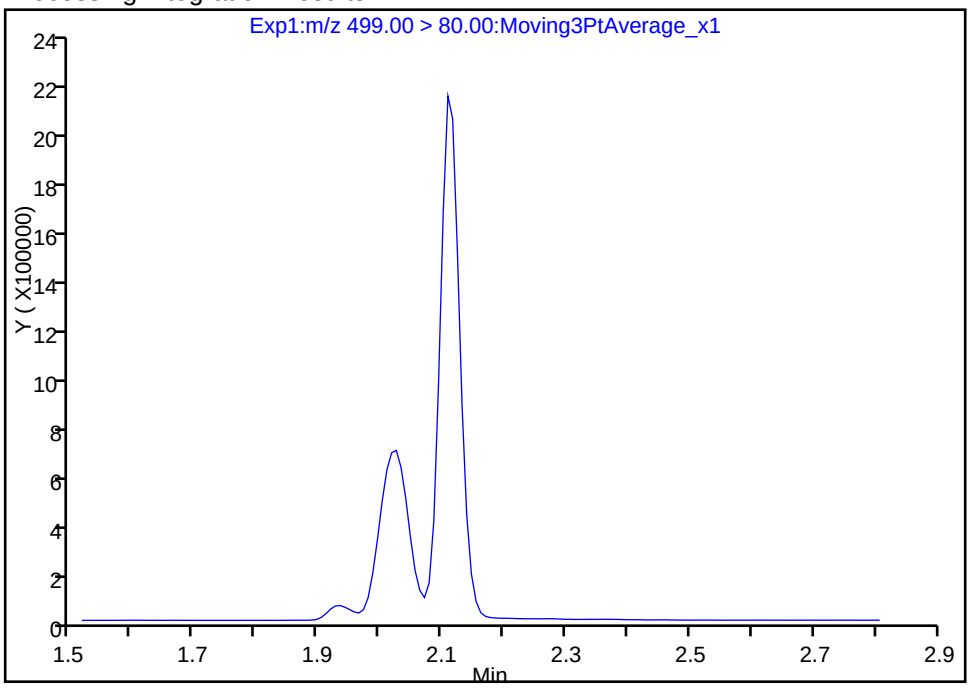
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

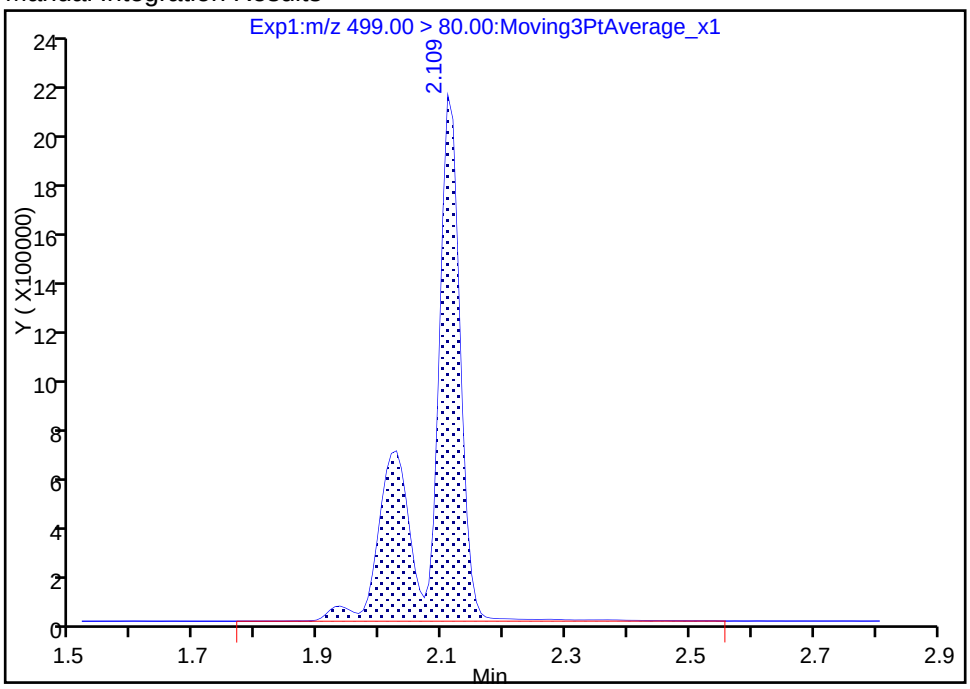
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:05:35
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

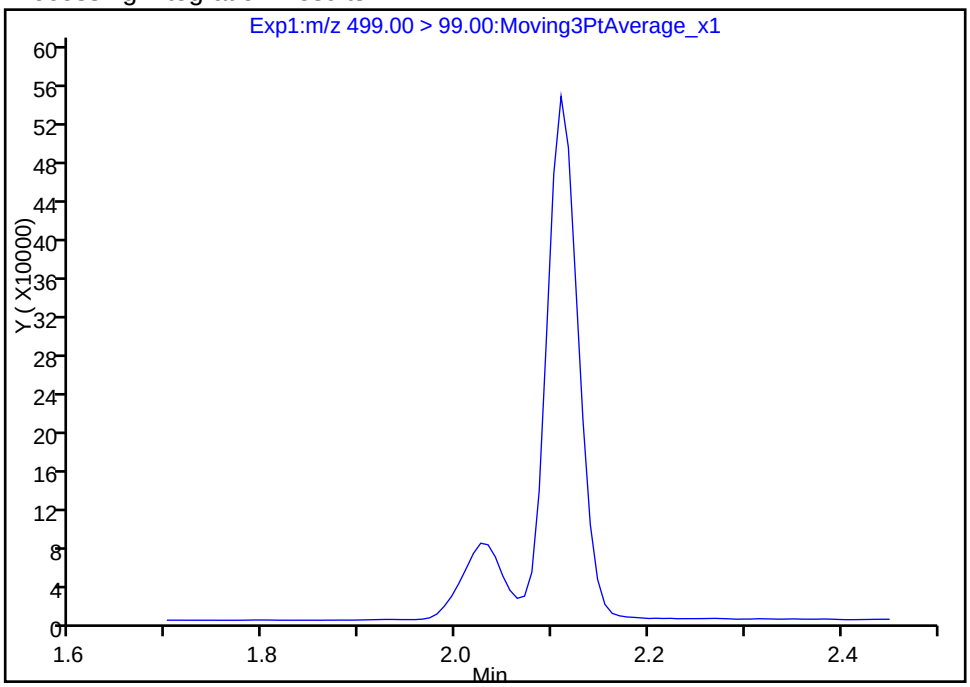
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

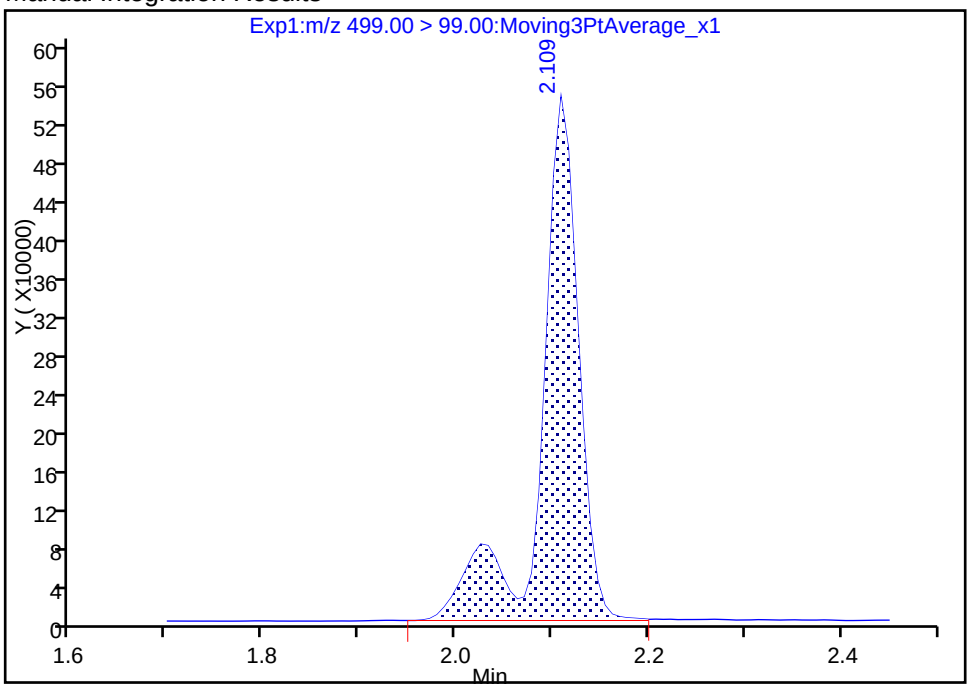
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:05:50
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

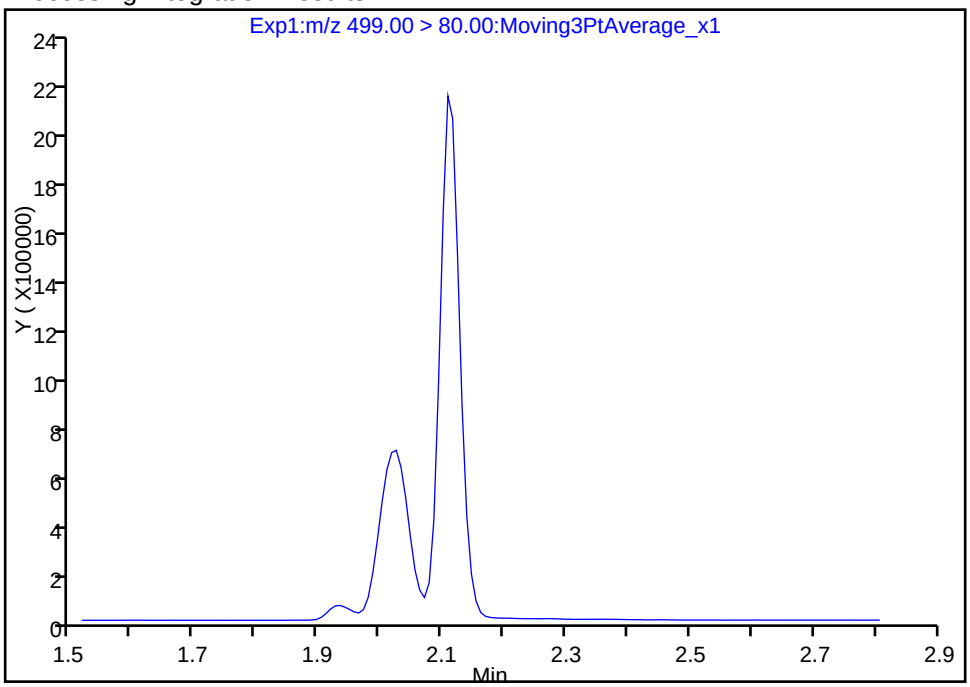
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

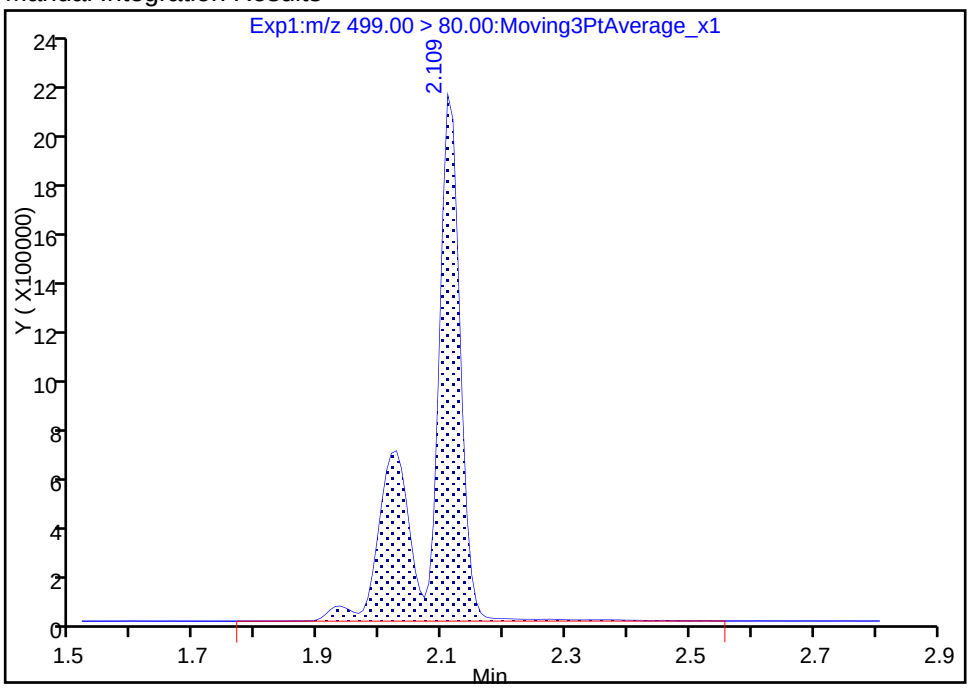
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:05:50
Audit Action: Manually Integrated Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 20-Sep-2017 03:15:01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:33 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:33 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d

Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8_N

Lims ID: IC L5

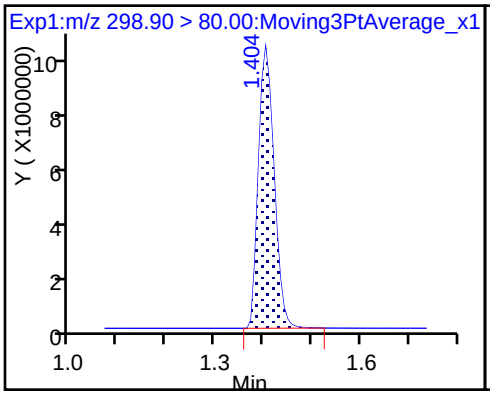
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8

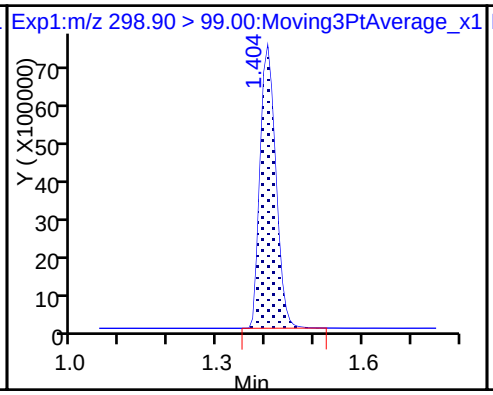
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

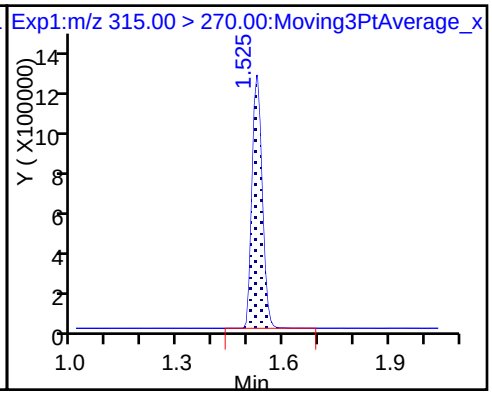
1 Perfluorobutanesulfonic acid



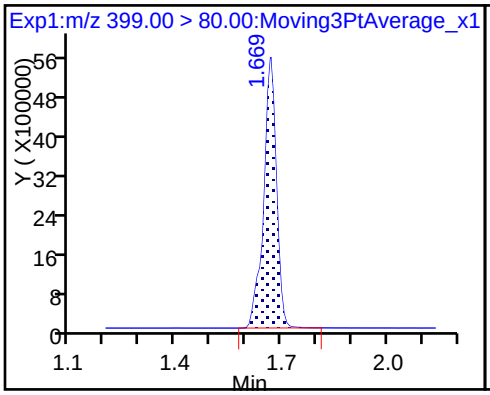
1 Perfluorobutanesulfonic acid



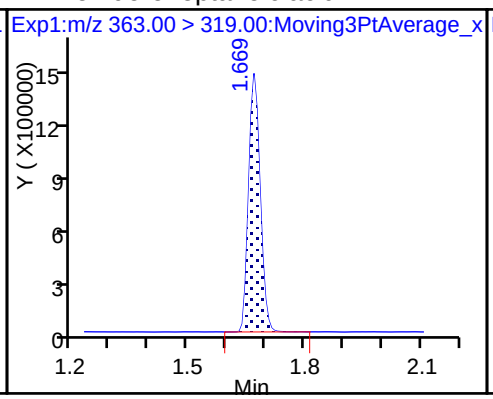
$ 2 13C2 PFHxA



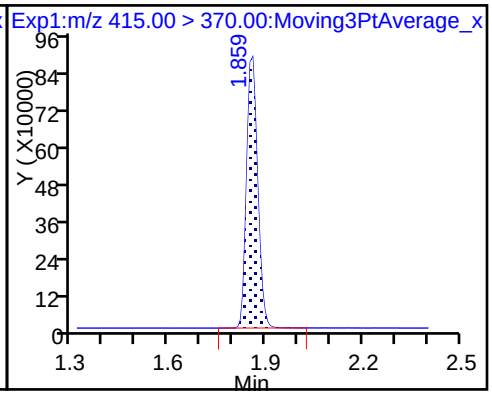
3 Perfluorohexanesulfonic acid



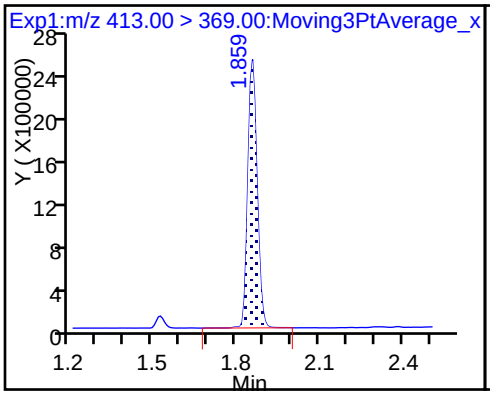
4 Perfluoroheptanoic acid



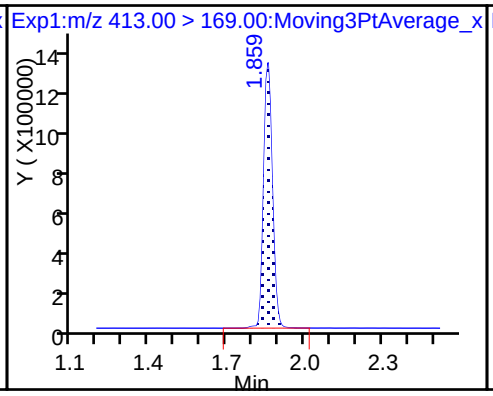
* 6 13C2-PFOA



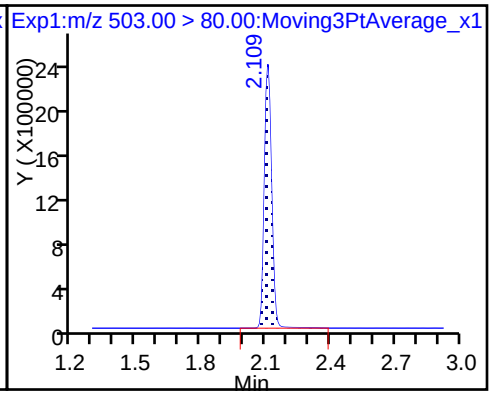
5 Perfluorooctanoic acid



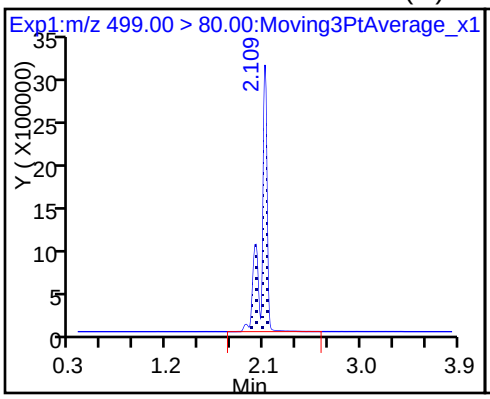
5 Perfluorooctanoic acid



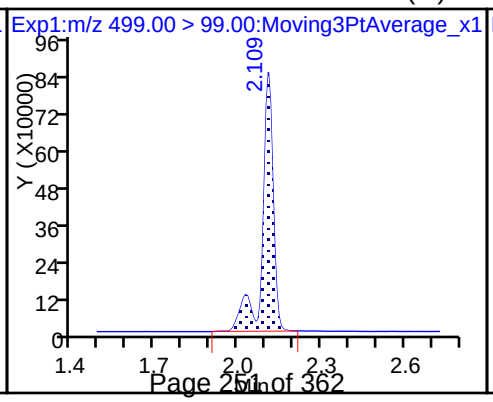
* 7 13C4 PFOS



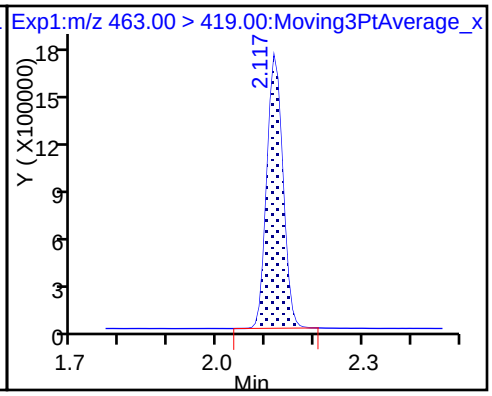
8 Perfluorooctane sulfonic acid (M)



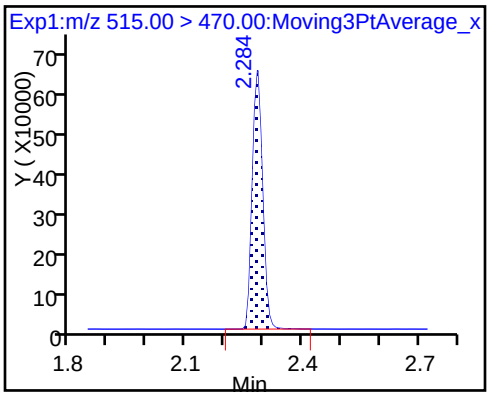
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

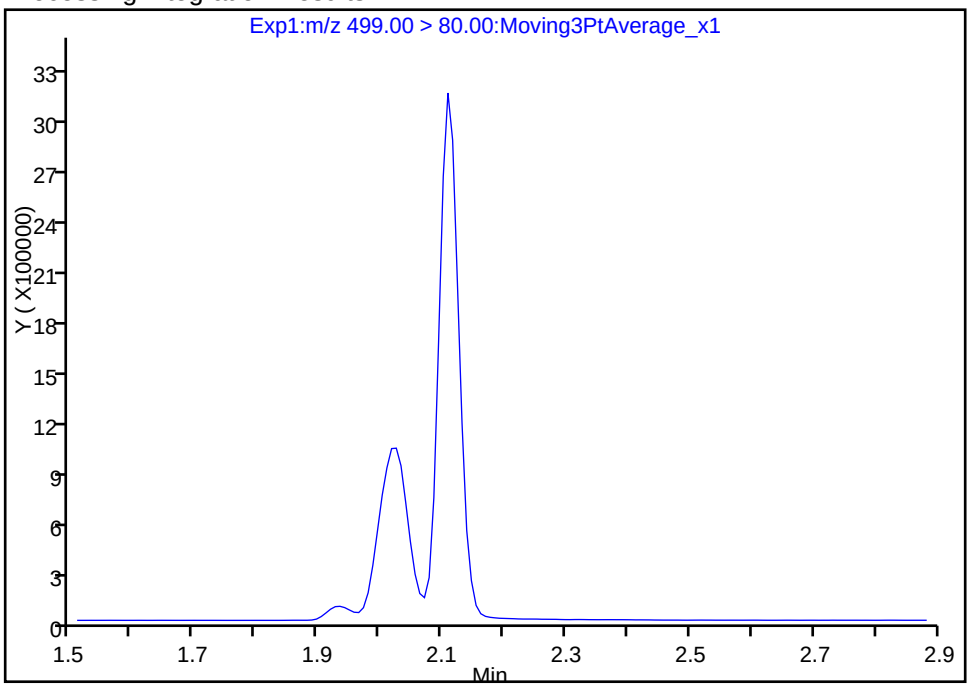
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

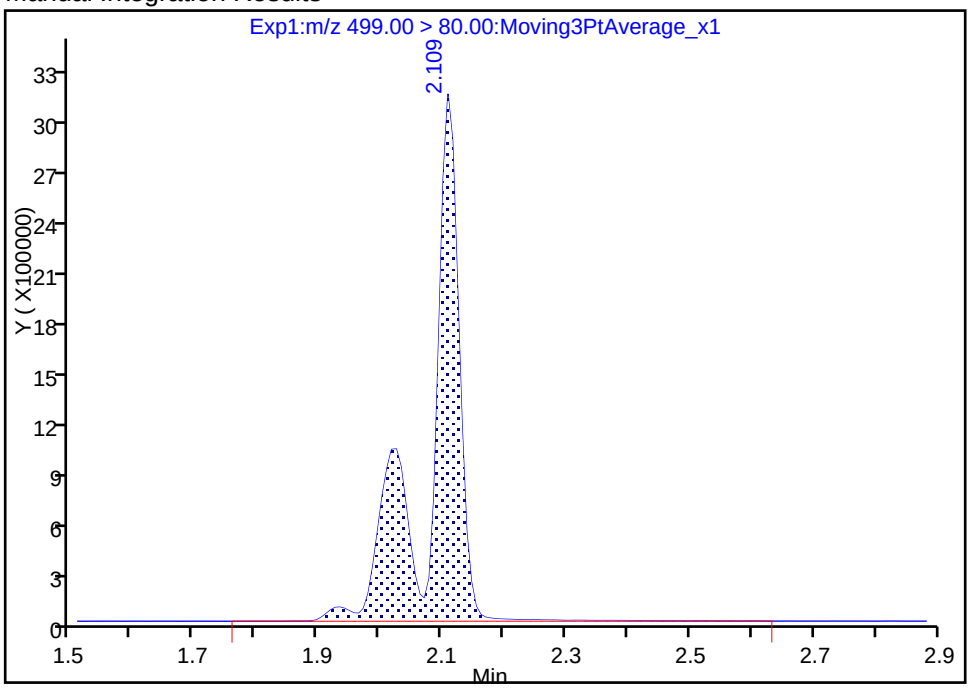
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:06:19
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

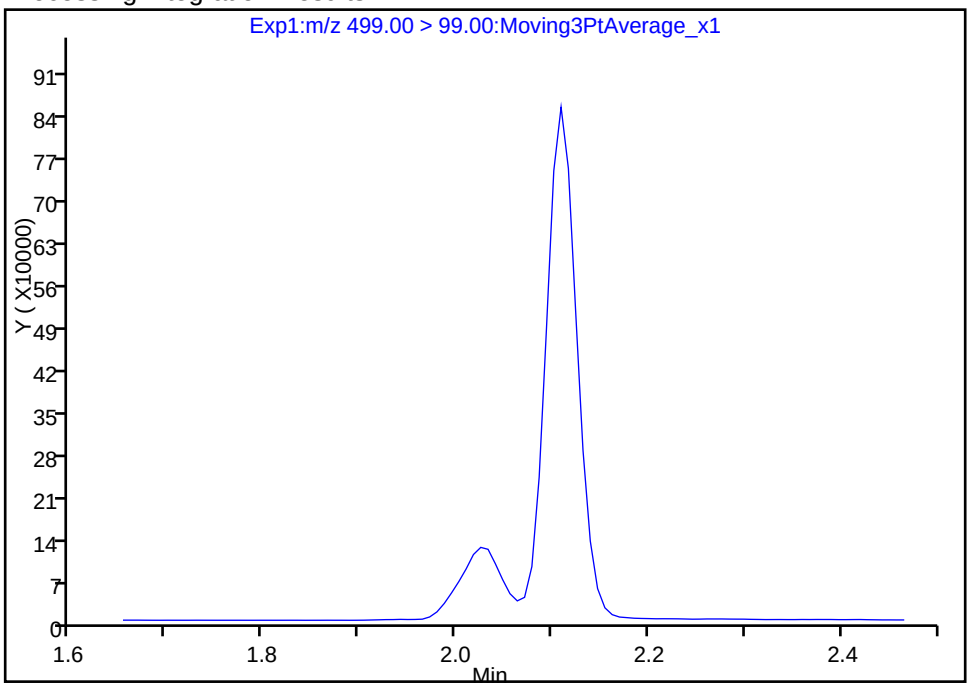
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

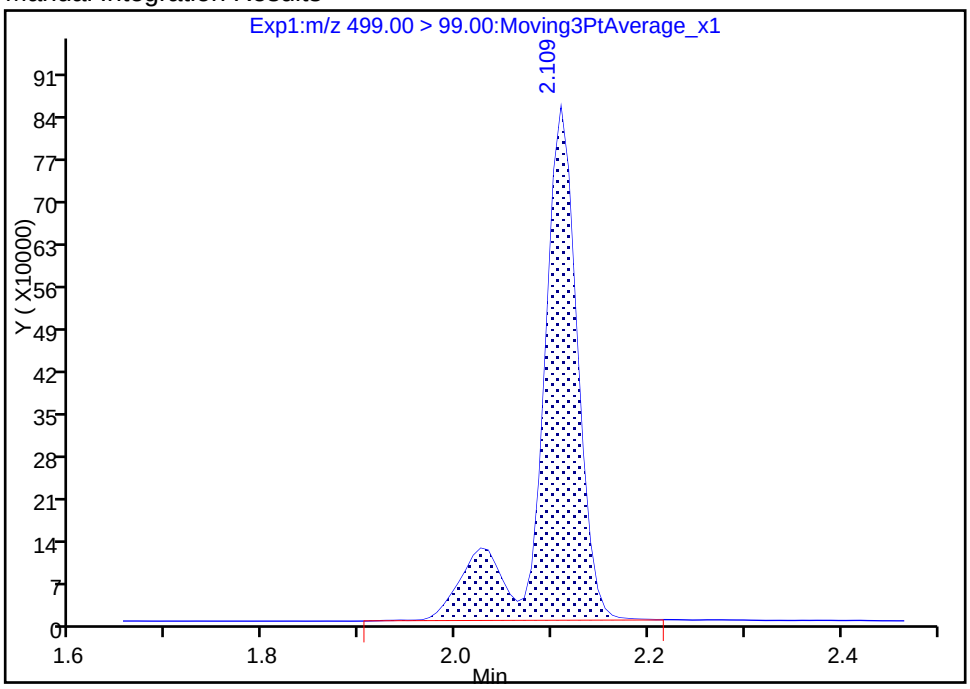
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:06:32
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

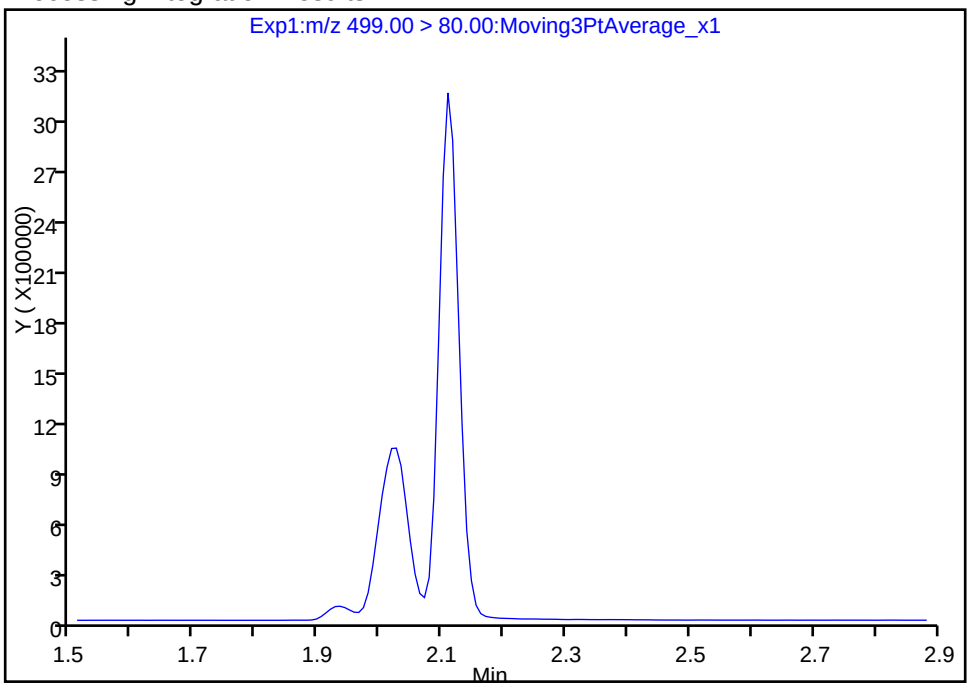
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

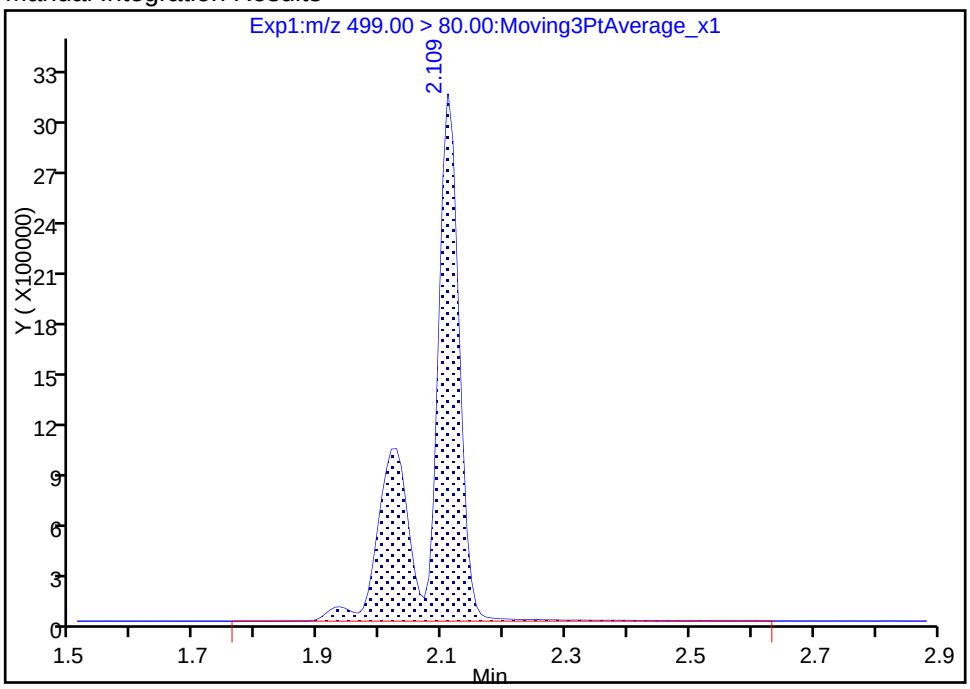
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:06:32
Audit Action: Manually Integrated Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 20-Sep-2017 03:19:48 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:34 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L6_00020 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:34 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8_N

Lims ID: IC L6

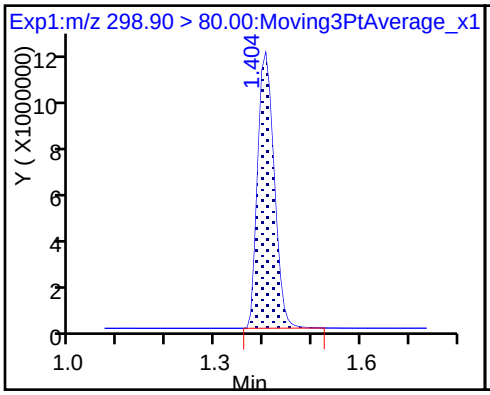
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9

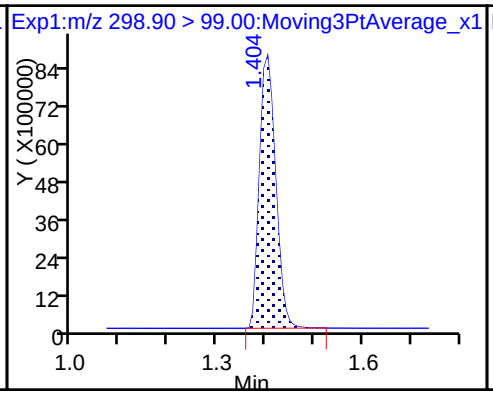
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

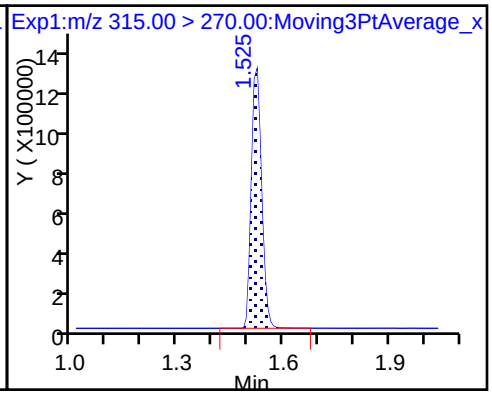
1 Perfluorobutanesulfonic acid



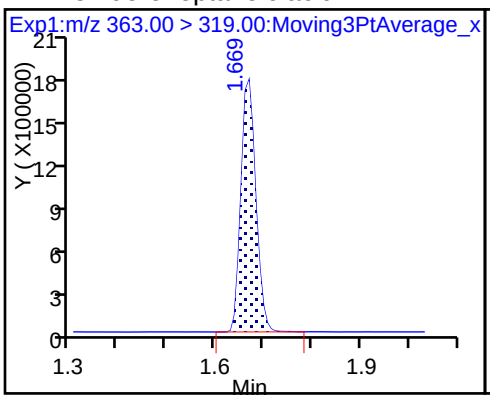
1 Perfluorobutanesulfonic acid



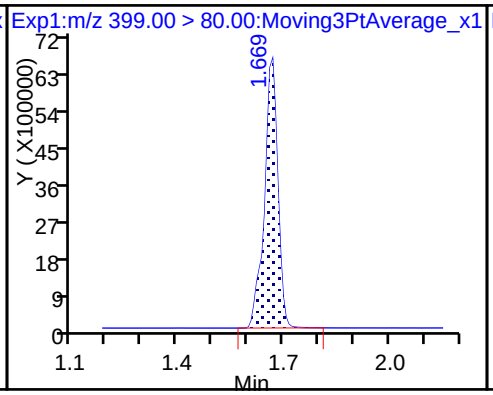
$ 2 13C2 PFHxA



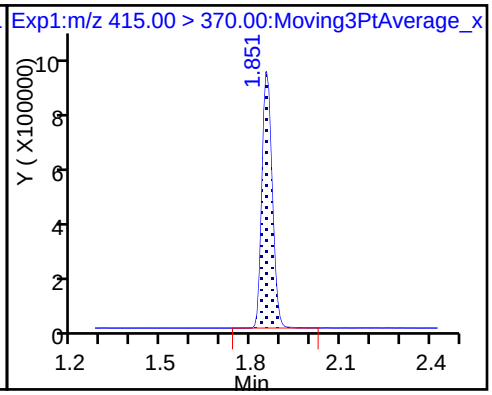
4 Perfluoroheptanoic acid



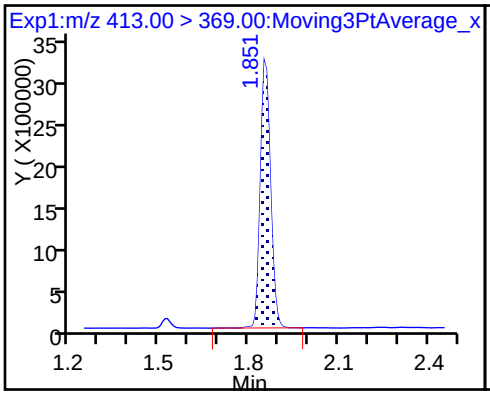
3 Perfluorohexanesulfonic acid



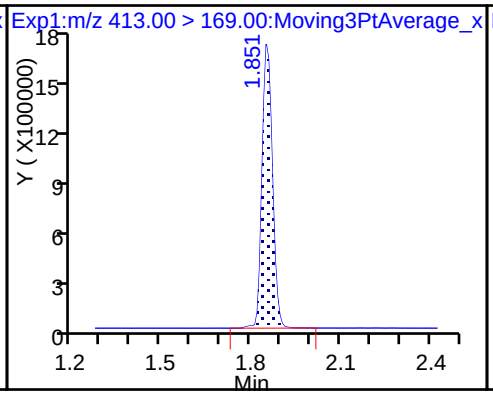
* 6 13C2-PFOA



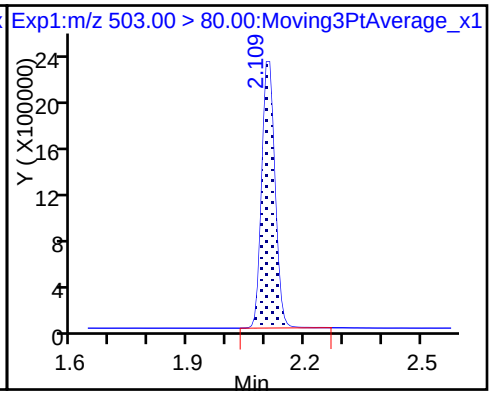
5 Perfluorooctanoic acid



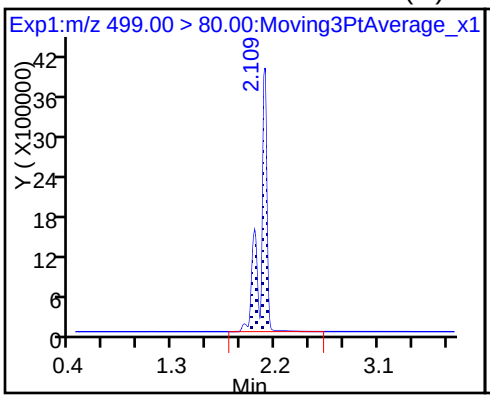
5 Perfluorooctanoic acid



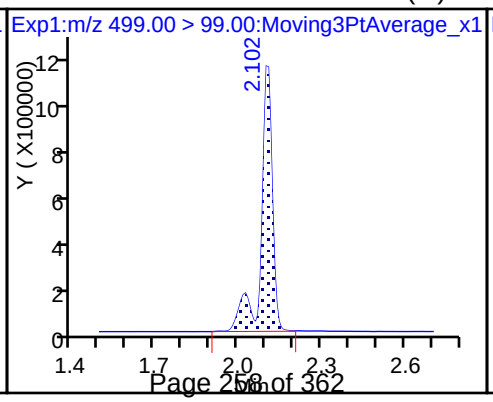
* 7 13C4 PFOS



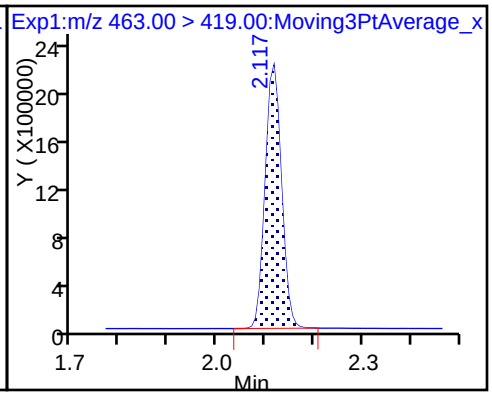
8 Perfluorooctane sulfonic acid (M)



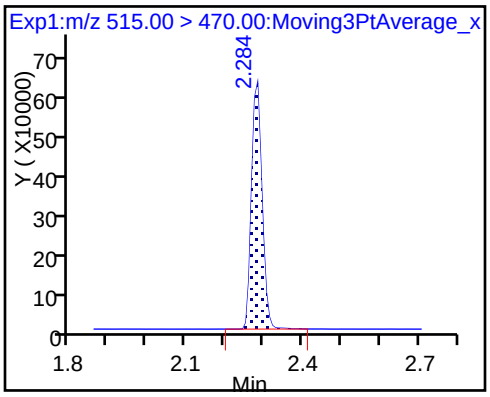
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

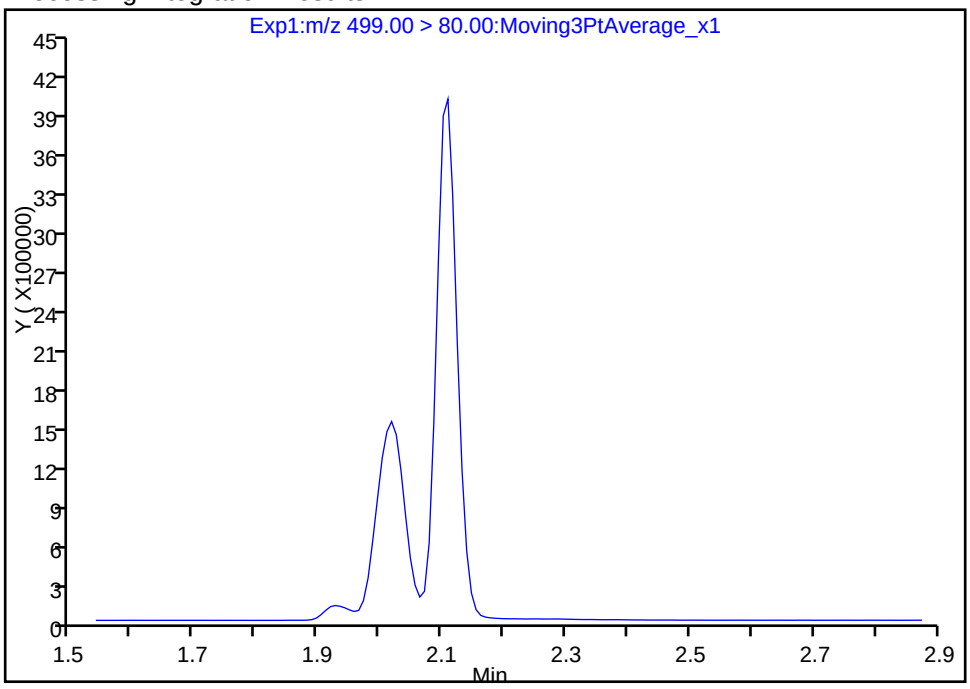
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

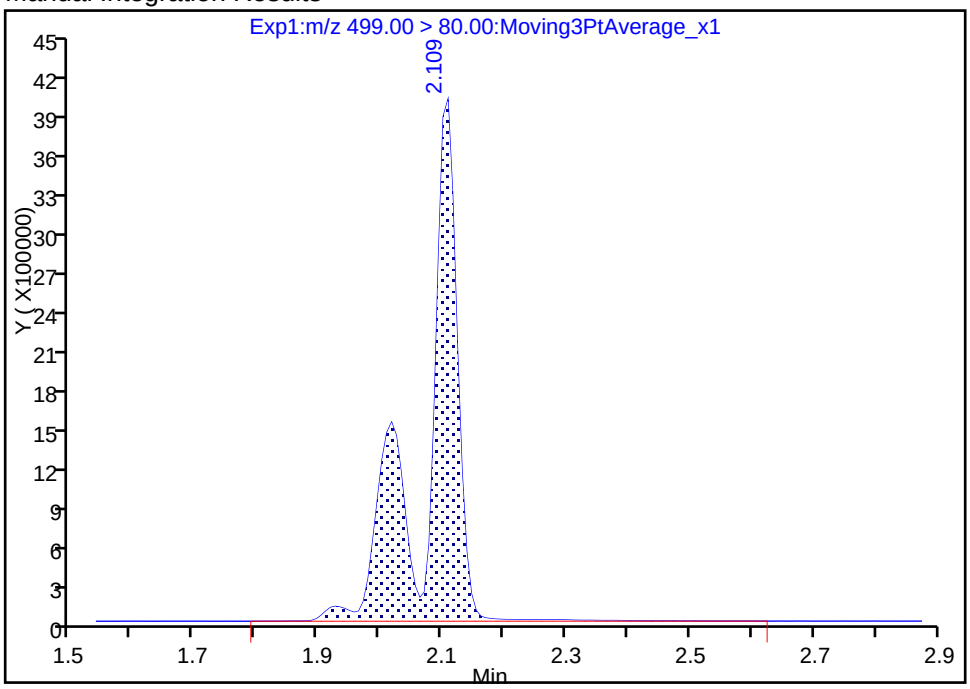
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

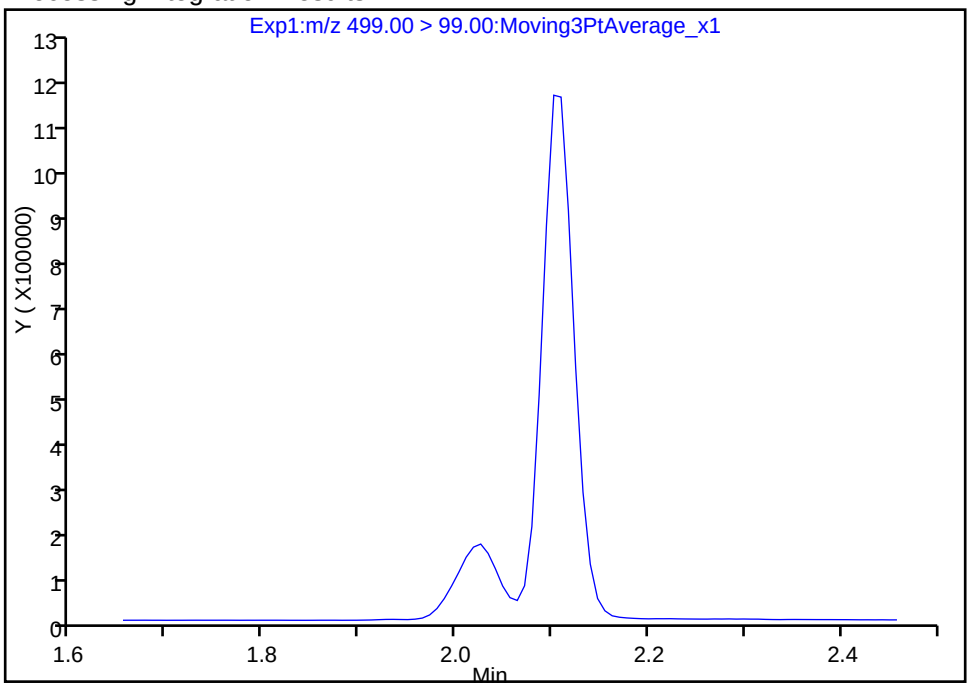
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

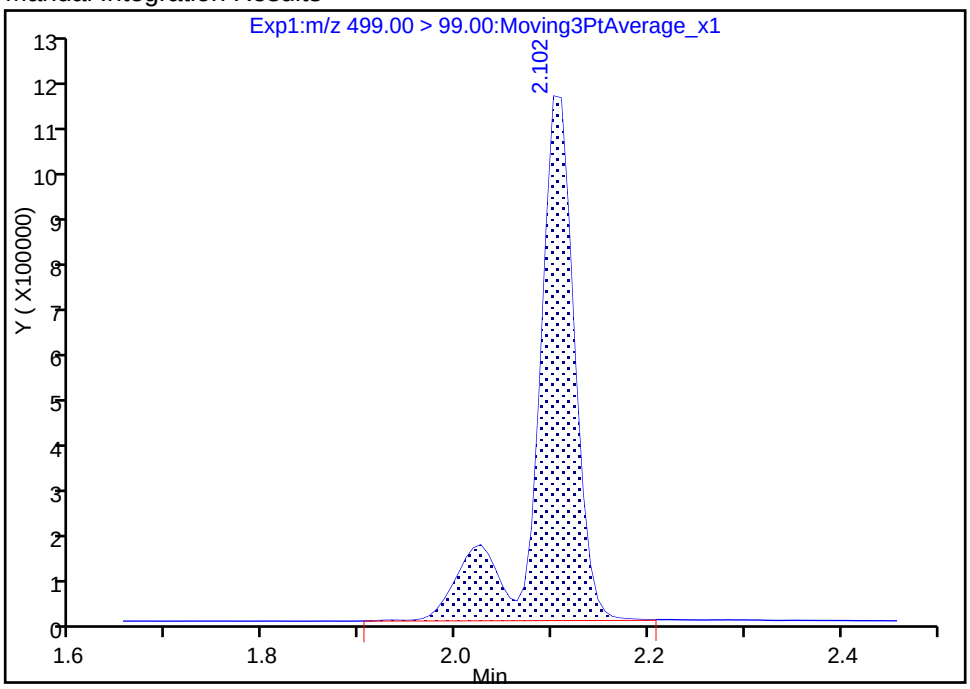
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:07:12
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

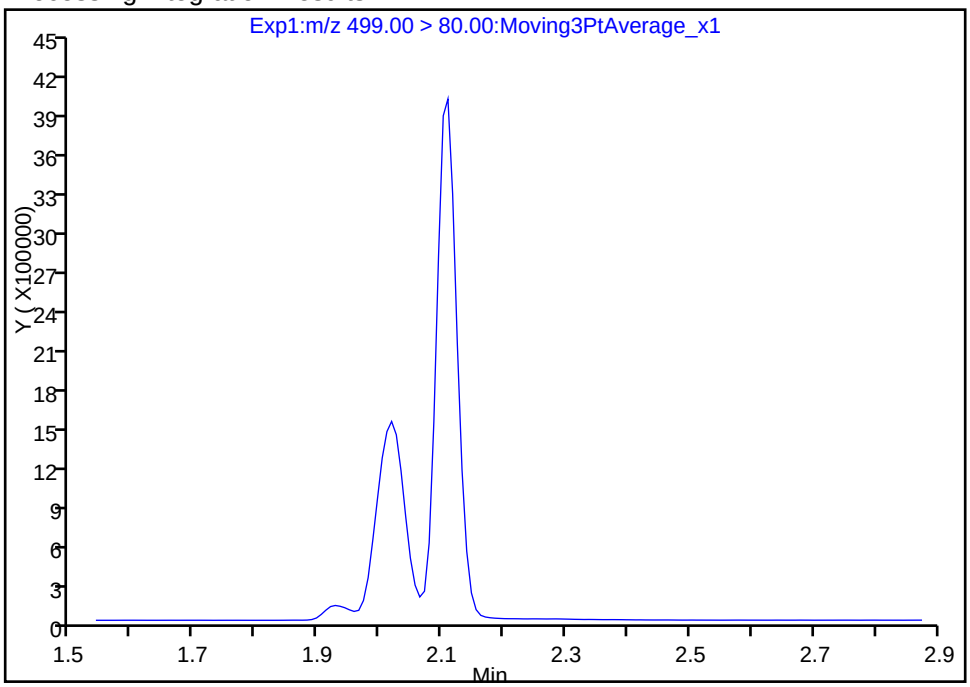
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

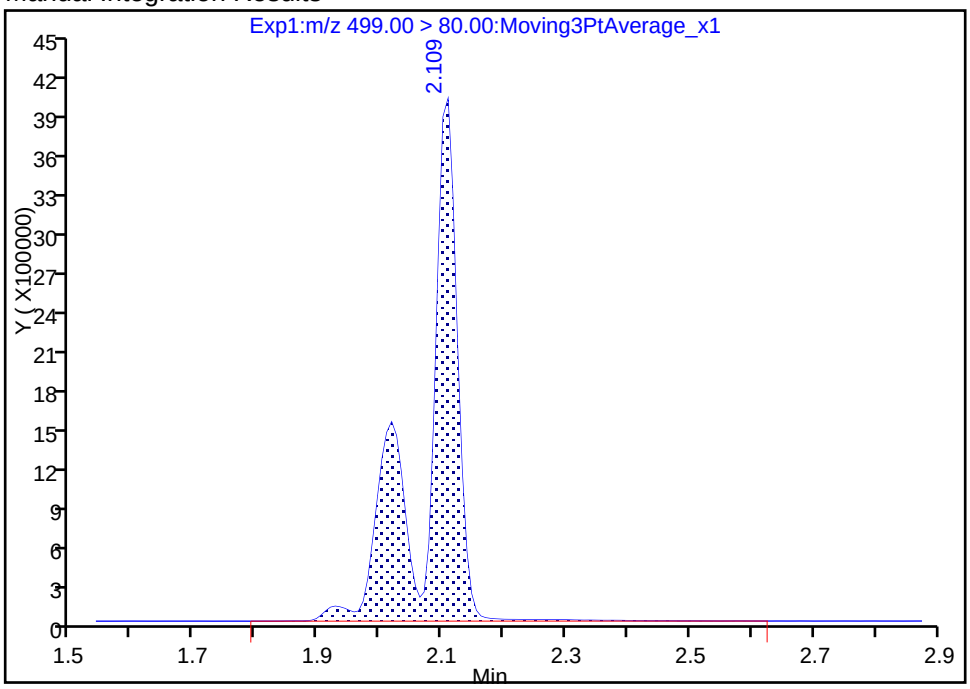
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:07:12
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCVL 320-185329/11 Calibration Date: 09/20/2017 03:29

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537ICAL_011.d Conc. Units: ng/mL

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 20-Sep-2017 03:29:17 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:36 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:36 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d

Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8_N

Lims ID: CCVL

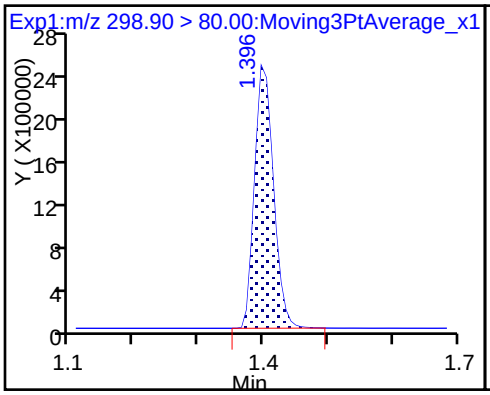
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11

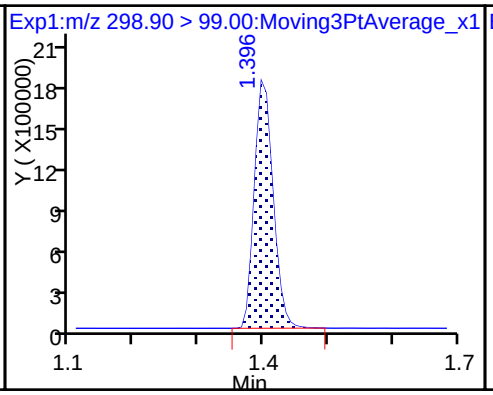
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

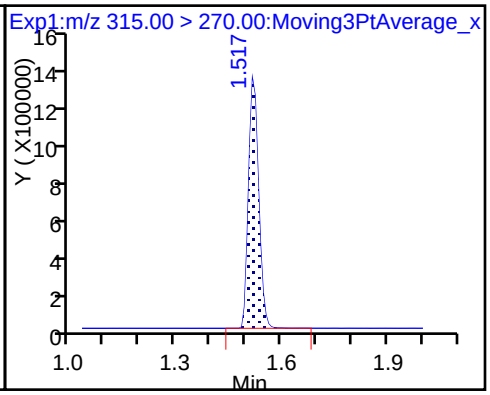
1 Perfluorobutanesulfonic acid



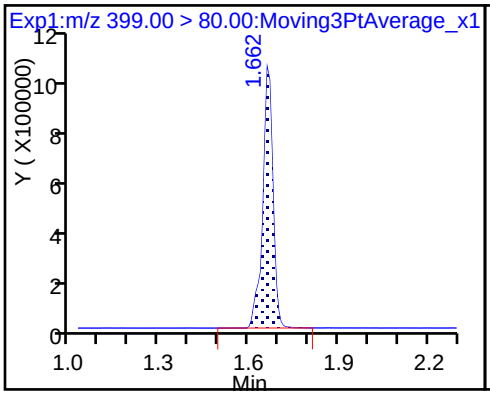
1 Perfluorobutanesulfonic acid



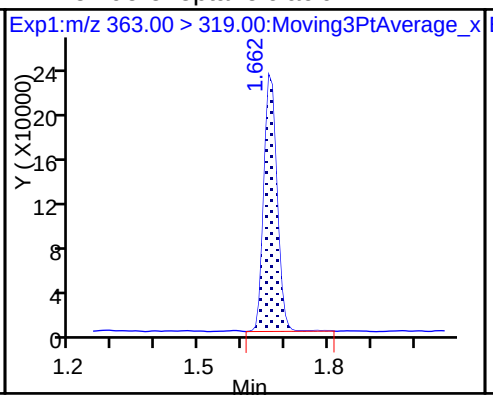
$ 2 13C2 PFHxA



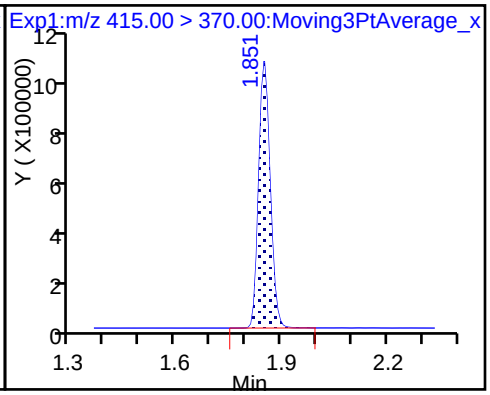
3 Perfluorohexanesulfonic acid



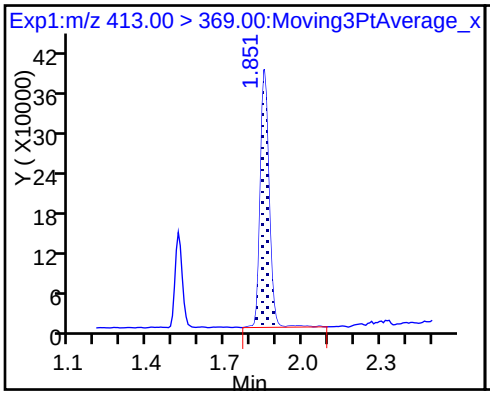
4 Perfluoroheptanoic acid



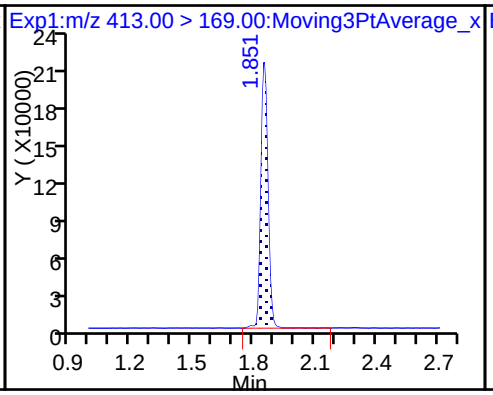
* 6 13C2-PFOA



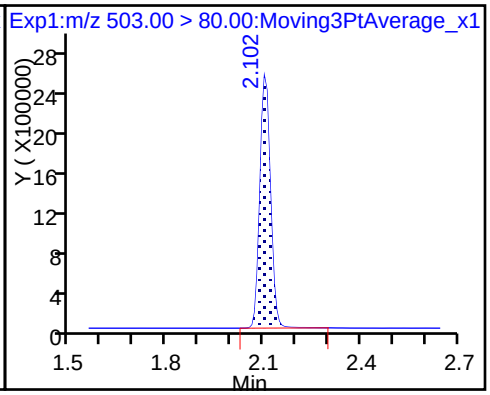
5 Perfluorooctanoic acid



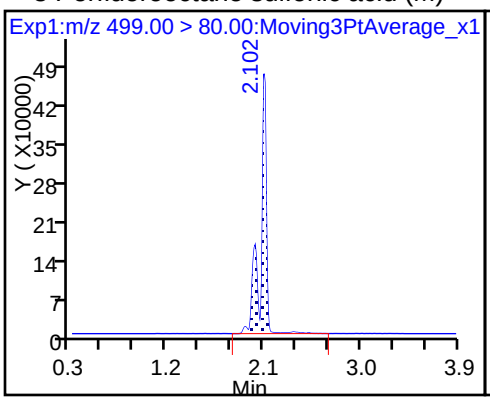
5 Perfluorooctanoic acid



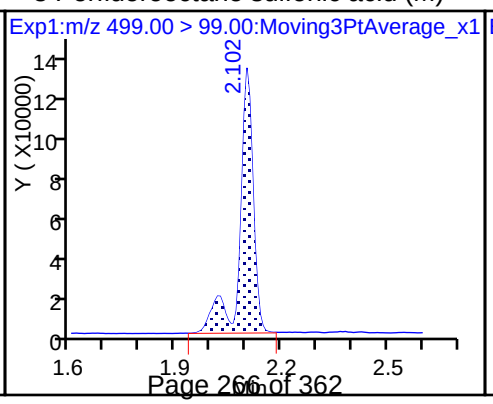
* 7 13C4 PFOS



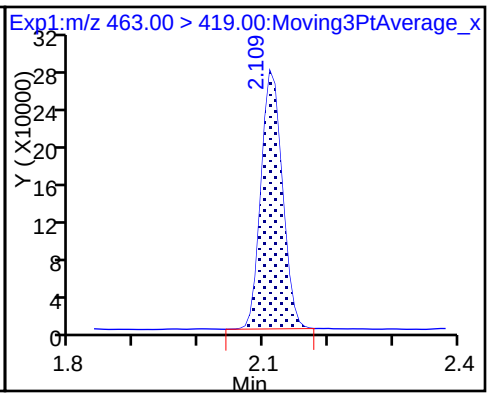
8 Perfluorooctane sulfonic acid (M)



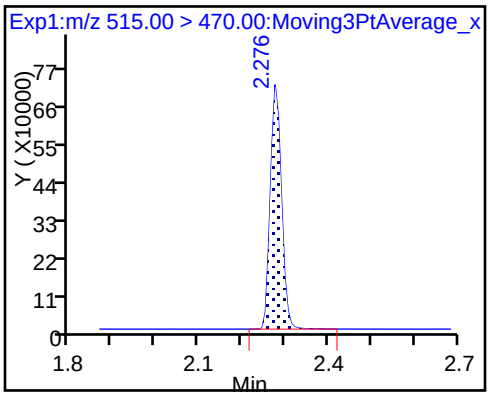
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

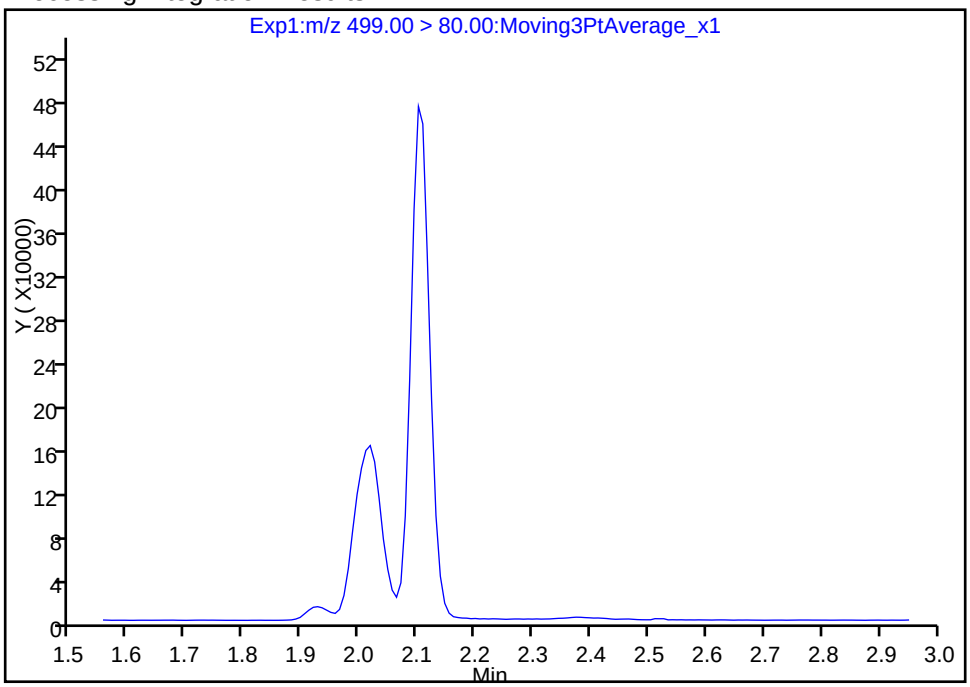
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

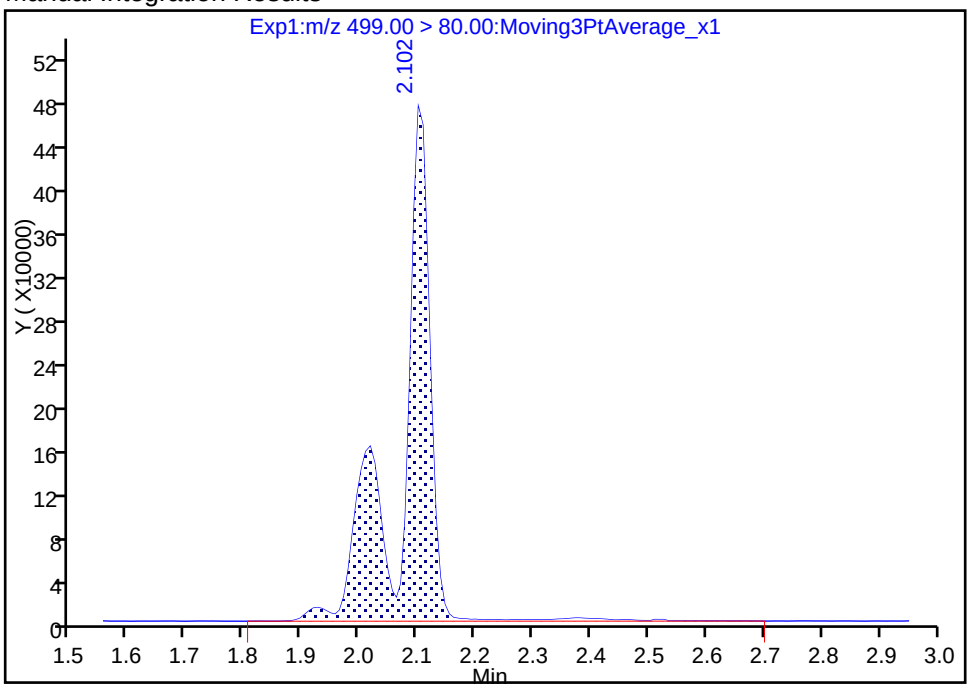
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

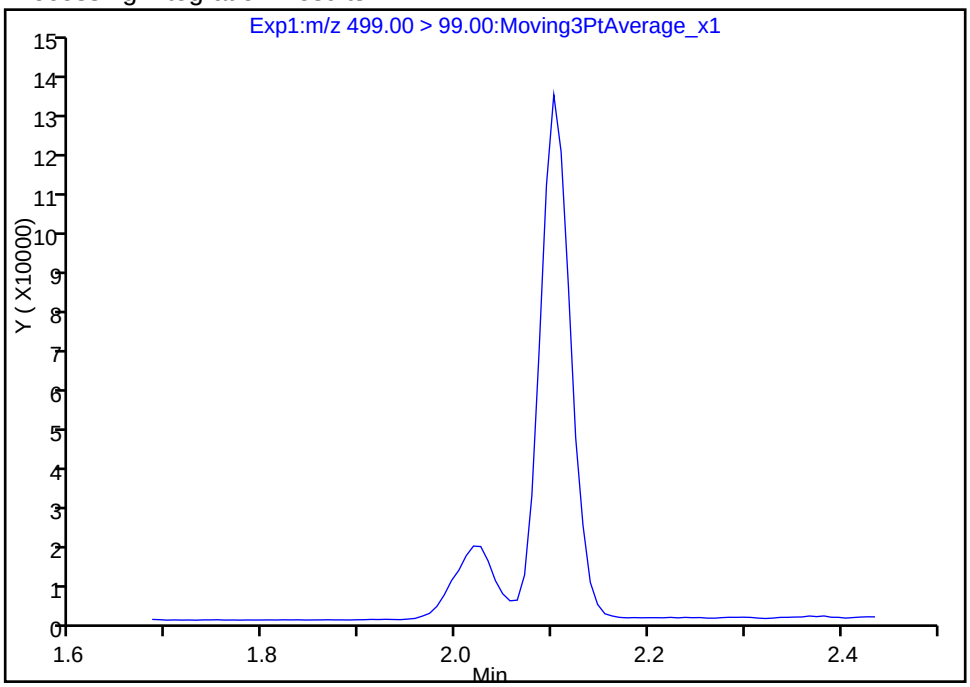
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

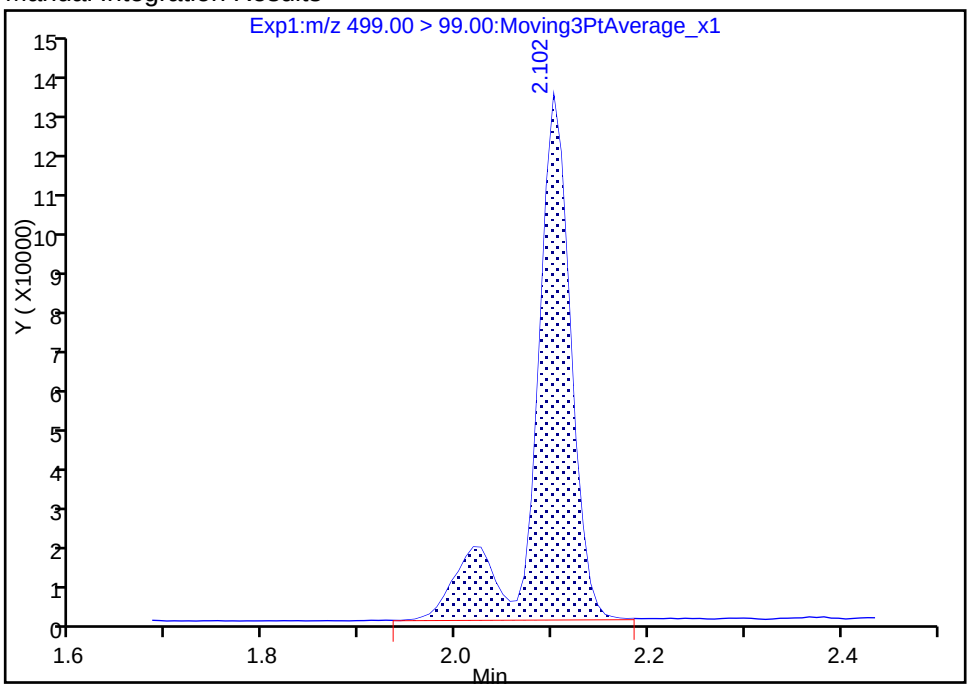
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:10:20
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

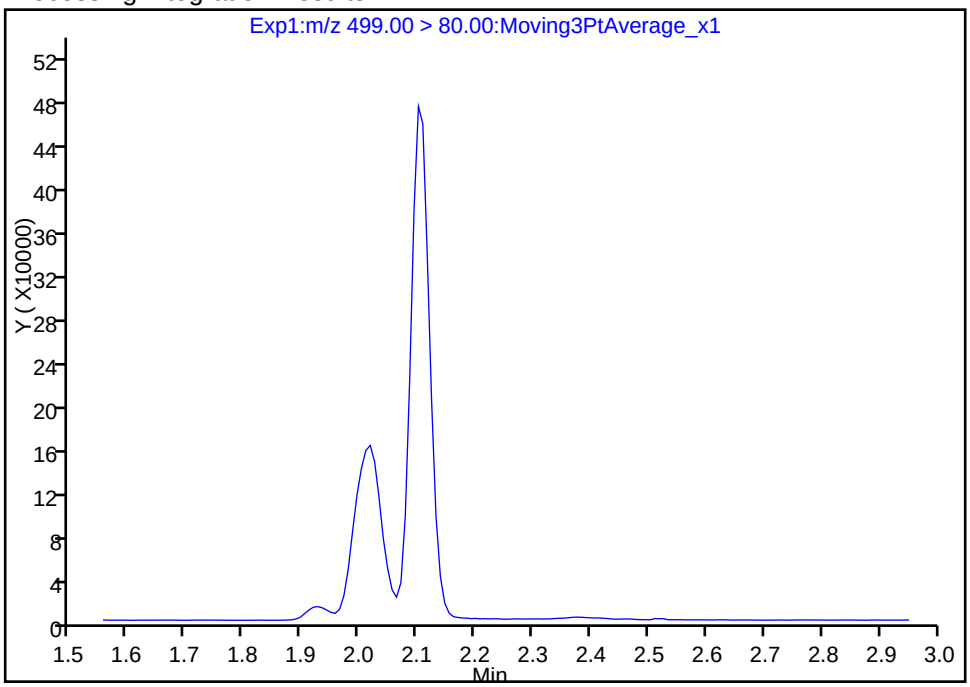
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

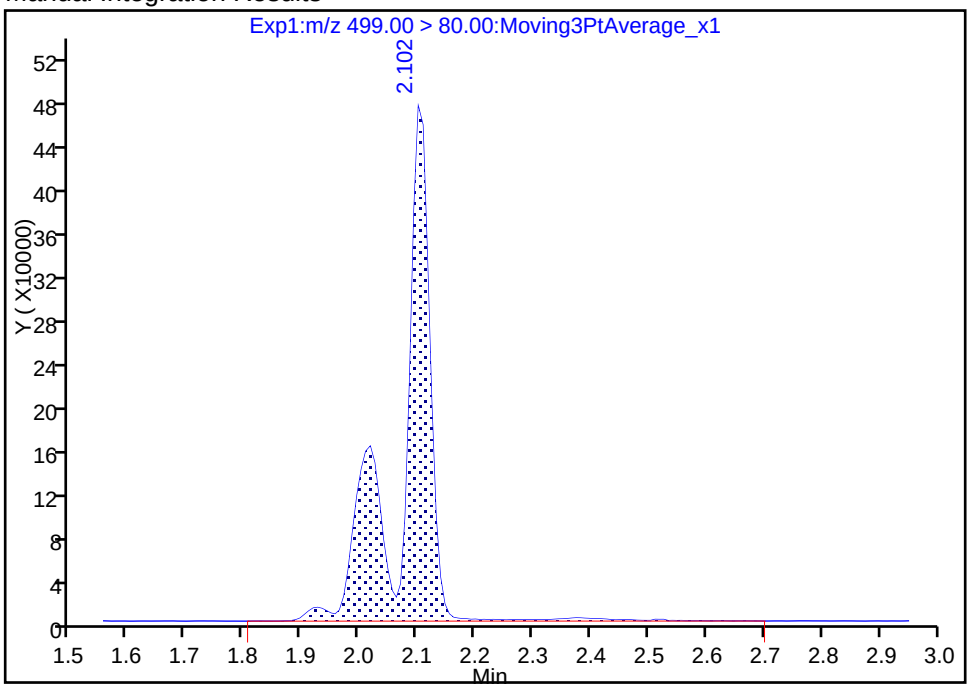
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:10:20
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: ICV 320-185329/13 Calibration Date: 09/20/2017 03:38

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537ICAL_013.d Conc. Units: ng/mL

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 20-Sep-2017 03:38:46 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 10:35:38 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-ICV_00028 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 10:35:38 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d

Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8_N

Lims ID: ICV

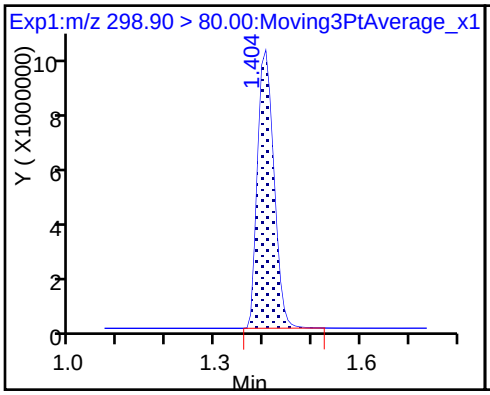
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13

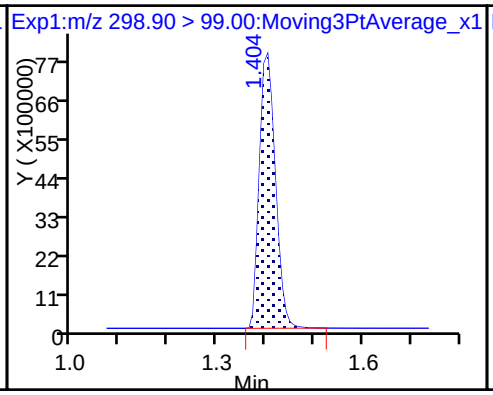
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

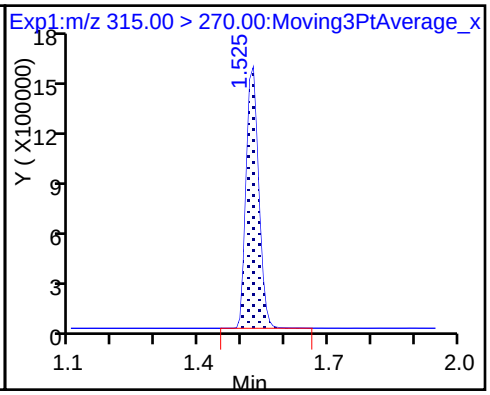
1 Perfluorobutanesulfonic acid



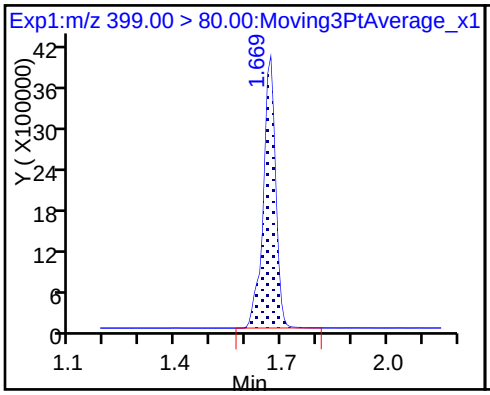
1 Perfluorobutanesulfonic acid



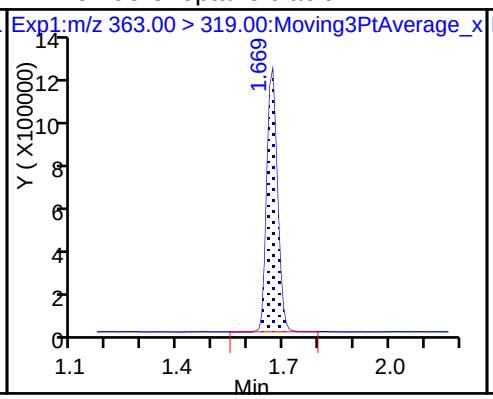
$ 2 13C2 PFHxA



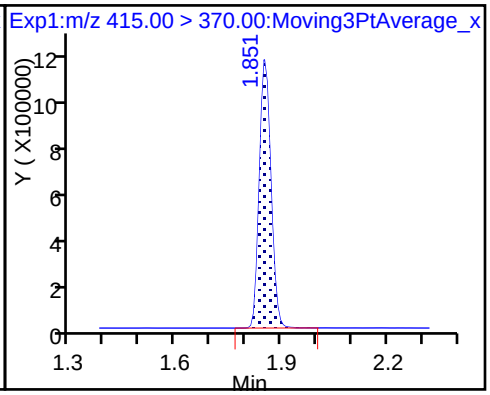
3 Perfluorohexanesulfonic acid



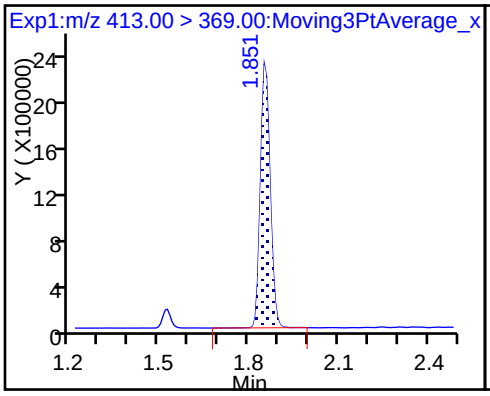
4 Perfluoroheptanoic acid



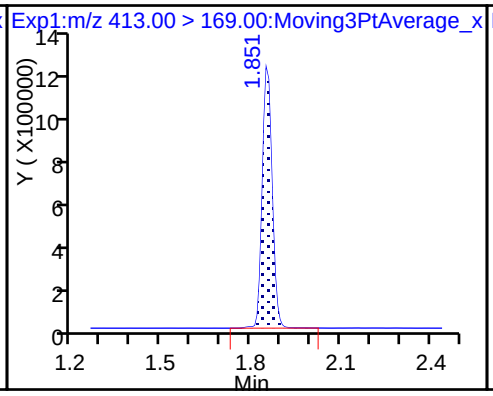
* 6 13C2-PFOA



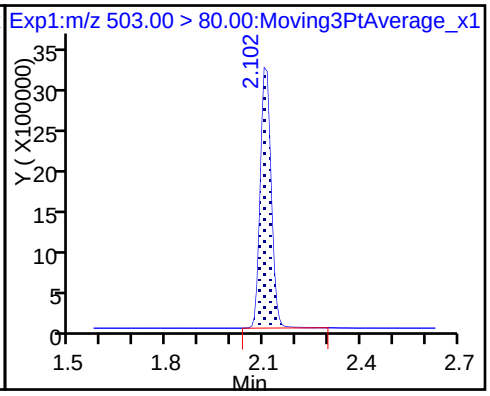
5 Perfluorooctanoic acid



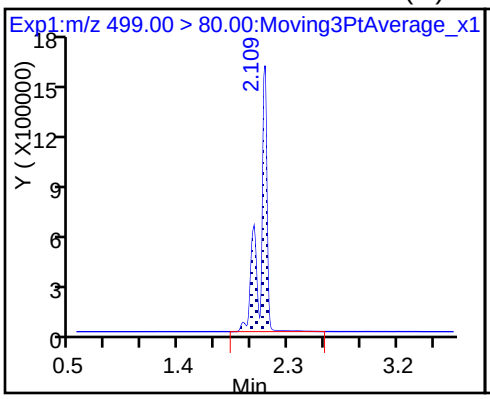
5 Perfluorooctanoic acid



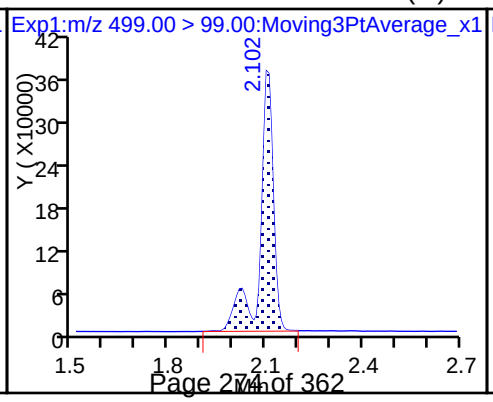
* 7 13C4 PFOS



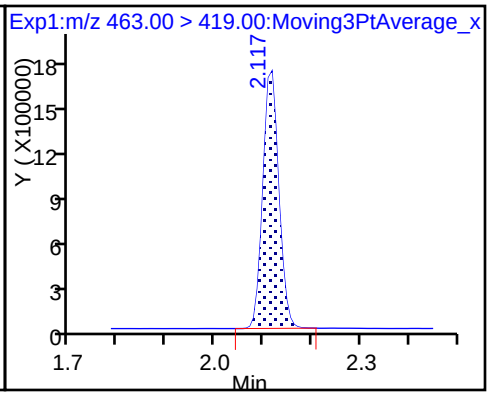
8 Perfluorooctane sulfonic acid (M)



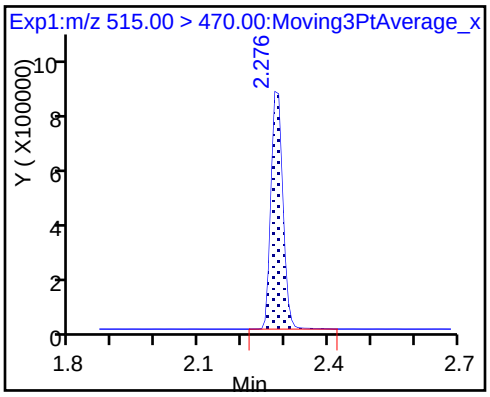
8 Perfluorooctane sulfonic acid (M)



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

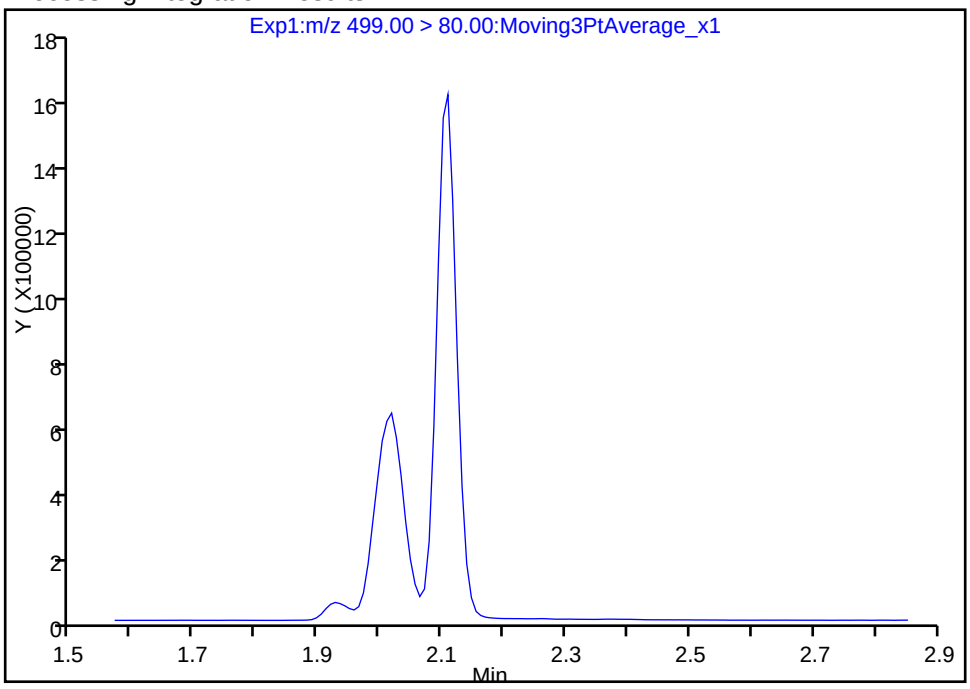
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d
Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

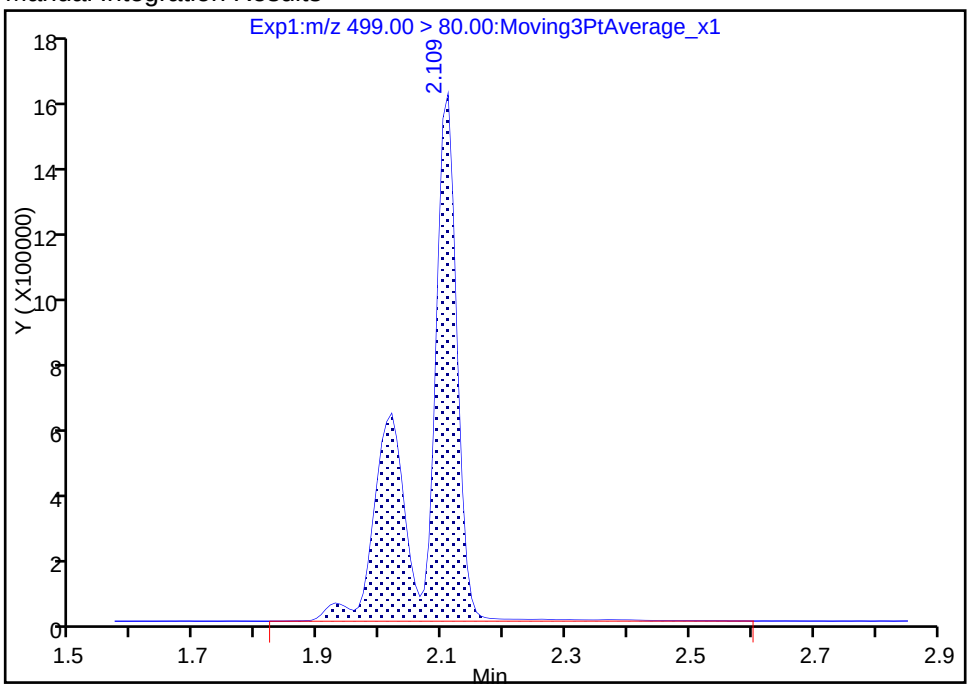
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

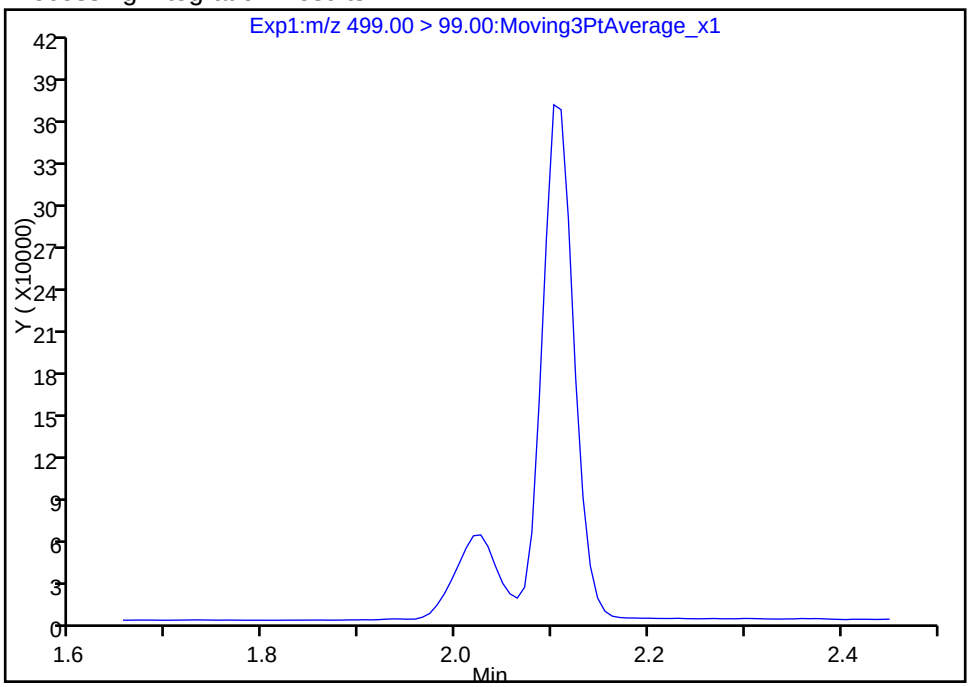
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d
Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

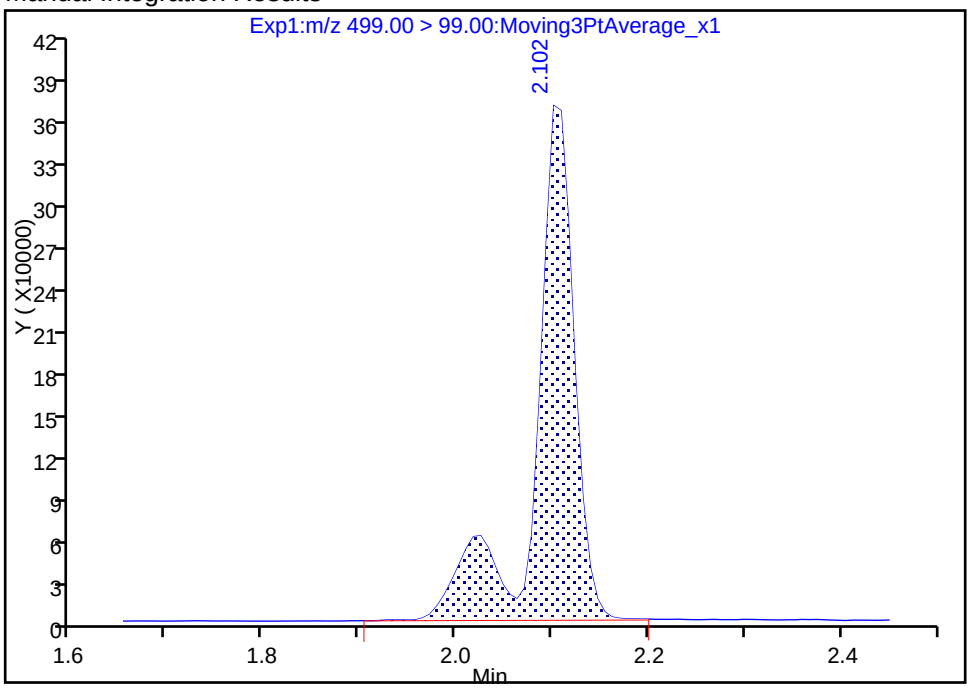
Processing Integration Results

Not Detected
Expected RT: 2.11



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:11:07
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

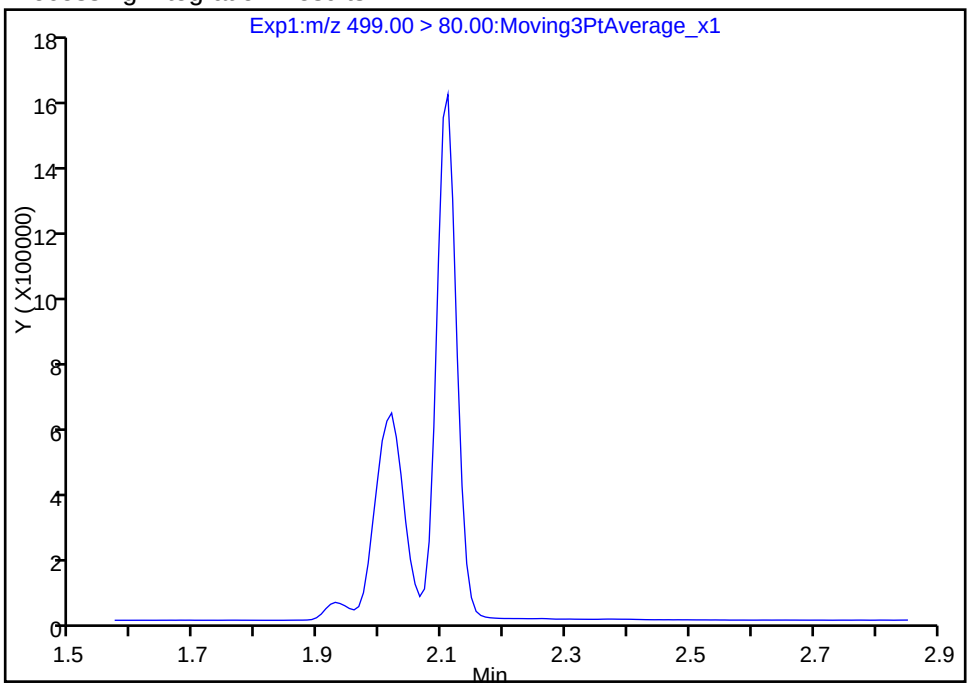
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d
Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

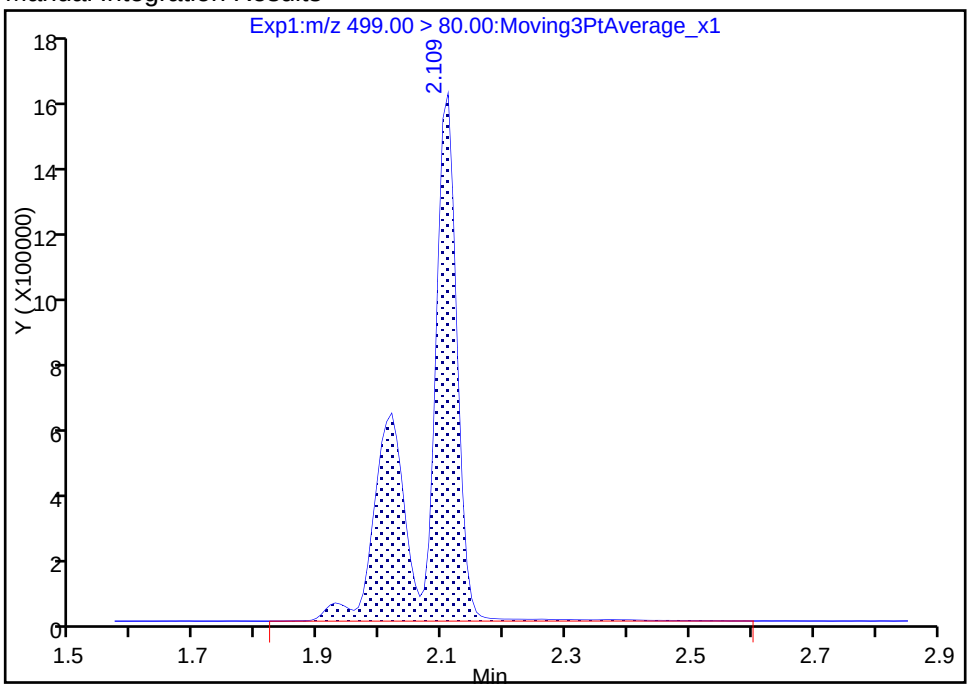
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 20-Sep-2017 10:11:07
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185410/1 Calibration Date: 09/20/2017 06:43

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_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		0.8765		135	135	0.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8948		14.3	15.0	-5.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.596		43.9	45.0	-2.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8826		28.8	30.0	-4.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9548		61.5	60.0	2.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5935		28.6	30.0	-4.6	30.0
13C2 PFHxA	Ave	1.172	1.209		10.3	10.0	3.2	30.0
13C2 PFDA	Ave	0.5578	0.5368		9.62	10.0	-3.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_038.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 20-Sep-2017 06:43:50 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\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:48:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	22232213	135.2		5349	
298.90 > 99.00	1.396	1.402	-0.006	1.000	16661218		1.33(0.00-0.00)	5354	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2583322	10.3		8977	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	13497139	43.9		5454	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	2869181	14.3		737	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2137164	10.0		6904	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	5663334	28.8		195	
413.00 > 169.00	1.844	1.856	-0.012	1.000	3095220		1.83(0.00-0.00)	6277	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.094	2.094	0.0	1.000	10765898	61.5		5899	M
499.00 > 99.00	2.094	2.094	0.0	1.000	2235651		4.82(0.00-0.00)	1510	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		5388320	28.7		4770	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.116	-0.014	1.000	3805767	28.6		458	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1147213	9.62		9670	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 14:17:22 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_038.d

Injection Date: 20-Sep-2017 06:43:50 Instrument ID: A8_N

Lims ID: CCV L5

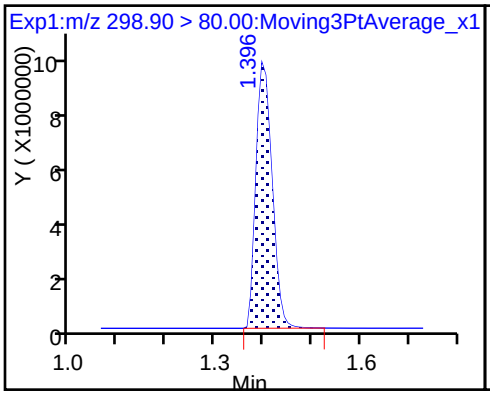
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1

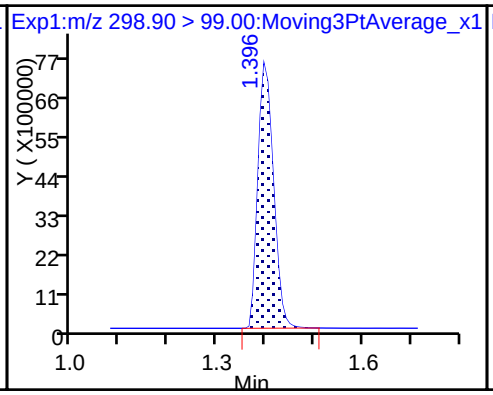
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

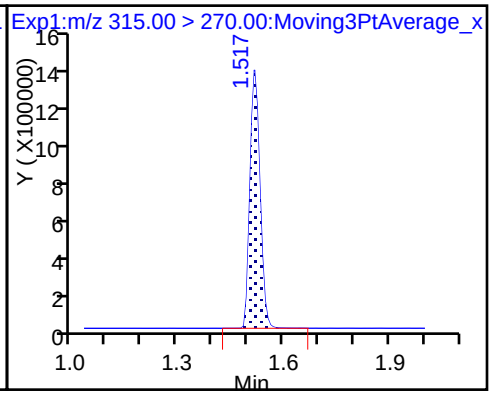
1 Perfluorobutanesulfonic acid



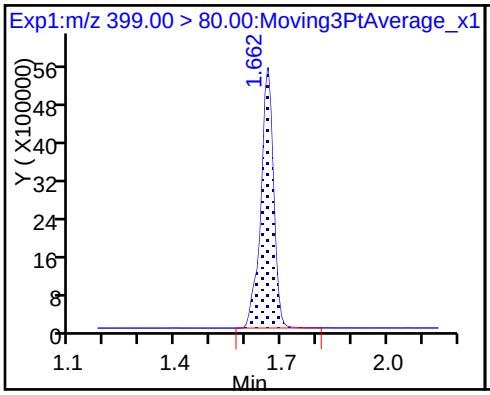
1 Perfluorobutanesulfonic acid



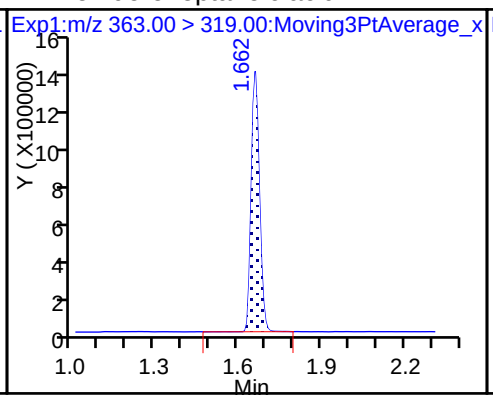
$ 2 13C2 PFHxA



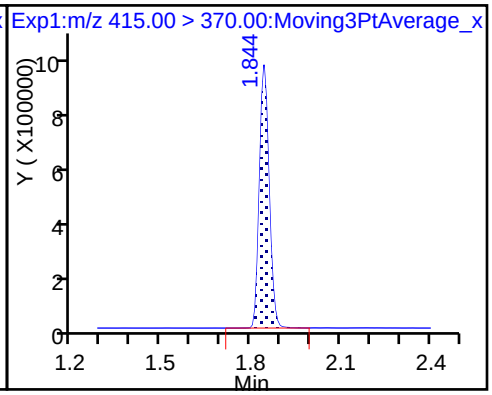
3 Perfluorohexanesulfonic acid



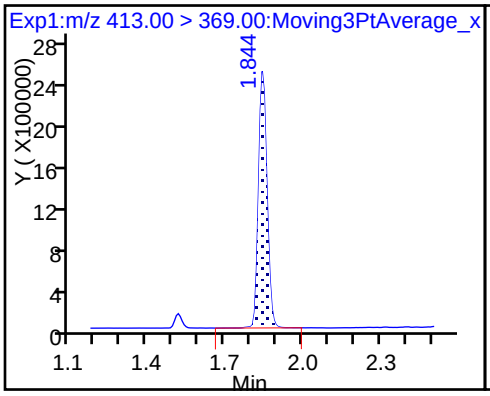
4 Perfluoroheptanoic acid



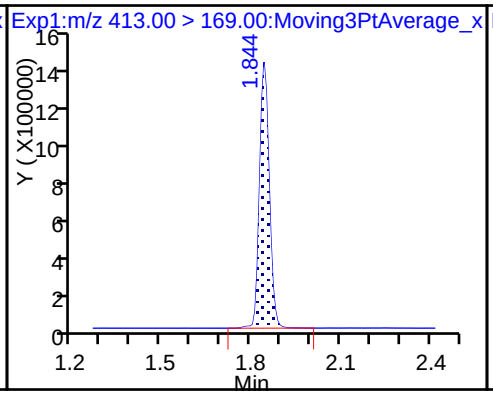
* 6 13C2-PFOA



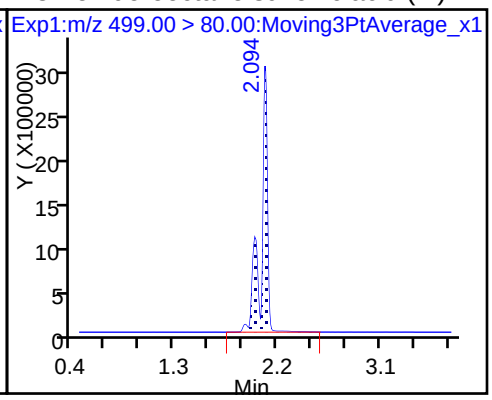
5 Perfluorooctanoic acid



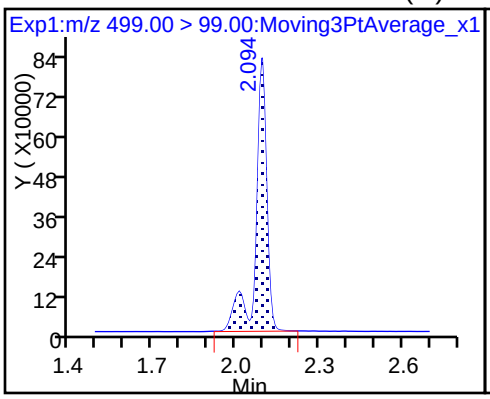
5 Perfluorooctanoic acid



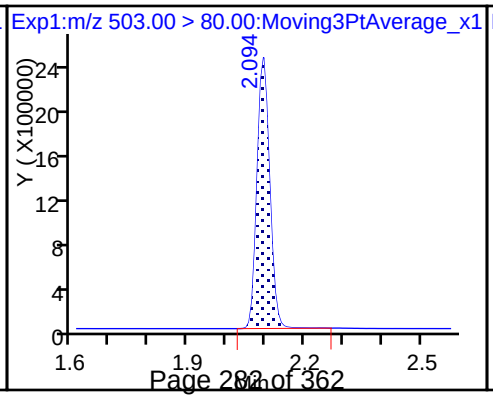
8 Perfluorooctane sulfonic acid (M)



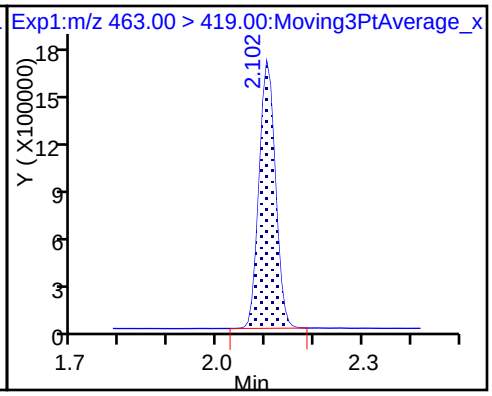
8 Perfluorooctane sulfonic acid (M)



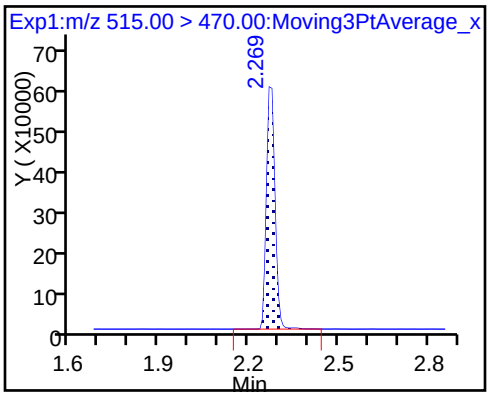
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
70
60
50
40
30
20
10
0
1.6
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

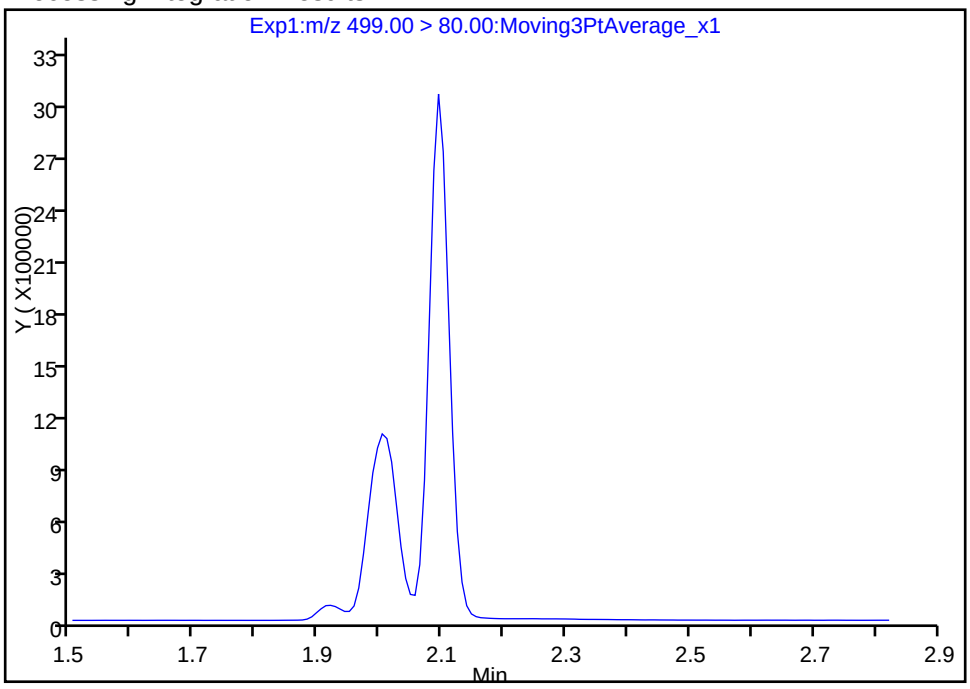
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_038.d
Injection Date: 20-Sep-2017 06:43:50 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

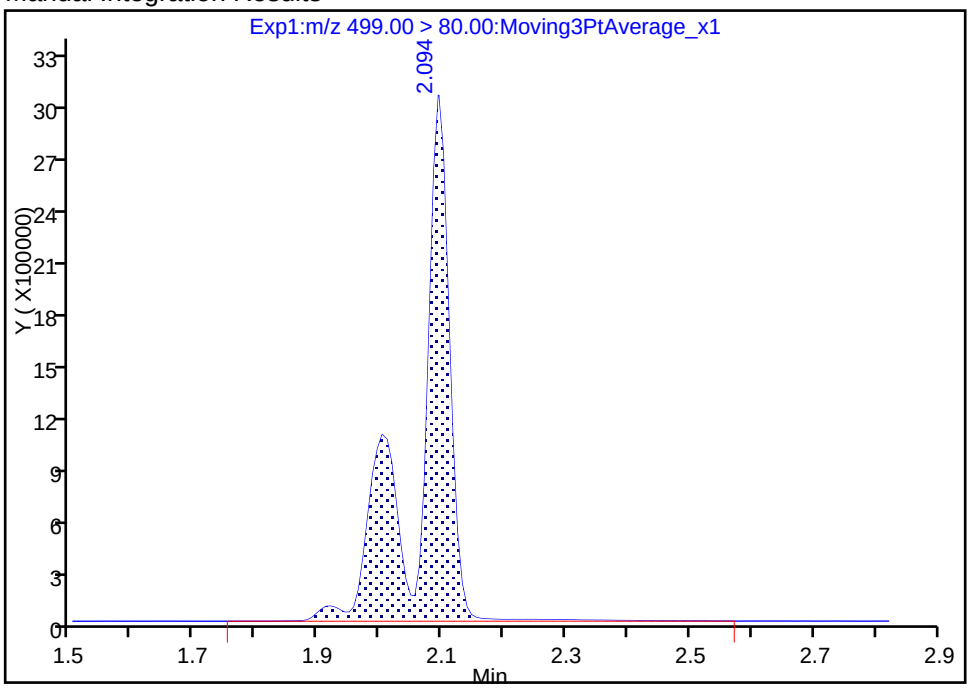
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 10765898
Amount: 61.503502
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:48:07
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

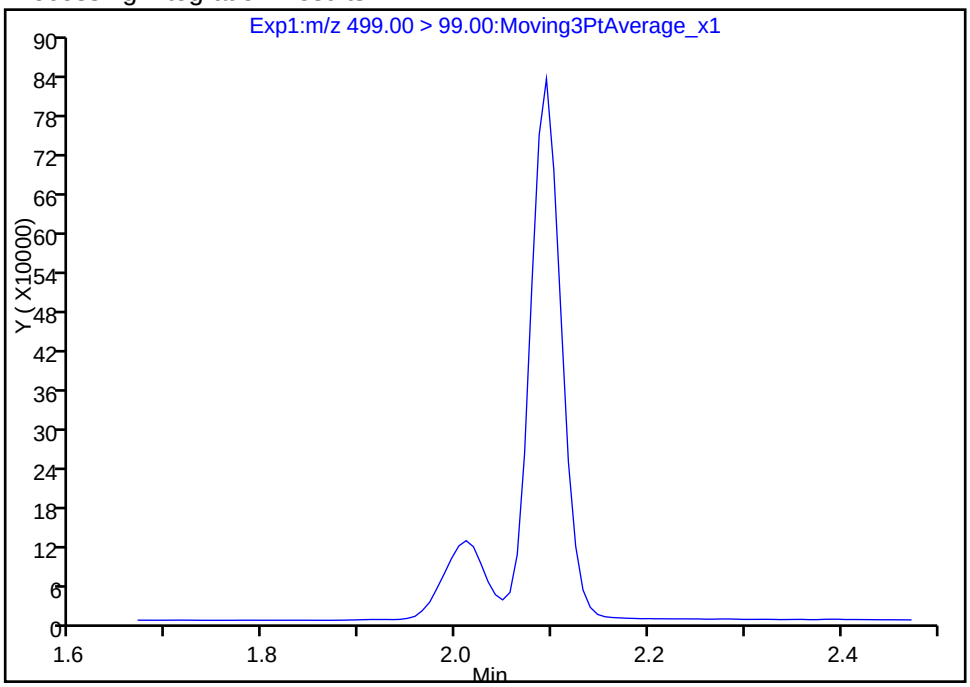
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_038.d
Injection Date: 20-Sep-2017 06:43:50 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

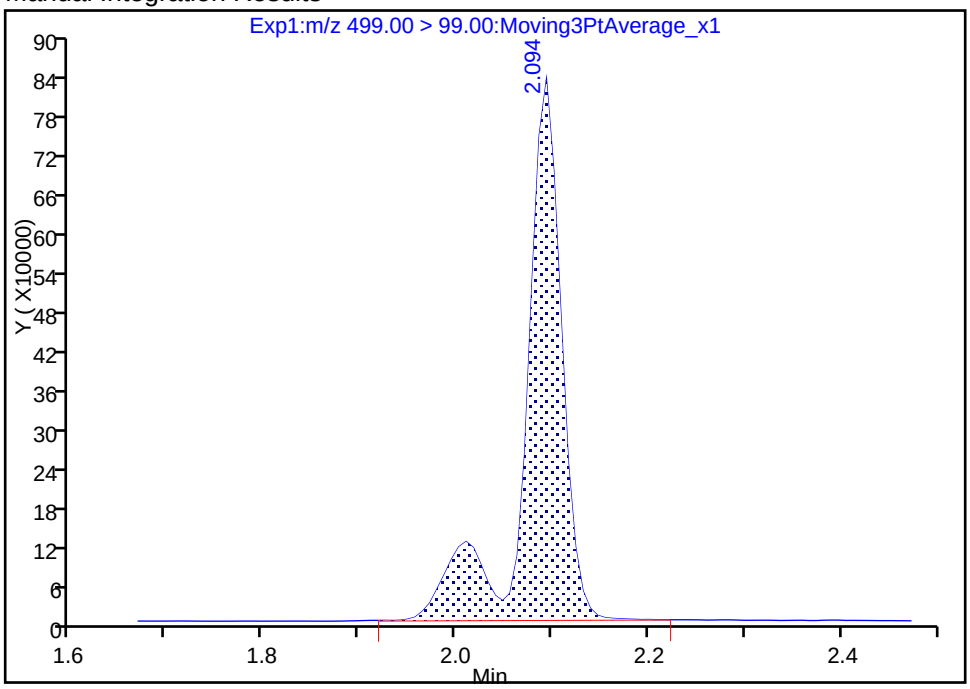
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 2235651
Amount: 61.503502
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:48:20
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

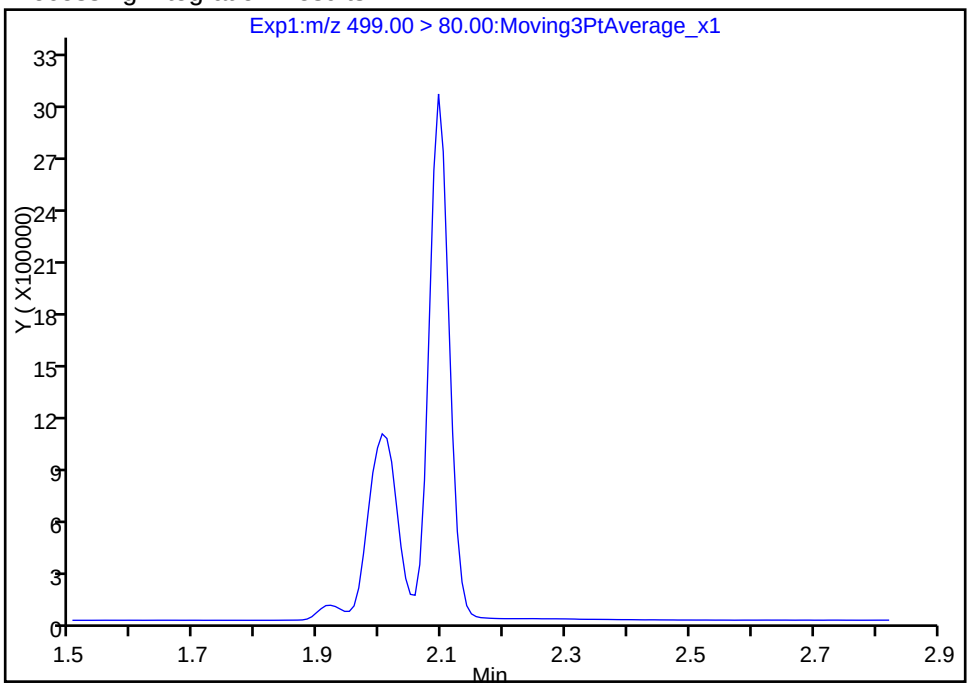
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_038.d
Injection Date: 20-Sep-2017 06:43:50 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

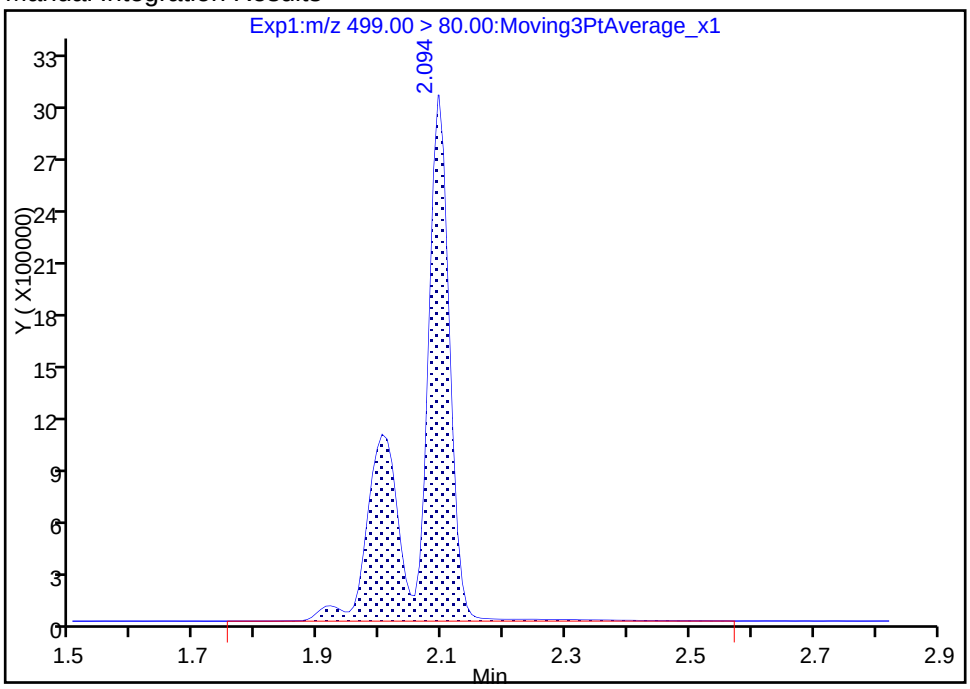
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 10765898
Amount: 61.503502
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:48:20
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185410/13 Calibration Date: 09/20/2017 07:40

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_050.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.131		46.4	45.0	3.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9423		5.00	5.00	0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.707		15.6	15.0	4.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9228		10.0	10.0	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9449		20.3	20.0	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6155		9.90	10.0	-1.0	30.0
13C2 PFHxA	Ave	1.172	1.153		9.84	10.0	-1.6	30.0
13C2 PFDA	Ave	0.5578	0.5300		9.50	10.0	-5.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185411/13 Calibration Date: 09/20/2017 07:40

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_050.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.131		46.4	45.0	3.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9423		5.00	5.00	0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.707		15.6	15.0	4.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9228		10.0	10.0	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9449		20.3	20.0	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6155		9.90	10.0	-1.0	30.0
13C2 PFHxA	Ave	1.172	1.153		9.84	10.0	-1.6	30.0
13C2 PFDA	Ave	0.5578	0.5300		9.50	10.0	-5.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_050.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 20-Sep-2017 07:40:46 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\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:55:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	9921410	46.4		7159	
298.90 > 99.00	1.396	1.402	-0.006	1.000	7012909		1.41(0.00-0.00)	5906	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.524	-0.014	1.000	2497780	9.84		9179	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	4992273	15.6		5540	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.668	-0.014	1.000	1020587	5.00		268	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2165650	10.0		6975	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.836	1.856	-0.020	1.000	2000115	10.0		67.2	
413.00 > 169.00	1.836	1.856	-0.020	1.000	1049606		1.91(0.00-0.00)	3691	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.094	-0.008	1.000	3685641	20.3		4453	
499.00 > 99.00	2.086	2.094	-0.008	1.000	748142		4.93(0.00-0.00)	584	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		5591851	28.7		5838	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.116	-0.022	1.000	1333094	9.90		139	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1147745	9.50		8501	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_050.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 20-Sep-2017 07:40:46 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\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:55:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	9921410	46.4		7159	
298.90 > 99.00	1.396	1.402	-0.006	1.000	7012909		1.41(0.00-0.00)	5906	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.524	-0.014	1.000	2497780	9.84		9179	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	4992273	15.6		5540	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.668	-0.014	1.000	1020587	5.00		268	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2165650	10.0		6975	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.836	1.856	-0.020	1.000	2000115	10.0		67.2	
413.00 > 169.00	1.836	1.856	-0.020	1.000	1049606		1.91(0.00-0.00)	3691	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.094	-0.008	1.000	3685641	20.3		4453	
499.00 > 99.00	2.086	2.094	-0.008	1.000	748142		4.93(0.00-0.00)	584	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		5591851	28.7		5838	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.116	-0.022	1.000	1333094	9.90		139	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1147745	9.50		8501	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 14:17:49 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_050.d

Injection Date: 20-Sep-2017 07:40:46 Instrument ID: A8_N

Lims ID: CCV L3

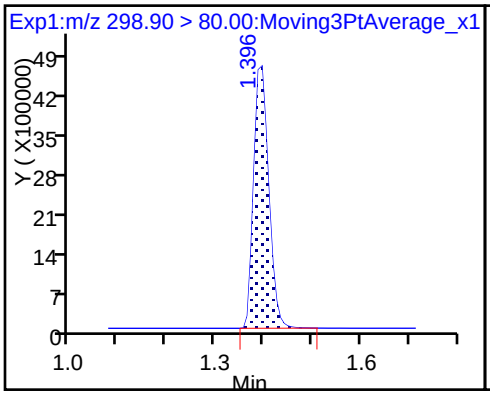
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13

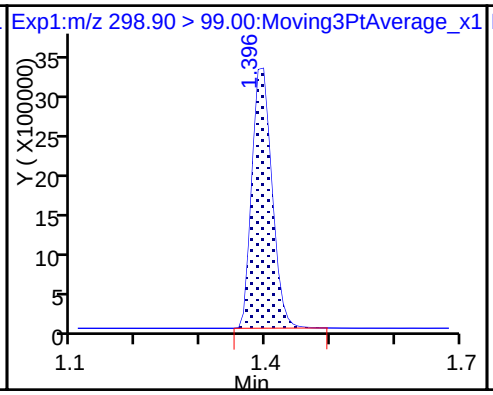
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

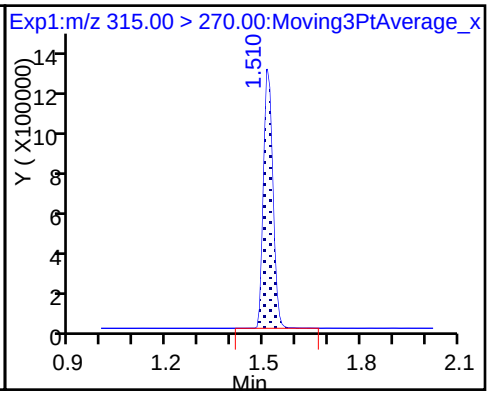
1 Perfluorobutanesulfonic acid



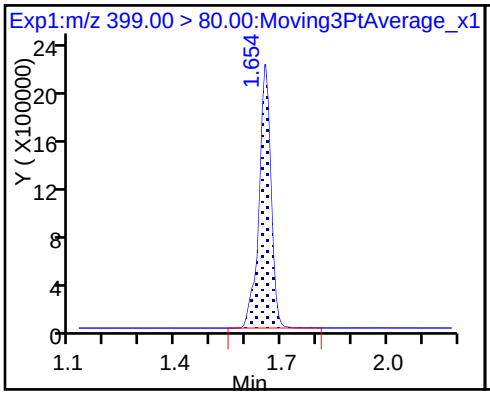
1 Perfluorobutanesulfonic acid



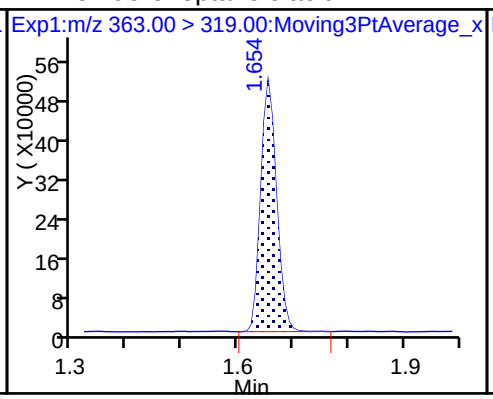
$ 2 13C2 PFHxA



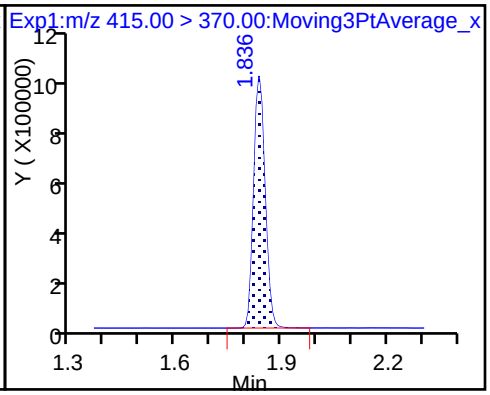
3 Perfluorohexanesulfonic acid



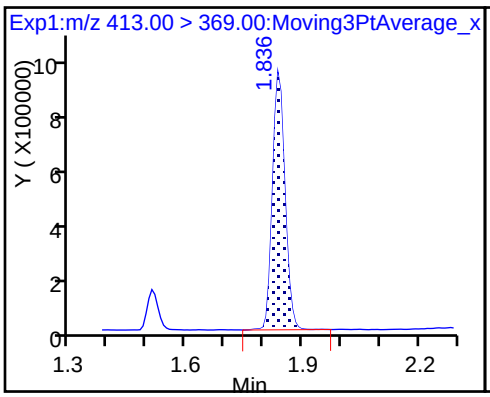
4 Perfluoroheptanoic acid



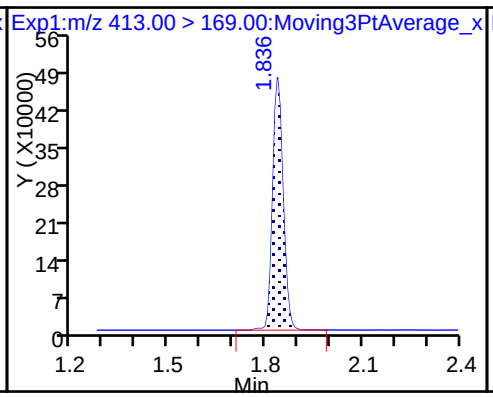
* 6 13C2-PFOA



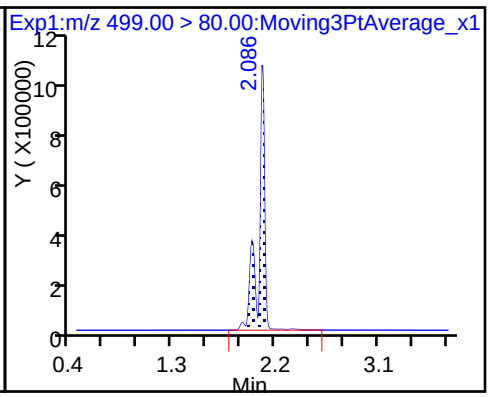
5 Perfluorooctanoic acid



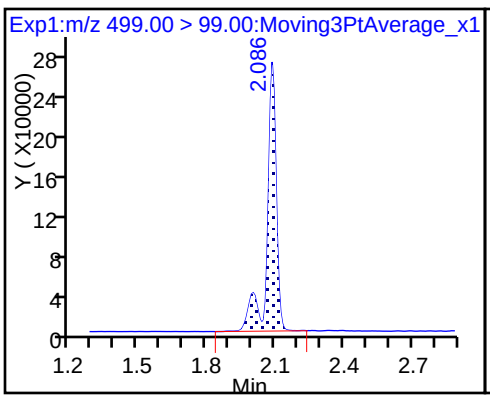
5 Perfluorooctanoic acid



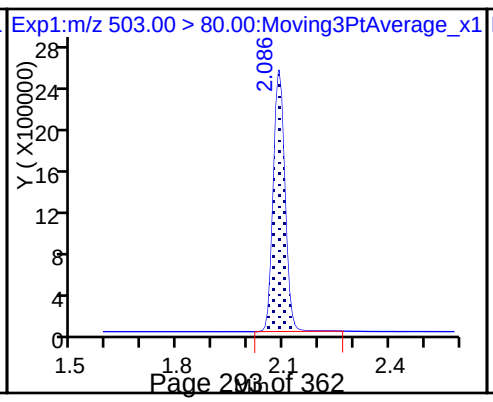
8 Perfluorooctane sulfonic acid



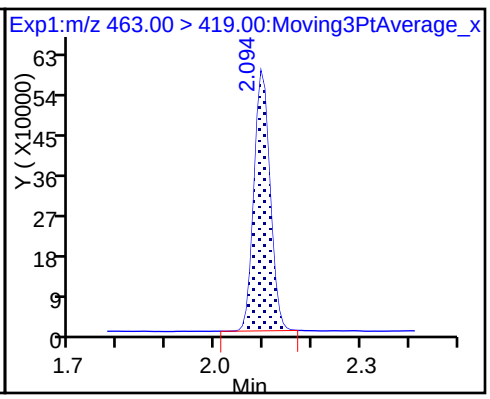
8 Perfluorooctane sulfonic acid



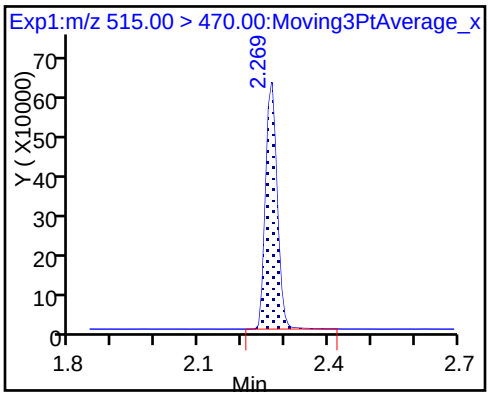
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Report Date: 20-Sep-2017 14:17:49 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_050.d

Injection Date: 20-Sep-2017 07:40:46 Instrument ID: A8_N

Lims ID: CCV L3

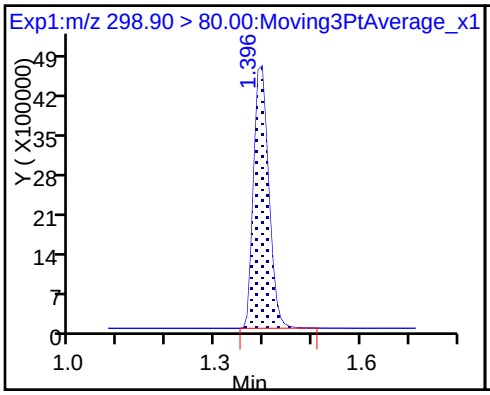
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13

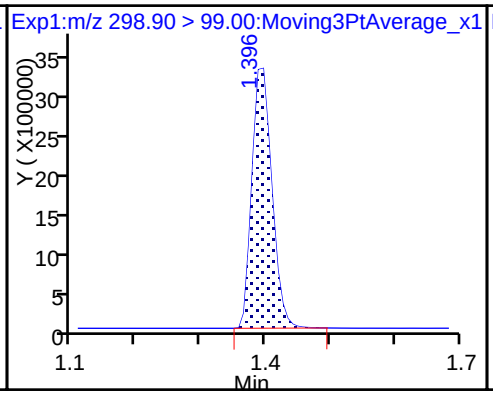
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

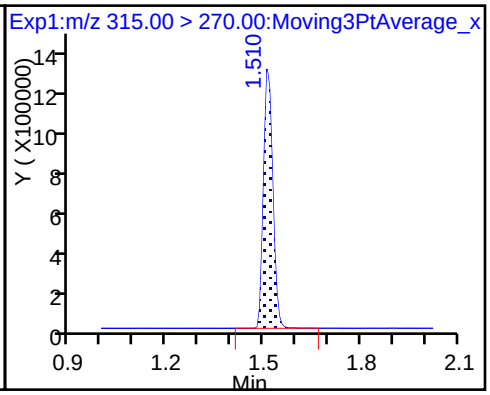
1 Perfluorobutanesulfonic acid



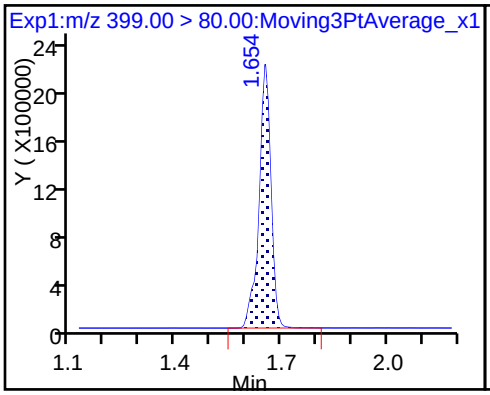
1 Perfluorobutanesulfonic acid



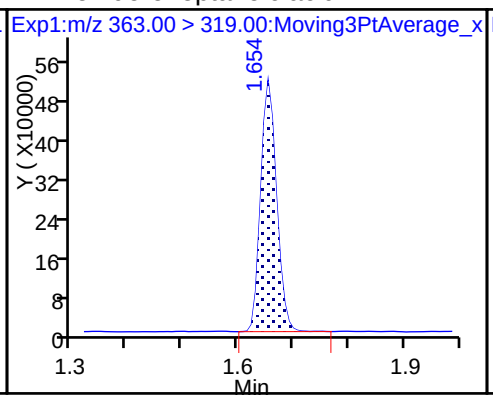
$ 2 13C2 PFHxA



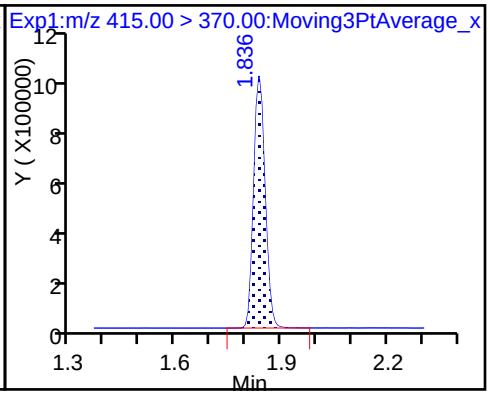
3 Perfluorohexanesulfonic acid



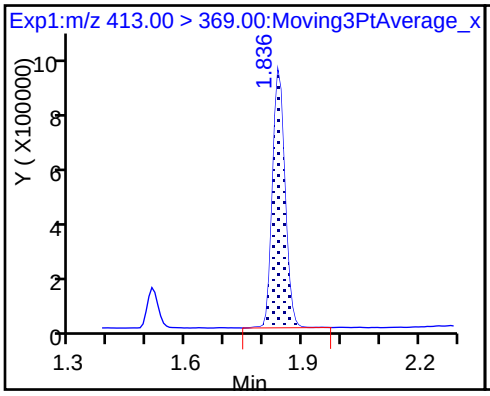
4 Perfluoroheptanoic acid



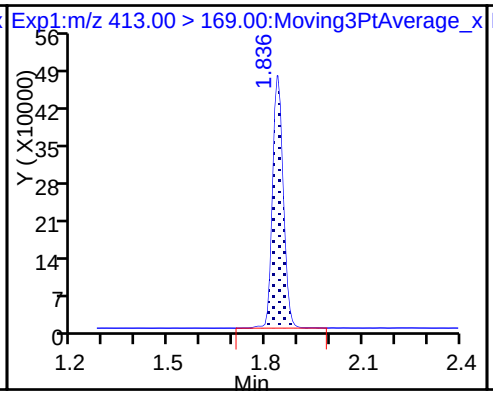
* 6 13C2-PFOA



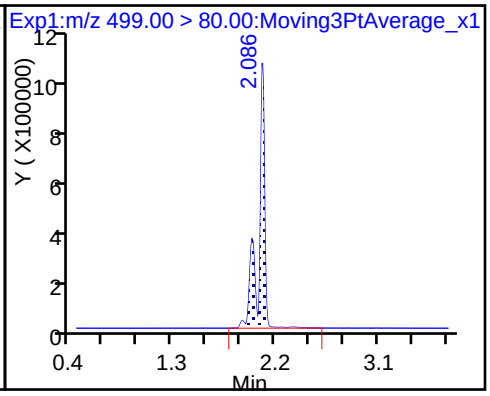
5 Perfluorooctanoic acid



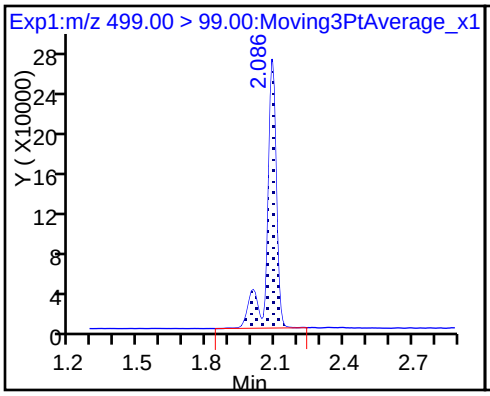
5 Perfluorooctanoic acid



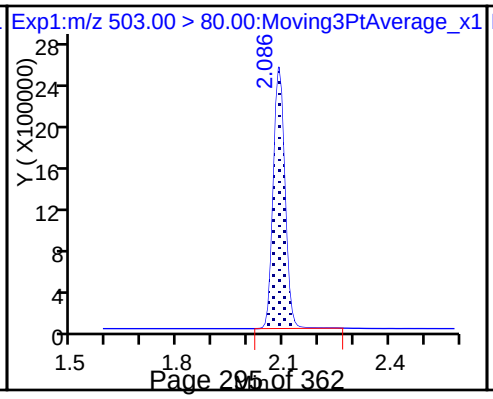
8 Perfluorooctane sulfonic acid



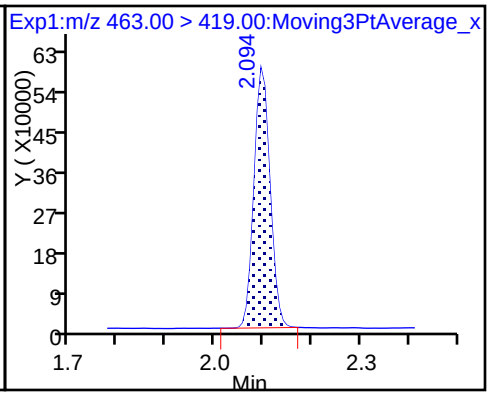
8 Perfluorooctane sulfonic acid



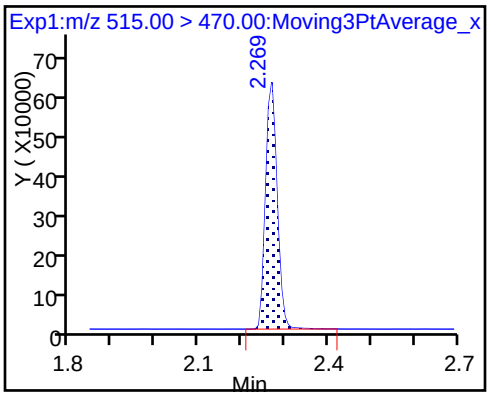
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185411/25 Calibration Date: 09/20/2017 08:37

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_062.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8373		126	135	-6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9118		14.5	15.0	-3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.589		43.7	45.0	-3.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9018		29.4	30.0	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9566		61.6	60.0	2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6042		29.2	30.0	-2.8	30.0
13C2 PFHxA	Ave	1.172	1.191		10.2	10.0	1.7	30.0
13C2 PFDA	Ave	0.5578	0.5613		10.1	10.0	0.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_062.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 20-Sep-2017 08:37:43 ALS Bottle#: 5 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:18:06 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:55:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	22945284	125.7		5567	
298.90 > 99.00	1.396	1.402	-0.006	1.000	17657323		1.30(0.00-0.00)	5534	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.524	-0.014	1.000	2647967	10.2		8713	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	14519824	43.7		6308	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.668	-0.014	1.000	3040374	14.5		787	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2222421	10.0		7316	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.836	1.856	-0.020	1.000	6017423	29.4		199	
413.00 > 169.00	1.836	1.856	-0.020	1.000	3226147		1.87(0.00-0.00)	6990	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.094	0.0	1.000	11653653	61.6		7110	
499.00 > 99.00	2.086	2.094	-0.008	0.996	2424296		4.81(0.00-0.00)	1448	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		5821646	28.7		5854	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.116	-0.014	1.000	4028800	29.2		429	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1247394	10.1		9178	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 14:18:06 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_062.d

Injection Date: 20-Sep-2017 08:37:43 Instrument ID: A8_N

Lims ID: CCV L5

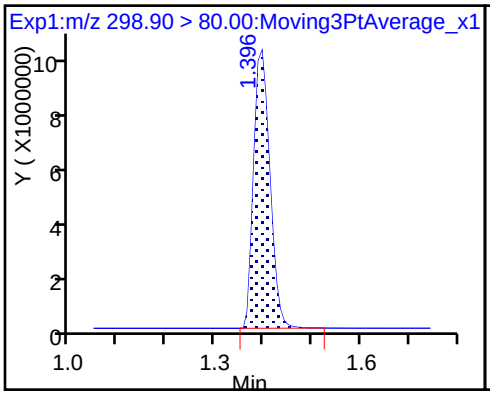
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 25

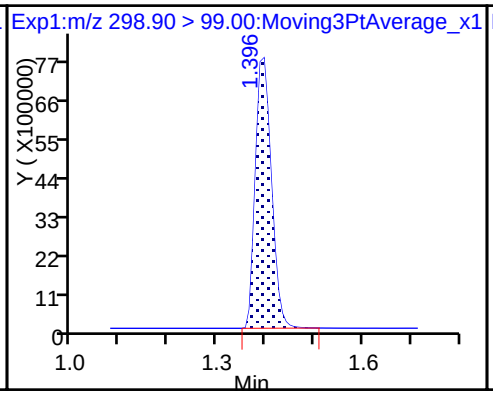
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

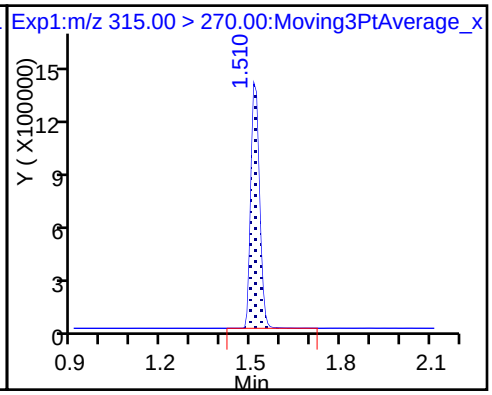
1 Perfluorobutanesulfonic acid



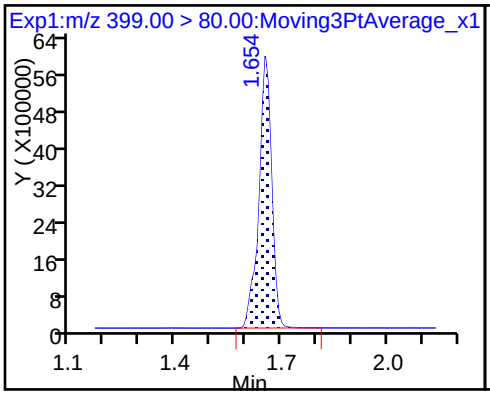
1 Perfluorobutanesulfonic acid



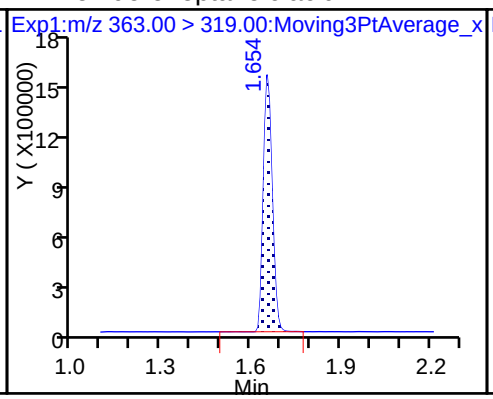
$ 2 13C2 PFHxA



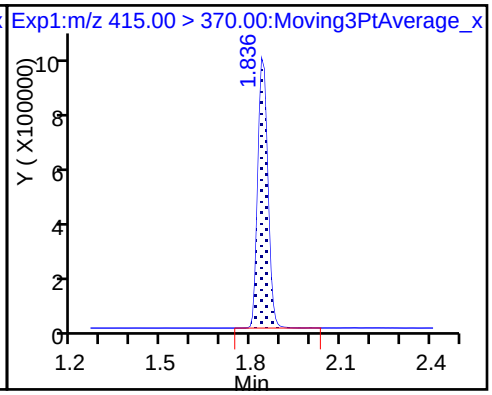
3 Perfluorohexanesulfonic acid



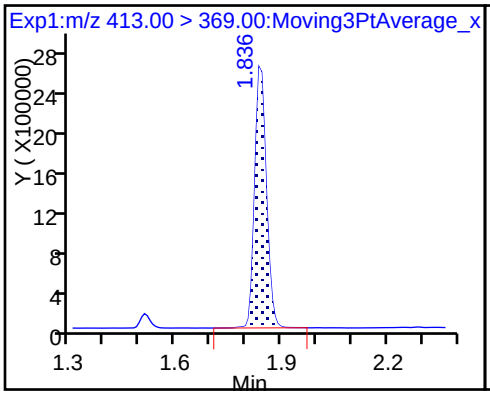
4 Perfluoroheptanoic acid



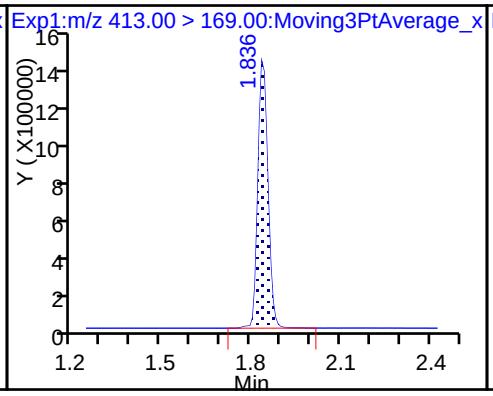
* 6 13C2-PFOA



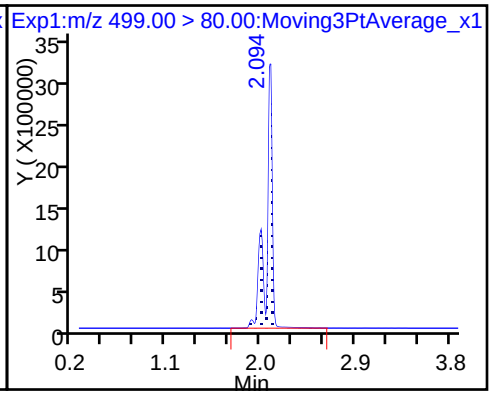
5 Perfluorooctanoic acid



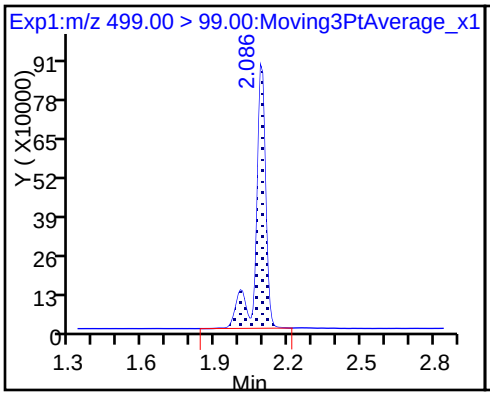
5 Perfluorooctanoic acid



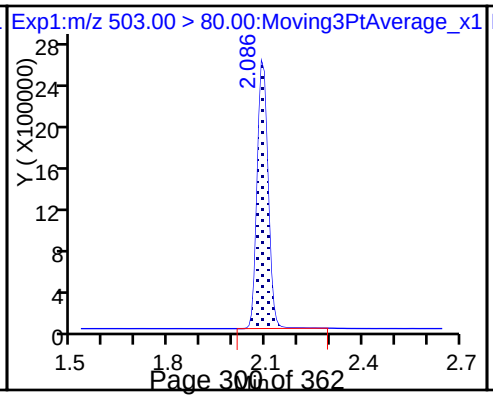
8 Perfluorooctane sulfonic acid



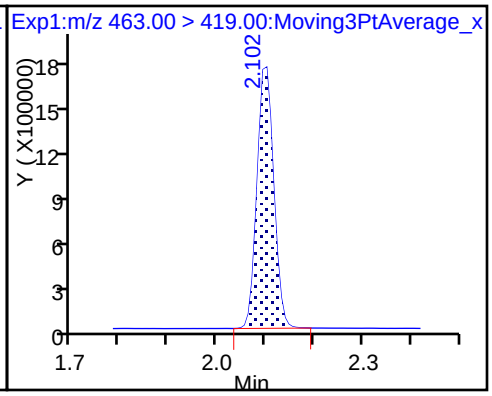
8 Perfluorooctane sulfonic acid



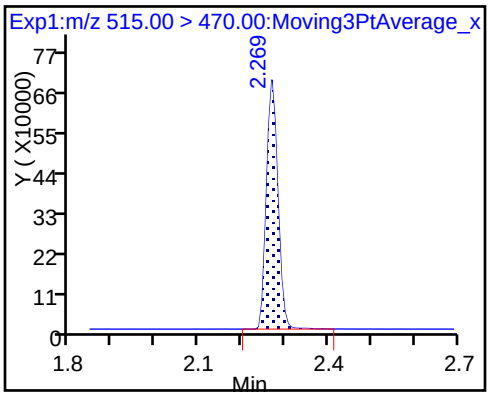
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185468/1 Calibration Date: 09/20/2017 14:21

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.20_537A_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		1.065		43.4	45.0	-3.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9254		4.91	5.00	-1.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.815		16.6	15.0	10.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9218		10.0	10.0	0.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9622		20.7	20.0	3.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5781		9.30	10.0	-7.0	30.0
13C2 PFHxA	Ave	1.172	1.143		9.76	10.0	-2.4	30.0
13C2 PFDA	Ave	0.5578	0.5143		9.22	10.0	-7.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_001.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 20-Sep-2017 14:21:29 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\20170920-48188.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 15:37:57 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 15:29:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	8254789	43.4		5704	
298.90 > 99.00	1.419	1.402	0.017	1.000	6196320		1.33(0.00-0.00)	5108	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	2131381	9.76		7870	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	4689329	16.6		4705	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	862731	4.91		291	
* 6 13C2-PFOA									
415.00 > 370.00	1.889	1.855	0.034		1864090	10.0		6598	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.889	1.856	0.033	1.000	1719680	10.0		70.4	
413.00 > 169.00	1.889	1.856	0.033	1.000	945065		1.82(0.00-0.00)	3432	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.108	0.039		4938119	28.7		5382	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.116	0.039	1.000	1077728	9.30		223	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.124	0.023	1.000	3314063	20.7		3256	
499.00 > 99.00	2.147	2.124	0.023	1.000	659682		5.02(0.00-0.00)	557	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.282	0.024	1.000	958773	9.22		9187	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 15:37:57 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_001.d

Injection Date: 20-Sep-2017 14:21:29 Instrument ID: A8_N

Lims ID: CCV L3

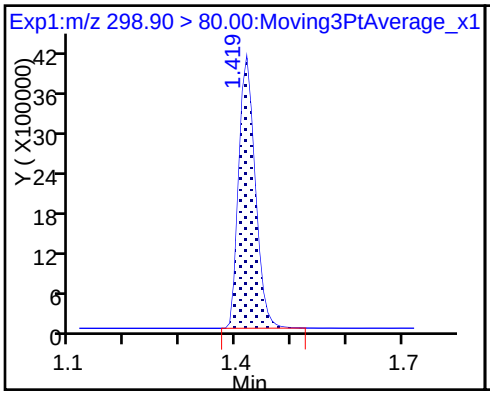
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1

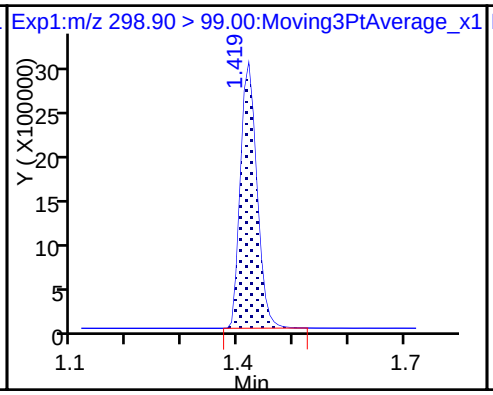
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

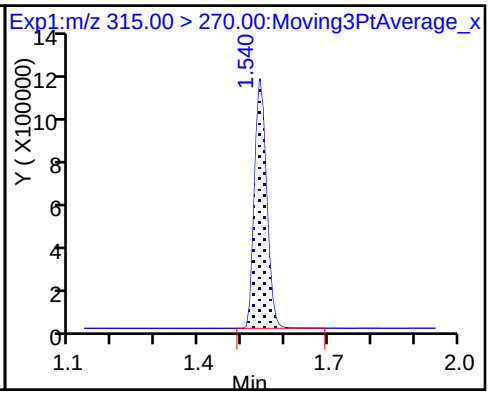
1 Perfluorobutanesulfonic acid



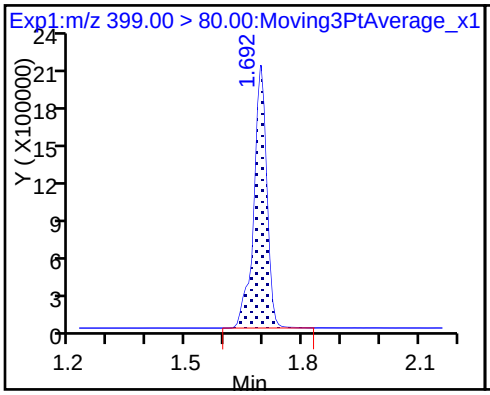
1 Perfluorobutanesulfonic acid



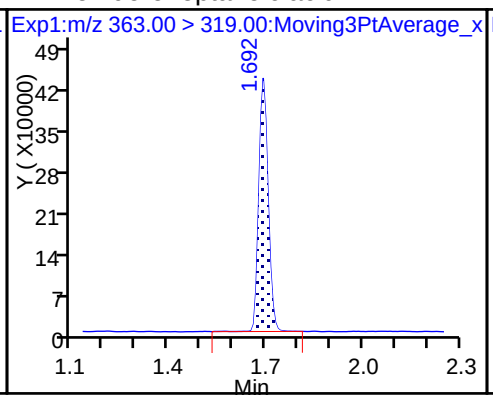
$ 2 13C2 PFHxA



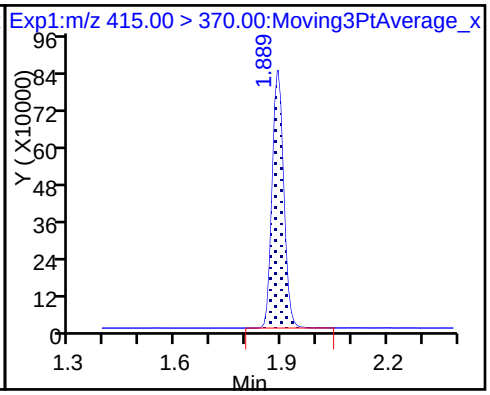
3 Perfluorohexanesulfonic acid



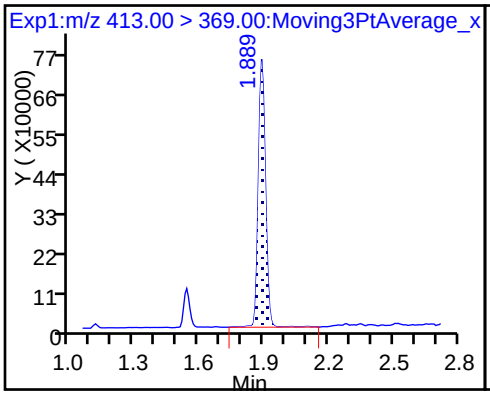
4 Perfluoroheptanoic acid



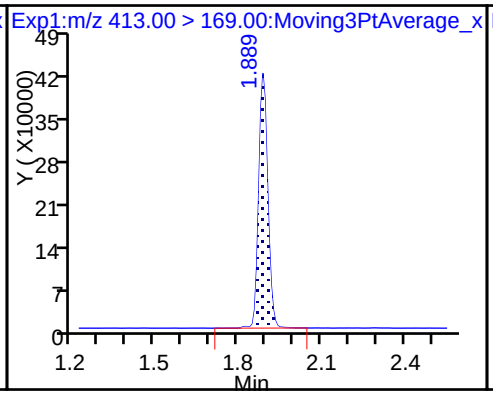
* 6 13C2-PFOA



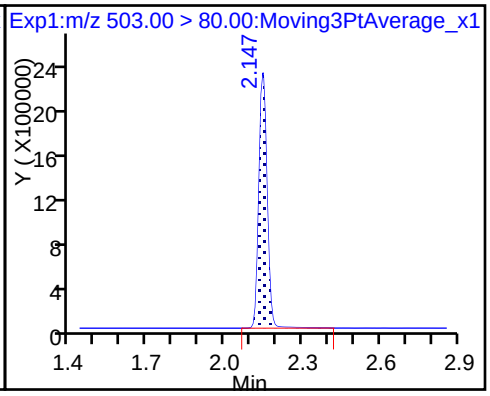
5 Perfluorooctanoic acid



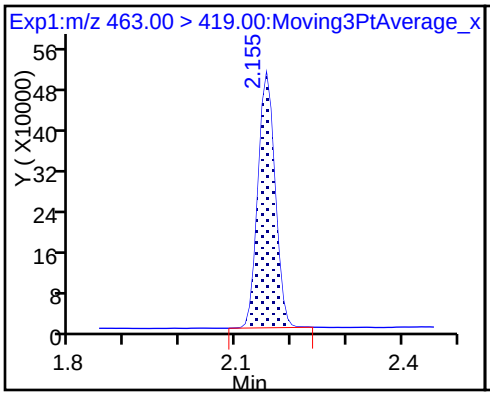
5 Perfluorooctanoic acid



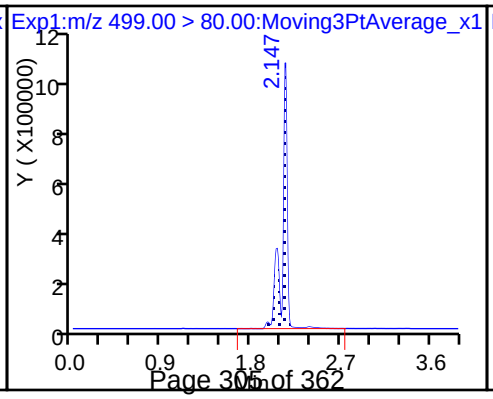
* 7 13C4 PFOS



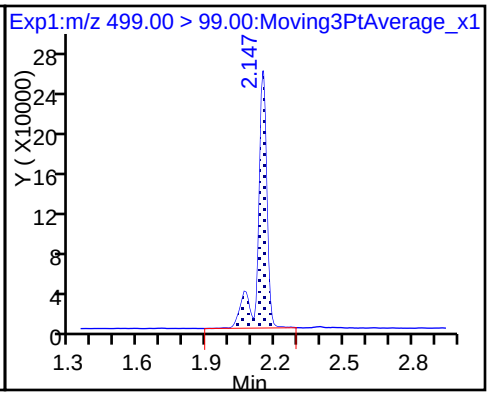
9 Perfluorononanoic acid



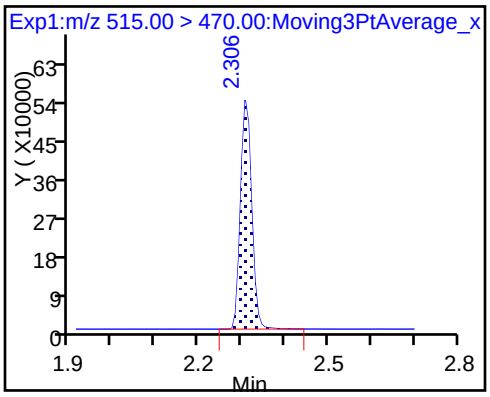
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
63
54
45
36
27
18
9
0
1.9
2.2
2.5
2.8
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185468/9 Calibration Date: 09/20/2017 14:59

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.20_537A_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		0.8221		122	135	-9.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9441		15.0	15.0	0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.633		44.9	45.0	-0.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9272		30.3	30.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9648		62.1	60.0	3.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6113		29.5	30.0	-1.7	30.0
13C2 PFHxA	Ave	1.172	1.239		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.5578	0.5525		9.91	10.0	-0.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_009.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 20-Sep-2017 14:59:30 ALS Bottle#: 5 Worklist Smp#: 9
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\20170920-48188.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 15:38:03 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 15:30:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.402	0.009	1.000	19141049	122.3		5711	
298.90 > 99.00	1.411	1.402	0.009	1.000	15208164		1.26(0.00-0.00)	6115	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.524	0.009	1.000	2175034	10.6		8894	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.668	0.016	1.000	12677040	44.9		5838	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.668	0.009	1.000	2485825	15.0		727	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.855	0.011		1754947	10.0		6427	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.856	0.018	1.000	4885685	30.3		177	
413.00 > 169.00	1.874	1.856	0.018	1.000	2778023		1.76(0.00-0.00)	6294	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		4946062	28.7		7688	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	3218755	29.5		505	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.124	2.124	0.0	1.000	9985624	62.1		6790	M
499.00 > 99.00	2.124	2.124	0.0	1.000	2022312		4.94(0.00-0.00)	1411	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.282	0.017	1.000	969647	9.91		9717	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 20-Sep-2017 15:38:03 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_009.d

Injection Date: 20-Sep-2017 14:59:30 Instrument ID: A8_N

Lims ID: CCV L5

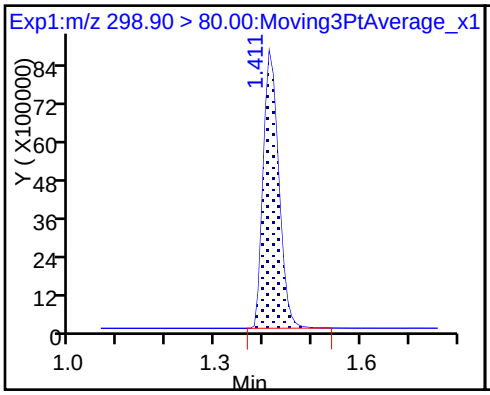
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 9

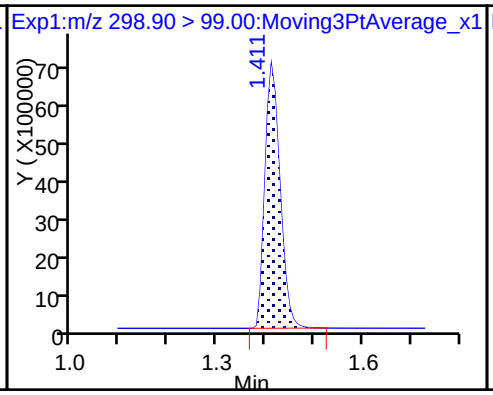
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

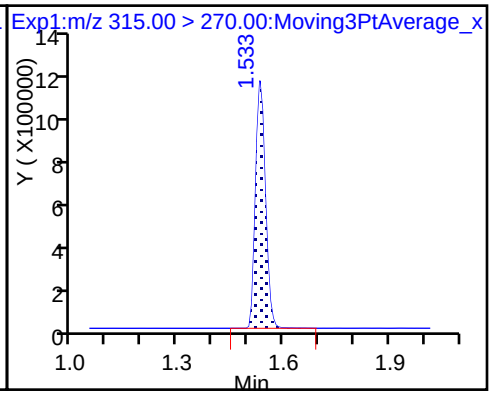
1 Perfluorobutanesulfonic acid



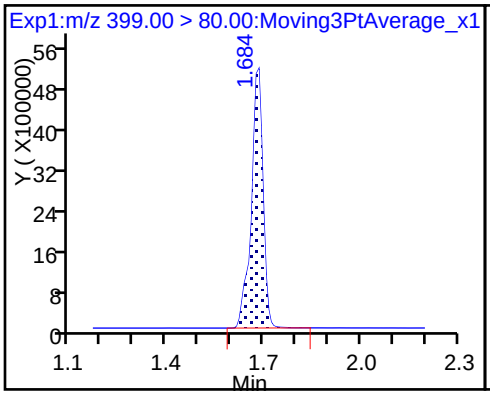
1 Perfluorobutanesulfonic acid



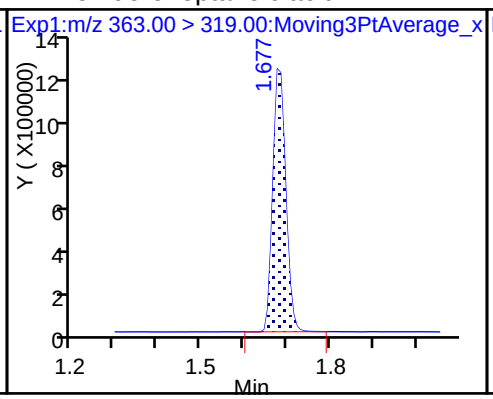
$ 2 13C2 PFHxA



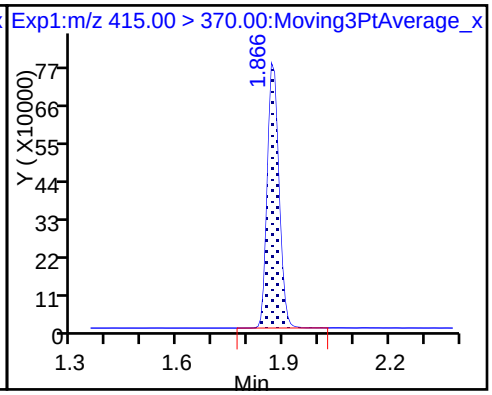
3 Perfluorohexanesulfonic acid



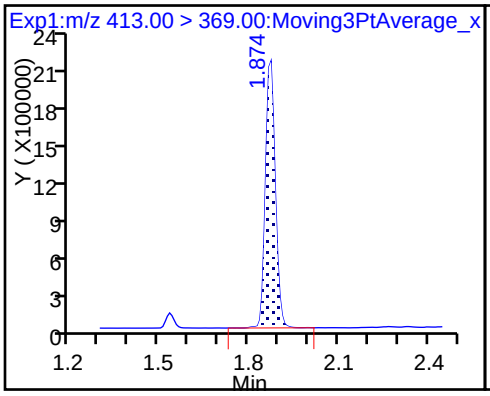
4 Perfluoroheptanoic acid



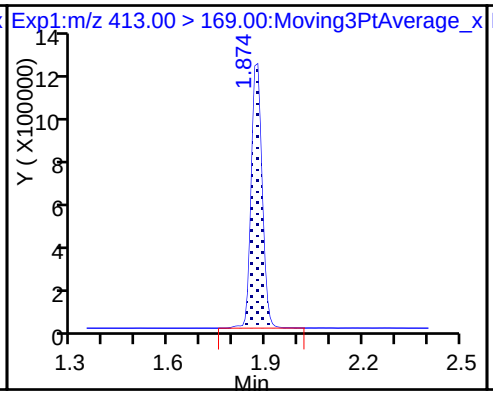
* 6 13C2-PFOA



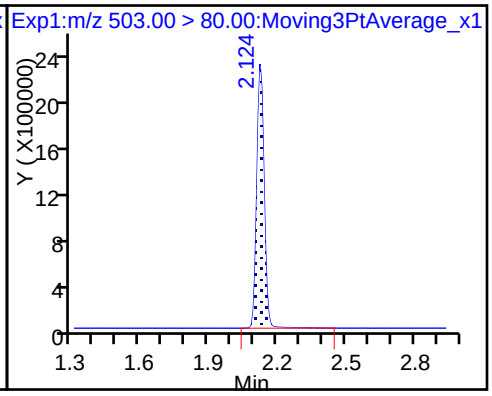
5 Perfluorooctanoic acid



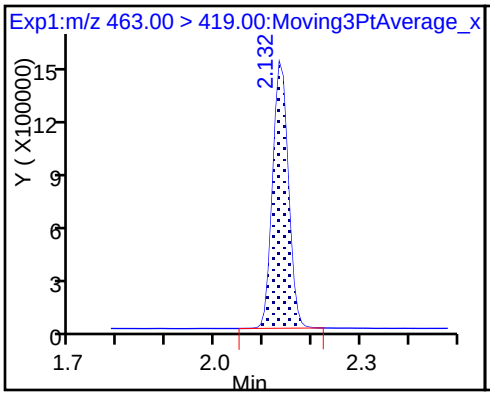
5 Perfluorooctanoic acid



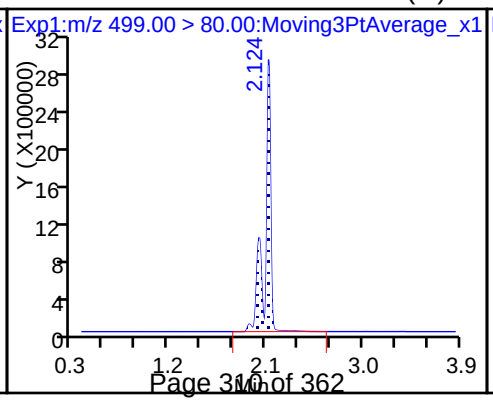
* 7 13C4 PFOS



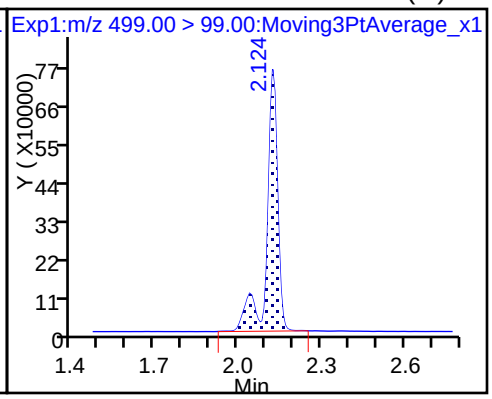
9 Perfluorononanoic acid



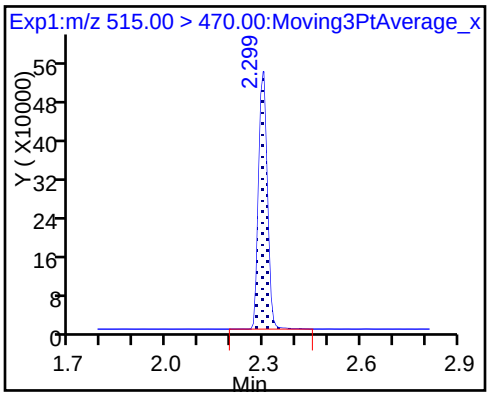
8 Perfluorooctane sulfonic acid (M)



8 Perfluorooctane sulfonic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.299
Y (X10000)
56
48
40
32
24
16
8
0
1.7
2.0
2.3
2.6
2.9
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

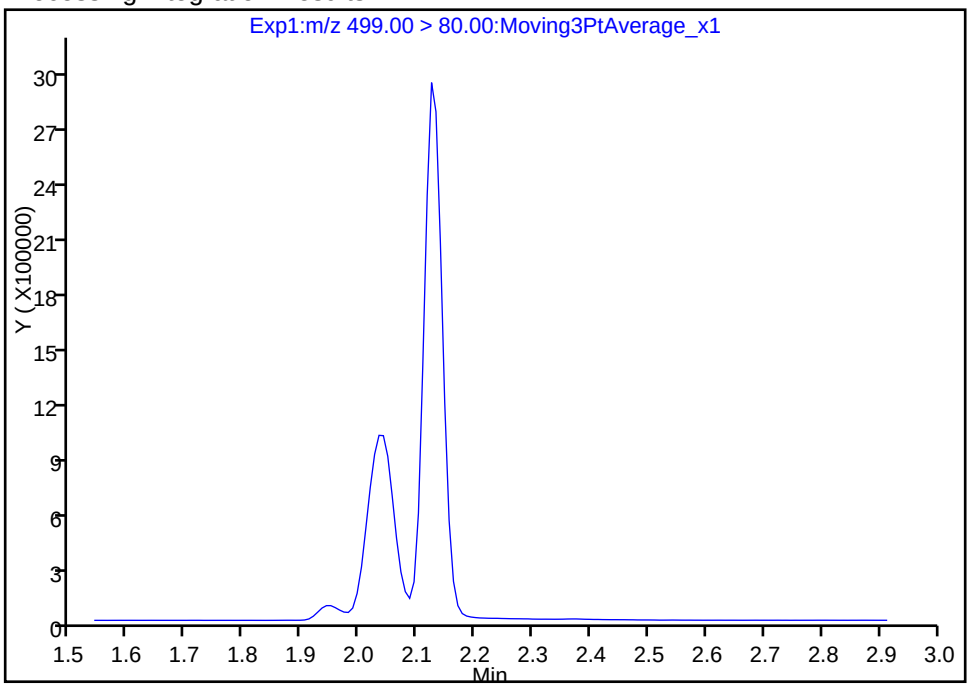
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_009.d
Injection Date: 20-Sep-2017 14:59:30 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

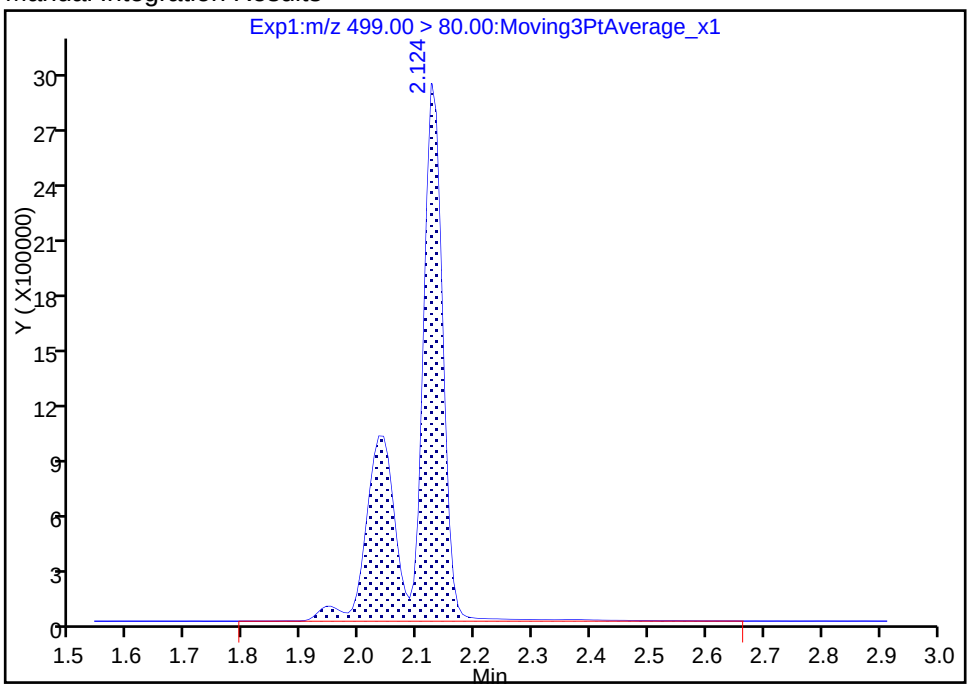
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 9985624
Amount: 62.146778
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 15:30:05
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

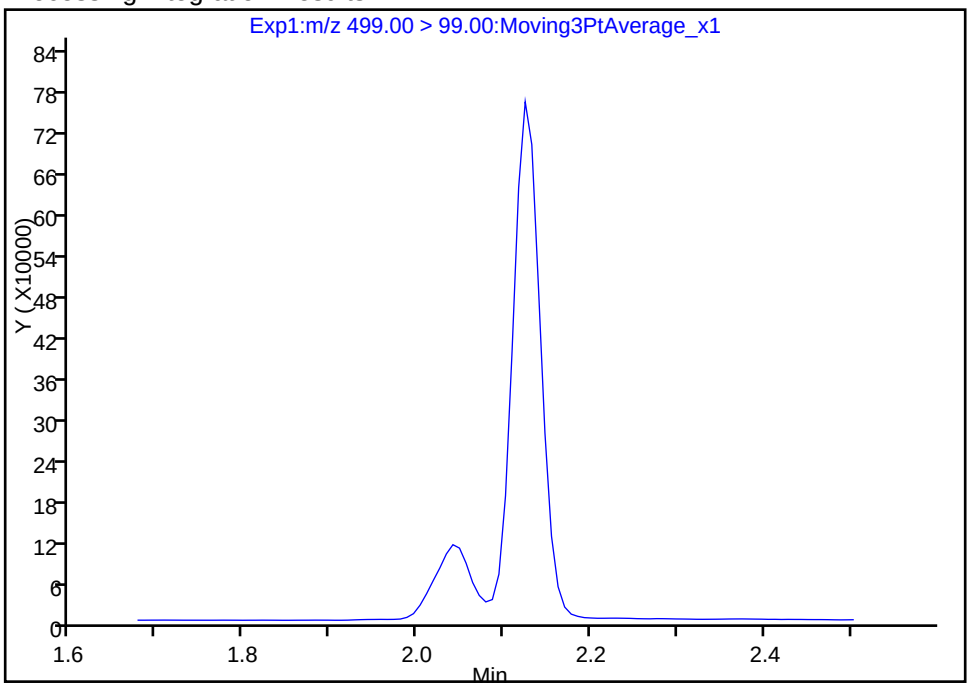
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_009.d
Injection Date: 20-Sep-2017 14:59:30 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

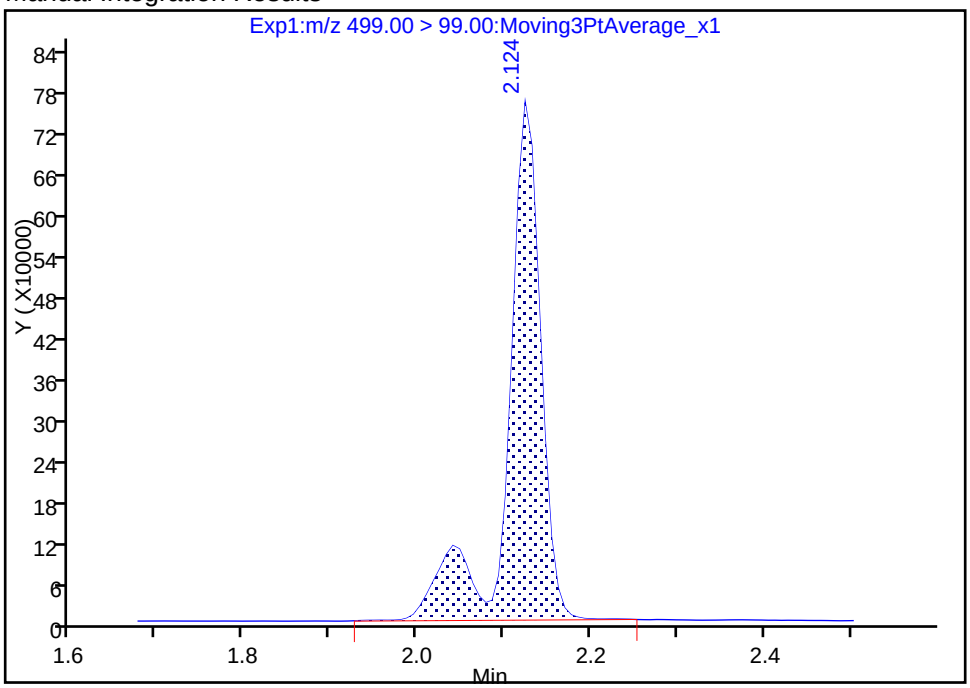
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 2022312
Amount: 62.146778
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 15:30:22
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

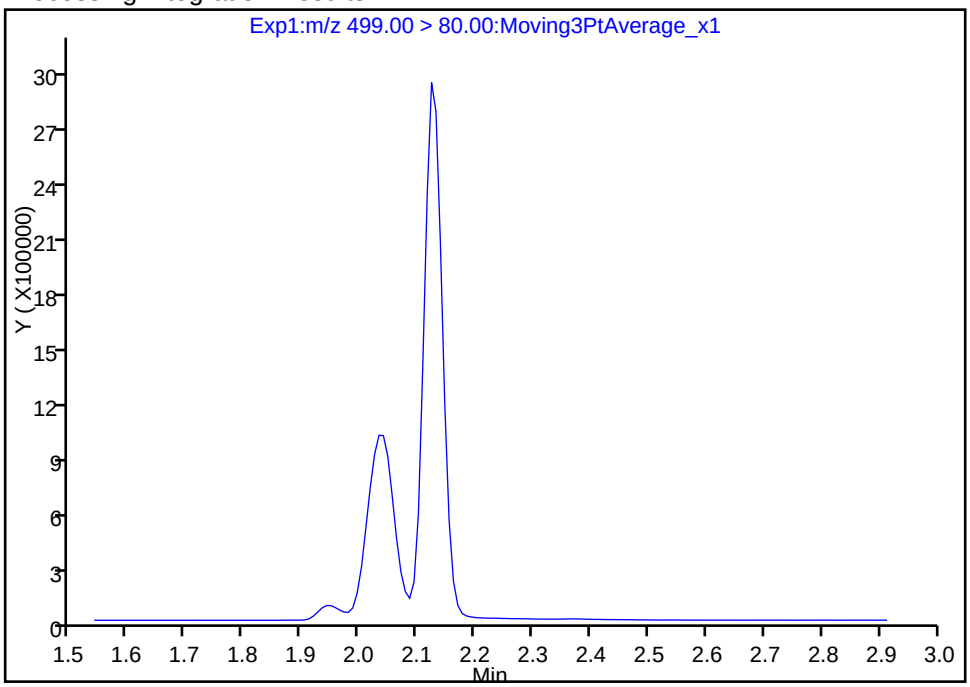
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b\2017.09.20_537A_009.d
Injection Date: 20-Sep-2017 14:59:30 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

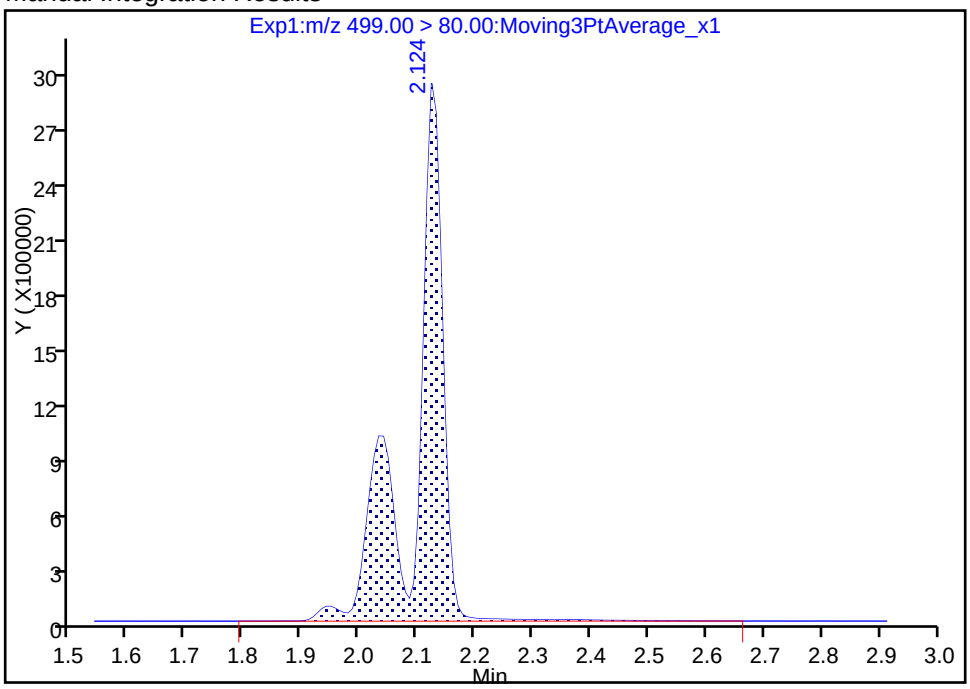
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 9985624
Amount: 62.146778
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 15:30:22
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-184653/1-A

Matrix: Water | Lab File ID: 2017.09.19_537A_040.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 250(mL) | Date Analyzed: 09/20/2017 06:53

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.: 185410 | 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	91		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_040.d
Lims ID: MB 320-184653/1-A
Client ID:
Sample Type: MB
Inject. Date: 20-Sep-2017 06:53:21 ALS Bottle#: 30 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-184653/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2618262	9.11		12129	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.855	-0.011		2453694	10.0		9456	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6328167	28.7		5124	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1507561	11.0		11777	

Report Date: 20-Sep-2017 14:17:27 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_040.d

Injection Date: 20-Sep-2017 06:53:21 Instrument ID: A8_N

Lims ID: MB 320-184653/1-A

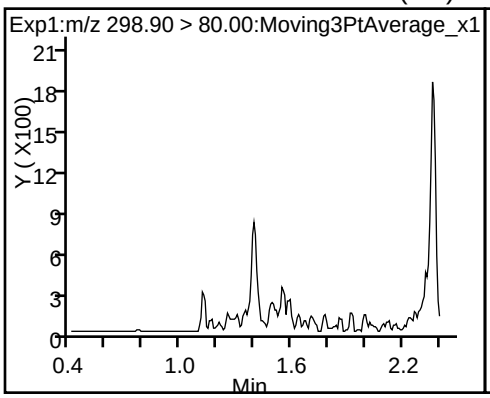
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 3

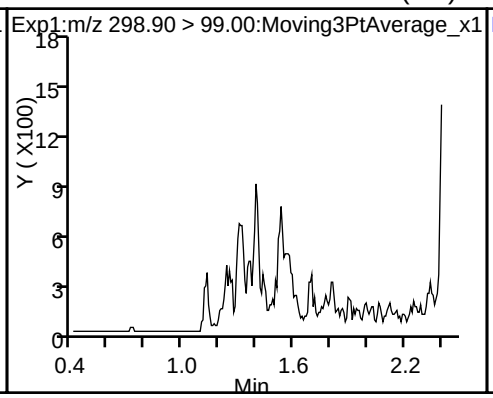
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

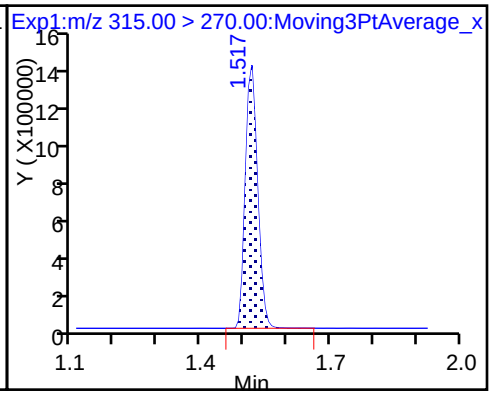
1 Perfluorobutanesulfonic acid (ND)



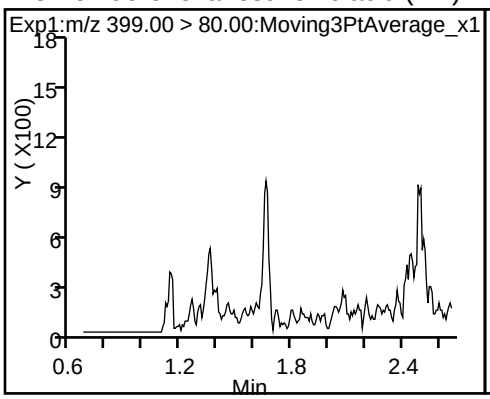
1 Perfluorobutanesulfonic acid (ND)



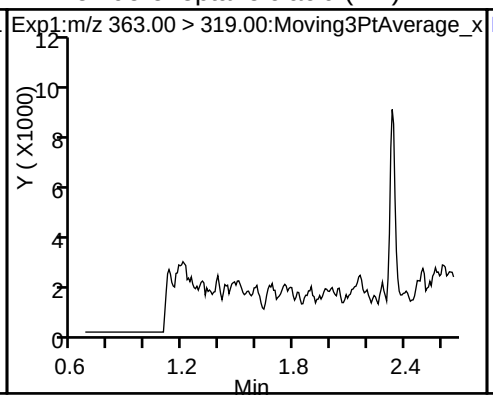
$ 2 13C2 PFHxA



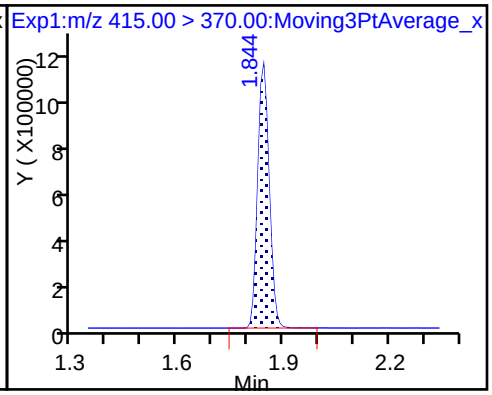
3 Perfluorohexanesulfonic acid (ND)



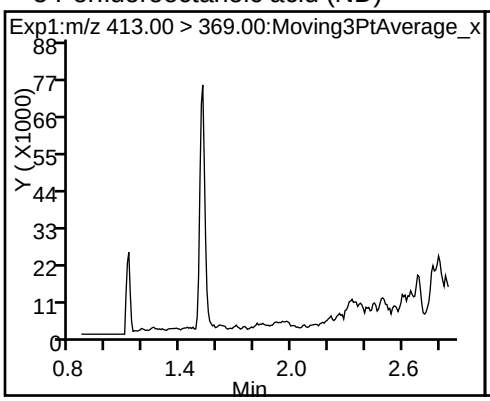
4 Perfluoroheptanoic acid (ND)



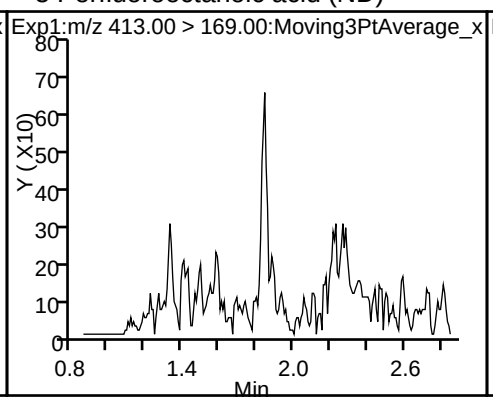
* 6 13C2-PFOA



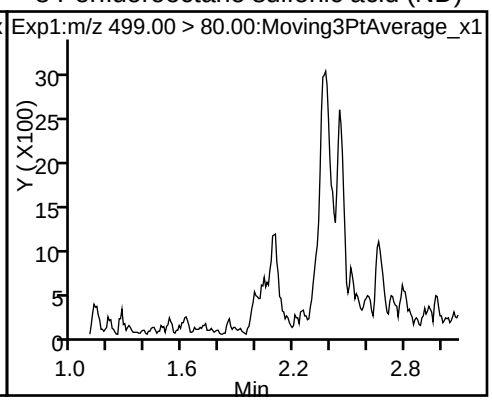
5 Perfluorooctanoic acid (ND)



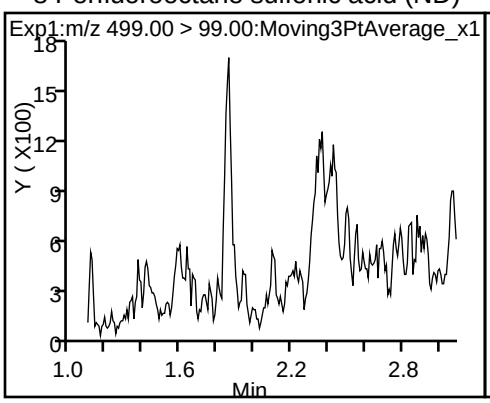
5 Perfluorooctanoic acid (ND)



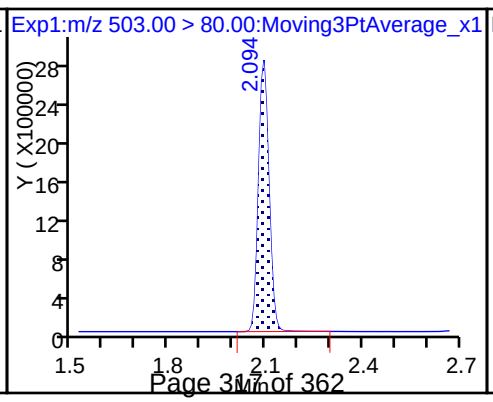
8 Perfluorooctane sulfonic acid (ND)



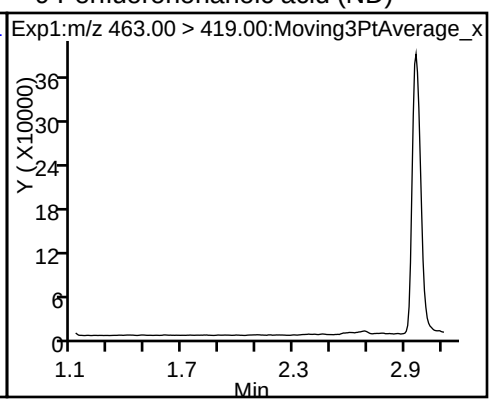
8 Perfluorooctane sulfonic acid (ND)



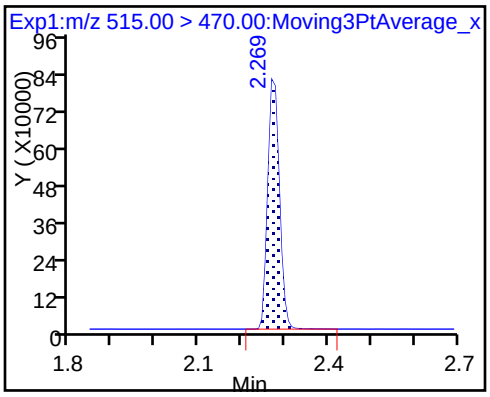
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
96
84
72
60
48
36
24
12
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_040.d
Lims ID: MB 320-184653/1-A
Client ID:
Sample Type: MB
Inject. Date: 20-Sep-2017 06:53:21 ALS Bottle#: 30 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-184653/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.11	91.07
$ 10 13C2 PFDA	10.0	11.0	110.15

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-184653/2-A

Matrix: Water | Lab File ID: 2017.09.19_537A_041.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 250(mL) | Date Analyzed: 09/20/2017 06:58

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	121	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	58.9		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	57.7		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	91.7		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	31.8		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	262		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_041.d
Lims ID: LCS 320-184653/2-A
Client ID:
Sample Type: LCS
Inject. Date: 20-Sep-2017 06:58:06 ALS Bottle#: 31 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-184653/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:50:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.402	-0.014	1.000	15208256	65.5		9941	
298.90 > 99.00	1.388	1.402	-0.014	1.000	11375776		1.34(0.00-0.00)	7614	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.524	-0.014	1.000	2700777	8.92		12118	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	8311170	22.9		8887	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.668	-0.014	1.000	1937316	7.96		525	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2584758	10.0		11408	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.856	-0.012	1.000	3498788	14.7		146	
413.00 > 169.00	1.836	1.856	-0.020	0.996	1912614		1.83(0.00-0.00)	6015	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.094	2.094	0.0	1.000	6244834	30.3		5945	M
499.00 > 99.00	2.094	2.094	0.0	1.000	1255502		4.97(0.00-0.00)	818	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.108	-0.014		6348829	28.7		5766	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.116	-0.014	1.000	2317975	14.4		63.4	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1679006	11.6		13641	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:17:31 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_041.d

Injection Date: 20-Sep-2017 06:58:06 Instrument ID: A8_N

Lims ID: LCS 320-184653/2-A

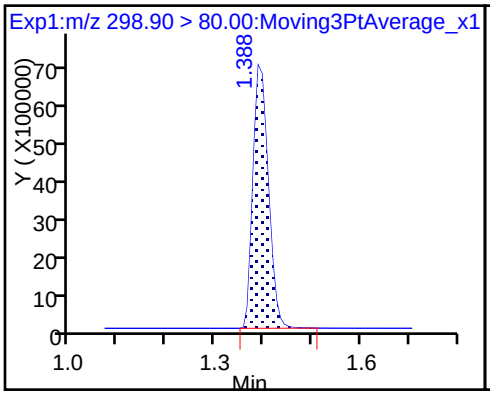
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 4

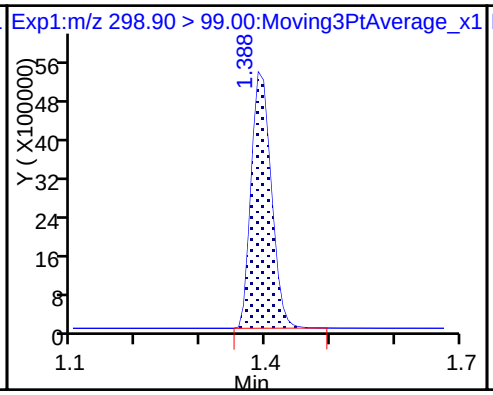
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

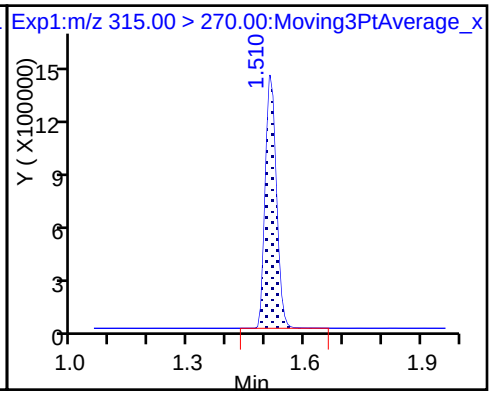
1 Perfluorobutanesulfonic acid



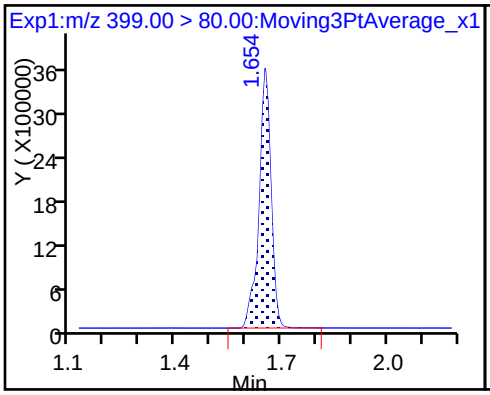
1 Perfluorobutanesulfonic acid



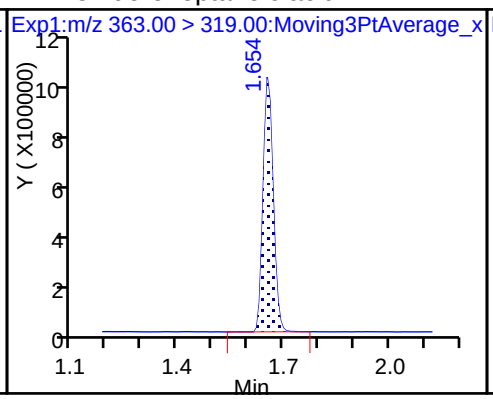
$ 2 13C2 PFHxA



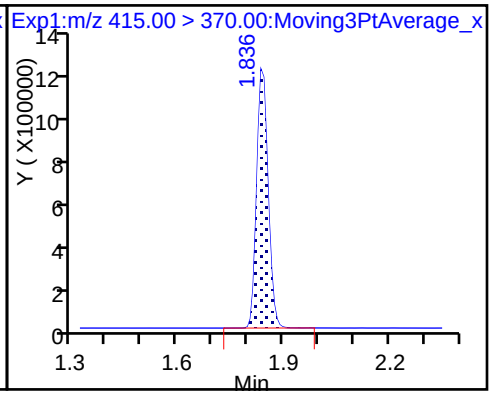
3 Perfluorohexanesulfonic acid



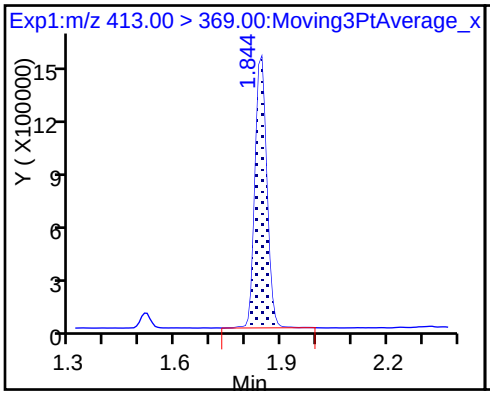
4 Perfluoroheptanoic acid



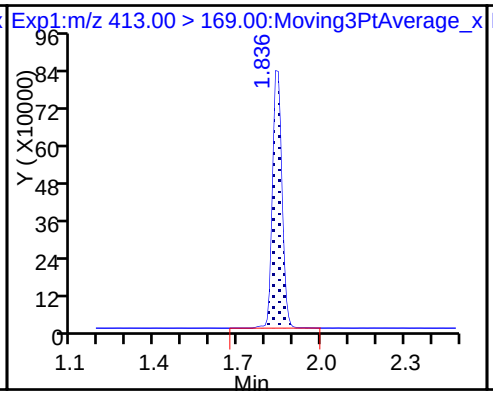
* 6 13C2-PFOA



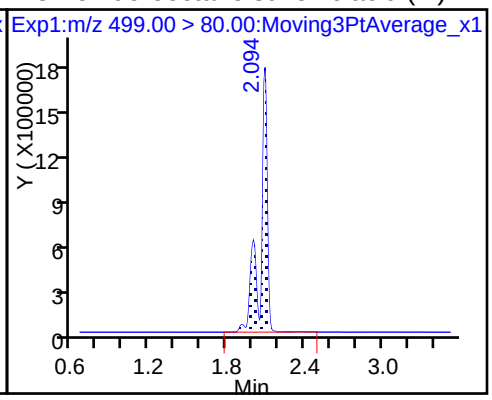
5 Perfluorooctanoic acid



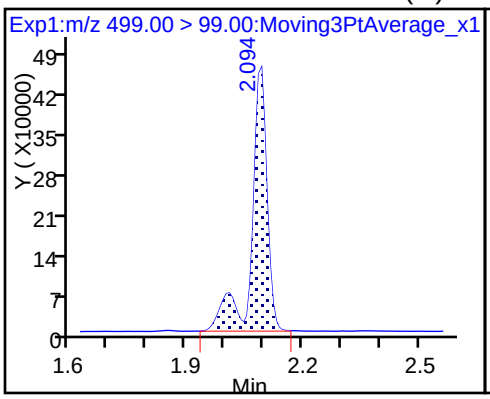
5 Perfluorooctanoic acid



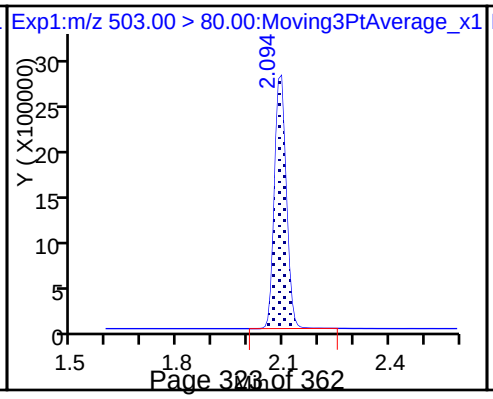
8 Perfluorooctane sulfonic acid (M)



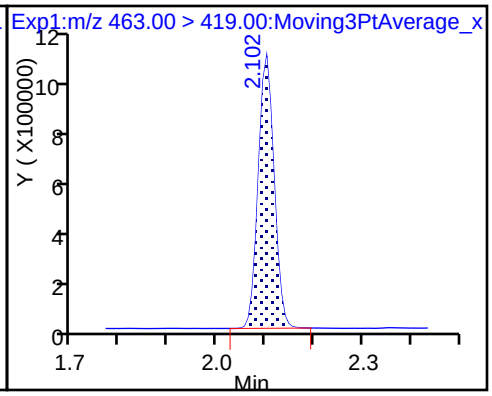
8 Perfluorooctane sulfonic acid (M)



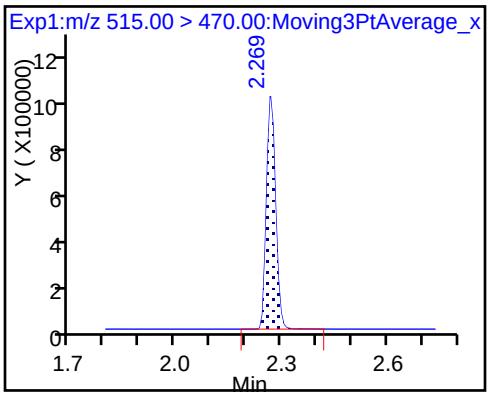
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
12
10
8
6
4
2
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_041.d
Lims ID: LCS 320-184653/2-A
Client ID:
Sample Type: LCS
Inject. Date: 20-Sep-2017 06:58:06 ALS Bottle#: 31 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-184653/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:22 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:50:27

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.92	89.17
$ 10 13C2 PFDA	10.0	11.6	116.46

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

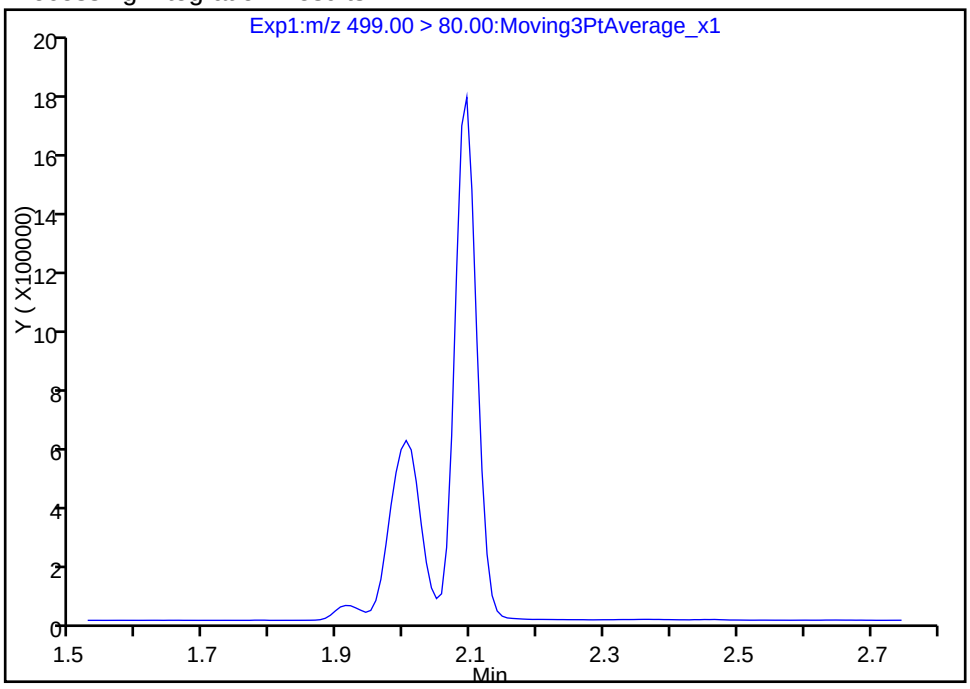
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_041.d
Injection Date: 20-Sep-2017 06:58:06 Instrument ID: A8_N
Lims ID: LCS 320-184653/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

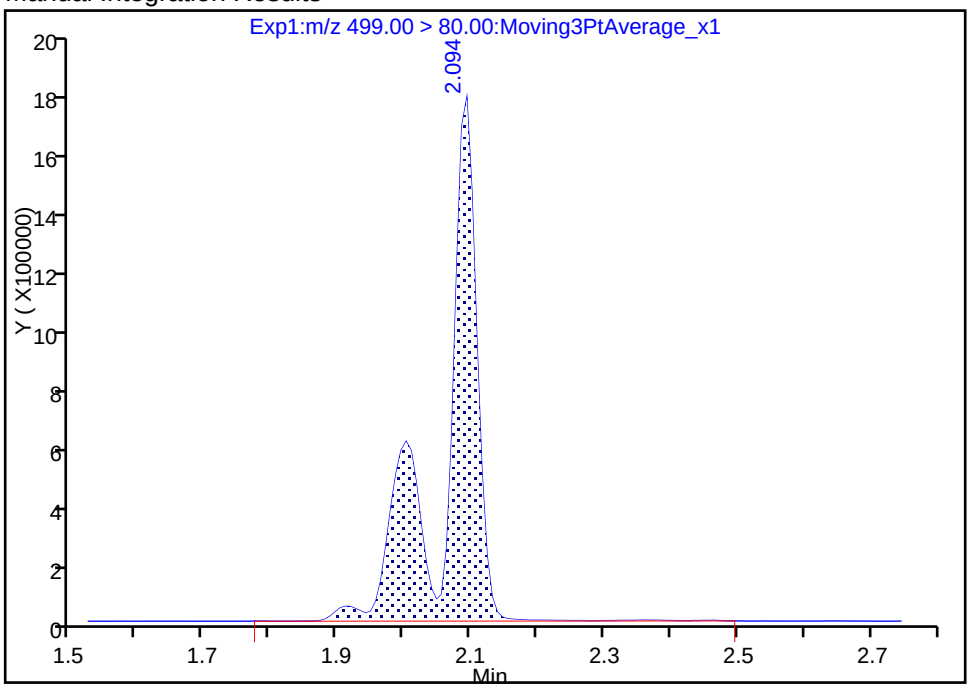
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 6244834
Amount: 30.278212
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:49:50
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

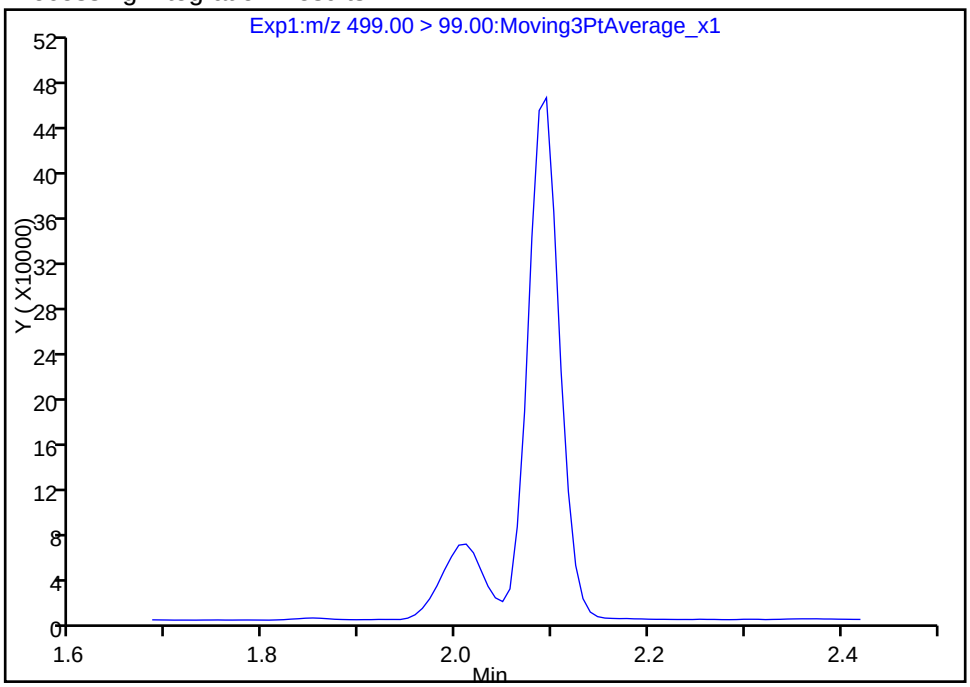
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_041.d
Injection Date: 20-Sep-2017 06:58:06 Instrument ID: A8_N
Lims ID: LCS 320-184653/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

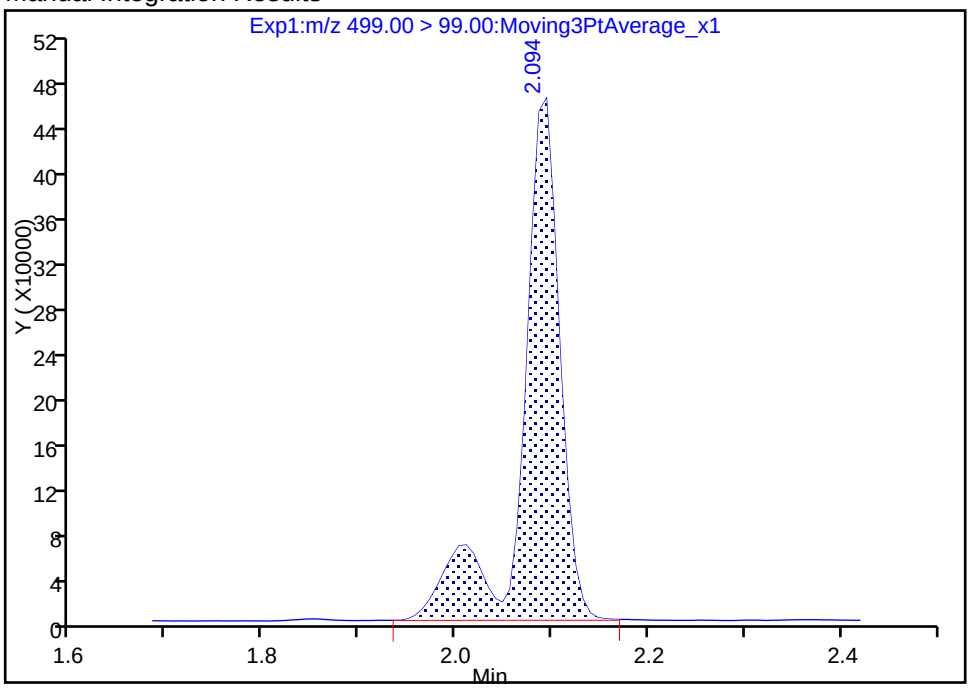
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.09
Area: 1255502
Amount: 30.278212
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:50:04
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

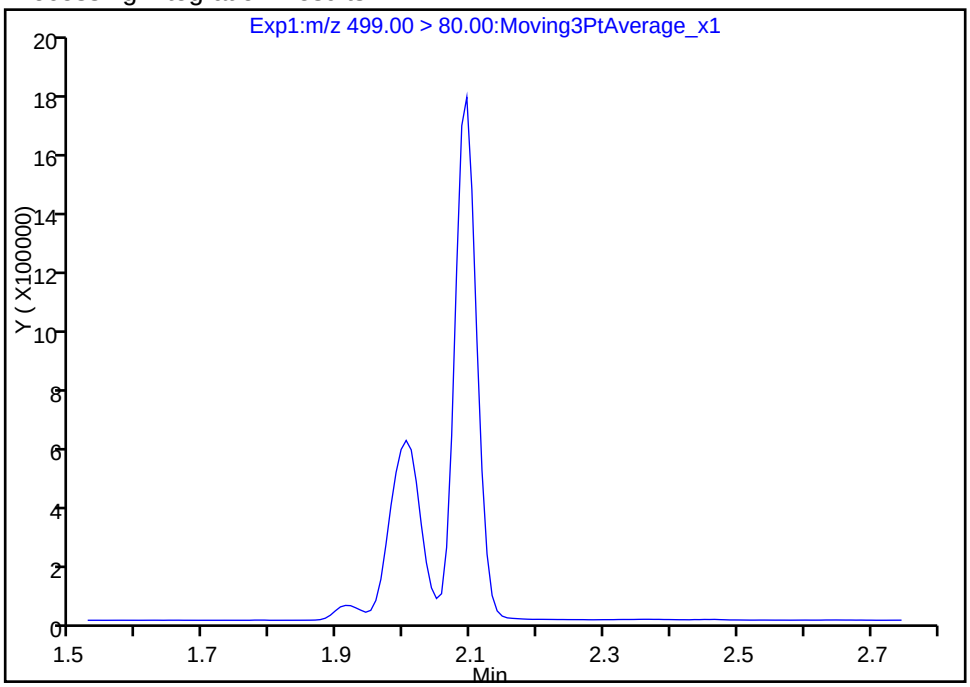
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_041.d
Injection Date: 20-Sep-2017 06:58:06 Instrument ID: A8_N
Lims ID: LCS 320-184653/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

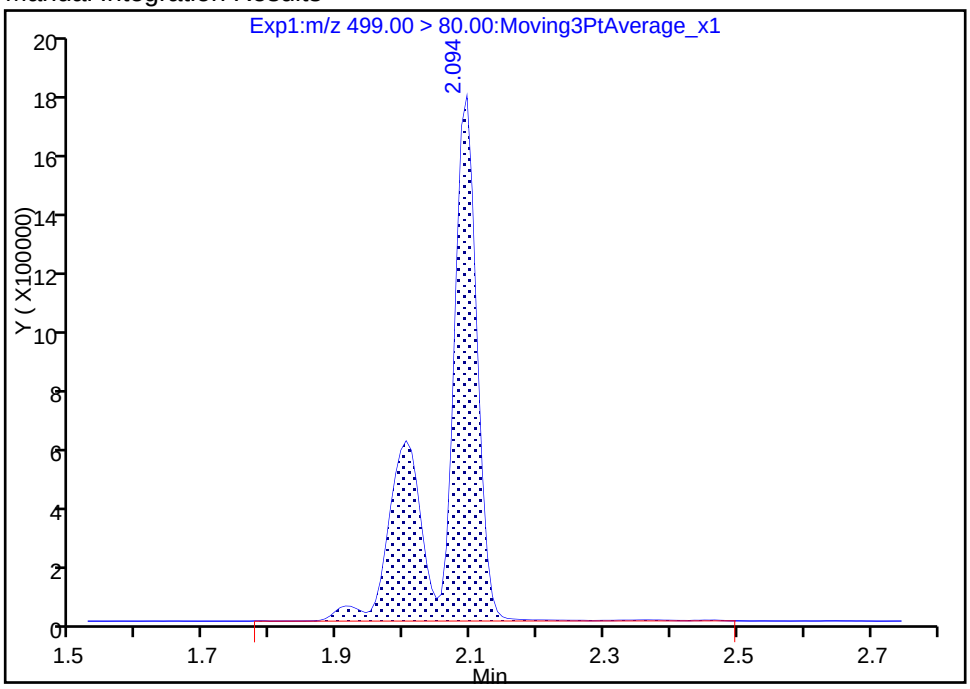
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 6244834
Amount: 30.278212
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:50:04
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-315 MS | Lab Sample ID: 320-31489-11 MS

Matrix: Water | Lab File ID: 2017.09.19_537A_055.d

Analysis Method: 537 | Date Collected: 09/12/2017 13:50

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 245.3(mL) | Date Analyzed: 09/20/2017 08:04

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	137		41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	75.6		20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	67.5		24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	96.3		31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	35.7		10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	259		92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	75		70-130
STL00996	13C2 PFDA	123		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_055.d
Lims ID: 320-31489-A-11-B MS
Client ID: NAWC-091217-RW-315
Sample Type: MS
Inject. Date: 20-Sep-2017 08:04:30 ALS Bottle#: 43 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-11-b ms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:58:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	14534947	63.6		4337	
298.90 > 99.00	1.396	1.402	-0.006	1.000	10636618		1.37(0.00-0.00)	6522	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.524	-0.014	1.000	2089487	7.47		8081	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	8385190	23.6		2529	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.668	-0.014	1.000	1967228	8.75		280	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2386931	10.0		9219	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.836	1.856	-0.020	1.000	4069819	18.5		152	
413.00 > 169.00	1.836	1.856	-0.020	1.000	2215120		1.84(0.00-0.00)	5305	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.094	-0.008	1.000	6764744	33.5		2303	
499.00 > 99.00	2.086	2.094	-0.008	1.000	1365877		4.95(0.00-0.00)	814	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		6215415	28.7		2917	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.116	-0.022	1.000	2456991	16.6		55.6	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1642823	12.3		13940	

Report Date: 20-Sep-2017 14:17:57 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_055.d

Injection Date: 20-Sep-2017 08:04:30 Instrument ID: A8_N

Lims ID: 320-31489-A-11-B MS

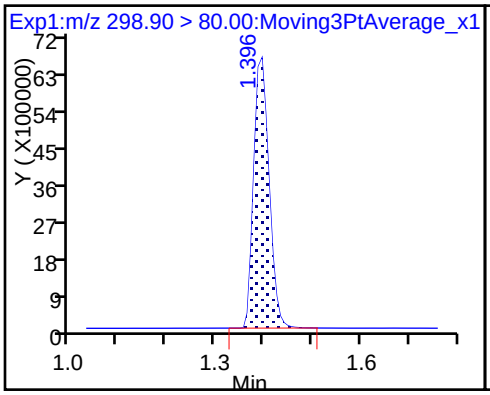
Client ID: NAWC-091217-RW-315

Operator ID: SACINSTLCMS01 ALS Bottle#: 43 Worklist Smp#: 18

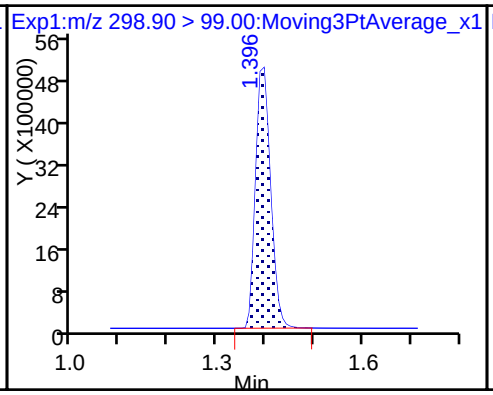
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

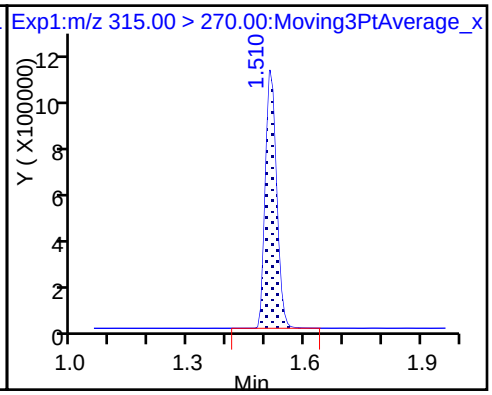
1 Perfluorobutanesulfonic acid



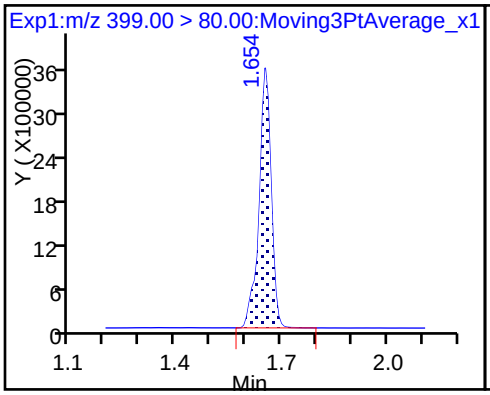
1 Perfluorobutanesulfonic acid



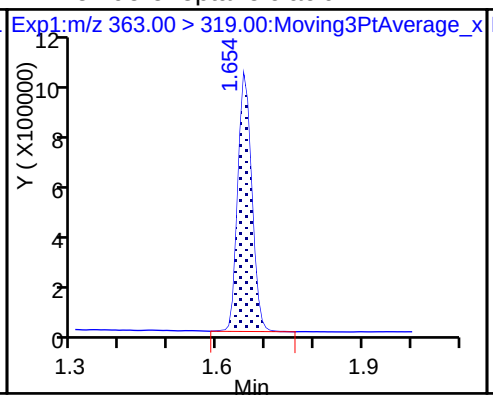
$ 2 13C2 PFHxA



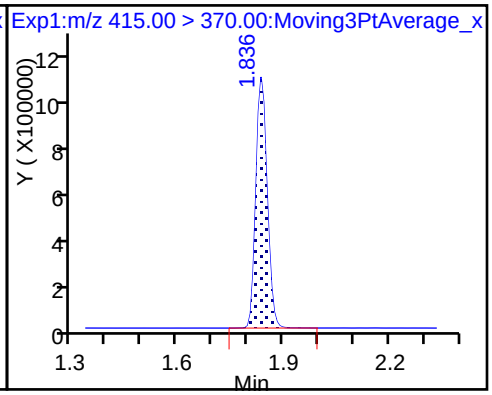
3 Perfluorohexanesulfonic acid



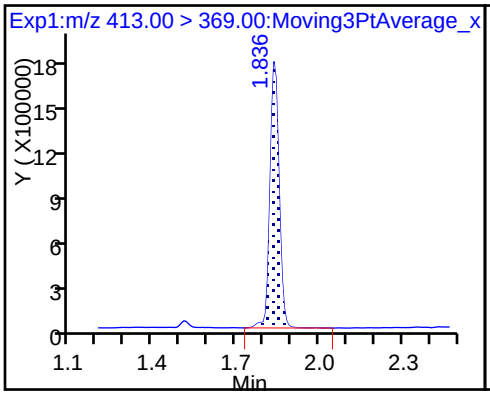
4 Perfluoroheptanoic acid



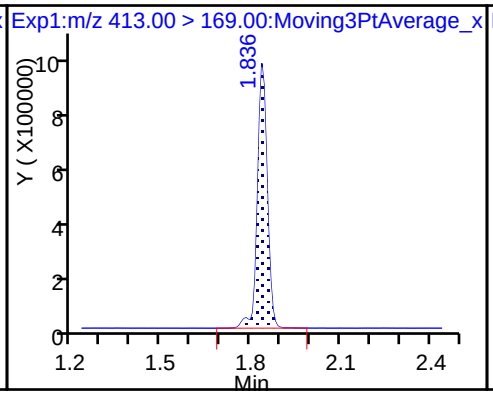
* 6 13C2-PFOA



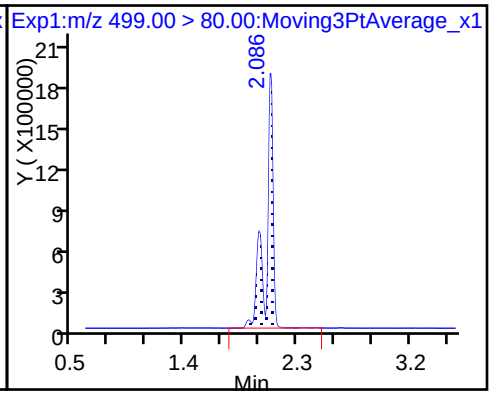
5 Perfluorooctanoic acid



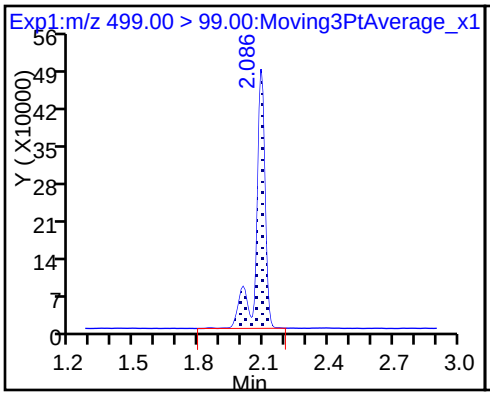
5 Perfluorooctanoic acid



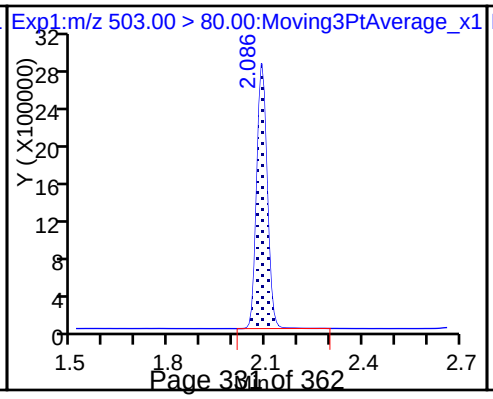
8 Perfluorooctane sulfonic acid



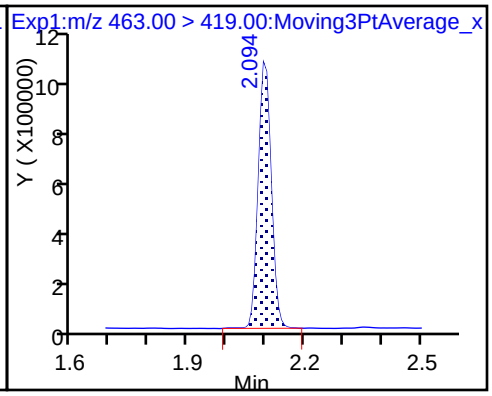
8 Perfluorooctane sulfonic acid



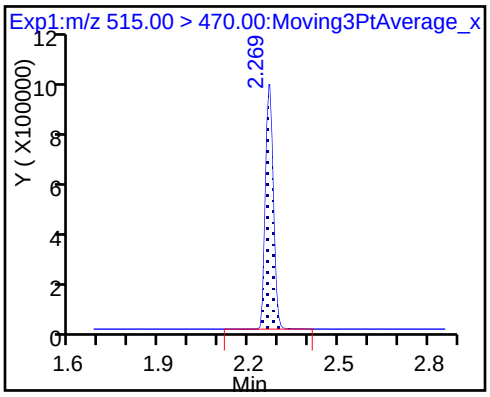
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
12
10
8
6
4
2
0
1.6
1.9
2.2
2.5
2.8
Min

Report Date: 20-Sep-2017 14:17:56 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_055.d				
Lims ID:	320-31489-A-11-B MS				
Client ID:	NAWC-091217-RW-315				
Sample Type:	MS				
Inject. Date:	20-Sep-2017 08:04:30	ALS Bottle#:	43	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31489-a-11-b ms				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Sep-2017 14:17:48	Calib Date:	20-Sep-2017 03:19:48		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK008				

First Level Reviewer: barnettj Date: 20-Sep-2017 13:58:17

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.47	74.71
$ 10 13C2 PFDA	10.0	12.3	123.39

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-315 MSD Lab Sample ID: 320-31489-11 MSD

Matrix: Water Lab File ID: 2017.09.19_537A_056.d

Analysis Method: 537 Date Collected: 09/12/2017 13:50

Extraction Method: 537 Date Extracted: 09/15/2017 10:28

Sample wt/vol: 245.8(mL) Date Analyzed: 09/20/2017 08:09

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.: 185411 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	133	M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	74.1		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	67.8		24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	94.0		31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	36.5		10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	251		92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	77		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_056.d
Lims ID: 320-31489-A-11-C MSD
Client ID: NAWC-091217-RW-315
Sample Type: MSD
Inject. Date: 20-Sep-2017 08:09:16 ALS Bottle#: 44 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-11-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:59:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	14678313	61.6		5108	
298.90 > 99.00	1.396	1.402	-0.006	1.000	11036924		1.33(0.00-0.00)	6905	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2142644	7.75		9532	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.668	-0.014	1.000	8514695	23.1		2017	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	1994532	8.98		272	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.855	-0.019		2359481	10.0		10362	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.836	1.856	-0.020	1.000	3950240	18.2		138	
413.00 > 169.00	1.836	1.856	-0.020	1.000	2203483		1.79(0.00-0.00)	5717	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.094	2.094	0.0	1.000	6833728	32.6		1758	M
499.00 > 99.00	2.086	2.094	-0.008	0.996	1393914		4.90(0.00-0.00)	799	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.108	-0.022		6451817	28.7		3389	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.116	-0.014	1.000	2443361	16.7		56.4	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.282	-0.014	1.000	1528446	11.6		12523	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Sep-2017 14:17:58 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_056.d

Injection Date: 20-Sep-2017 08:09:16 Instrument ID: A8_N

Lims ID: 320-31489-A-11-C MSD

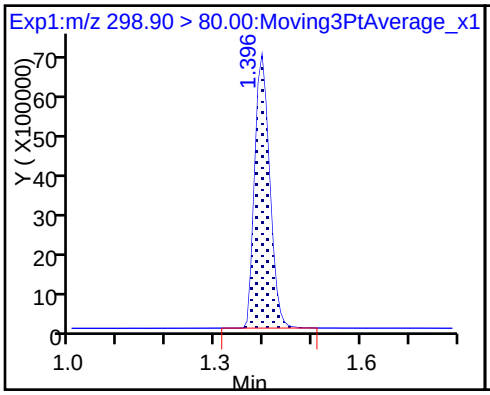
Client ID: NAWC-091217-RW-315

Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 19

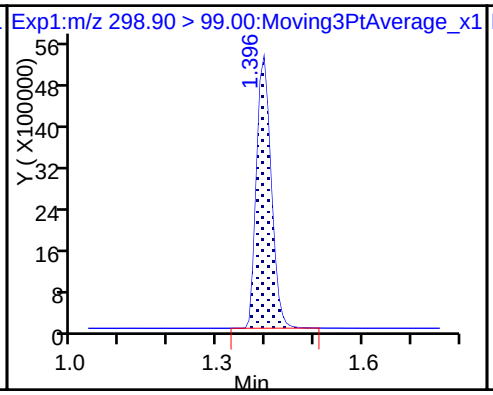
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

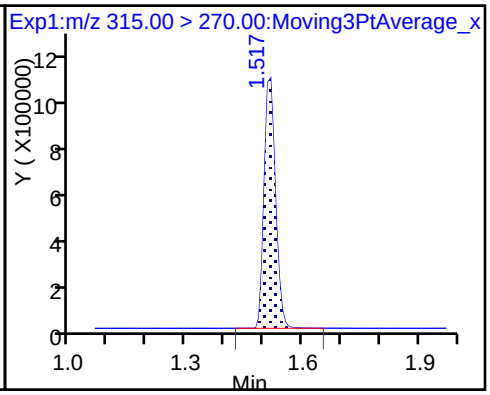
1 Perfluorobutanesulfonic acid



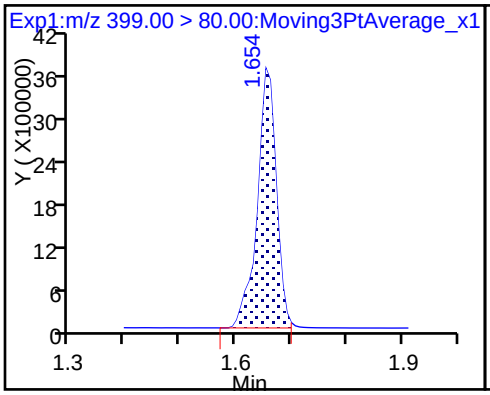
1 Perfluorobutanesulfonic acid



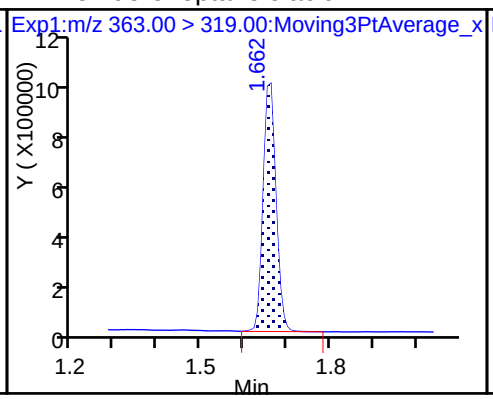
$ 2 13C2 PFHxA



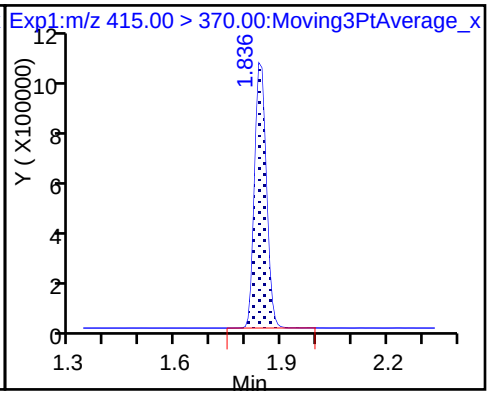
3 Perfluorohexanesulfonic acid



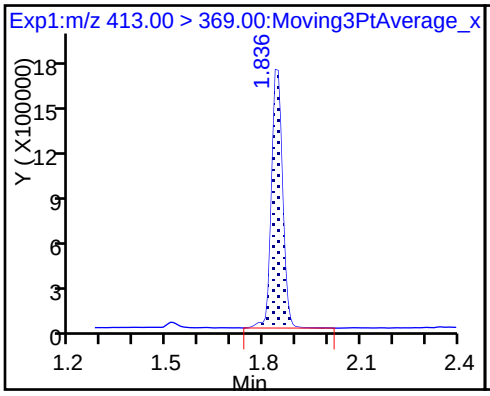
4 Perfluoroheptanoic acid



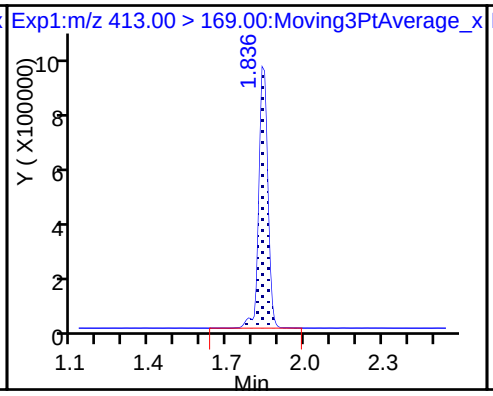
* 6 13C2-PFOA



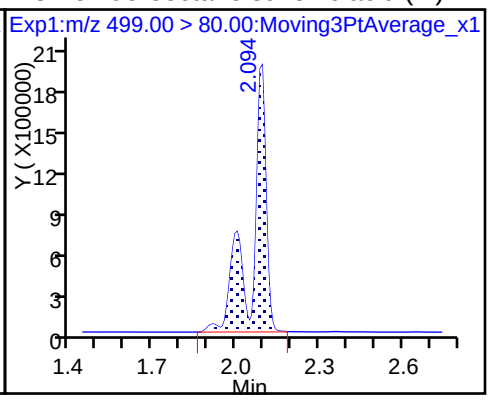
5 Perfluorooctanoic acid



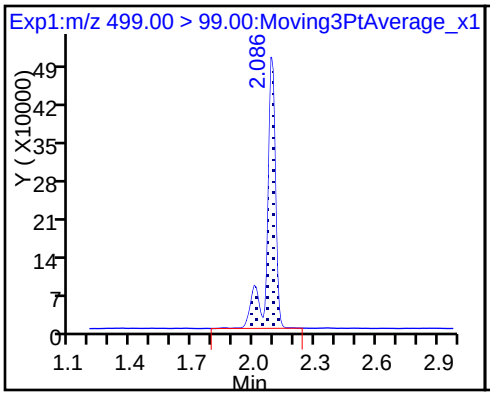
5 Perfluorooctanoic acid



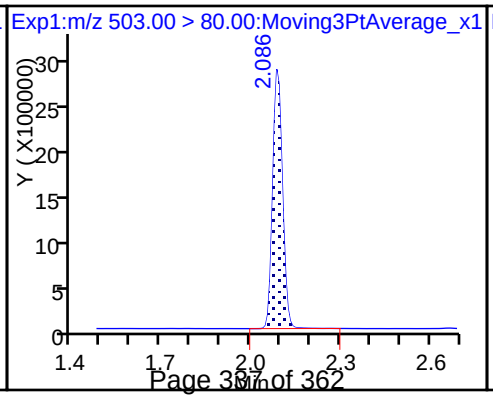
8 Perfluorooctane sulfonic acid (M)



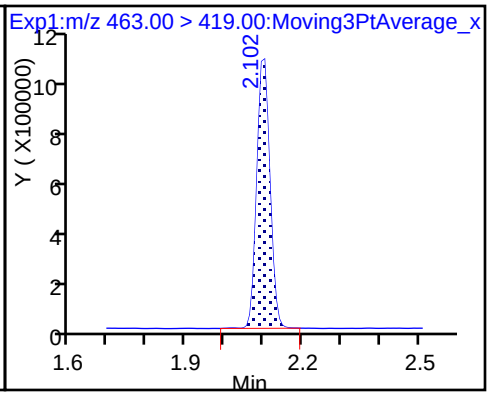
8 Perfluorooctane sulfonic acid



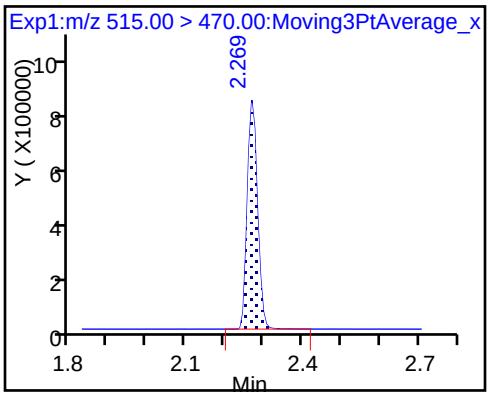
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_056.d
Lims ID: 320-31489-A-11-C MSD
Client ID: NAWC-091217-RW-315
Sample Type: MSD
Inject. Date: 20-Sep-2017 08:09:16 ALS Bottle#: 44 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31489-a-11-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Sep-2017 14:17:48 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 20-Sep-2017 13:59:05

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.75	77.50
$ 10 13C2 PFDA	10.0	11.6	116.14

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

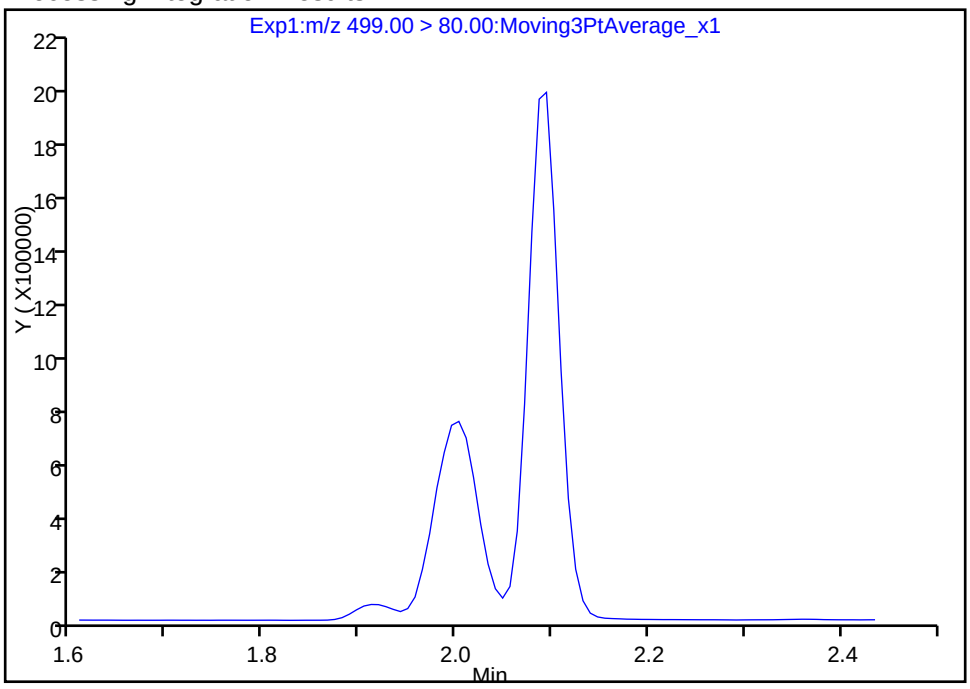
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_056.d				
Injection Date:	20-Sep-2017 08:09:16	Instrument ID:	A8_N		
Lims ID:	320-31489-A-11-C MSD				
Client ID:	NAWC-091217-RW-315				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	44	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. 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

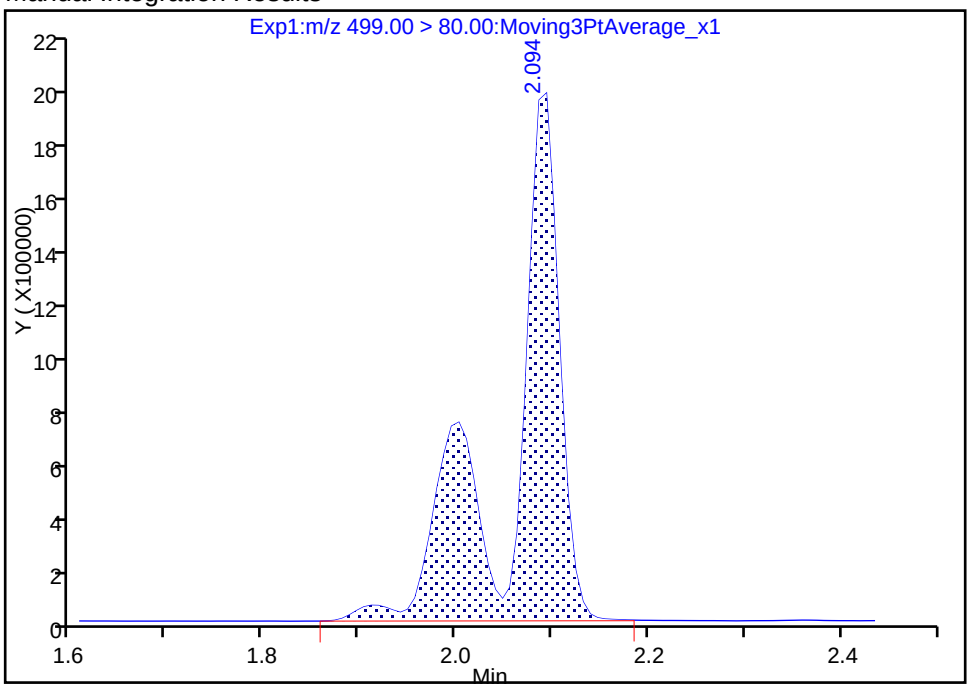
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 6833728
Amount: 32.604580
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:58:31
Audit Action: Assigned Compound ID Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

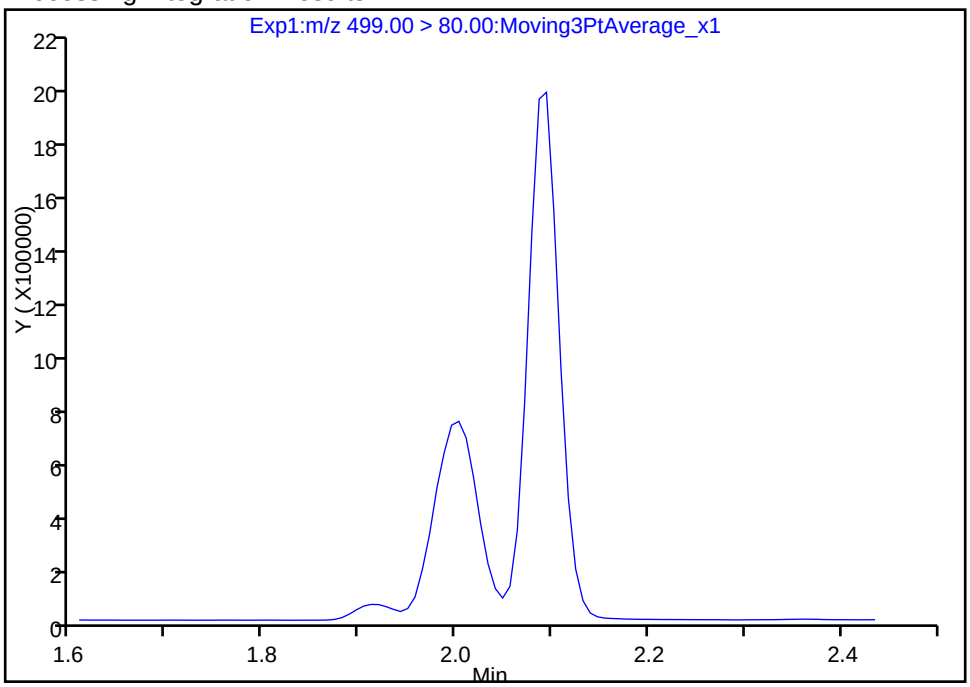
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b\2017.09.19_537A_056.d
Injection Date: 20-Sep-2017 08:09:16 Instrument ID: A8_N
Lims ID: 320-31489-A-11-C MSD
Client ID: NAWC-091217-RW-315
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

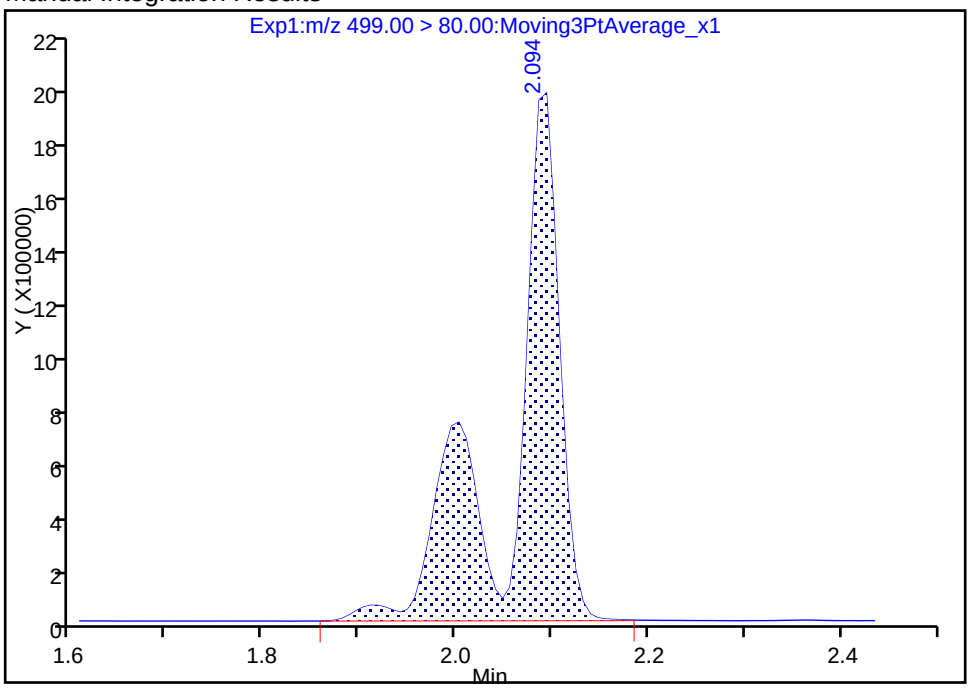
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 6833728
Amount: 32.604580
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 13:58:43
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 02:56

Analysis Batch Number: 185329 End Date: 09/20/2017 03:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185329/4		09/20/2017 02:56	1	2017.09.19_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-185329/5		09/20/2017 03:00	1	2017.09.19_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-185329/6		09/20/2017 03:05	1	2017.09.19_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-185329/7 ICISAV		09/20/2017 03:10	1	2017.09.19_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-185329/8		09/20/2017 03:15	1	2017.09.19_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-185329/9		09/20/2017 03:19	1	2017.09.19_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:24	1		GeminiC18 3x100 3(mm)
CCVL 320-185329/11		09/20/2017 03:29	1	2017.09.19_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:34	1		GeminiC18 3x100 3(mm)
ICV 320-185329/13		09/20/2017 03:38	1	2017.09.19_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 06:43

Analysis Batch Number: 185410 End Date: 09/20/2017 07:40

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185410/1 CCVIS		09/20/2017 06:43	1	2017.09.19_537A 038.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 06:48	1		GeminiC18 3x100 3(mm)
MB 320-184653/1-A		09/20/2017 06:53	1	2017.09.19_537A 040.d	GeminiC18 3x100 3(mm)
LCS 320-184653/2-A		09/20/2017 06:58	1	2017.09.19_537A 041.d	GeminiC18 3x100 3(mm)
320-31489-1		09/20/2017 07:02	1	2017.09.19_537A 042.d	GeminiC18 3x100 3(mm)
320-31489-2		09/20/2017 07:07	1	2017.09.19_537A 043.d	GeminiC18 3x100 3(mm)
320-31489-3		09/20/2017 07:12	1	2017.09.19_537A 044.d	GeminiC18 3x100 3(mm)
320-31489-4		09/20/2017 07:17	1	2017.09.19_537A 045.d	GeminiC18 3x100 3(mm)
320-31489-5		09/20/2017 07:21	1	2017.09.19_537A 046.d	GeminiC18 3x100 3(mm)
320-31489-6		09/20/2017 07:26	1	2017.09.19_537A 047.d	GeminiC18 3x100 3(mm)
320-31489-7		09/20/2017 07:31	1	2017.09.19_537A 048.d	GeminiC18 3x100 3(mm)
320-31489-8		09/20/2017 07:36	1	2017.09.19_537A 049.d	GeminiC18 3x100 3(mm)
CCV 320-185410/13 CCVIS		09/20/2017 07:40	1	2017.09.19_537A 050.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 07:40

Analysis Batch Number: 185411 End Date: 09/20/2017 08:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185411/13 CCVIS		09/20/2017 07:40	1	2017.09.19_537A 050.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 07:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 07:50	1		GeminiC18 3x100 3(mm)
320-31489-10		09/20/2017 07:55	1	2017.09.19_537A 053.d	GeminiC18 3x100 3(mm)
320-31489-11		09/20/2017 07:59	1	2017.09.19_537A 054.d	GeminiC18 3x100 3(mm)
320-31489-11 MS		09/20/2017 08:04	1	2017.09.19_537A 055.d	GeminiC18 3x100 3(mm)
320-31489-11 MSD		09/20/2017 08:09	1	2017.09.19_537A 056.d	GeminiC18 3x100 3(mm)
320-31489-12		09/20/2017 08:14	1	2017.09.19_537A 057.d	GeminiC18 3x100 3(mm)
320-31489-13		09/20/2017 08:18	1	2017.09.19_537A 058.d	GeminiC18 3x100 3(mm)
320-31489-14		09/20/2017 08:23	1	2017.09.19_537A 059.d	GeminiC18 3x100 3(mm)
320-31489-15		09/20/2017 08:28	1	2017.09.19_537A 060.d	GeminiC18 3x100 3(mm)
320-31489-16		09/20/2017 08:32	1	2017.09.19_537A 061.d	GeminiC18 3x100 3(mm)
CCV 320-185411/25 CCVIS		09/20/2017 08:37	1	2017.09.19_537A _062.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 14:21

Analysis Batch Number: 185468 End Date: 09/20/2017 14:59

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185468/1 CCVIS		09/20/2017 14:21	1	2017.09.20_537A_001.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:35	1		GeminiC18 3x100 3(mm)
320-31489-9		09/20/2017 14:40	1	2017.09.20_537A_005.d	GeminiC18 3x100 3(mm)
RINSE 320-185468/6		09/20/2017 14:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:50	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:54	1		GeminiC18 3x100 3(mm)
CCV 320-185468/9 CCVIS		09/20/2017 14:59	1	2017.09.20_537A_009.d	GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Batch Number: 184653 Batch Start Date: 09/15/17 10:28 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/18/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00047
MB 320-184653/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-184653/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-31489-A-1	NAWC-091217-RW-289	537, 537	T	285.13 g	29.05 g	256.1 mL	1.00 mL	7 SU	100 uL
320-31489-A-2	NAWC-091217-FRB-289	537, 537	T	282.92 g	28.90 g	254 mL	1.00 mL	7 SU	100 uL
320-31489-A-3	NAWC-091217-RW-029	537, 537	T	290.07 g	28.64 g	261.4 mL	1.00 mL	7 SU	100 uL
320-31489-A-4	NAWC-091217-FRB-029	537, 537	T	283.62 g	28.73 g	254.9 mL	1.00 mL	7 SU	100 uL
320-31489-A-5	NAWC-091217-RW-312	537, 537	T	280.78 g	28.04 g	252.7 mL	1.00 mL	7 SU	100 uL
320-31489-A-6	NAWC-091217-FRB-312	537, 537	T	283.00 g	27.39 g	255.6 mL	1.00 mL	7 SU	100 uL
320-31489-A-7	NAWC-091217-RW-141	537, 537	T	290.66 g	29.06 g	261.6 mL	1.00 mL	7 SU	100 uL
320-31489-A-8	NAWC-091217-FRB-141	537, 537	T	312.16 g	28.73 g	283.4 mL	1.00 mL	7 SU	100 uL
320-31489-A-9	NAWC-091217-RW-038	537, 537	T	289.93 g	29.39 g	260.5 mL	1.00 mL	7 SU	100 uL
320-31489-A-10	NAWC-091217-FRB-038	537, 537	T	283.35 g	27.99 g	255.4 mL	1.00 mL	7 SU	100 uL
320-31489-A-11	NAWC-091217-RW-315	537, 537	T	290.20 g	28.69 g	261.5 mL	1.00 mL	7 SU	100 uL
320-31489-A-11 MS	NAWC-091217-RW-315	537, 537	T	274.07 g	28.81 g	245.3 mL	1.00 mL	7 SU	100 uL
320-31489-A-11 MSD	NAWC-091217-RW-315	537, 537	T	274.35 g	28.54 g	245.8 mL	1.00 mL	7 SU	100 uL
320-31489-A-12	NAWC-091217-FRB-315	537, 537	T	278.49 g	28.22 g	250.3 mL	1.00 mL	7 SU	100 uL
320-31489-A-13	NAWC-091217-RW-032	537, 537	T	283.27 g	28.55 g	254.7 mL	1.00 mL	7 SU	100 uL
320-31489-A-14	NAWC-091217-FRB-032	537, 537	T	291.06 g	28.77 g	262.3 mL	1.00 mL	7 SU	100 uL
320-31489-A-15	NAWC-091217-RW-300	537, 537	T	293.94 g	28.07 g	265.9 mL	1.00 mL	7 SU	100 uL
320-31489-A-16	NAWC-091217-FRB-300	537, 537	T	292.67 g	28.59 g	264.1 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00048	AnalysisComment			

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.: 320-31489-1

SDG No.:

Batch Number: 184653 Batch Start Date: 09/15/17 10:28 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/18/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00048	AnalysisComment			
MB 320-184653/1		537, 537			100 uL	ch nd			
LCS 320-184653/2		537, 537		100 uL	100 uL	ch nd			
320-31489-A-1	NAWC-091217-RW-289	537, 537	T		100 uL	ch nd			
320-31489-A-2	NAWC-091217-FRB-289	537, 537	T		100 uL	ch nd			
320-31489-A-3	NAWC-091217-RW-029	537, 537	T		100 uL	ch nd			
320-31489-A-4	NAWC-091217-FRB-029	537, 537	T		100 uL	ch nd			
320-31489-A-5	NAWC-091217-RW-312	537, 537	T		100 uL	ch nd			
320-31489-A-6	NAWC-091217-FRB-312	537, 537	T		100 uL	ch nd			
320-31489-A-7	NAWC-091217-RW-141	537, 537	T		100 uL	ch nd			
320-31489-A-8	NAWC-091217-FRB-141	537, 537	T		100 uL	ch nd			
320-31489-A-9	NAWC-091217-RW-038	537, 537	T		100 uL	ch nd			
320-31489-A-10	NAWC-091217-FRB-038	537, 537	T		100 uL	ch nd			
320-31489-A-11	NAWC-091217-RW-315	537, 537	T		100 uL	ch nd			
320-31489-A-11 MS	NAWC-091217-RW-315	537, 537	T	100 uL	100 uL	ch nd			
320-31489-A-11 MSD	NAWC-091217-RW-315	537, 537	T	100 uL	100 uL	ch nd			
320-31489-A-12	NAWC-091217-FRB-315	537, 537	T		100 uL	ch nd			
320-31489-A-13	NAWC-091217-RW-032	537, 537	T		100 uL	ch nd			
320-31489-A-14	NAWC-091217-FRB-032	537, 537	T		100 uL	ch nd			
320-31489-A-15	NAWC-091217-RW-300	537, 537	T		100 uL	ch nd			
320-31489-A-16	NAWC-091217-FRB-300	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.: 320-31489-1

SDG No.:

Batch Number: 184653 Batch Start Date: 09/15/17 10:28 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/18/17 17:16

Batch Notes	
Batch Comment	IS: 1002957 BD: CCB FV: VPM AL:TWL
Manifold ID	9
Methanol ID	1021237
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	TWL
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge ID	6357081-03
Trizma ID	SLBR4303V
Reagent Water ID	9/13/17

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.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

A8

Job No: 31489 Instrument ID & Date: 9-20-17 ICAL Batch: 185329
Extraction Batch: 184653 Worklist #: 48171, 48188 TALS Batch: 185410, 185411, 185468

Review Items	— Level 1 — Yes	No	N/A	Level 2
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 9-20-17 2nd Level Reviewer / Date: 9/22/17

NCM # and Comments: 101641

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 9-20-17 Worklist#: 48154

ICAL Batch: 185329, 185330 Calibration ID number: 34457

Review Items	— Level 1 — Yes	No	N/A	Level 2
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): (Average) Linear (1/x²)Linear (Quadratic) (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average $R^2 \geq 0.990$ for Linear $R^2 \geq 0.990$ 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 (2nd source) ± 30% of true value?	✓			✓
11. Is ICV (2nd 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: MWuf for JRB 9/22/2017

2nd Level Reviewer / Date: MWuf 9/22/2017

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 20SEP2017_537B Worklist Number: 48171
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48171.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 185410
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 MB 320-184653/1-A	# 3 MB 320-184653/1-A
# 4 LCS 320-184653/2-A	# 4 LCS 320-184653/2-A
# 5 320-31489-A-1-A	# 5 320-31489-A-1-A
# 6 320-31489-A-2-A	# 6 320-31489-A-2-A
# 7 320-31489-A-3-A	# 7 320-31489-A-3-A
# 8 320-31489-A-4-A	# 8 320-31489-A-4-A
# 9 320-31489-A-5-A	# 9 320-31489-A-5-A
#10 320-31489-A-6-A	#10 320-31489-A-6-A
#11 320-31489-A-7-A	#11 320-31489-A-7-A
#12 320-31489-A-8-A	#12 320-31489-A-8-A
#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 185411
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB
#15 320-31489-A-9-A	#15 320-31489-A-9-A
#16 320-31489-A-10-A	#16 320-31489-A-10-A
#17 320-31489-A-11-A	#17 320-31489-A-11-A
#18 320-31489-A-11-B MS	#18 320-31489-A-11-B MS
#19 320-31489-A-11-C MSD	#19 320-31489-A-11-C MSD
#20 320-31489-A-12-A	#20 320-31489-A-12-A
#21 320-31489-A-13-A	#21 320-31489-A-13-A
#22 320-31489-A-14-A	#22 320-31489-A-14-A
#23 320-31489-A-15-A	#23 320-31489-A-15-A
#24 320-31489-A-16-B	#24 320-31489-A-16-B
#25 CCV L5	#25 CCV L5
#26 RB	#26 RB

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 20SEP2017_537D Worklist Number: 48188
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170920-48188.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 185468
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 320-31468-A-1-A	# 3 320-31468-A-1-A
# 4 320-31468-A-15-A	# 4 320-31468-A-15-A
# 5 320-31489-A-9-A	# 5 320-31489-A-9-A
# 6 RINSE	# 6 RINSE
# 7 MB 320-184385/1-A	# 7 MB 320-184385/1-A
# 8 320-31489-A-13-A	# 8 320-31489-A-13-A
# 9 CCV L5	# 9 CCV L5
#10 RB	#10 RB

20

AB 9/19/17

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653

Analyst: Branscum, Cassie

Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320

Batch End: 9/18/2017 5:16:00PM

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-184653/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	MB 320-184653/1-A
				1.00 mL								
2	LCS~320-184653/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	LCS 320-184653/2-A
				1.00 mL								
3	320-31489-A-1 (537_DOD5)	N/A (320-31489-1)	285.13 g	256.1 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-1-A
			29.05 g	1.00 mL								
	320-31489-A-2 (537_DOD5)	N/A (320-31489-1)	282.92 g	254 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-2-A
			28.90 g	1.00 mL								
	320-31489-A-3 (537_DOD5)	N/A (320-31489-1)	290.07 g	261.4 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-3-A
			28.64 g	1.00 mL								
6	320-31489-A-4 (537_DOD5)	N/A (320-31489-1)	283.62 g	254.9 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-4-A
			28.73 g	1.00 mL								
7	320-31489-A-5 (537_DOD5)	N/A (320-31489-1)	280.78 g	252.7 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-5-A
			28.04 g	1.00 mL								
8	320-31489-A-6 (537_DOD5)	N/A (320-31489-1)	283.00 g	255.6 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-6-A
			27.39 g	1.00 mL								
9	320-31489-A-7 (537_DOD5)	N/A (320-31489-1)	290.66 g	261.6 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-7-A
			29.06 g	1.00 mL								
10	320-31489-A-8 (537_DOD5)	N/A (320-31489-1)	312.16 g	283.4 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-8-A
			28.73 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653 Analyst: Branscum, Cassie Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320 Batch End:

11	320-31489-A-9 (537_DOD5)	N/A (320-31489-1)	289.93 g 29.39 g	260.5 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd	RI	
12	320-31489-A-10 (537_DOD5)	N/A (320-31489-1)	283.35 g 27.99 g	255.4 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		
13	320-31489-A-11 (537_DOD5)	N/A (320-31489-1)	290.20 g 28.69 g	261.5 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		
14	320-31489-A-11~MS (537_DOD5)	N/A (320-31489-1)	274.07 g 28.81 g	245.3 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		
15	320-31489-A-11~MSD (537_DOD5)	N/A (320-31489-1)	274.35 g 28.54 g	245.8 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		
16	320-31489-A-12 (537_DOD5)	N/A (320-31489-1)	278.49 g 28.22 g	250.3 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		
17	320-31489-A-13 (537_DOD5)	N/A (320-31489-1)	283.27 g 28.55 g	254.7 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd	RI	
18	320-31489-A-14 (537_DOD5)	N/A (320-31489-1)	291.06 g 28.77 g	262.3 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		
19	320-31489-A-15 (537_DOD5)	N/A (320-31489-1)	293.94 g 28.07 g	265.9 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		
20	320-31489-A-16 (537_DOD5)	N/A (320-31489-1)	292.67 g 28.59 g	264.1 mL 1.00 mL	7			9/17/17	16_Days	4	ch nd		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653 Analyst: Branscum, Cassie Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320 Batch End:

Batch Notes

Manifold ID	9,
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-03
Methanol ID	1021237
Reagent Water ID	9/13/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	HJA
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	TWL
Batch Comment	IS: 1002957 BD: CCB FV: VPM AL: ~~VPM~~ TWL 9/18/17

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653 Analyst: Branscum, Cassie Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-184653/1	LC537-SU_00048	100 uL	1.00 mL	CeB 9-15-17	HJA 9-15-17
LCS 320-184653/2	LC537-MSP_00027	100 uL	1.00 mL		
LCS 320-184653/2	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-1	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-2	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-3	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-4	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-5	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-6	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-7	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-8	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-9	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-10	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-11	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-11 MS	LC537-MSP_00027	100 uL	1.00 mL		
320-31489-A-11 MS	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-11 MSD	LC537-MSP_00027	100 uL	1.00 mL		
320-31489-A-11 MSD	LC537-SU_00048	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653 Analyst: Branscum, Cassie Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320 Batch End:

320-31489-A-12	LC537-SU_00048	100 uL	1.00 mL	CAB 9-15-17	HJA 9-15-17
320-31489-A-13	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-14	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-15	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-16	LC537-SU_00048	100 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-184653 Test: 537_Prep

Earliest Holding Time: 9/26/17

Sample List Tab	1st Level Reviewer	2nd 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	**1st Level Reviewer**	**2nd 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	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: ABH Date: 9/18/17

2nd Level Reviewer: VPM Date: 9/18/17

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	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 9/12/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 2 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

320-31489 Chain of Custody

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-091217-RW-289	9/12/2017	07:35	G	DW	2	N	N	Y	
NAWC-091217-FRB-289	9/12/2017	07:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-029	9/12/2017	08:05	G	DW	2	N	N	Y	
NAWC-091217-FRB-029	9/12/2017	08:00	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-312	9/12/2017	08:35	G	DW	2	N	N	Y	
NAWC-091217-FRB-312	9/12/2017	08:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-141	9/12/2017	09:00	G	DW	2	N	N	Y	
NAWC-091217-FRB-141	9/12/2017	08:55	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-038	9/12/2017	09:25	G	DW	2	N	N	Y	
NAWC-091217-FRB-038	9/12/2017	09:20	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-315	9/12/2017	13:50	G	DW	6	N	Y	Y	MS/MSD
NAWC-091217-FRB-315	9/12/2017	13:45	G	DW	2	N	N	Y	Field Reagent Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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: 770221957264

2.5 2.5 Ak-2

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.1 Corr'd: 3.1 | Therm ID No.: Ak-2

Relinquished by: Mary K Bond	Company: Tetra Tech	Date/Time: 9/12/2017 18:00	Received by:	Company: FEDEX	Date/Time: 9/13/17 0930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 9/12/2017	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			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 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-091217-RW-032	9/12/2017	10:35	G	DW	2	N	N	Y	
NAWC-091217-FRB-032	9/12/2017	10:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-300	9/12/2017	11:30	G	DW	2	N	N	Y	
NAWC-091217-FRB-300	9/12/2017	11:25	G	DW	2	N	N	Y	Field Reagent Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
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

2.5 2.5 Ak-2

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.1 Corr'd: 3.1 | Therm ID No.: Ak-2

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Mary K Bond	Tetra Tech	9/12/2017 18:00		TAWS	9/13/17 0830
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-31489-1

Login Number: 31489
List Number: 1
Creator: Edman, Connor M

List Source: TestAmerica Sacramento

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

"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","12","ng/L","J M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.1","1.00","16",""
"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","6.4","ng/L","J","2.7","DL","","TRG","","","20","LOQ","YES","-99","","256.1","1.00","7.8",""
"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.1","1.00","12",""
"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.1","1.00","35",""
"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","256.1","1.00","3.9",""
"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.1","1.00","20",""
"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","STL00993","13C2 PFHxA","30","ng/L","","-99","DL","","SURR","78","","-99","LOQ","YES","39.0","","256.1","1.00","0",""
"NAWC-091217-RW-289","537","RES","320-31489-1","TALSAC","STL00996","13C2 PFDA","44","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","39.0","","256.1","1.00","0",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","255.4","1.00","16",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","255.4","1.00","7.8",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","255.4","1.00","12",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","255.4","1.00","35",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","255.4","1.00","3.9",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","255.4","1.00","20",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","STL00993","13C2 PFHxA","36","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","39.2","","255.4","1.00","0",""
"NAWC-091217-FRB-038","537","RES","320-31489-10","TALSAC","STL00996","13C2 PFDA","44","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","39.2","","255.4","1.00","0",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","9.0","ng/L","J M","6.5","DL","","TRG","","","38","LOQ","YES","-99","","261.5","1.00","15",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","11","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","261.5","1.00","7.6",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","261.5","1.00","11",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","261.5","1.00","34",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","261.5","1.00","3.8",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","261.5","1.00","19",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","STL00993","13C2 PFHxA","30","ng/L","","-99","DL","","SURR","78","","-99","LOQ","YES","38.2","","261.5","1.00","0",""
"NAWC-091217-RW-315","537","RES","320-31489-11","TALSAC","STL00996","13C2 PFDA","49","ng/L","","-99","DL","","SURR","129","","-99","LOQ","YES","38.2","","261.5","1.00","0",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","137","ng/L","","6.9","DL","","SPK","94","","41","LOQ","YES","136","NAWC-091217-RW-315","245.3","1.00","16",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","75.6","ng/L","","2.9","DL","","SPK","95","","20","LOQ","YES","68.0","NAWC-091217-RW-

315","245.3","1.00","8.2",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","96.3","ng/L","","5.6","DL","","SPK","94","","31","LOQ","YES","102","NAWC-091217-RW-315","245.3","1.00","12",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","259","ng/L","","16","DL","","SPK","85","","92","LOQ","YES","306","NAWC-091217-RW-315","245.3","1.00","37",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","35.7","ng/L","","1.9","DL","","SPK","93","","10","LOQ","YES","34.0","NAWC-091217-RW-315","245.3","1.00","4.1",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","67.5","ng/L","","8.2","DL","","SPK","99","","24","LOQ","YES","68.0","NAWC-091217-RW-315","245.3","1.00","20",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","STL00993","13C2 PFHxA","30.5","ng/L","","-99","DL","","SURR","75","","-99","LOQ","YES","40.8","NAWC-091217-RW-315","245.3","1.00","0",""
"NAWC-091217-RW-315MS","537","RES","320-31489-11MS","TALSAC","STL00996","13C2 PFDA","50.3","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","40.8","NAWC-091217-RW-315","245.3","1.00","0",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","133","ng/L","M","6.9","DL","","SPK","91","3","41","LOQ","YES","136","NAWC-091217-RW-315","245.8","1.00","16",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","74.1","ng/L","","2.8","DL","","SPK","93","2","20","LOQ","YES","67.9","NAWC-091217-RW-315","245.8","1.00","8.1",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","94.0","ng/L","","5.6","DL","","SPK","92","2","31","LOQ","YES","102","NAWC-091217-RW-315","245.8","1.00","12",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","251","ng/L","","16","DL","","SPK","82","3","92","LOQ","YES","305","NAWC-091217-RW-315","245.8","1.00","37",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","36.5","ng/L","","1.9","DL","","SPK","96","2","10","LOQ","YES","33.9","NAWC-091217-RW-315","245.8","1.00","4.1",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","67.8","ng/L","","8.1","DL","","SPK","100","0","24","LOQ","YES","67.8","NAWC-091217-RW-315","245.8","1.00","20",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","STL00993","13C2 PFHxA","31.5","ng/L","","-99","DL","","SURR","77","","-99","LOQ","YES","40.7","NAWC-091217-RW-315","245.8","1.00","0",""
"NAWC-091217-RW-315MSD","537","RES","320-31489-11MSD","TALSAC","STL00996","13C2 PFDA","47.2","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","40.7","NAWC-091217-RW-315","245.8","1.00","0",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.3","1.00","16",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.3","1.00","8.0",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.3","1.00","12",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.3","1.00","36",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.3","1.00","4.0",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.3","1.00","20",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","40.0","","250.3","1.00","0",""
"NAWC-091217-FRB-315","537","RES","320-31489-12","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","40.0","","250.3","1.00","0",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","20","ng/L","J M","6.7","DL","","TRG","","","39","LOQ","YES","-99","","254.7","1.00","16",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","14","ng/L","J","2.7","DL","","TRG","","","20","LOQ","YES","-99","","254.7","1.00","7.9",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","14","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","254.7","1.00","12",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","254.7","1.00","35",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.8","ng/L","J","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","254.7","1.00","3.9",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","254.7","1.00","20",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","STL00993","13C2
PFHxA","26","ng/L","Q","-99","DL","","SURR","65","","-99","LOQ","YES","39.3","","254.7","1.00","0",""
"NAWC-091217-RW-032","537","RES","320-31489-13","TALSAC","STL00996","13C2
PFDA","47","ng/L","","-99","DL","","SURR","120","","-99","LOQ","YES","39.3","","254.7","1.00","0",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES","-99","","262.3","1.00","15",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.6","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","262.3","1.00","7.6",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","29","LOQ","YES","-99","","262.3","1.00","11",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","262.3","1.00","34",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","262.3","1.00","3.8",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","262.3","1.00","19",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","38.1","","262.3","1.00","0",""
"NAWC-091217-FRB-032","537","RES","320-31489-14","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","38.1","","262.3","1.00","0",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","24","ng/L","J M","6.4","DL","","TRG","","","38","LOQ","YES","-99","","265.9","1.00","15",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","23","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","265.9","1.00","7.5",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.1","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","265.9","1.00","11",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","265.9","1.00","34",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.8","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","265.9","1.00","3.8",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","265.9","1.00","19",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","STL00993","13C2
PFHxA","28","ng/L","","-99","DL","","SURR","74","","-99","LOQ","YES","37.6","","265.9","1.00","0",""
"NAWC-091217-RW-300","537","RES","320-31489-15","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","107","","-99","LOQ","YES","37.6","","265.9","1.00","0",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","15","ng/L","U","6.4","DL","","TRG","","","38","LOQ","YES","-99","","264.1","1.00","15",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.6","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","264.1","1.00","7.6",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","28","LOQ","YES","-99","","264.1","1.00","11",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","264.1","1.00","34",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","264.1","1.00","3.8",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","264.1","1.00","19",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","37.9","","264.1","1.00","0",""
"NAWC-091217-FRB-300","537","RES","320-31489-16","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","37.9","","264.1","1.00","0",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","254","1.00","16",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","254","1.00","7.9",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES","-99","","254","1.00","12",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","254","1.00","35",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","254","1.00","3.9",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","254","1.00","20",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","39.4","","254","1.00","0",""
"NAWC-091217-FRB-289","537","RES","320-31489-2","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","39.4","","254","1.00","0",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","21","ng/L","J M","6.5","DL","","TRG","","","38","LOQ","YES","-99","","261.4","1.00","15",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","18","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","261.4","1.00","7.7",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","6.5","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","261.4","1.00","11",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","261.4","1.00","34",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.1","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","261.4","1.00","3.8",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","261.4","1.00","19",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","STL00993","13C2
PFHxA","27","ng/L","","-99","DL","","SURR","71","","-99","LOQ","YES","38.3","","261.4","1.00","0",""
"NAWC-091217-RW-029","537","RES","320-31489-3","TALSAC","STL00996","13C2
PFDA","49","ng/L","","-99","DL","","SURR","127","","-99","LOQ","YES","38.3","","261.4","1.00","0",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","254.9","1.00","16",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","254.9","1.00","7.8",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","254.9","1.00","12",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","254.9","1.00","35",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","254.9","1.00","3.9",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.8","DL","","TRG","","","24","LOQ","YES","-99","","254.9","1.00","20",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","39.2","","254.9","1.00","0",""
"NAWC-091217-FRB-029","537","RES","320-31489-4","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","39.2","","254.9","1.00","0",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J M","6.7","DL","","TRG","","","40","LOQ","YES","-99","","252.7","1.00","16",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","17","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","252.7","1.00","7.9",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.7","ng/L","J","5.4","DL","","TRG","","","30","LOQ","YES","-99","","252.7","1.00","12",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","252.7","1.00","36",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.5","ng/L","J","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","252.7","1.00","4.0",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","252.7","1.00","20",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","STL00993","13C2
PFHxA","30","ng/L","","-99","DL","","SURR","75","","-99","LOQ","YES","39.6","","252.7","1.00","0",""
"NAWC-091217-RW-312","537","RES","320-31489-5","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","39.6","","252.7","1.00","0",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","255.6","1.00","16",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","255.6","1.00","7.8",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","255.6","1.00","12",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","255.6","1.00","35",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","255.6","1.00","3.9",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","255.6","1.00","20",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","39.1","","255.6","1.00","0",""
"NAWC-091217-FRB-312","537","RES","320-31489-6","TALSAC","STL00996","13C2
PFDA","46","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","39.1","","255.6","1.00","0",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","23","ng/L","J M","6.5","DL","","TRG","","","38","LOQ","YES","-99","","261.6","1.00","15",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","15","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","261.6","1.00","7.6",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","15","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","261.6","1.00","11",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","261.6","1.00","34",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.2","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","261.6","1.00","3.8",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","261.6","1.00","19",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","STL00993","13C2

PFHxA","30","ng/L","","-99","DL","","SURR","78","","-99","LOQ","YES","38.2","","261.6","1.00","0",""
"NAWC-091217-RW-141","537","RES","320-31489-7","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","38.2","","261.6","1.00","0",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","283.4","1.00","14",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.1","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","283.4","1.00","7.1",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","26","LOQ","YES","-99","","283.4","1.00","11",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","283.4","1.00","32",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","283.4","1.00","3.5",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.1","DL","","TRG","","","21","LOQ","YES","-99","","283.4","1.00","18",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","35.3","","283.4","1.00","0",""
"NAWC-091217-FRB-141","537","RES","320-31489-8","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","35.3","","283.4","1.00","0",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","24","ng/L","J M","6.5","DL","","TRG","","","38","LOQ","YES","-99","","260.5","1.00","15",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","20","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","260.5","1.00","7.7",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","6.1","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","260.5","1.00","12",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","260.5","1.00","35",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.5","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","260.5","1.00","3.8",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","260.5","1.00","19",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","STL00993","13C2
PFHxA","28","ng/L","","-99","DL","","SURR","73","","-99","LOQ","YES","38.4","","260.5","1.00","0",""
"NAWC-091217-RW-038","537","RES","320-31489-9","TALSAC","STL00996","13C2
PFDA","50","ng/L","","-99","DL","","SURR","130","","-99","LOQ","YES","38.4","","260.5","1.00","0",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","121","ng/L","M","6.8","DL","","SPK","91","","40","LOQ","YES","133","","250","1.00","16",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","58.9","ng/L","","2.8","DL","","SPK","88","","20","LOQ","YES","66.7","","250","1.00","8.0",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","91.7","ng/L","","5.5","DL","","SPK","92","","30","LOQ","YES","100","","250","1.00","12",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","262","ng/L","","16","DL","","SPK","87","","90","LOQ","YES","300","","250","1.00","36",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","31.8","ng/L","","1.9","DL","","SPK","95","","10","LOQ","YES","33.3","","250","1.00","4.0",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","57.7","ng/L","","8.0","DL","","SPK","87","","24","LOQ","YES","66.7","","250","1.00","20",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","STL00993","13C2
PFHxA","35.7","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LCS 320-184653/2-A","537","RES","LCS 320-184653/2-A","TALSAC","STL00996","13C2
PFDA","46.6","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250","1.00","16",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","335-67-1","Perfluorooctanoic acid

(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250","1.00","8.0",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250","1.00","12",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250","1.00","4.0",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250","1.00","20",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","STL00993","13C2
PFHxA","36.4","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-184653/1-A","537","RES","MB 320-184653/1-A","TALSAC","STL00996","13C2
PFDA","44.1","ng/L","","-99","DL","","SURR","110","","-99","LOQ","YES","40.0","","250","1.00","0",""
"Unknown","Unknown","NAWC-091217-RW-289","09/12/2017 07:35","AQ","320-31489-
1","NM","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:02","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-038","09/12/2017 09:20","AQ","320-31489-
10","FB","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-315","09/12/2017 13:50","AQ","320-31489-
11","NM","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:59","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-315MS","09/12/2017 13:50","AQ","320-31489-
11MS","MS","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
08:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-315MSD","09/12/2017 13:50","AQ","320-31489-
11MSD","MSD","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
08:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-315","09/12/2017 13:45","AQ","320-31489-
12","FB","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
08:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-032","09/12/2017 10:35","AQ","320-31489-
13","NM","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
08:18","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-032","09/12/2017 10:30","AQ","320-31489-
14","FB","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
08:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-300","09/12/2017 11:30","AQ","320-31489-
15","NM","","2.5","537","METHOD","RES","09/15/2017 10:40","09/20/2017
08:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-300","09/12/2017 11:25","AQ","320-31489-
16","FB","","2.5","537","METHOD","RES","09/15/2017 10:40","09/20/2017
08:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185411","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-289","09/12/2017 07:30","AQ","320-31489-

2","FB","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:07","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-029","09/12/2017 08:05","AQ","320-31489-
3","NM","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:12","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-029","09/12/2017 08:00","AQ","320-31489-
4","FB","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:17","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-312","09/12/2017 08:35","AQ","320-31489-
5","NM","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:21","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-312","09/12/2017 08:30","AQ","320-31489-
6","FB","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:26","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-141","09/12/2017 09:00","AQ","320-31489-
7","NM","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:31","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-FRB-141","09/12/2017 08:55","AQ","320-31489-
8","FB","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
07:36","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","NAWC-091217-RW-038","09/12/2017 09:25","AQ","320-31489-
9","NM","","2.5","537","METHOD","RES","09/15/2017 10:28","09/20/2017
14:40","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185468","320-31489-1","09/13/2017 09:30","09/22/2017 15:00",""
"Unknown","Unknown","LCS 320-184653/2-A","","AQ","LCS 320-184653/2-
A","LCS","","-99","537","METHOD","RES","09/15/2017 10:28","09/20/2017
06:58","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/15/2017 10:28","09/22/2017 15:00",""
"Unknown","Unknown","MB 320-184653/1-A","","AQ","MB 320-184653/1-
A","MB","","-99","537","METHOD","RES","09/15/2017 10:28","09/20/2017
06:53","TALSAC","COA","WET","NA","1","NA","NA","","100","320-184653","320-184653","NA","320-
185410","320-31489-1","09/15/2017 10:28","09/22/2017 15:00",""

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. FREBOWITZ** **DATE:** **OCTOBER 12, 2017**

FROM: **TERRI L. SOLOMON** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-31489-1

SAMPLES: 8/Field Reagent Blank (FRB)

NAWC-091217-FRB-312	NAWC-091217-FRB-038
NAWC-091217-FRB-329	NAWC-091217-FRB-029
NAWC-091217-FRB-032	NAWC-091217-FRB-141
NAWC-091217-FRB-289	NAWC-091217-FRB-300

8/Drinking Water

NAWC-091217-RW-312	NAWC-091217-RW-038
NAWC-091217-RW-329	NAWC-091217-RW-029
NAWC-091217-RW-032	NAWC-091217-RW-141
NAWC-091217-RW-289	NAWC-091217-RW-300

Overview

The sample set for NAS JRB Willow Grove, SDG 320-31489-1, consisted of eight (8) drinking water samples and eight (8) FRB samples. All samples were analyzed for select polyfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). No field duplicate samples were included in this SDG.

The samples were collected by Tetra Tech on September 12, 2017 and analyzed by TestAmerica-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, initial/continuing calibrations, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample results, internal standard areas and recoveries, matrix spike / matrix spike duplicate results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

The following surrogate recovery was below the 70% quality control limit. The sample was reanalyzed by the laboratory with similar recoveries and the original analysis was reported. The detected and nondetected results reported in the affected sample were qualified as estimated (J) and (UJ), respectively.

Sample	Surrogate
NAWC-091217-RW-032	13C2 Perfluorohexanoic acid

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).

Notes

As per the project manager, the sample ID for NAWC-091217-RW315 should be NAWC-091217-RW329. The sample ID was amended by the validator on the Form Is and electronic deliverable.

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

Sample	Associated FRB
NAWC-091217-RW-312	NAWC-091217-FRB-312
NAWC-091217-RW-038	NAWC-091217-FRB-038
NAWC-091217-RW-329	NAWC-091217-FRB-329
NAWC-091217-RW-029	NAWC-091217-FRB-029
NAWC-091217-RW-032	NAWC-091217-FRB-032
NAWC-091217-RW-141	NAWC-091217-FRB-141
NAWC-091217-RW-289	NAWC-091217-FRB-289
NAWC-091217-RW-300	NAWC-091217-FRB-300

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: One surrogate recovery was below the quality control limit.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

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 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-091217-FRB-029			NAWC-091217-FRB-032			NAWC-091217-FRB-038			NAWC-091217-FRB-141		
SDG: 320-31489-1	LAB_ID	320-31489-4			320-31489-14			320-31489-10			320-31489-8		
FRACTION: PFAS	SAMP_DATE	9/12/2017			9/12/2017			9/12/2017			9/12/2017		
MEDIA: WATER	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.8	U		7.6	U		7.8	U		7.1	U	
PERFLUOROBUTANESULFONIC ACID		35	U		34	U		35	U		32	U	
PERFLUOROHEPTANOIC ACID		3.9	U		3.8	U		3.9	U		3.5	U	
PERFLUOROHEXANESULFONIC ACID		12	U		11	U		12	U		11	U	
PERFLUORONONANOIC ACID		20	U		19	U		20	U		18	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		15	U		16	U		14	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-091217-FRB-289			NAWC-091217-FRB-300			NAWC-091217-FRB-312			NAWC-091217-FRB-329		
SDG: 320-31489-1	LAB_ID	320-31489-2			320-31489-16			320-31489-6			320-31489-12		
FRACTION: PFAS	SAMP_DATE	9/12/2017			9/12/2017			9/12/2017			9/12/2017		
MEDIA: WATER	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.9	U		7.6	U		7.8	U		8	U	
PERFLUOROBUTANESULFONIC ACID		35	U		34	U		35	U		36	U	
PERFLUOROHEPTANOIC ACID		3.9	U		3.8	U		3.9	U		4	U	
PERFLUOROHEXANESULFONIC ACID		12	U		11	U		12	U		12	U	
PERFLUORONONANOIC ACID		20	U		19	U		20	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		15	U		16	U		16	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-091217-RW-029			NAWC-091217-RW-032			NAWC-091217-RW-038			NAWC-091217-RW-141		
SDG: 320-31489-1	LAB_ID	320-31489-3			320-31489-13			320-31489-9			320-31489-7		
FRACTION: PFAS	SAMP_DATE	9/12/2017			9/12/2017			9/12/2017			9/12/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		18	J	P	14	J	PR	20			15	J	P
PERFLUOROBUTANESULFONIC ACID		34	U		35	UJ	R	35	U		34	U	
PERFLUOROHEPTANOIC ACID		5.1	J	P	4.8	J	PR	5.5	J	P	7.2	J	P
PERFLUOROHEXANESULFONIC ACID		6.5	J	P	14	J	PR	6.1	J	P	15	J	P
PERFLUORONONANOIC ACID		19	U		20	UJ	R	19	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		21	J	P	20	J	PR	24	J	P	23	J	P

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-091217-RW-289			NAWC-091217-RW-300			NAWC-091217-RW-312			NAWC-091217-RW-329		
SDG: 320-31489-1	LAB_ID	320-31489-1			320-31489-15			320-31489-5			320-31489-11		
FRACTION: PFAS	SAMP_DATE	9/12/2017			9/12/2017			9/12/2017			9/12/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		6.4	J	P	23			17	J	P	11	J	P
PERFLUOROBUTANESULFONIC ACID		35	U		34	U		36	U		34	U	
PERFLUOROHEPTANOIC ACID		3.9	U		7.8	J	P	7.5	J	P	4	J	P
PERFLUOROHEXANESULFONIC ACID		12	U		8.1	J	P	5.7	J	P	11	U	
PERFLUORONONANOIC ACID		20	U		19	U		20	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		12	J	P	24	J	P	17	J	P	9	J	P

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-289 | Lab Sample ID: 320-31489-1

Matrix: Water | Lab File ID: 2017.09.19_537A_042.d

Analysis Method: 537 | Date Collected: 09/12/2017 07:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 256.1(mL) | Date Analyzed: 09/20/2017 07:02

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J ~~M~~	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	6.4	J	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	113		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-289 | Lab Sample ID: 320-31489-2

Matrix: Water | Lab File ID: 2017.09.19_537A_043.d

Analysis Method: 537 | Date Collected: 09/12/2017 07:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254(mL) | Date Analyzed: 09/20/2017 07:07

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	89	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	109		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-029 | Lab Sample ID: 320-31489-3

Matrix: Water | Lab File ID: 2017.09.19_537A_044.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:05

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.4(mL) | Date Analyzed: 09/20/2017 07:12

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J ~~M~~	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	18	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.5	J	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.1	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	71		70-130
STL00996	13C2 PFDA	127		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-029 | Lab Sample ID: 320-31489-4

Matrix: Water | Lab File ID: 2017.09.19_537A_045.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:00

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254.9(mL) | Date Analyzed: 09/20/2017 07:17

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	109		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-312 | Lab Sample ID: 320-31489-5

Matrix: Water | Lab File ID: 2017.09.19_537A_046.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 252.7(mL) | Date Analyzed: 09/20/2017 07:21

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J ~~M~~	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	17	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	75		70-130
STL00996	13C2 PFDA	104		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-312 | Lab Sample ID: 320-31489-6

Matrix: Water | Lab File ID: 2017.09.19_537A_047.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 255.6(mL) | Date Analyzed: 09/20/2017 07:26

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	116		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-141 | Lab Sample ID: 320-31489-7

Matrix: Water | Lab File ID: 2017.09.19_537A_048.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:00

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.6(mL) | Date Analyzed: 09/20/2017 07:31

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	23	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	116		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-141 | Lab Sample ID: 320-31489-8

Matrix: Water | Lab File ID: 2017.09.19_537A_049.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:55

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 283.4(mL) | Date Analyzed: 09/20/2017 07:36

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

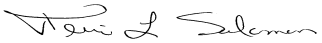
Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 185410 | 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)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.9
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	91		70-130
STL00996	13C2 PFDA	112		70-130


10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-038 | Lab Sample ID: 320-31489-9

Matrix: Water | Lab File ID: 2017.09.20_537A_005.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:25

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 260.5(mL) | Date Analyzed: 09/20/2017 14:40

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 185468 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J ~~M~~	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.1	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	73		70-130
STL00996	13C2 PFDA	130		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-038 | Lab Sample ID: 320-31489-10

Matrix: Water | Lab File ID: 2017.09.19_537A_053.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:20

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 255.4(mL) | Date Analyzed: 09/20/2017 07:55

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	112		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-~~315~~ 329 | Lab Sample ID: 320-31489-11

Matrix: Water | Lab File ID: 2017.09.19_537A_054.d

Analysis Method: 537 | Date Collected: 09/12/2017 13:50

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.5(mL) | Date Analyzed: 09/20/2017 07:59

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.0	J ~~M~~	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	129		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB~~-315~~ 329 | Lab Sample ID: 320-31489-12

Matrix: Water | Lab File ID: 2017.09.19_537A_057.d

Analysis Method: 537 | Date Collected: 09/12/2017 13:45

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 250.3(mL) | Date Analyzed: 09/20/2017 08:14

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.: 185411 | 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	88		70-130
STL00996	13C2 PFDA	104		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-032 | Lab Sample ID: 320-31489-13

Matrix: Water | Lab File ID: 2017.09.19_537A_058.d

Analysis Method: 537 | Date Collected: 09/12/2017 10:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254.7(mL) | Date Analyzed: 09/20/2017 08:18

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J ~~M~~	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	20	7.9	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	~~U~~ UJ	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	~~U~~ UJ	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	65	Q	70-130
STL00996	13C2 PFDA	120		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-032 | Lab Sample ID: 320-31489-14

Matrix: Water | Lab File ID: 2017.09.19_537A_059.d

Analysis Method: 537 | Date Collected: 09/12/2017 10:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 262.3(mL) | Date Analyzed: 09/20/2017 08:23

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

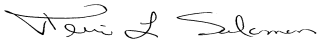
Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	116		70-130



10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-300 | Lab Sample ID: 320-31489-15

Matrix: Water | Lab File ID: 2017.09.19_537A_060.d

Analysis Method: 537 | Date Collected: 09/12/2017 11:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:40

Sample wt/vol: 265.9(mL) | Date Analyzed: 09/20/2017 08:28

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J ~~M~~	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	23		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.8	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	107		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-300 | Lab Sample ID: 320-31489-16

Matrix: Water | Lab File ID: 2017.09.19_537A_061.d

Analysis Method: 537 | Date Collected: 09/12/2017 11:25

Extraction Method: 537 | Date Extracted: 09/15/2017 10:40

Sample wt/vol: 264.1(mL) | Date Analyzed: 09/20/2017 08:32

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	112		70-130


10/05/2017

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-289 | Lab Sample ID: 320-31489-1

Matrix: Water | Lab File ID: 2017.09.19_537A_042.d

Analysis Method: 537 | Date Collected: 09/12/2017 07:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 256.1(mL) | Date Analyzed: 09/20/2017 07:02

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	6.4	J	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-289 | Lab Sample ID: 320-31489-2

Matrix: Water | Lab File ID: 2017.09.19_537A_043.d

Analysis Method: 537 | Date Collected: 09/12/2017 07:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254(mL) | Date Analyzed: 09/20/2017 07:07

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	89	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-029 | Lab Sample ID: 320-31489-3

Matrix: Water | Lab File ID: 2017.09.19_537A_044.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:05

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.4(mL) | Date Analyzed: 09/20/2017 07:12

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	18	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.5	J	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.1	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	71		70-130
STL00996	13C2 PFDA	127		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-029 | Lab Sample ID: 320-31489-4

Matrix: Water | Lab File ID: 2017.09.19_537A_045.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:00

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254.9(mL) | Date Analyzed: 09/20/2017 07:17

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-312 | Lab Sample ID: 320-31489-5

Matrix: Water | Lab File ID: 2017.09.19_537A_046.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 252.7(mL) | Date Analyzed: 09/20/2017 07:21

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	17	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	75		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-312 | Lab Sample ID: 320-31489-6

Matrix: Water | Lab File ID: 2017.09.19_537A_047.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 255.6(mL) | Date Analyzed: 09/20/2017 07:26

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	116		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-141 | Lab Sample ID: 320-31489-7

Matrix: Water | Lab File ID: 2017.09.19_537A_048.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:00

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.6(mL) | Date Analyzed: 09/20/2017 07:31

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.: 185410 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	23	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	116		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-141 | Lab Sample ID: 320-31489-8

Matrix: Water | Lab File ID: 2017.09.19_537A_049.d

Analysis Method: 537 | Date Collected: 09/12/2017 08:55

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 283.4(mL) | Date Analyzed: 09/20/2017 07:36

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.: 185410 | 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)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.9
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	91		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-038 | Lab Sample ID: 320-31489-9

Matrix: Water | Lab File ID: 2017.09.20_537A_005.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:25

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 260.5(mL) | Date Analyzed: 09/20/2017 14:40

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 185468 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.1	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	73		70-130
STL00996	13C2 PFDA	130		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-038 | Lab Sample ID: 320-31489-10

Matrix: Water | Lab File ID: 2017.09.19_537A_053.d

Analysis Method: 537 | Date Collected: 09/12/2017 09:20

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 255.4(mL) | Date Analyzed: 09/20/2017 07:55

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-~~315~~ 329 | Lab Sample ID: 320-31489-11

Matrix: Water | Lab File ID: 2017.09.19_537A_054.d

Analysis Method: 537 | Date Collected: 09/12/2017 13:50

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 261.5(mL) | Date Analyzed: 09/20/2017 07:59

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.0	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	129		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-~~315~~ 329 | Lab Sample ID: 320-31489-12

Matrix: Water | Lab File ID: 2017.09.19_537A_057.d

Analysis Method: 537 | Date Collected: 09/12/2017 13:45

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 250.3(mL) | Date Analyzed: 09/20/2017 08:14

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.: 185411 | 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	88		70-130
STL00996	13C2 PFDA	104		70-130

10/05/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-032 | Lab Sample ID: 320-31489-13

Matrix: Water | Lab File ID: 2017.09.19_537A_058.d

Analysis Method: 537 | Date Collected: 09/12/2017 10:35

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 254.7(mL) | Date Analyzed: 09/20/2017 08:18

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	20	7.9	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.8	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	65	Q	70-130
STL00996	13C2 PFDA	120		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-032 | Lab Sample ID: 320-31489-14

Matrix: Water | Lab File ID: 2017.09.19_537A_059.d

Analysis Method: 537 | Date Collected: 09/12/2017 10:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 262.3(mL) | Date Analyzed: 09/20/2017 08:23

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	116		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-RW-300 | Lab Sample ID: 320-31489-15

Matrix: Water | Lab File ID: 2017.09.19_537A_060.d

Analysis Method: 537 | Date Collected: 09/12/2017 11:30

Extraction Method: 537 | Date Extracted: 09/15/2017 10:40

Sample wt/vol: 265.9(mL) | Date Analyzed: 09/20/2017 08:28

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	23		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.8	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: NAWC-091217-FRB-300 | Lab Sample ID: 320-31489-16

Matrix: Water | Lab File ID: 2017.09.19_537A_061.d

Analysis Method: 537 | Date Collected: 09/12/2017 11:25

Extraction Method: 537 | Date Extracted: 09/15/2017 10:40

Sample wt/vol: 264.1(mL) | Date Analyzed: 09/20/2017 08:32

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.: 185411 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	112		70-130

Appendix C

Support Documentation

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

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

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 9/12/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 2 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

320-31489 Chain of Custody

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-091217-RW-289	9/12/2017	07:35	G	DW	2	N	N	Y	
NAWC-091217-FRB-289	9/12/2017	07:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-029	9/12/2017	08:05	G	DW	2	N	N	Y	
NAWC-091217-FRB-029	9/12/2017	08:00	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-312	9/12/2017	08:35	G	DW	2	N	N	Y	
NAWC-091217-FRB-312	9/12/2017	08:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-141	9/12/2017	09:00	G	DW	2	N	N	Y	
NAWC-091217-FRB-141	9/12/2017	08:55	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-038	9/12/2017	09:25	G	DW	2	N	N	Y	
NAWC-091217-FRB-038	9/12/2017	09:20	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-315	9/12/2017	13:50	G	DW	6	N	Y	Y	MS/MSD
NAWC-091217-FRB-315	9/12/2017	13:45	G	DW	2	N	N	Y	Field Reagent Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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: 770221957264

2.5 2.5 Ak-2

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: 3.1	Corr'd: 3.1	Therm ID No.: Ak-2
Relinquished by: Mary K Bond	Company: Tetra Tech	Date/Time: 9/12/2017 18:00	Received by:	Company: FEDEX	Date/Time: 9/13/17 0930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 9/12/2017	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**			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 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-091217-RW-032	9/12/2017	10:35	G	DW	2	N	N	Y	
NAWC-091217-FRB-032	9/12/2017	10:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-091217-RW-300	9/12/2017	11:30	G	DW	2	N	N	Y	
NAWC-091217-FRB-300	9/12/2017	11:25	G	DW	2	N	N	Y	Field Reagent Blank

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
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

2.5 2.5 Ak-2

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.1 Corr'd: 3.1 | Therm ID No.: Ak-2

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Mary K Bond	Tetra Tech	9/12/2017 18:00		TAMS	9/13/17 0830
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Job Narrative
320-31489-1

Receipt
The samples were received on 9/13/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.5º C and 3.1º C.

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

Method(s) 537: Surrogate recovery for the following sample was outside control limits: NAWC-091217-RW-032 (320-31489-13). 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
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-31489-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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: 320-31489-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31489-1	NAWC-091217-RW-289	Water	09/12/17 07:35	09/13/17 09:30
320-31489-2	NAWC-091217-FRB-289	Water	09/12/17 07:30	09/13/17 09:30
320-31489-3	NAWC-091217-RW-029	Water	09/12/17 08:05	09/13/17 09:30
320-31489-4	NAWC-091217-FRB-029	Water	09/12/17 08:00	09/13/17 09:30
320-31489-5	NAWC-091217-RW-312	Water	09/12/17 08:35	09/13/17 09:30
320-31489-6	NAWC-091217-FRB-312	Water	09/12/17 08:30	09/13/17 09:30
320-31489-7	NAWC-091217-RW-141	Water	09/12/17 09:00	09/13/17 09:30
320-31489-8	NAWC-091217-FRB-141	Water	09/12/17 08:55	09/13/17 09:30
320-31489-9	NAWC-091217-RW-038	Water	09/12/17 09:25	09/13/17 09:30
320-31489-10	NAWC-091217-FRB-038	Water	09/12/17 09:20	09/13/17 09:30
320-31489-11	NAWC-091217-RW-315	Water	09/12/17 13:50	09/13/17 09:30
320-31489-12	NAWC-091217-FRB-315	Water	09/12/17 13:45	09/13/17 09:30
320-31489-13	NAWC-091217-RW-032	Water	09/12/17 10:35	09/13/17 09:30
320-31489-14	NAWC-091217-FRB-032	Water	09/12/17 10:30	09/13/17 09:30
320-31489-15	NAWC-091217-RW-300	Water	09/12/17 11:30	09/13/17 09:30
320-31489-16	NAWC-091217-FRB-300	Water	09/12/17 11:25	09/13/17 09:30

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-091217-RW-289	320-31489-1	78	113
NAWC-091217-FRB-289	320-31489-2	89	109
NAWC-091217-RW-029	320-31489-3	71	127
NAWC-091217-FRB-029	320-31489-4	90	109
NAWC-091217-RW-312	320-31489-5	75	104
NAWC-091217-FRB-312	320-31489-6	90	116
NAWC-091217-RW-141	320-31489-7	78	116
NAWC-091217-FRB-141	320-31489-8	91	112
NAWC-091217-RW-038	320-31489-9	73	130
NAWC-091217-FRB-038	320-31489-10	92	112
NAWC-091217-RW-315	320-31489-11	78	129
NAWC-091217-FRB-315	320-31489-12	88	104
NAWC-091217-RW-032	320-31489-13	65 Q	120
NAWC-091217-FRB-032	320-31489-14	93	116
NAWC-091217-RW-300	320-31489-15	74	107
NAWC-091217-FRB-300	320-31489-16	97	112
	MB 320-184653/1-A	91	110
	LCS 320-184653/2-A	89	116
NAWC-091217-RW-315 MS	320-31489-11 MS	75	123
NAWC-091217-RW-315 MSD	320-31489-11 MSD	77	116

	QC LIMITS
PFHxA = 13C2 PFHxA	70-130
PFDA = 13C2 PFDA	70-130

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.19_537A_041.d

Lab ID: LCS 320-184653/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	121	91	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	58.9	88	70-130	
Perfluorononanoic acid (PFNA)	66.7	57.7	87	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	91.7	92	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	31.8	95	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	262	87	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.19_537A_055.d

Lab ID: 320-31489-11 MS Client ID: NAWC-091217-RW-315 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	136	9.0 J	137	94	70-130	
Perfluorooctanoic acid (PFOA)	68.0	11 J	75.6	95	70-130	
Perfluorononanoic acid (PFNA)	68.0	19 U	67.5	99	70-130	
Perfluorohexanesulfonic acid (PFHxS)	102	11 U	96.3	94	70-130	
Perfluoroheptanoic acid (PFHpA)	34.0	4.0 J	35.7	93	70-130	
Perfluorobutanesulfonic acid (PFBS)	306	34 U	259	85	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.19_537A_056.d

Lab ID: 320-31489-11 MSD Client ID: NAWC-091217-RW-315 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	136	133	91	3	30	70-130	M
Perfluorooctanoic acid (PFOA)	67.9	74.1	93	2	30	70-130	
Perfluorononanoic acid (PFNA)	67.8	67.8	100	0	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	102	94.0	92	2	30	70-130	
Perfluoroheptanoic acid (PFHpA)	33.9	36.5	96	2	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	305	251	82	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab File ID: 2017.09.19_537A_040.d Lab Sample ID: MB 320-184653/1-A

Matrix: Water Date Extracted: 09/15/2017 10:28

Instrument ID: A8_N Date Analyzed: 09/20/2017 06:53

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-184653/2-A	2017.09.19_537A_041.d	09/20/2017 06:58
NAWC-091217-RW-289	320-31489-1	2017.09.19_537A_042.d	09/20/2017 07:02
NAWC-091217-FRB-289	320-31489-2	2017.09.19_537A_043.d	09/20/2017 07:07
NAWC-091217-RW-029	320-31489-3	2017.09.19_537A_044.d	09/20/2017 07:12
NAWC-091217-FRB-029	320-31489-4	2017.09.19_537A_045.d	09/20/2017 07:17
NAWC-091217-RW-312	320-31489-5	2017.09.19_537A_046.d	09/20/2017 07:21
NAWC-091217-FRB-312	320-31489-6	2017.09.19_537A_047.d	09/20/2017 07:26
NAWC-091217-RW-141	320-31489-7	2017.09.19_537A_048.d	09/20/2017 07:31
NAWC-091217-FRB-141	320-31489-8	2017.09.19_537A_049.d	09/20/2017 07:36
NAWC-091217-FRB-038	320-31489-10	2017.09.19_537A_053.d	09/20/2017 07:55
NAWC-091217-RW-315	320-31489-11	2017.09.19_537A_054.d	09/20/2017 07:59
NAWC-091217-RW-315 MS	320-31489-11 MS	2017.09.19_537A_055.d	09/20/2017 08:04
NAWC-091217-RW-315 MSD	320-31489-11 MSD	2017.09.19_537A_056.d	09/20/2017 08:09
NAWC-091217-FRB-315	320-31489-12	2017.09.19_537A_057.d	09/20/2017 08:14
NAWC-091217-RW-032	320-31489-13	2017.09.19_537A_058.d	09/20/2017 08:18
NAWC-091217-FRB-032	320-31489-14	2017.09.19_537A_059.d	09/20/2017 08:23
NAWC-091217-RW-300	320-31489-15	2017.09.19_537A_060.d	09/20/2017 08:28
NAWC-091217-FRB-300	320-31489-16	2017.09.19_537A_061.d	09/20/2017 08:32
NAWC-091217-RW-038	320-31489-9	2017.09.20_537A_005.d	09/20/2017 14:40

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31489-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-184653/1-A

Matrix: Water | Lab File ID: 2017.09.19_537A_040.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 09/15/2017 10:28

Sample wt/vol: 250(mL) | Date Analyzed: 09/20/2017 06:53

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.: 185410 | 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	91		70-130
STL00996	13C2 PFDA	110		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2116635	1.86	5570738	2.11		
UPPER LIMIT		3174953	2.36	8356107	2.61		
LOWER LIMIT		1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-185329/11		2252465	1.85	5723538	2.10		
ICV 320-185329/13		2616480	1.85	7294448	2.10		
CCV 320-185410/1 CCVIS		2137164	1.84	5388320	2.09		
MB 320-184653/1-A		2453694	1.84	6328167	2.09		
LCS 320-184653/2-A		2584758	1.84	6348829	2.09		
320-31489-1	NAWC-091217-RW-289	2447459	1.84	6406738	2.09		
320-31489-2	NAWC-091217-FRB-289	2514373	1.85	6300338	2.09		
320-31489-3	NAWC-091217-RW-029	2509210	1.84	6273970	2.09		
320-31489-4	NAWC-091217-FRB-029	2619610	1.84	6478781	2.09		
320-31489-5	NAWC-091217-RW-312	2499261	1.84	6593134	2.09		
320-31489-6	NAWC-091217-FRB-312	2612263	1.84	6435336	2.09		
320-31489-7	NAWC-091217-RW-141	2551724	1.84	6381647	2.09		
320-31489-8	NAWC-091217-FRB-141	2459724	1.84	6133899	2.09		
CCV 320-185410/13 CCVIS		2165650	1.84	5591851	2.09		
CCV 320-185411/13 CCVIS		2165650	1.84	5591851	2.09		
320-31489-10	NAWC-091217-FRB-038	2474435	1.84	6053950	2.09		
320-31489-11	NAWC-091217-RW-315	2392232	1.84	6404955	2.09		
320-31489-11 MS	NAWC-091217-RW-315 MS	2386931	1.84	6215415	2.09		
320-31489-11 MSD	NAWC-091217-RW-315 MSD	2359481	1.84	6451817	2.09		
320-31489-12	NAWC-091217-FRB-315	2517989	1.84	6073560	2.09		
320-31489-13	NAWC-091217-RW-032	2324777	1.84	6126952	2.09		
320-31489-14	NAWC-091217-FRB-032	2637436	1.84	6735507	2.09		
320-31489-15	NAWC-091217-RW-300	2494391	1.84	6721558	2.09		
320-31489-16	NAWC-091217-FRB-300	2439474	1.84	6432248	2.09		
CCV 320-185411/25 CCVIS		2222421	1.84	5821646	2.09		
CCV 320-185468/1 CCVIS		1864090	1.89	4938119	2.15		
320-31489-9	NAWC-091217-RW-038	1918184	1.87	5497337	2.13		

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

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2116635	1.86	5570738	2.11		
UPPER LIMIT		3174953	2.36	8356107	2.61		
LOWER LIMIT		1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 320-185468/9 CCVIS		1754947	1.87	4946062	2.12		

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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185410/1 Date Analyzed: 09/20/2017 06:43

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_038 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2137164	1.84	5388320	2.09		
UPPER LIMIT		2992030	2.34	7543648	2.59		
LOWER LIMIT		1496015	1.34	3771824	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-184653/1-A		2453694	1.84	6328167	2.09		
LCS 320-184653/2-A		2584758	1.84	6348829	2.09		
320-31489-1	NAWC-091217-RW-289	2447459	1.84	6406738	2.09		
320-31489-2	NAWC-091217-FRB-289	2514373	1.85	6300338	2.09		
320-31489-3	NAWC-091217-RW-029	2509210	1.84	6273970	2.09		
320-31489-4	NAWC-091217-FRB-029	2619610	1.84	6478781	2.09		
320-31489-5	NAWC-091217-RW-312	2499261	1.84	6593134	2.09		
320-31489-6	NAWC-091217-FRB-312	2612263	1.84	6435336	2.09		
320-31489-7	NAWC-091217-RW-141	2551724	1.84	6381647	2.09		
320-31489-8	NAWC-091217-FRB-141	2459724	1.84	6133899	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185410/13 Date Analyzed: 09/20/2017 07:40

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_050 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2165650	1.84	5591851	2.09		
UPPER LIMIT		3031910	2.34	7828591	2.59		
LOWER LIMIT		1515955	1.34	3914296	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-184653/1-A		2453694	1.84	6328167	2.09		
LCS 320-184653/2-A		2584758	1.84	6348829	2.09		
320-31489-1	NAWC-091217-RW-289	2447459	1.84	6406738	2.09		
320-31489-2	NAWC-091217-FRB-289	2514373	1.85	6300338	2.09		
320-31489-3	NAWC-091217-RW-029	2509210	1.84	6273970	2.09		
320-31489-4	NAWC-091217-FRB-029	2619610	1.84	6478781	2.09		
320-31489-5	NAWC-091217-RW-312	2499261	1.84	6593134	2.09		
320-31489-6	NAWC-091217-FRB-312	2612263	1.84	6435336	2.09		
320-31489-7	NAWC-091217-RW-141	2551724	1.84	6381647	2.09		
320-31489-8	NAWC-091217-FRB-141	2459724	1.84	6133899	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185411/13 Date Analyzed: 09/20/2017 07:40

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_050 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2165650	1.84	5591851	2.09		
UPPER LIMIT		3031910	2.34	7828591	2.59		
LOWER LIMIT		1515955	1.34	3914296	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-10	NAWC-091217-FRB-038	2474435	1.84	6053950	2.09		
320-31489-11	NAWC-091217-RW-315	2392232	1.84	6404955	2.09		
320-31489-11 MS	NAWC-091217-RW-315 MS	2386931	1.84	6215415	2.09		
320-31489-11 MSD	NAWC-091217-RW-315 MSD	2359481	1.84	6451817	2.09		
320-31489-12	NAWC-091217-FRB-315	2517989	1.84	6073560	2.09		
320-31489-13	NAWC-091217-RW-032	2324777	1.84	6126952	2.09		
320-31489-14	NAWC-091217-FRB-032	2637436	1.84	6735507	2.09		
320-31489-15	NAWC-091217-RW-300	2494391	1.84	6721558	2.09		
320-31489-16	NAWC-091217-FRB-300	2439474	1.84	6432248	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185411/25 Date Analyzed: 09/20/2017 08:37

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.19_537A_062 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2222421	1.84	5821646	2.09		
UPPER LIMIT		3111389	2.34	8150304	2.59		
LOWER LIMIT		1555695	1.34	4075152	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-10	NAWC-091217-FRB-038	2474435	1.84	6053950	2.09		
320-31489-11	NAWC-091217-RW-315	2392232	1.84	6404955	2.09		
320-31489-11 MS	NAWC-091217-RW-315 MS	2386931	1.84	6215415	2.09		
320-31489-11 MSD	NAWC-091217-RW-315 MSD	2359481	1.84	6451817	2.09		
320-31489-12	NAWC-091217-FRB-315	2517989	1.84	6073560	2.09		
320-31489-13	NAWC-091217-RW-032	2324777	1.84	6126952	2.09		
320-31489-14	NAWC-091217-FRB-032	2637436	1.84	6735507	2.09		
320-31489-15	NAWC-091217-RW-300	2494391	1.84	6721558	2.09		
320-31489-16	NAWC-091217-FRB-300	2439474	1.84	6432248	2.09		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185468/1 Date Analyzed: 09/20/2017 14:21

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.20_537A_001 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1864090	1.89	4938119	2.15		
UPPER LIMIT		2609726	2.39	6913367	2.65		
LOWER LIMIT		1304863	1.39	3456683	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-9	NAWC-091217-RW-038	1918184	1.87	5497337	2.13		

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

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Sample No.: CCV 320-185468/9 Date Analyzed: 09/20/2017 14:59

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.09.20_537A_009 Heated Purge: (Y/N) N

Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1754947	1.87	4946062	2.12		
UPPER LIMIT		2456926	2.37	6924487	2.62		
LOWER LIMIT		1228463	1.37	3462243	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31489-9	NAWC-091217-RW-038	1918184	1.87	5497337	2.13		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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 537

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

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1 Analy Batch No.: 185329

SDG No.:

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

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

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1549 0.7675	1.2218	1.1299	0.9825	0.8671	QuaF		1.2127	-0.002495						1.0000		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9156 0.9157	1.0104	0.9599	0.9323	0.9167	Ave		0.9418				4.0		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6240 1.5024	1.7562	1.6778	1.6725	1.5962	Ave		1.6382				5.3		30.0			
Perfluorooctanoic acid (PFOA)	0.8827 0.9310	0.9355	0.9297	0.9101	0.9278	Ave		0.9195				2.2		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8786 0.9472	0.9205	0.9514	0.9450	0.9475	Ave		0.9317				3.0		30.0			
Perfluorononanoic acid (PFNA)	0.6171 0.6192	0.6458	0.6231	0.6183	0.6076	Ave		0.6218				2.1		30.0			
13C2 PFHxA	1.1170 1.2085	1.1856	1.1778	1.1659	1.1757	Ave		1.1718				2.6		30.0			
13C2 PFDA	0.5262 0.5719	0.5663	0.5603	0.5520	0.5699	Ave		0.5578				3.1		30.0			

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1 Analy Batch No.: 185329

SDG No.:

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

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

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	2072419 26277877	5031340	9714039	16708415	22246597	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	202553 3731330	492336	996370	1954380	2871658	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	971572 17148552	2411042	4809005	9481986	13653533	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	390753 7591950	912252	1931186	3817782	5816384	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	700862 14414630	1684976	3635963	7143258	10806665	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	273016 5046017	629304	1293375	2592159	3806555	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	2470192 2461679	2599092	2444565	2443470	2454801	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1163662 1164862	1241510	1162968	1156914	1189895	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

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

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1 Analy Batch No.: 185329

SDG No.:

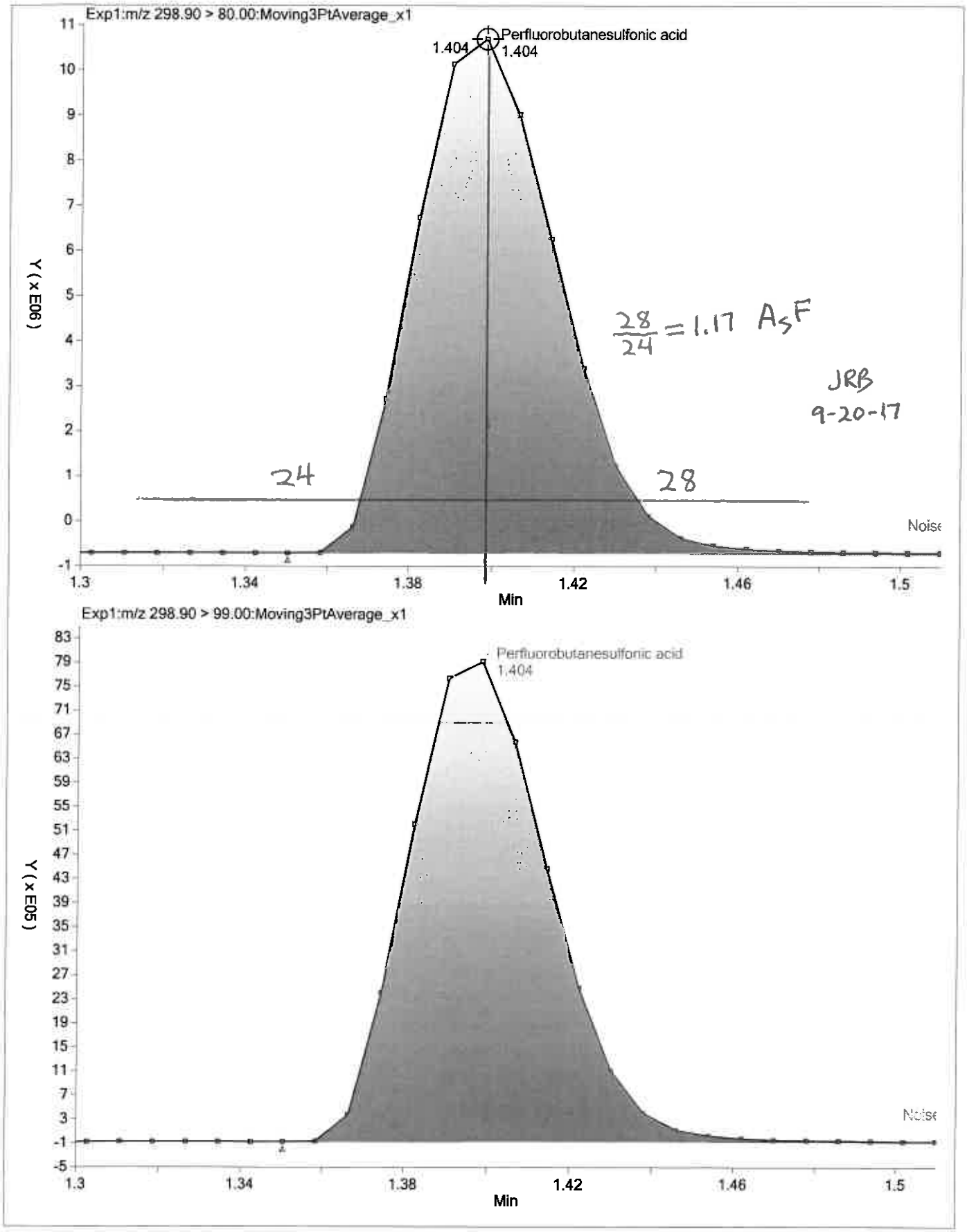
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

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

Calibration Files:

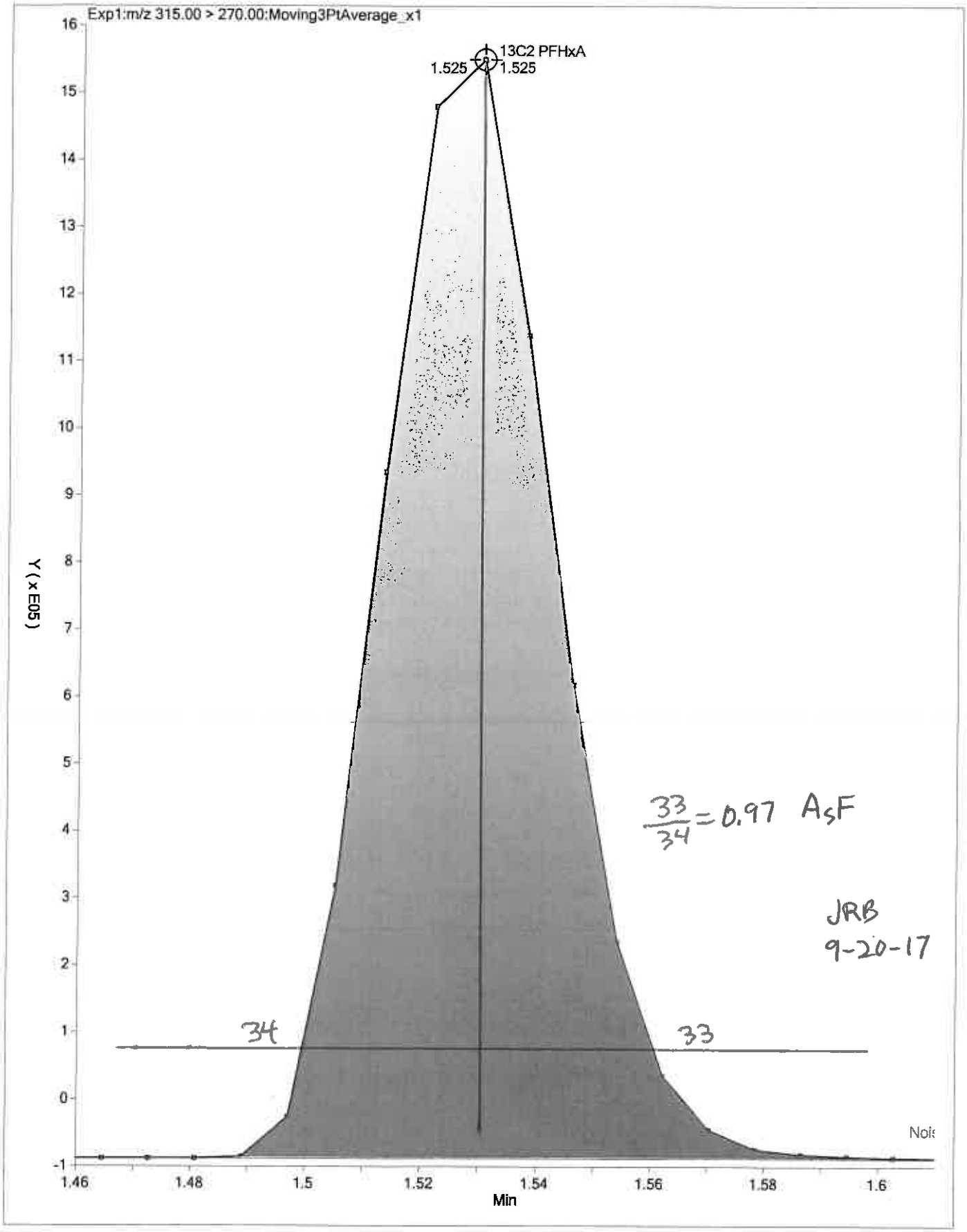
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-3.0	5.3	3.0	-0.7	-1.6	1.3	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-2.8	7.3	1.9	-1.0	-2.7	-2.8	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.9	7.2	2.4	2.1	-2.6	-8.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-4.0	1.7	1.1	-1.0	0.9	1.3	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.7	-1.2	2.1	1.4	1.7	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.8	3.8	0.2	-0.6	-2.3	-0.4	50	30	30	30	30	30
13C2 PFHxA	-4.7	1.2	0.5	-0.5	0.3	3.1	30	30	30	30	30	30
13C2 PFDA	-5.7	1.5	0.5	-1.0	2.2	2.5	30	30	30	30	30	30



$\frac{28}{24} = 1.17$ A_SF

JRB
9-20-17


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.525
1.525
Y (x E05)
Min
34
33
$\frac{33}{34} = 0.97$ A_SF
JRB
9-20-17

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCVL 320-185329/11 Calibration Date: 09/20/2017 03:29

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537ICAL_011.d Conc. Units: ng/mL

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

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: ICV 320-185329/13 Calibration Date: 09/20/2017 03:38

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537ICAL_013.d Conc. Units: ng/mL

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

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185410/1 Calibration Date: 09/20/2017 06:43

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_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		0.8765		135	135	0.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.8948		14.3	15.0	-5.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.596		43.9	45.0	-2.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8826		28.8	30.0	-4.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9548		61.5	60.0	2.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5935		28.6	30.0	-4.6	30.0
13C2 PFHxA	Ave	1.172	1.209		10.3	10.0	3.2	30.0
13C2 PFDA	Ave	0.5578	0.5368		9.62	10.0	-3.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185410/13 Calibration Date: 09/20/2017 07:40

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_050.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.131		46.4	45.0	3.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9423		5.00	5.00	0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.707		15.6	15.0	4.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9228		10.0	10.0	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9449		20.3	20.0	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6155		9.90	10.0	-1.0	30.0
13C2 PFHxA	Ave	1.172	1.153		9.84	10.0	-1.6	30.0
13C2 PFDA	Ave	0.5578	0.5300		9.50	10.0	-5.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185411/13 Calibration Date: 09/20/2017 07:40

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_050.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.131		46.4	45.0	3.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9423		5.00	5.00	0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.707		15.6	15.0	4.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9228		10.0	10.0	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9449		20.3	20.0	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6155		9.90	10.0	-1.0	30.0
13C2 PFHxA	Ave	1.172	1.153		9.84	10.0	-1.6	30.0
13C2 PFDA	Ave	0.5578	0.5300		9.50	10.0	-5.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185411/25 Calibration Date: 09/20/2017 08:37

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.19_537A_062.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8373		126	135	-6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9118		14.5	15.0	-3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.589		43.7	45.0	-3.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9018		29.4	30.0	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9566		61.6	60.0	2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6042		29.2	30.0	-2.8	30.0
13C2 PFHxA	Ave	1.172	1.191		10.2	10.0	1.7	30.0
13C2 PFDA	Ave	0.5578	0.5613		10.1	10.0	0.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185468/1 Calibration Date: 09/20/2017 14:21

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.20_537A_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		1.065		43.4	45.0	-3.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9254		4.91	5.00	-1.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.815		16.6	15.0	10.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9218		10.0	10.0	0.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9622		20.7	20.0	3.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5781		9.30	10.0	-7.0	30.0
13C2 PFHxA	Ave	1.172	1.143		9.76	10.0	-2.4	30.0
13C2 PFDA	Ave	0.5578	0.5143		9.22	10.0	-7.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Lab Sample ID: CCV 320-185468/9 Calibration Date: 09/20/2017 14:59

Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/20/2017 03:19

Lab File ID: 2017.09.20_537A_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		0.8221		122	135	-9.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9441		15.0	15.0	0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.633		44.9	45.0	-0.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9272		30.3	30.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9648		62.1	60.0	3.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6113		29.5	30.0	-1.7	30.0
13C2 PFHxA	Ave	1.172	1.239		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.5578	0.5525		9.91	10.0	-0.9	30.0

20

AB 9/19/17

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653

Analyst: Branscum, Cassie

Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320

Batch End: 9/18/2017 5:16:00PM

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-184653/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	MB 320-184653/1-A
				1.00 mL								
2	LCS~320-184653/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	LCS 320-184653/2-A
				1.00 mL								
3	320-31489-A-1 (537_DOD5)	N/A (320-31489-1)	285.13 g	256.1 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-1-A
			29.05 g	1.00 mL								
	320-31489-A-2 (537_DOD5)	N/A (320-31489-1)	282.92 g	254 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-2-A
			28.90 g	1.00 mL								
	320-31489-A-3 (537_DOD5)	N/A (320-31489-1)	290.07 g	261.4 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-3-A
			28.64 g	1.00 mL								
6	320-31489-A-4 (537_DOD5)	N/A (320-31489-1)	283.62 g	254.9 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-4-A
			28.73 g	1.00 mL								
7	320-31489-A-5 (537_DOD5)	N/A (320-31489-1)	280.78 g	252.7 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-5-A
			28.04 g	1.00 mL								
8	320-31489-A-6 (537_DOD5)	N/A (320-31489-1)	283.00 g	255.6 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-6-A
			27.39 g	1.00 mL								
9	320-31489-A-7 (537_DOD5)	N/A (320-31489-1)	290.66 g	261.6 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-7-A
			29.06 g	1.00 mL								
10	320-31489-A-8 (537_DOD5)	N/A (320-31489-1)	312.16 g	283.4 mL	7			9/17/17	16_Days	4	ch nd	320-31489-A-8-A
			28.73 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653 Analyst: Branscum, Cassie Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320 Batch End:

11	320-31489-A-9 (537_DOD5)	N/A (320-31489-1)	289.93 g / 29.39 g	260.5 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd RI	
12	320-31489-A-10 (537_DOD5)	N/A (320-31489-1)	283.35 g / 27.99 g	255.4 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	
13	320-31489-A-11 (537_DOD5)	N/A (320-31489-1)	290.20 g / 28.69 g	261.5 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	
14	320-31489-A-11~MS (537_DOD5)	N/A (320-31489-1)	274.07 g / 28.81 g	245.3 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	
15	320-31489-A-11~MSD (537_DOD5)	N/A (320-31489-1)	274.35 g / 28.54 g	245.8 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	
16	320-31489-A-12 (537_DOD5)	N/A (320-31489-1)	278.49 g / 28.22 g	250.3 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	
17	320-31489-A-13 (537_DOD5)	N/A (320-31489-1)	283.27 g / 28.55 g	254.7 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd RI	
18	320-31489-A-14 (537_DOD5)	N/A (320-31489-1)	291.06 g / 28.77 g	262.3 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	
19	320-31489-A-15 (537_DOD5)	N/A (320-31489-1)	293.94 g / 28.07 g	265.9 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	
20	320-31489-A-16 (537_DOD5)	N/A (320-31489-1)	292.67 g / 28.59 g	264.1 mL / 1.00 mL	7			9/17/17	16_Days	4	ch nd	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653
Analyst: Branscum, Cassie
Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320
Batch End:

Batch Notes

Manifold ID	9
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-03
Methanol ID	1021237
Reagent Water ID	9/13/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	HJA
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	TWL
Batch Comment	IS: 1002957 BD: CCB FV: VPM AL: ~~VPM~~ TWL 9/18/17

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653
Analyst: Branscum, Cassie
Batch Open: 9/15/2017 10:28:00AM
Method Code: 320-537_Prep-320
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-184653/1	LC537-SU_00048	100 uL	1.00 mL	CeB 9-15-17	HJA 9-15-17
LCS 320-184653/2	LC537-MSP_00027	100 uL	1.00 mL		
LCS 320-184653/2	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-1	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-2	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-3	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-4	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-5	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-6	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-7	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-8	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-9	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-10	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-11	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-11 MS	LC537-MSP_00027	100 uL	1.00 mL		
320-31489-A-11 MS	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-11 MSD	LC537-MSP_00027	100 uL	1.00 mL		
320-31489-A-11 MSD	LC537-SU_00048	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-184653 Analyst: Branscum, Cassie Batch Open: 9/15/2017 10:28:00AM

Method Code: 320-537_Prep-320 Batch End:

320-31489-A-12	LC537-SU_00048	100 uL	1.00 mL	CAB 9-15-17	HJA 9-15-17
320-31489-A-13	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-14	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-15	LC537-SU_00048	100 uL	1.00 mL		
320-31489-A-16	LC537-SU_00048	100 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 02:56

Analysis Batch Number: 185329 End Date: 09/20/2017 03:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185329/4		09/20/2017 02:56	1	2017.09.19_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-185329/5		09/20/2017 03:00	1	2017.09.19_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-185329/6		09/20/2017 03:05	1	2017.09.19_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-185329/7 ICISAV		09/20/2017 03:10	1	2017.09.19_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-185329/8		09/20/2017 03:15	1	2017.09.19_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-185329/9		09/20/2017 03:19	1	2017.09.19_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:24	1		GeminiC18 3x100 3(mm)
CCVL 320-185329/11		09/20/2017 03:29	1	2017.09.19_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:34	1		GeminiC18 3x100 3(mm)
ICV 320-185329/13		09/20/2017 03:38	1	2017.09.19_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 06:43

Analysis Batch Number: 185410 End Date: 09/20/2017 07:40

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185410/1 CCVIS		09/20/2017 06:43	1	2017.09.19_537A 038.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 06:48	1		GeminiC18 3x100 3(mm)
MB 320-184653/1-A		09/20/2017 06:53	1	2017.09.19_537A 040.d	GeminiC18 3x100 3(mm)
LCS 320-184653/2-A		09/20/2017 06:58	1	2017.09.19_537A 041.d	GeminiC18 3x100 3(mm)
320-31489-1		09/20/2017 07:02	1	2017.09.19_537A 042.d	GeminiC18 3x100 3(mm)
320-31489-2		09/20/2017 07:07	1	2017.09.19_537A 043.d	GeminiC18 3x100 3(mm)
320-31489-3		09/20/2017 07:12	1	2017.09.19_537A 044.d	GeminiC18 3x100 3(mm)
320-31489-4		09/20/2017 07:17	1	2017.09.19_537A 045.d	GeminiC18 3x100 3(mm)
320-31489-5		09/20/2017 07:21	1	2017.09.19_537A 046.d	GeminiC18 3x100 3(mm)
320-31489-6		09/20/2017 07:26	1	2017.09.19_537A 047.d	GeminiC18 3x100 3(mm)
320-31489-7		09/20/2017 07:31	1	2017.09.19_537A 048.d	GeminiC18 3x100 3(mm)
320-31489-8		09/20/2017 07:36	1	2017.09.19_537A 049.d	GeminiC18 3x100 3(mm)
CCV 320-185410/13 CCVIS		09/20/2017 07:40	1	2017.09.19_537A 050.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 07:40

Analysis Batch Number: 185411 End Date: 09/20/2017 08:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185411/13 CCVIS		09/20/2017 07:40	1	2017.09.19_537A 050.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 07:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 07:50	1		GeminiC18 3x100 3(mm)
320-31489-10		09/20/2017 07:55	1	2017.09.19_537A 053.d	GeminiC18 3x100 3(mm)
320-31489-11		09/20/2017 07:59	1	2017.09.19_537A 054.d	GeminiC18 3x100 3(mm)
320-31489-11 MS		09/20/2017 08:04	1	2017.09.19_537A 055.d	GeminiC18 3x100 3(mm)
320-31489-11 MSD		09/20/2017 08:09	1	2017.09.19_537A 056.d	GeminiC18 3x100 3(mm)
320-31489-12		09/20/2017 08:14	1	2017.09.19_537A 057.d	GeminiC18 3x100 3(mm)
320-31489-13		09/20/2017 08:18	1	2017.09.19_537A 058.d	GeminiC18 3x100 3(mm)
320-31489-14		09/20/2017 08:23	1	2017.09.19_537A 059.d	GeminiC18 3x100 3(mm)
320-31489-15		09/20/2017 08:28	1	2017.09.19_537A 060.d	GeminiC18 3x100 3(mm)
320-31489-16		09/20/2017 08:32	1	2017.09.19_537A 061.d	GeminiC18 3x100 3(mm)
CCV 320-185411/25 CCVIS		09/20/2017 08:37	1	2017.09.19_537A _062.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Instrument ID: A8_N Start Date: 09/20/2017 14:21

Analysis Batch Number: 185468 End Date: 09/20/2017 14:59

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185468/1 CCVIS		09/20/2017 14:21	1	2017.09.20_537A_001.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:35	1		GeminiC18 3x100 3(mm)
320-31489-9		09/20/2017 14:40	1	2017.09.20_537A_005.d	GeminiC18 3x100 3(mm)
RINSE 320-185468/6		09/20/2017 14:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:50	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 14:54	1		GeminiC18 3x100 3(mm)
CCV 320-185468/9 CCVIS		09/20/2017 14:59	1	2017.09.20_537A_009.d	GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31489-1

SDG No.:

Batch Number: 184653 Batch Start Date: 09/15/17 10:28 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/18/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00047
MB 320-184653/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-184653/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-31489-A-1	NAWC-091217-RW-289	537, 537	T	285.13 g	29.05 g	256.1 mL	1.00 mL	7 SU	100 uL
320-31489-A-2	NAWC-091217-FRB-289	537, 537	T	282.92 g	28.90 g	254 mL	1.00 mL	7 SU	100 uL
320-31489-A-3	NAWC-091217-RW-029	537, 537	T	290.07 g	28.64 g	261.4 mL	1.00 mL	7 SU	100 uL
320-31489-A-4	NAWC-091217-FRB-029	537, 537	T	283.62 g	28.73 g	254.9 mL	1.00 mL	7 SU	100 uL
320-31489-A-5	NAWC-091217-RW-312	537, 537	T	280.78 g	28.04 g	252.7 mL	1.00 mL	7 SU	100 uL
320-31489-A-6	NAWC-091217-FRB-312	537, 537	T	283.00 g	27.39 g	255.6 mL	1.00 mL	7 SU	100 uL
320-31489-A-7	NAWC-091217-RW-141	537, 537	T	290.66 g	29.06 g	261.6 mL	1.00 mL	7 SU	100 uL
320-31489-A-8	NAWC-091217-FRB-141	537, 537	T	312.16 g	28.73 g	283.4 mL	1.00 mL	7 SU	100 uL
320-31489-A-9	NAWC-091217-RW-038	537, 537	T	289.93 g	29.39 g	260.5 mL	1.00 mL	7 SU	100 uL
320-31489-A-10	NAWC-091217-FRB-038	537, 537	T	283.35 g	27.99 g	255.4 mL	1.00 mL	7 SU	100 uL
320-31489-A-11	NAWC-091217-RW-315	537, 537	T	290.20 g	28.69 g	261.5 mL	1.00 mL	7 SU	100 uL
320-31489-A-11 MS	NAWC-091217-RW-315	537, 537	T	274.07 g	28.81 g	245.3 mL	1.00 mL	7 SU	100 uL
320-31489-A-11 MSD	NAWC-091217-RW-315	537, 537	T	274.35 g	28.54 g	245.8 mL	1.00 mL	7 SU	100 uL
320-31489-A-12	NAWC-091217-FRB-315	537, 537	T	278.49 g	28.22 g	250.3 mL	1.00 mL	7 SU	100 uL
320-31489-A-13	NAWC-091217-RW-032	537, 537	T	283.27 g	28.55 g	254.7 mL	1.00 mL	7 SU	100 uL
320-31489-A-14	NAWC-091217-FRB-032	537, 537	T	291.06 g	28.77 g	262.3 mL	1.00 mL	7 SU	100 uL
320-31489-A-15	NAWC-091217-RW-300	537, 537	T	293.94 g	28.07 g	265.9 mL	1.00 mL	7 SU	100 uL
320-31489-A-16	NAWC-091217-FRB-300	537, 537	T	292.67 g	28.59 g	264.1 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00048	AnalysisComment			

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.: 320-31489-1

SDG No.:

Batch Number: 184653 Batch Start Date: 09/15/17 10:28 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/18/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00048	AnalysisComment			
MB 320-184653/1		537, 537			100 uL	ch nd			
LCS 320-184653/2		537, 537		100 uL	100 uL	ch nd			
320-31489-A-1	NAWC-091217-RW-289	537, 537	T		100 uL	ch nd			
320-31489-A-2	NAWC-091217-FRB-289	537, 537	T		100 uL	ch nd			
320-31489-A-3	NAWC-091217-RW-029	537, 537	T		100 uL	ch nd			
320-31489-A-4	NAWC-091217-FRB-029	537, 537	T		100 uL	ch nd			
320-31489-A-5	NAWC-091217-RW-312	537, 537	T		100 uL	ch nd			
320-31489-A-6	NAWC-091217-FRB-312	537, 537	T		100 uL	ch nd			
320-31489-A-7	NAWC-091217-RW-141	537, 537	T		100 uL	ch nd			
320-31489-A-8	NAWC-091217-FRB-141	537, 537	T		100 uL	ch nd			
320-31489-A-9	NAWC-091217-RW-038	537, 537	T		100 uL	ch nd			
320-31489-A-10	NAWC-091217-FRB-038	537, 537	T		100 uL	ch nd			
320-31489-A-11	NAWC-091217-RW-315	537, 537	T		100 uL	ch nd			
320-31489-A-11 MS	NAWC-091217-RW-315	537, 537	T	100 uL	100 uL	ch nd			
320-31489-A-11 MSD	NAWC-091217-RW-315	537, 537	T	100 uL	100 uL	ch nd			
320-31489-A-12	NAWC-091217-FRB-315	537, 537	T		100 uL	ch nd			
320-31489-A-13	NAWC-091217-RW-032	537, 537	T		100 uL	ch nd			
320-31489-A-14	NAWC-091217-FRB-032	537, 537	T		100 uL	ch nd			
320-31489-A-15	NAWC-091217-RW-300	537, 537	T		100 uL	ch nd			
320-31489-A-16	NAWC-091217-FRB-300	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.: 320-31489-1

SDG No.:

Batch Number: 184653 Batch Start Date: 09/15/17 10:28 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/18/17 17:16

Batch Notes	
Batch Comment	IS: 1002957 BD: CCB FV: VPM AL:TWL
Manifold ID	9
Methanol ID	1021237
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	TWL
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge ID	6357081-03
Trizma ID	SLBR4303V
Reagent Water ID	9/13/17

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.

PFAS Calibration Calculations:

Initial Calibration 9/20/2017
Instrument A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3	971572	5717338	28.7	1.62571	1.624
6.67	2411042	5904759	28.7	1.75695	1.7562
15	4809005	5478893	28.7	1.67940	1.6778
30	9481986	5418565	28.7	1.67408	1.6725
45	13653533	5450221	28.7	1.59772	1.5962
60	17148552	5454650	28.7	1.50380	1.5024
			Average	1.63961	1.6382
			Standard Deviation	0.0859	
			RSD	0.0524	
			%RSD	5.24164	5.3

Continuing Calibration 09/20/2017 @ 6:43
A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
45	13497139	5388320	28.7	1.5976	-2.480649	1.596	-2.6

Willow Grove
SDG 320-31489-1

Sample Identification	NAWC-091217-RW-029	
Compound	Perfluorohexanesulfonic acid	
Compound Area	607862	
Internal Standard Amount (ng)	28.7	
Dilution Factor	1	
Internal Standard Area	6273970	
Average RRF	1.6382	
Sample Volume(ml)	261.4	
Volume Extract (ml)	1	
Injection Volume (µl)	1	
µl to ml	1000.00	
Concentration	6.49	ng/L

C:\All_Projects\112G08005\WE04\FS.DR.03\NAWC_201901.mxd MKB 1/24/2019

N

WARRINGTON

WARWICK

NORTHAMPTON

IVYLAND

WARMINSTER

HAGS

NASJRB
Willow Grove

HORSHAM

HATBORO

UPPER SOUTHAMPTON

UPPER MORELAND

LEGEND

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARMINSTER
- TOWNSHIP BOUNDARY

3,000 1,500 0 3,000 6,000
Feet

NAVFAC

PFC SAMPLE RESULTS MAP
FORMER NAWC WAMINSTER
MONTGOMERY COUNTY, PENNSYLVANIA

SCALE	AS NOTED
FILE	NAWC
REV	0
DATE	01/24/19
FIGURE NUMBER	FIGURE 1