Navy_CLEAN_PFAS_FOIA_request_covers.indd

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 320-30191-1

Naval Air Warfare Center Warminster
Warminster, Pennsylvania

August 2019

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

N62269_001146
WARMINSTER_NAWC
SSIC 5000-33c

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

08/18/2017

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 320-30191-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

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

Attention: Andy Frebowitz

Approved for release.
David R Alltucker
Project Manager I
8/18/2017 12:38 PM

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

Table of Contents

Table of Contents

Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-30191-1

Receipt
The samples were received on 7/27/2017 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

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

Method(s) 537: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-177640 and analytical batch 320-179727 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

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

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

Method(s) 537: Surrogate recovery for the following samples was outside control limits: WGNA-072617-RW-4844 (320-30191-18) and WGNA-072617-FRB-4844 (320-30191-19). Re-analysis was performed with concurring results. The original analysis has been reported.

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

Organic Prep
Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-177651.

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

Detection Summary

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

TestAmerica Job ID: 320-30191-1

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

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

Client Sample ID: NAWC-072617-RW-332B — Lab Sample ID: 320-30191-2

No Detections.

Client Sample ID: NAWC-072617-FRB-332A — Lab Sample ID: 320-30191-3

No Detections.

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

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

Client Sample ID: NAWC-072617-FRB-341 — Lab Sample ID: 320-30191-5

No Detections.

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

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

Client Sample ID: NAWC-072617-FRB-349 — Lab Sample ID: 320-30191-7

No Detections.

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

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

Client Sample ID: NAWC-072617-FRB-343 — Lab Sample ID: 320-30191-9

No Detections.

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

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

This Detection Summary does not include radiochemical test results.

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

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

Client Sample ID: NAWC-072617-FRB-345 Lab Sample ID: 320-30191-11

No Detections.

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

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

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

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

Client Sample ID: NAWC-072617-RW-332B Lab Sample ID: 320-30191-14

No Detections.

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

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

Client Sample ID: NAWC-072617-FRB-117 Lab Sample ID: 320-30191-16

No Detections.

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

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

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

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

This Detection Summary does not include radiochemical test results.

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

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

Client Sample ID: WGNA-072617-FRB-4844 Lab Sample ID: 320-30191-19

No Detections.

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

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

Client Sample ID: WGNA-072617-FRB-3103 Lab Sample ID: 320-30191-21

No Detections.

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

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

This Detection Summary does not include radiochemical test results.

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

Date Collected: 07/26/17 08:05 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*08/03/17 17:23*	*08/16/17 12:59*	*1*
13C2 PFDA	*123*		*70 - 130*	*08/03/17 17:23*	*08/16/17 12:59*	*1*

Client Sample ID: NAWC-072617-RW-332B — Lab Sample ID: 320-30191-2

Date Collected: 07/26/17 08:10 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*70 - 130*	*08/03/17 17:23*	*08/16/17 13:04*	*1*
13C2 PFDA	*125*		*70 - 130*	*08/03/17 17:23*	*08/16/17 13:04*	*1*

Client Sample ID: NAWC-072617-FRB-332A — Lab Sample ID: 320-30191-3

Date Collected: 07/26/17 08:00 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*08/03/17 17:23*	*08/16/17 20:12*	*1*
13C2 PFDA	*125*		*70 - 130*	*08/03/17 17:23*	*08/16/17 20:12*	*1*

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

Date Collected: 07/26/17 08:35 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

Client Sample ID: NAWC-072617-FRB-341 — Lab Sample ID: 320-30191-5

Date Collected: 07/26/17 08:30 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 10:35 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

Client Sample ID: NAWC-072617-FRB-349 — Lab Sample ID: 320-30191-7

Date Collected: 07/26/17 10:30 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 13:55 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

Client Sample ID: NAWC-072617-FRB-343 — Lab Sample ID: 320-30191-9

Date Collected: 07/26/17 13:50 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 15:15 **Matrix: Water**
Date Received: 07/27/17 09:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**42**		35	5.9	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorooctanoic acid (PFOA)	**42**	**M**	17	2.4	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorononanoic acid (PFNA)	17	U M	21	6.9	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorohexanesulfonic acid (PFHxS)	**8.1**	**J**	26	4.8	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluoroheptanoic acid (PFHpA)	**11**		8.7	1.6	ng/L		08/03/17 17:23	08/16/17 14:01	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/03/17 17:23	08/16/17 14:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*08/03/17 17:23*	*08/16/17 14:01*	*1*
13C2 PFDA	*135*	*Q*	*70 - 130*	*08/03/17 17:23*	*08/16/17 14:01*	*1*

Client Sample ID: NAWC-072617-FRB-345 — Lab Sample ID: 320-30191-11

Date Collected: 07/26/17 15:10 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*08/03/17 17:23*	*08/16/17 14:06*	*1*
13C2 PFDA	*120*		*70 - 130*	*08/03/17 17:23*	*08/16/17 14:06*	*1*

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

Date Collected: 07/26/17 07:00 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*80*		*70 - 130*	*08/03/17 17:40*	*08/16/17 14:34*	*1*
13C2 PFDA	*123*		*70 - 130*	*08/03/17 17:40*	*08/16/17 14:34*	*1*

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

Date Collected: 07/26/17 12:10 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

Client Sample ID: NAWC-072617-RW-332B — Lab Sample ID: 320-30191-14

Date Collected: 07/26/17 12:05 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 12:35 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

Client Sample ID: NAWC-072617-FRB-117 — Lab Sample ID: 320-30191-16

Date Collected: 07/26/17 12:30 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 07:00 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 09:35 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

Client Sample ID: WGNA-072617-FRB-4844 — Lab Sample ID: 320-30191-19

Date Collected: 07/25/17 09:30 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 11:10 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

Client Sample ID: WGNA-072617-FRB-3103 — Lab Sample ID: 320-30191-21

Date Collected: 07/26/17 11:05 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

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

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

Date Collected: 07/26/17 07:00 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*08/03/17 17:40*	*08/16/17 15:31*	*1*
13C2 PFDA	*123*		*70 - 130*	*08/03/17 17:40*	*08/16/17 15:31*	*1*

Default Detection Limits

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-30191-1
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: 320-30191-1

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

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-177640/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 179727 **Prep Batch: 177640**

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

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

Lab Sample ID: LCS 320-177640/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 179727 **Prep Batch: 177640**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	160	184		ng/L		115	70 - 130
Perfluorooctanoic acid (PFOA)	79.9	83.8		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	77.0	99.3		ng/L		129	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	120	121		ng/L		100	70 - 130
Perfluoroheptanoic acid (PFHpA)	39.6	45.5		ng/L		115	70 - 130
Perfluorobutanesulfonic acid (PFBS)	353	343		ng/L		97	70 - 130

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

Lab Sample ID: 320-30191-6 MS **Client Sample ID: NAWC-072617-RW-349**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 179727 **Prep Batch: 177640**

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

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

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

Lab Sample ID: 320-30191-6 MSD **Client Sample ID: NAWC-072617-RW-349**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 179727 **Prep Batch: 177640**

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

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

Lab Sample ID: MB 320-177651/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 179732 **Prep Batch: 177651**

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

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

Lab Sample ID: LCS 320-177651/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 179732 **Prep Batch: 177651**

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

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

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

Lab Sample ID: LCSD 320-177651/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 179732 **Prep Batch: 177651**

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

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*102*		*70 - 130*
13C2 PFDA	*126*		*70 - 130*

LCMS

Prep Batch: 177640

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

Prep Batch: 177651

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

Analysis Batch: 179727

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

Analysis Batch: 179728

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

LCMS (Continued)

Analysis Batch: 179728 (Continued)

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

Analysis Batch: 179732

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

Analysis Batch: 179733

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

Analysis Batch: 179920

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

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

Date Collected: 07/26/17 08:05 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-RW-332B — Lab Sample ID: 320-30191-2

Date Collected: 07/26/17 08:10 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-FRB-332A — Lab Sample ID: 320-30191-3

Date Collected: 07/26/17 08:00 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 08:35 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-FRB-341 — Lab Sample ID: 320-30191-5

Date Collected: 07/26/17 08:30 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 10:35 — **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-FRB-349 Lab Sample ID: 320-30191-7

Date Collected: 07/26/17 10:30 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 13:55 **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-FRB-343 Lab Sample ID: 320-30191-9

Date Collected: 07/26/17 13:50 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 15:15 **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-FRB-345 Lab Sample ID: 320-30191-11

Date Collected: 07/26/17 15:10 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 07:00 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 12:10 **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-RW-332B Lab Sample ID: 320-30191-14

Date Collected: 07/26/17 12:05 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 12:35 **Matrix: Water**
Date Received: 07/27/17 09:20

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

Client Sample ID: NAWC-072617-FRB-117 Lab Sample ID: 320-30191-16

Date Collected: 07/26/17 12:30 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 07:00 **Matrix: Water**
Date Received: 07/27/17 09:20

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

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

Date Collected: 07/26/17 09:35 **Matrix: Water**
Date Received: 07/27/17 09:20

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

Lab Chronicle

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

TestAmerica Job ID: 320-30191-1

Client Sample ID: WGNA-072617-FRB-4844
Lab Sample ID: 320-30191-19
Date Collected: 07/25/17 09:30
Matrix: Water
Date Received: 07/27/17 09:20

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

Client Sample ID: WGNA-072617-RW-3103
Lab Sample ID: 320-30191-20
Date Collected: 07/26/17 11:10
Matrix: Water
Date Received: 07/27/17 09:20

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

Client Sample ID: WGNA-072617-FRB-3103
Lab Sample ID: 320-30191-21
Date Collected: 07/26/17 11:05
Matrix: Water
Date Received: 07/27/17 09:20

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

Client Sample ID: WGNA-072617-DUP03
Lab Sample ID: 320-30191-22
Date Collected: 07/26/17 07:00
Matrix: Water
Date Received: 07/27/17 09:20

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

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-30191-1
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.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-30191-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-30191-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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

LCMS MANUAL INTEGRATION SUMMARY

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

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 179727

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

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

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

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

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

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

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

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

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

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

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

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

LCMS MANUAL INTEGRATION SUMMARY

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

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 179727

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

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

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

LCMS MANUAL INTEGRATION SUMMARY

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

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 179728

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

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

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

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

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

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

LCMS MANUAL INTEGRATION SUMMARY

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

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 179732

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

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

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

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

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

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

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

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

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

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

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

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

LCMS MANUAL INTEGRATION SUMMARY

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

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 179732

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

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

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

LCMS MANUAL INTEGRATION SUMMARY

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

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 179733

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

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

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

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

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

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

LCMS MANUAL INTEGRATION SUMMARY

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

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 179920

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

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

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

537

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-HSP_00017	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutane Sulfonate	1656.41 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
.LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutane Sulfonate	88.3417 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
..LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutane Sulfonate	2007.77 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
..LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
...LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
...LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-ICV_00028	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00045	1000 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
.LC537-IS_00045	01/05/18	07/05/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00028	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00046	1000 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM_00019	20 uL	Perfluorobutanesulfonic acid (PFBS)	100.119 ng/mL
							Perfluoroheptanoic acid (PFHpA)	9.99613 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.0761 ng/mL
							Perfluorononanoic acid (PFNA)	20.1272 ng/mL
							Perfluorooctanoic acid (PFOA)	20.4843 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.698 ng/mL
.LC537-SU_00046	01/05/18	07/05/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM_00019	01/25/18	08/01/17	Methanol, Lot 090285	25 mL	LC537-PFBS2_00008	0.6 mL	Perfluorobutanesulfonic acid (PFBS)	50.0597 ug/mL
					LC537-PFHpA2_00011	0.061 mL	Perfluoroheptanoic acid (PFHpA)	4.99806 ug/mL
					LC537-PFHxS2_00008	0.122 mL	Perfluorohexanesulfonic acid (PFHxS)	10.038 ug/mL
					LC537-PFNA2_00009	0.126 mL	Perfluorononanoic acid (PFNA)	10.0636 ug/mL
					LC537-PFOA2_00010	0.122 mL	Perfluorooctanoic acid (PFOA)	10.2421 ug/mL
					LC537-PFOS2_00010	0.124 mL	Perfluorooctanesulfonic acid (PFOS)	9.849 ug/mL
..LC537-PFBS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	20 mL	LC537_PFBS2_00002	0.0418 g	Perfluorobutanesulfonic acid (PFBS)	2085.82 ug/mL
...LC537_PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFHpA2_00011	01/25/18	07/25/17	Methanol, Lot 09092	31 mL	LC537_PFHpA2_00002	0.0635 g	Perfluoroheptanoic acid (PFHpA)	2048.39 ug/mL
...LC537_PFHpA2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
..LC537-PFHxS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537_PFHxS2_00002	0.0475 g	Perfluorohexanesulfonic acid (PFHxS)	2056.98 ug/mL
...LC537_PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA2_00009	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537_PFNA2_00002	0.0421 g	Perfluorononanoic acid (PFNA)	1996.74 ug/mL
...LC537_PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
..LC537-PFOA2_00010	01/25/18	08/01/17	Methanol, Lot 090285	20 mL	LC537_PFOA2_00002	0.0424 g	Perfluorooctanoic acid (PFOA)	2098.8 ug/mL
...LC537_PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
..LC537-PFOS2_00010	01/25/18	08/01/17	Methanol, Lot 090285	22 mL	LC537_PFOS2_00002	0.0561 g	Perfluorooctanesulfonic acid (PFOS)	1985.68 ug/mL
...LC537_PFOS2_00002	06/14/22	Sigma, Lot BCBQ0108V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00046	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					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
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	80 uL	Perfluorobutanesulfonic acid (PFBS)	20.0016 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.22277 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.66817 ng/mL
							Perfluorononanoic acid (PFNA)	4.44524 ng/mL
							Perfluorooctanoic acid (PFOA)	4.44816 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.89106 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot 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
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L4_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0072 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10.0024 ng/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	30.0067 ng/mL
							Perfluorononanoic acid (PFNA)	20.0036 ng/mL
							Perfluorooctanoic acid (PFOA)	20.0167 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	40.0098 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00024	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	540 uL	Perfluorobutanesulfonic acid (PFBS)	135.011 ng/mL
							Perfluoroheptanoic acid (PFHpA)	15.0037 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0101 ng/mL
							Perfluorononanoic acid (PFNA)	30.0053 ng/mL
							Perfluorooctanoic acid (PFOA)	30.0251 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.0146 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot 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
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot 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_00021	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	200 uL	Perfluorobutane Sulfonate	883.417 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	883.417 ng/mL
							Perfluoroheptanoic acid (PFHpA)	99 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	300.607 ng/mL
							Perfluorononanoic acid (PFNA)	192.6 ng/mL
							Perfluorooctanoic acid (PFOA)	199.8 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	400.329 ng/mL
.LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutane Sulfonate	88.3417 ug/mL

REAGENT TRACEABILITY SUMMARY

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

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
..LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutane Sulfonate	2007.77 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
...LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
...LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
...LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
...LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
..LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
...LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
...LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-SU_00046	01/05/18	07/05/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFBS_00002

R: 4/1/15 SPV

SIGMA-ALDRICH®

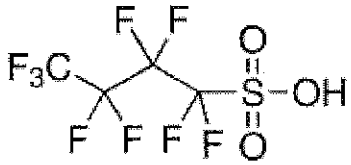
sigma-aldrich.com

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

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

Reagent

LC537_PFBS2_00002

1:6817 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

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

Reagent

LC537_PFHpA2_00002

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.

Order our products online **www.alfa.com**

ThermoFisher SCIENTIFIC

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

PFH_xS-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

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

Purity = 90.94 / w/m.w correction

SKV 4/1/15

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

Reagent

LC537_PFHxS2_00002

n: 6.8.17 SKW

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 $\frac{PFH_xS}{\text{Cas\# } 355\text{-}46\text{-}4}$

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®

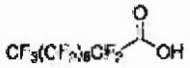
sigma-aldrich.com

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.

Reagent

LC537_PFOA_00002

P: 3/26/15 RV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.11.2013/505378/13/24029

Order-No.:
Customer-No.:

Order-Code:

Quantity:

Production Date: 04.Nov.2013
Expiry Date: 04.Nov.2018

Article/Product: 33824 Batch : SZBD308XV

PFOA

Pentadecafluorooctanoic acid OEKANAL®

Reference Material (RM)

1. General Information

Formula: C8HF15O2
CAS-No.: [335-67-1]
Usage : PFOA

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

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

2. Batch Analysis

identiy (GC-MS)	complying
Assay (GCMS)	99.4 %
Date of Analysis	13.Nov.2013

3. Advice and Remarks

- The expiry date is based on the current knowledge and holds only for proper storage conditions in the originally closed flasks/ packages.
- Whenever the container is opened for removal of 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

This document was produced electronically and is valid without a signature

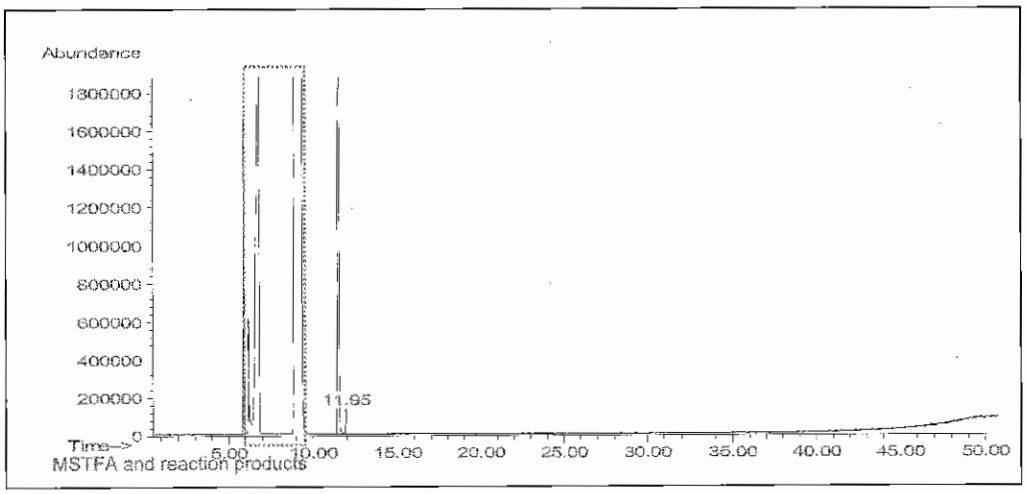
GC/MS-Method

Analytical Department

Article: **Pentadecafluorooctanoic acid OEKANAL**
Article-No.: **33824**
Batch: **SZBD308XV**

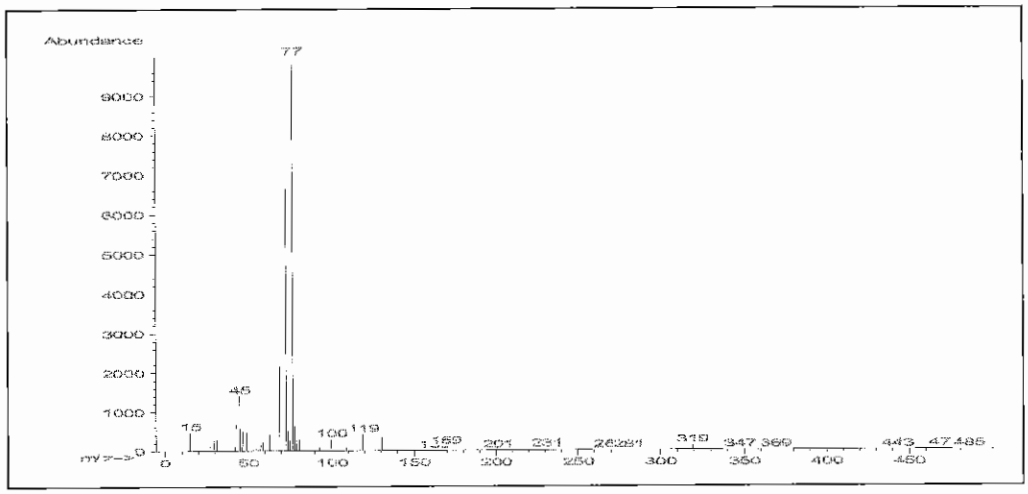
Column:	XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df
Injector:	Split mode
Injection:	approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)
Inj.-temp.:	280°C
Oven-temp.:	40°C (for 2 min) to 320°C (6°C/min) hold for 2 min
Split:	1:100
Flow:	1 ml He/min (Constant flow mode)
Detector:	MSD
Mass range:	10-600 amu (Scan mode)
Evaluation:	Purity: Total Ion Chromatogram (MSTFA and reaction products blinded out in report) Identity: Mass spectrum complies
Operator:	Ahrens / 2013-11-13

Total Ion Chromatogram:



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

Mass spectrum (rt = 11.54 min):



Reagent

LC537_PFOA_00003

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

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

Reagent

LC537_PFOA2_00002

Alfa Aesar

Certificate of analysis

Π: 6/9/17 ✓

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_00002

Γ: 4/1/15 SV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.08.2012/419060/12/17583

Order-No.:
Customer-No.:

Order-Code:

Quantity:

Production Date: 09.Aug.2012
Expiry Date: 09.Aug.2017 – EXP date

Article/Product: 33829 Batch : SZBC222XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL® PFOS-K+

Reference Material (RM)

1. General Information

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

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

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

2. Batch Analysis

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

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

Purity: 91.06 %

3. Advice and Remarks

- The minimum shelf life is based on the current knowledge and holds only for proper storage conditions in the originally closed flasks/ packages.
- Whenever the container is opened for removal of 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

This document was produced electronically and is valid without a signature

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

This document was produced electronically and is valid without signature

Reagent

LC537_PFOS2_00002

rv: 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

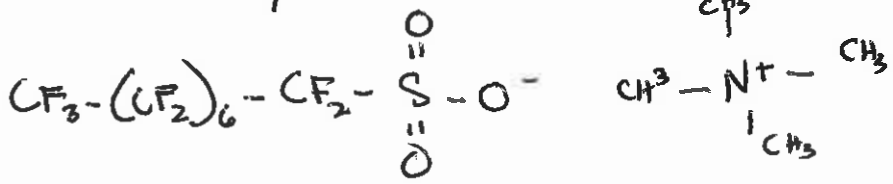
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

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

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

Reagent

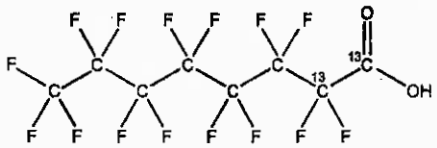
LCM2PFOA_00007

P: 5/6/17 SV

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:

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

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:

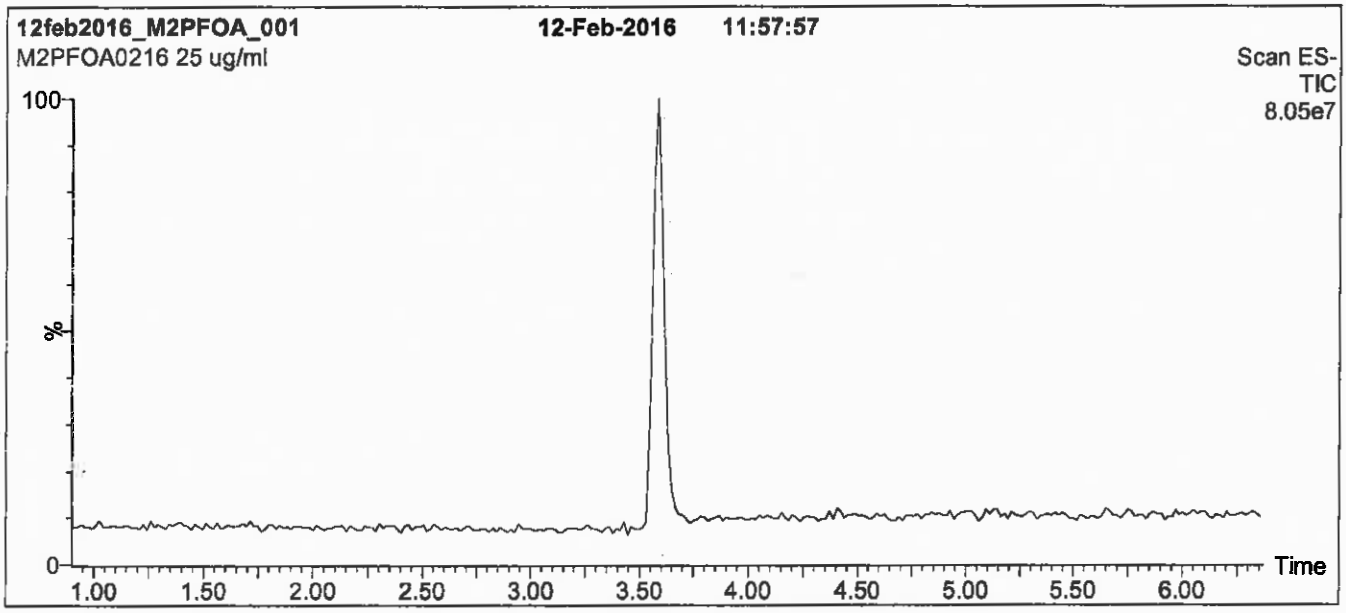
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

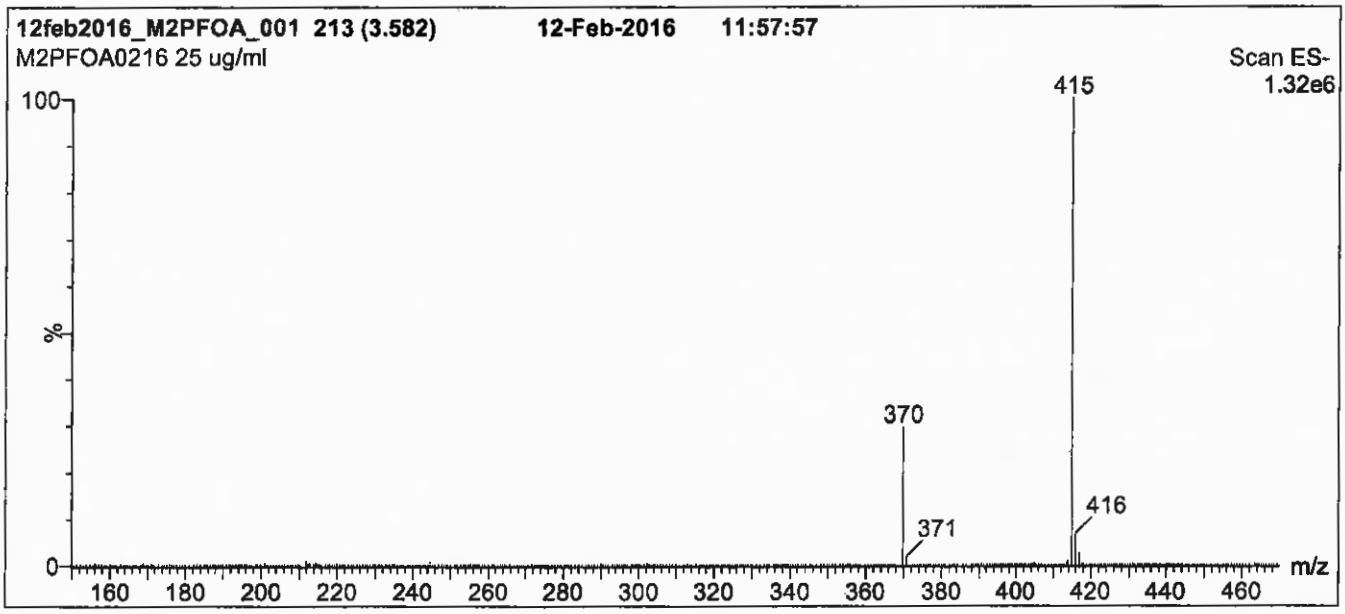
CALA

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

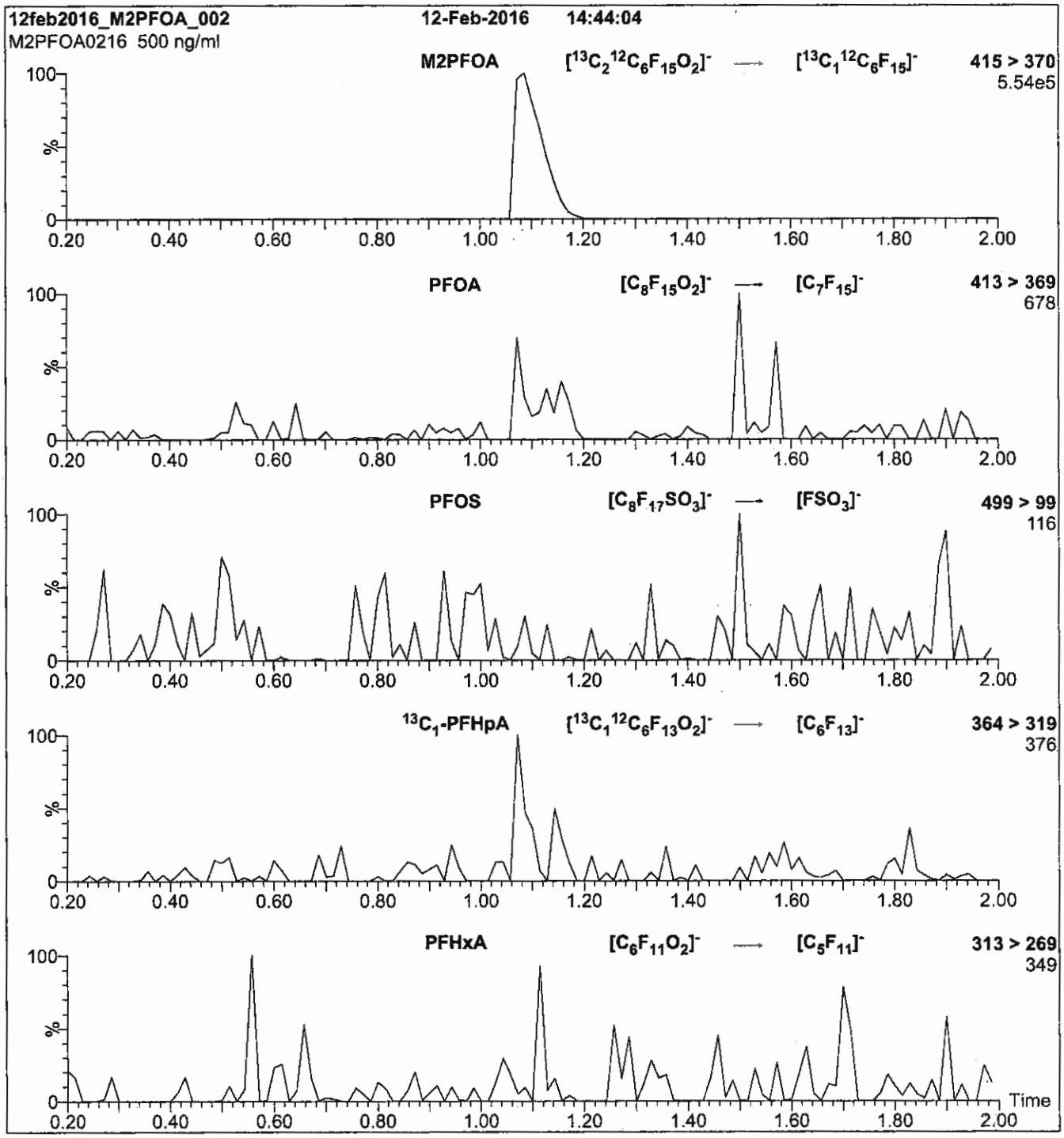
Flow: 300 µl/min

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-Perfluornodecanoic 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 $^{13}C_1$-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:

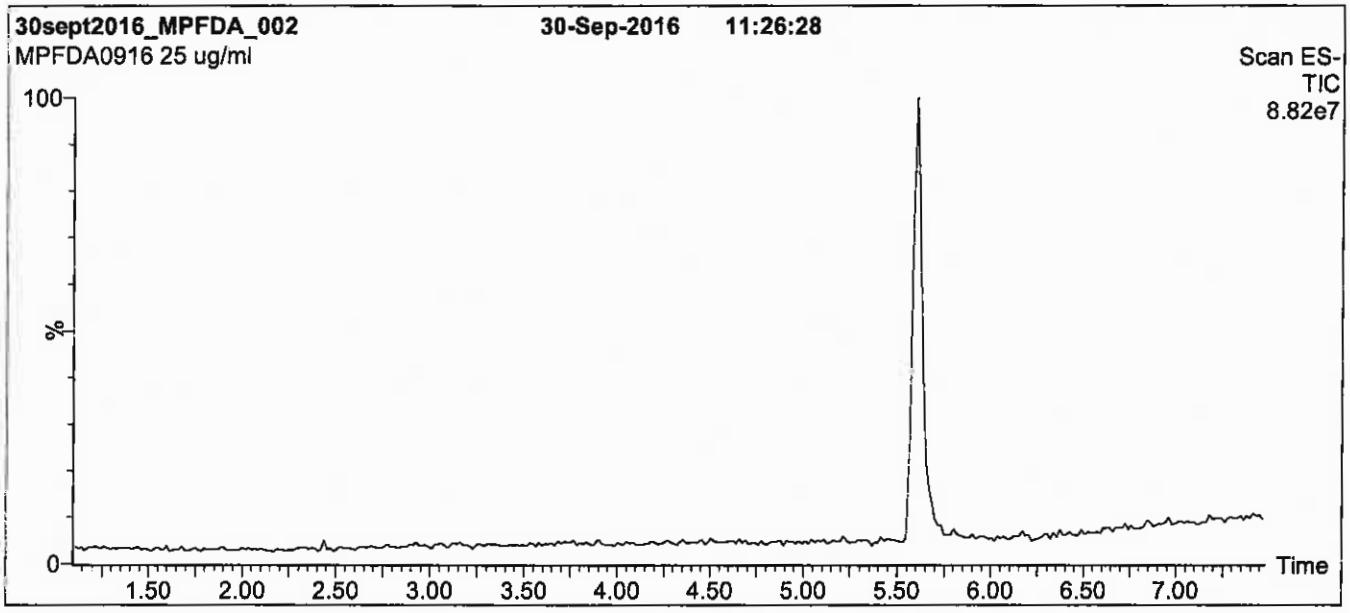
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

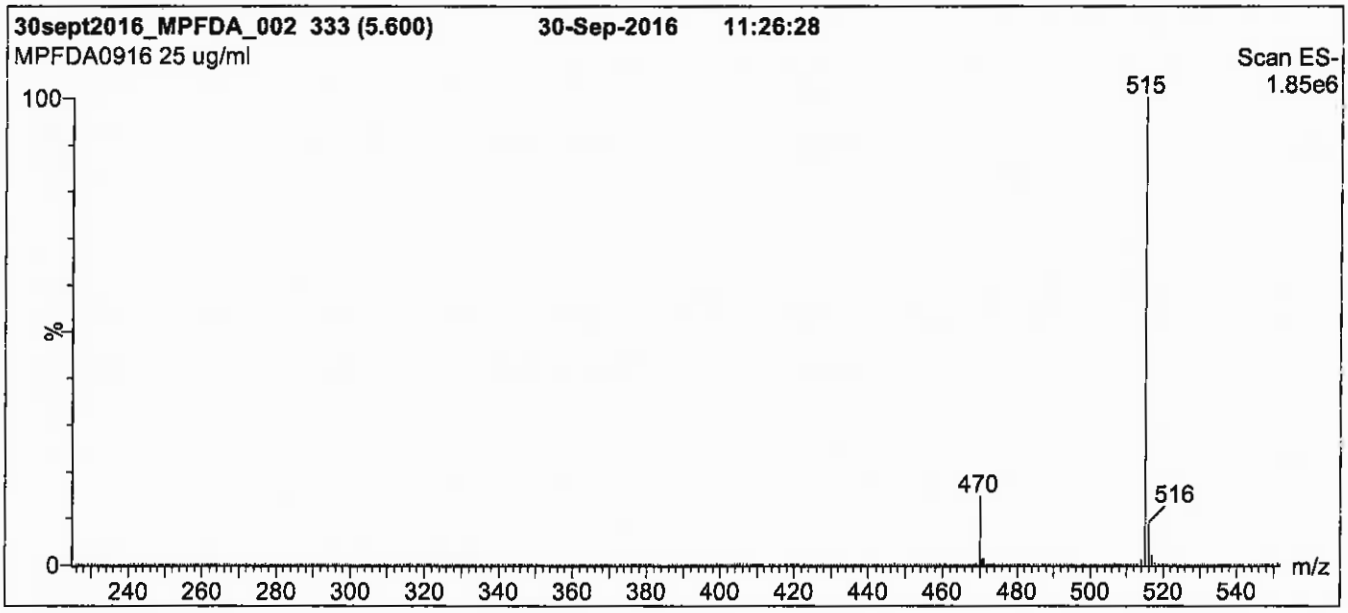
CALA Testing Accreditation No. A1226

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

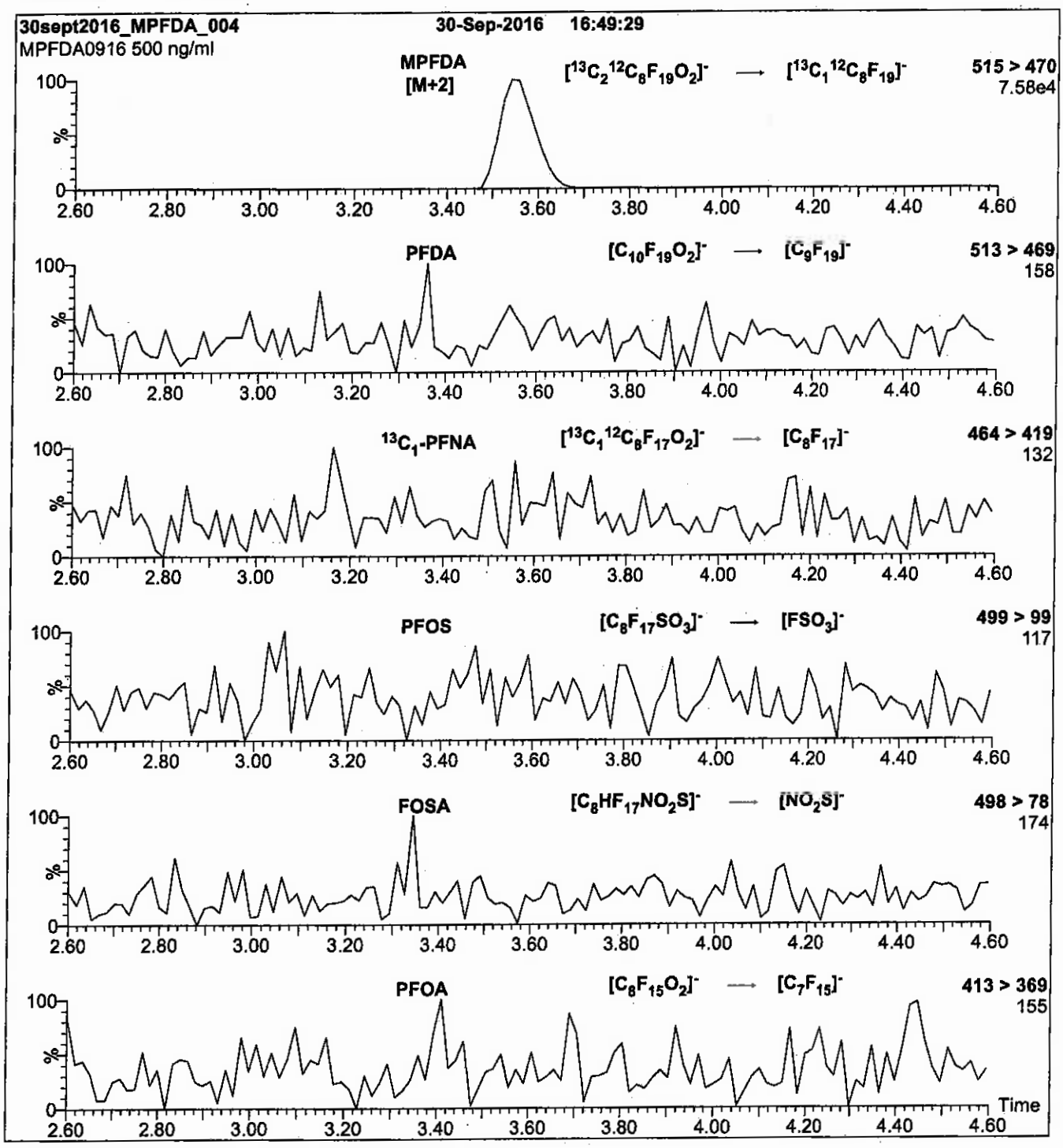
Flow: 300 µl/min

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

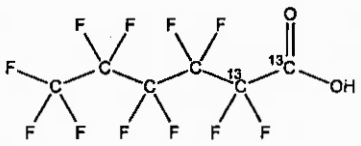
R: SBC 12/21/16

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:

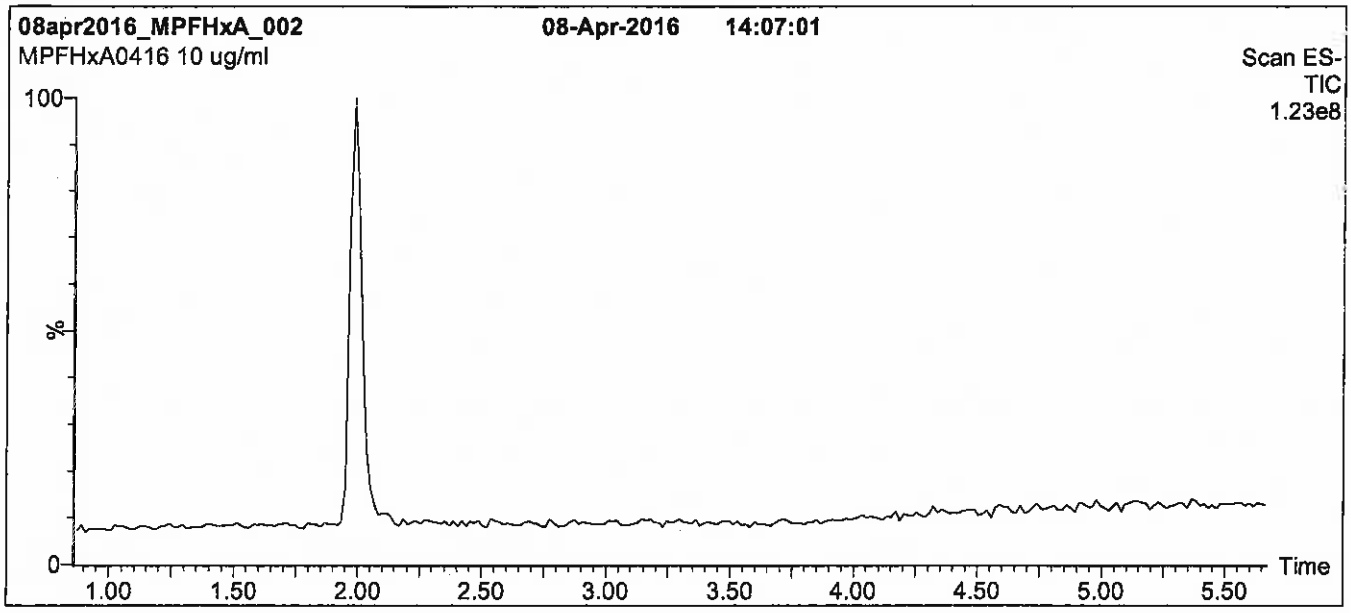
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

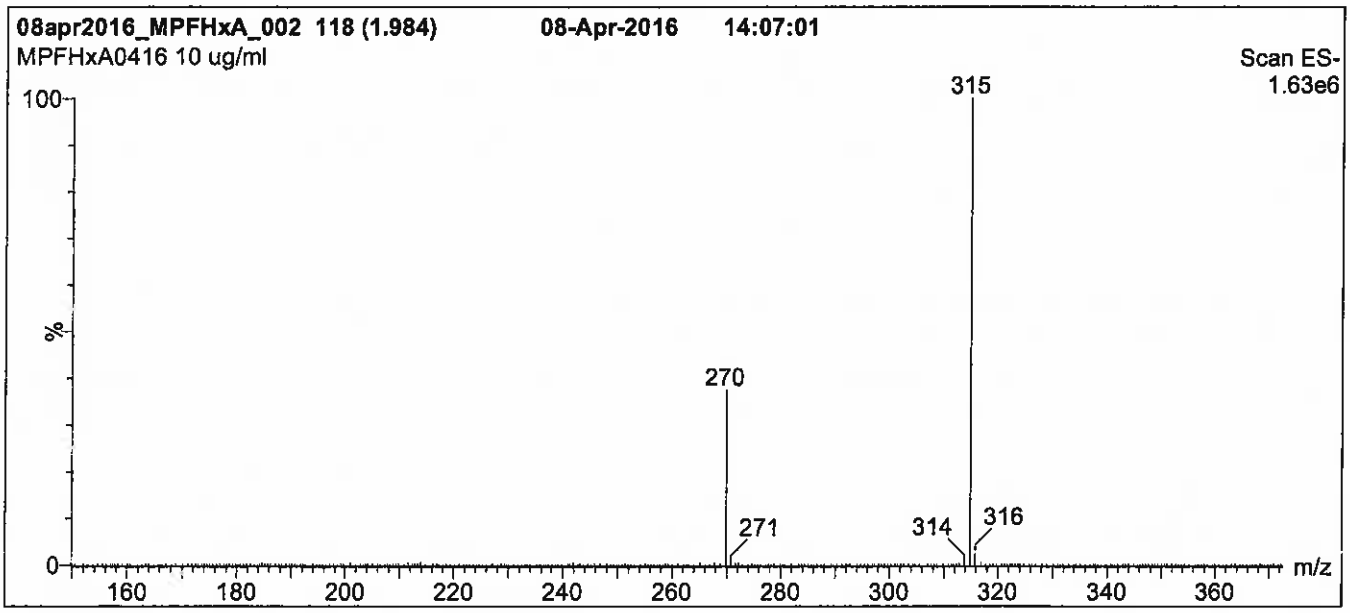
CALA Testing Accreditation No. A1226

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

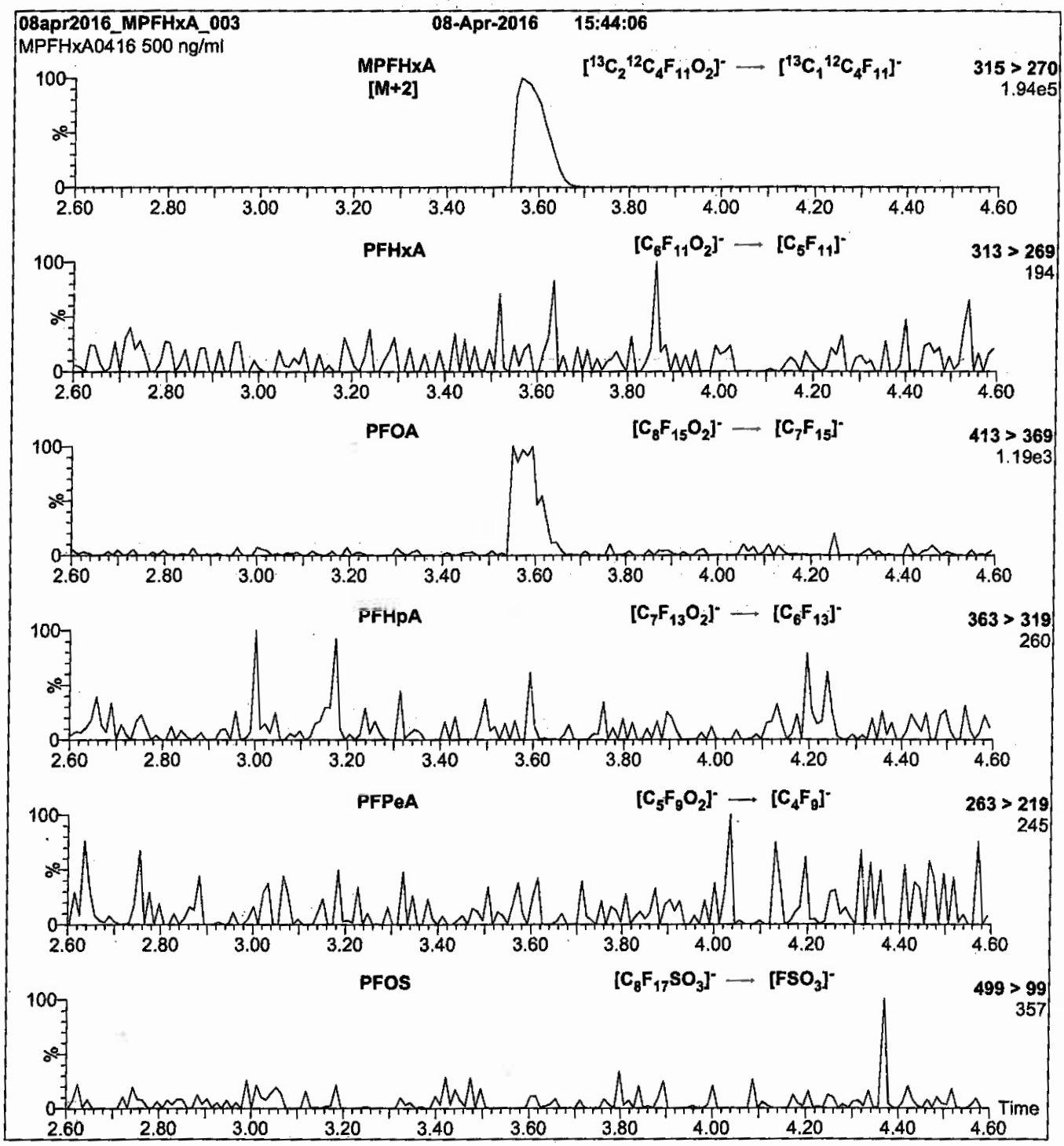
Flow: 300 µl/min

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

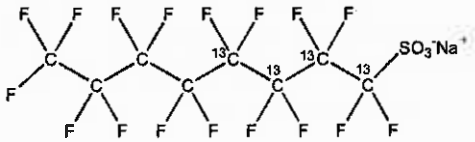
WELLINGTON LABORATORIES

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 ($1,2,3,4$-$^{13}C_4$)
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:

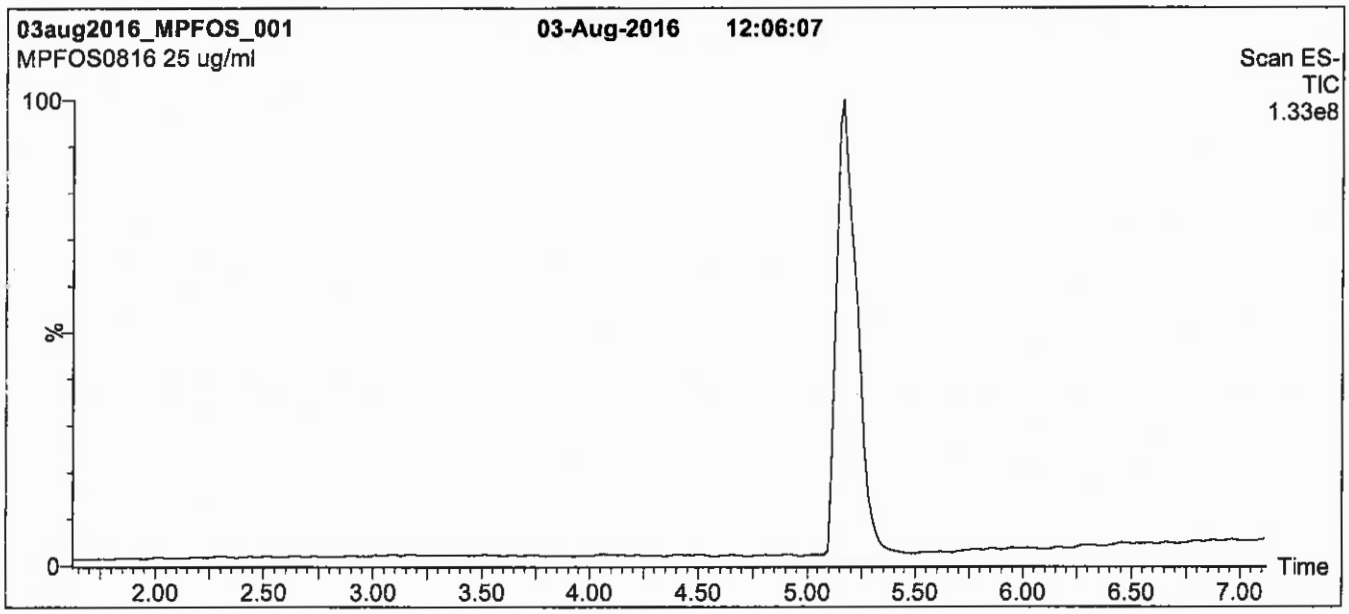
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

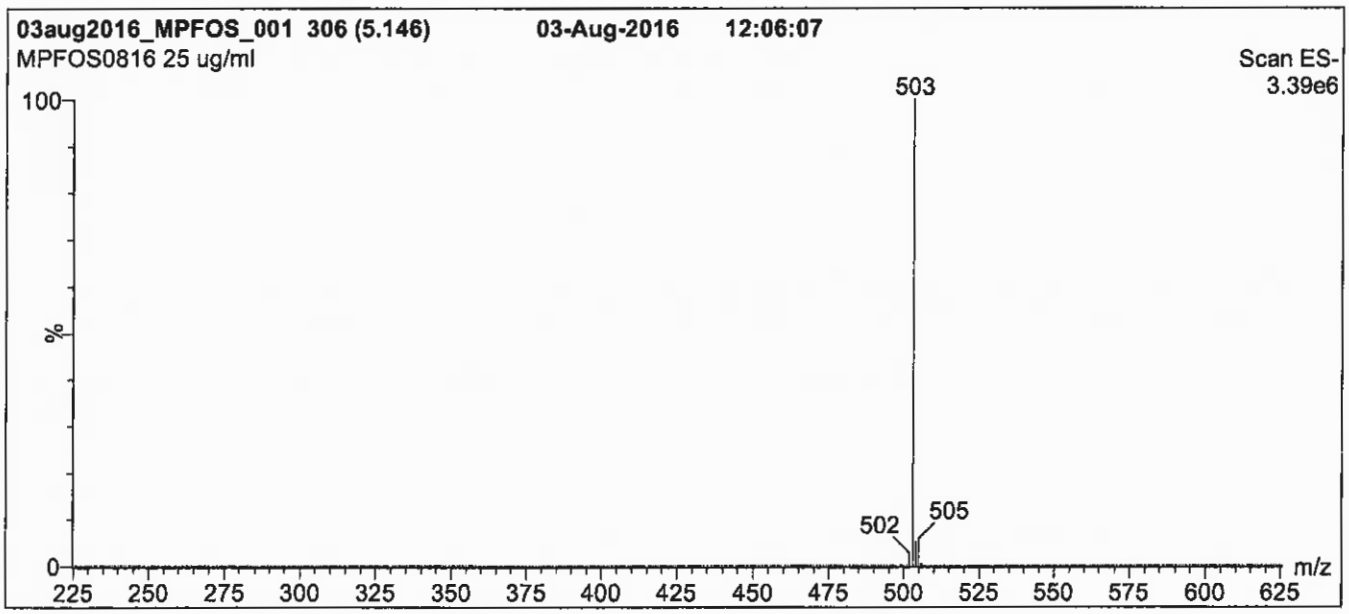
CALA Testing Accreditation No. A1226

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

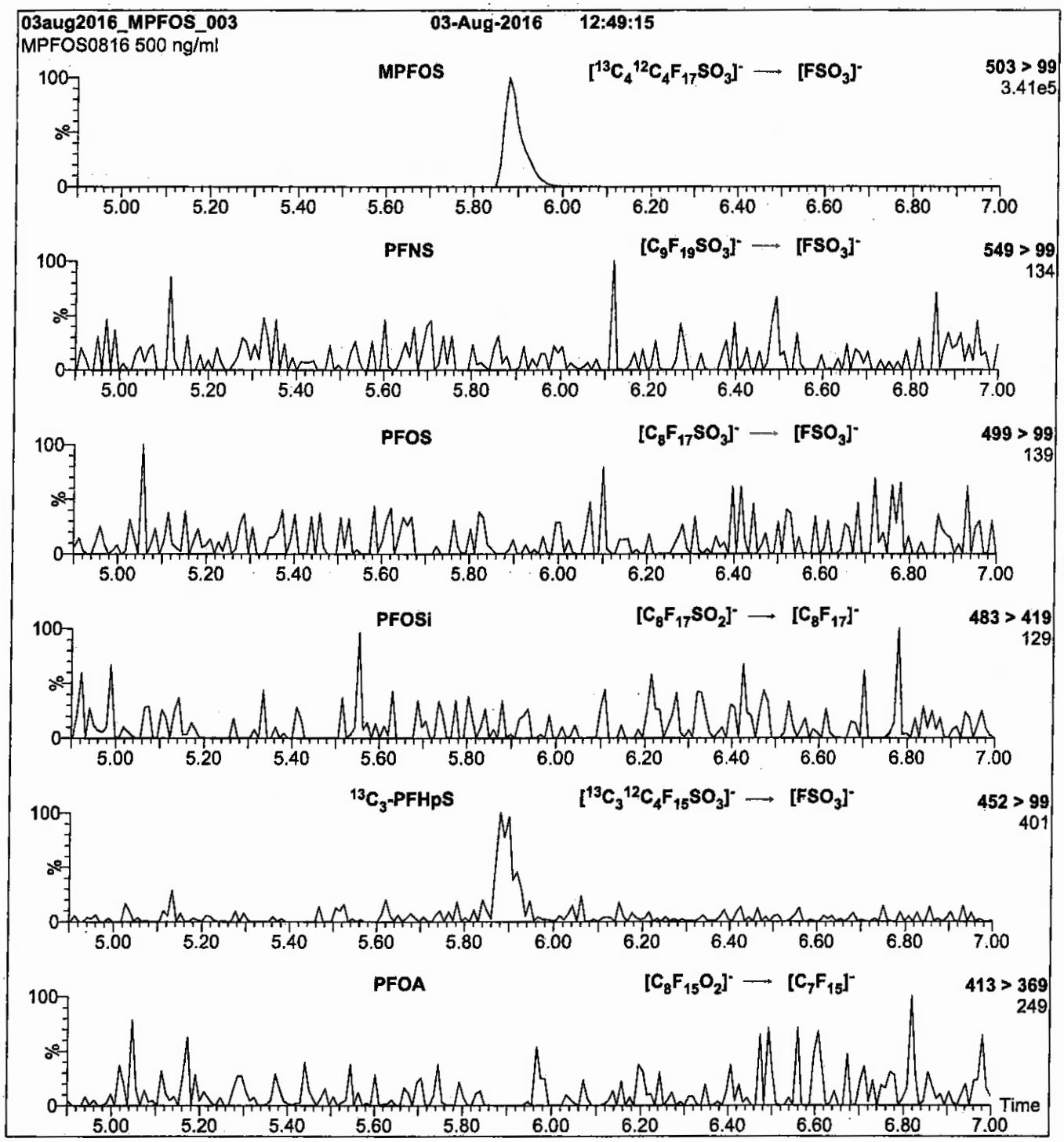
Flow: 300 µl/min

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

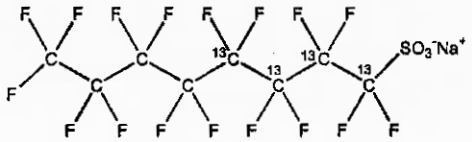
LCMPFOS_00021

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:

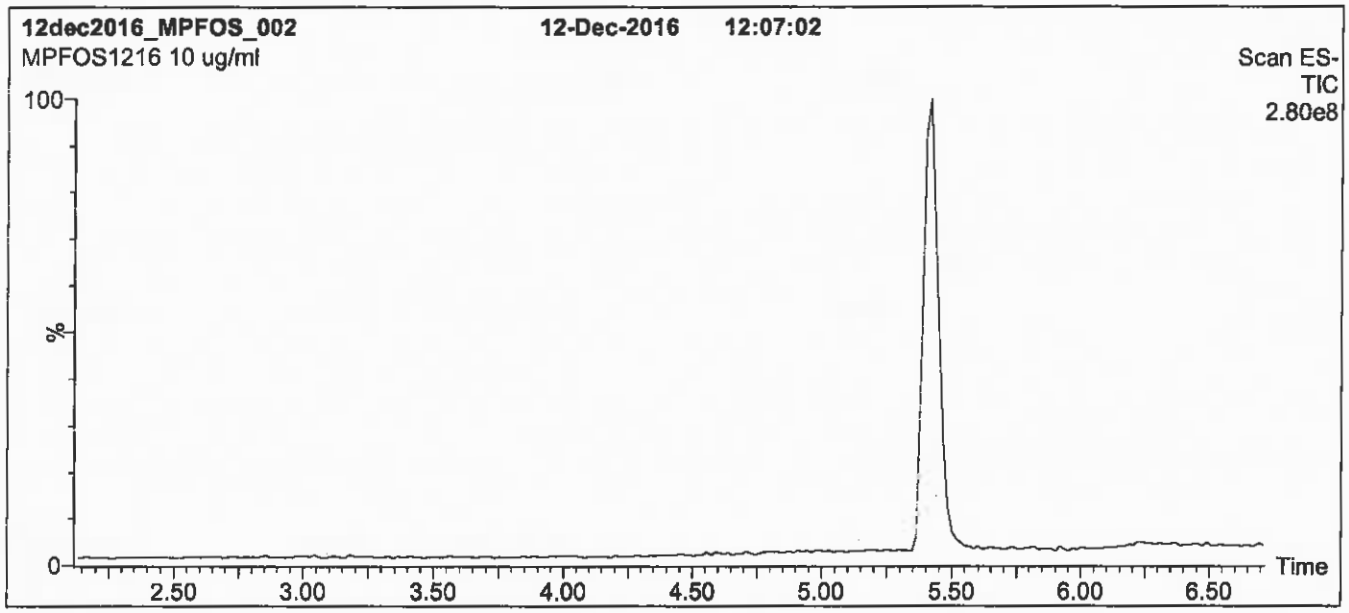
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

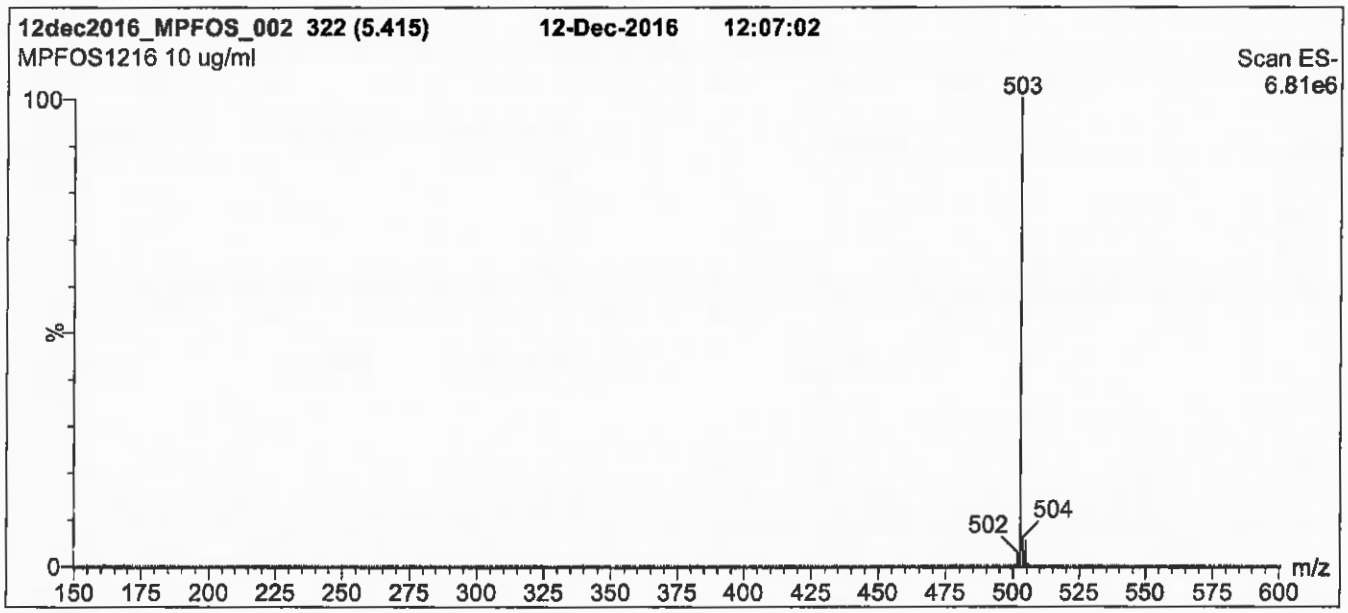
CALA

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

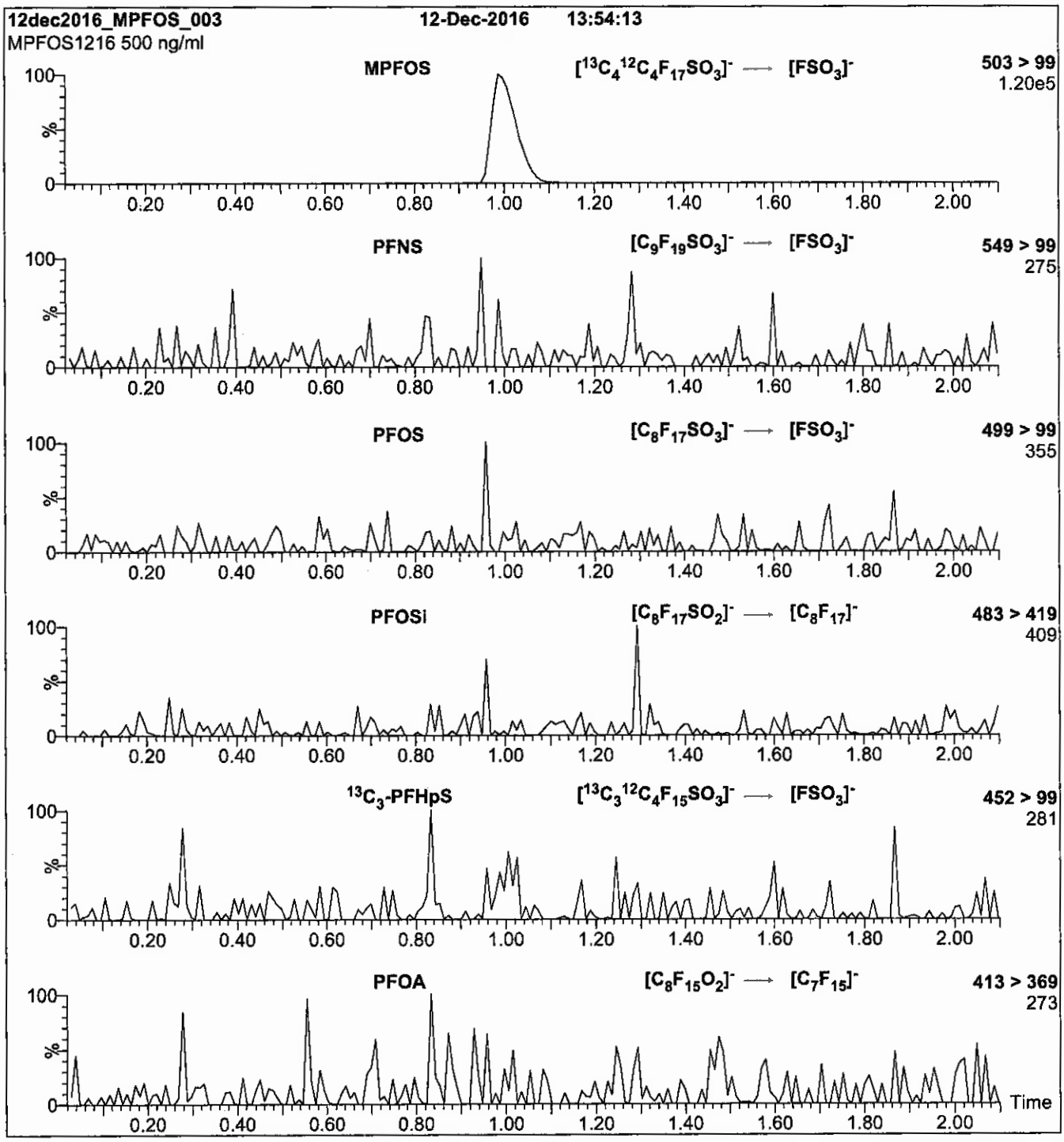
Flow: 300 µl/min

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.: 320-30191-1

SDG No.:

Matrix: Water Level: Low

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

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

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

Column to be used to flag recovery values

FORM II 537

FORM II
LCMS SURROGATE RECOVERY

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

SDG No.:

Matrix: Water Level: Low

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

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

	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.: 320-30191-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_004.d

Lab ID: LCS 320-177640/2-A Client ID:

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

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

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

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_023.d

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

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

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

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

SDG No.:

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

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

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

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE RECOVERY

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

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_011.d

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

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

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

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

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_012.d

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

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	139	178	115	6	30	70-130	
Perfluorooctanoic acid (PFOA)	69.4	107	112	5	30	70-130	M
Perfluorononanoic acid (PFNA)	66.9	92.5	138	2	30	70-130	J
Perfluorohexanesulfonic acid (PFHxS)	104	109	98	8	30	70-130	
Perfluoroheptanoic acid (PFHpA)	34.4	46.5	116	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	307	304	99	7	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

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

SDG No.:

Lab File ID: 2017.08.16_537C_003.d Lab Sample ID: MB 320-177640/1-A

Matrix: Water Date Extracted: 08/03/2017 17:23

Instrument ID: A8_N Date Analyzed: 08/16/2017 12:50

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-177640/2-A	2017.08.16_537C_004.d	08/16/2017 12:55
NAWC-072617-RW-332A	320-30191-1	2017.08.16_537C_005.d	08/16/2017 12:59
NAWC-072617-RW-332B	320-30191-2	2017.08.16_537C_006.d	08/16/2017 13:04
NAWC-072617-RW-341	320-30191-4	2017.08.16_537C_008.d	08/16/2017 13:14
NAWC-072617-FRB-341	320-30191-5	2017.08.16_537C_009.d	08/16/2017 13:18
NAWC-072617-RW-349	320-30191-6	2017.08.16_537C_010.d	08/16/2017 13:23
NAWC-072617-RW-349 MS	320-30191-6 MS	2017.08.16_537C_011.d	08/16/2017 13:28
NAWC-072617-RW-349 MSD	320-30191-6 MSD	2017.08.16_537C_012.d	08/16/2017 13:33
NAWC-072617-FRB-349	320-30191-7	2017.08.16_537C_015.d	08/16/2017 13:47
NAWC-072617-RW-343	320-30191-8	2017.08.16_537C_016.d	08/16/2017 13:52
NAWC-072617-FRB-343	320-30191-9	2017.08.16_537C_017.d	08/16/2017 13:56
NAWC-072617-RW-345	320-30191-10	2017.08.16_537C_018.d	08/16/2017 14:01
NAWC-072617-FRB-345	320-30191-11	2017.08.16_537C_019.d	08/16/2017 14:06
NAWC-072617-FRB-332A	320-30191-3	2017.08.16_537D_057.d	08/16/2017 20:12

FORM IV
LCMS METHOD BLANK SUMMARY

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

SDG No.:

Lab File ID: 2017.08.16_537C_022.d Lab Sample ID: MB 320-177651/1-A

Matrix: Water Date Extracted: 08/03/2017 17:40

Instrument ID: A8_N Date Analyzed: 08/16/2017 14:20

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

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

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179727/1 Date Analyzed: 08/16/2017 12:40

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

Lab File ID (Standard): 2017.08.16_537C_001 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179727/13 Date Analyzed: 08/16/2017 13:37

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

Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179728/13 Date Analyzed: 08/16/2017 13:37

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

Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179728/20 Date Analyzed: 08/16/2017 14:10

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

Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179732/20 Date Analyzed: 08/16/2017 14:10

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

Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179732/32 Date Analyzed: 08/16/2017 15:07

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

Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179733/32 Date Analyzed: 08/16/2017 15:07

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

Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179733/38 Date Analyzed: 08/16/2017 15:36

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

Lab File ID (Standard): 2017.08.16_537C_038 Heated Purge: (Y/N) N

Calibration ID: 33517

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

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179920/1 Date Analyzed: 08/16/2017 19:48

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

Lab File ID (Standard): 2017.08.16_537D_052 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1811420	1.93	5562915	2.16		
UPPER LIMIT		2535988	2.43	7788081	2.66		
LOWER LIMIT		1267994	1.43	3894041	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-3	NAWC-072617-FRB-332A	1923676	1.93	5905224	2.16		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

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

SDG No.:

Sample No.: CCV 320-179920/13 Date Analyzed: 08/16/2017 20:45

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

Lab File ID (Standard): 2017.08.16_537D_064 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1854955	1.94	5653051	2.17		
UPPER LIMIT		2596937	2.44	7914271	2.67		
LOWER LIMIT		1298469	1.44	3957136	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-3	NAWC-072617-FRB-332A	1923676	1.93	5905224	2.16		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_005.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 292.9(mL) | Date Analyzed: 08/16/2017 12:59

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d
Lims ID: 320-30191-A-1-A
Client ID: NAWC-072617-RW-332A
Sample Type: Client
Inject. Date: 16-Aug-2017 12:59:51 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

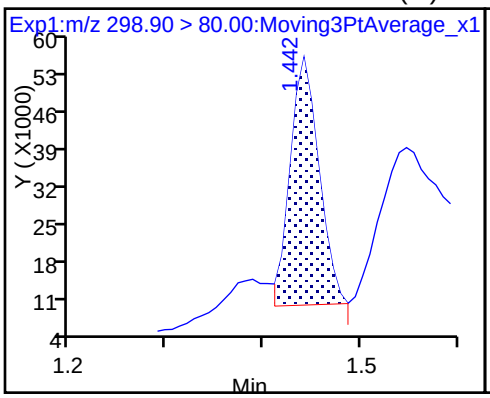
Report Date: 17-Aug-2017 14:27:14 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

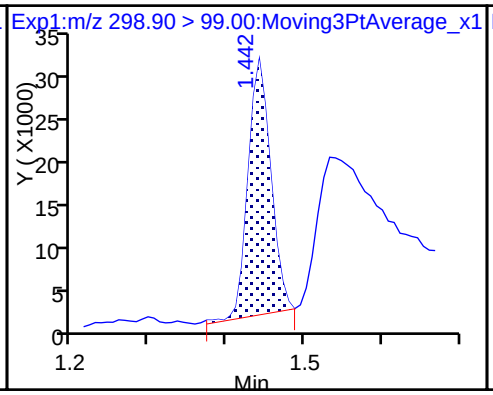
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d

Injection Date:	16-Aug-2017 12:59:51	Instrument ID:	A8_N		
Lims ID:	320-30191-A-1-A	Lab Sample ID:	320-30191-1		
Client ID:	NAWC-072617-RW-332A				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

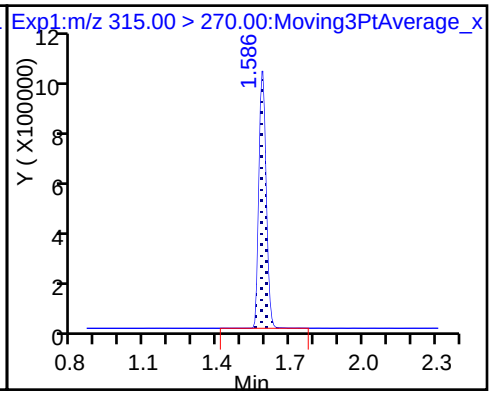
1 Perfluorobutanesulfonic acid (M)



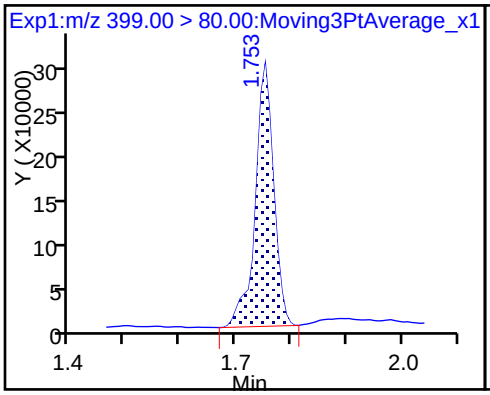
1 Perfluorobutanesulfonic acid



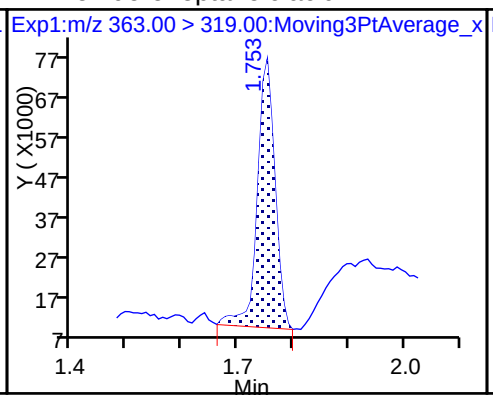
$ 2 13C2 PFHxA



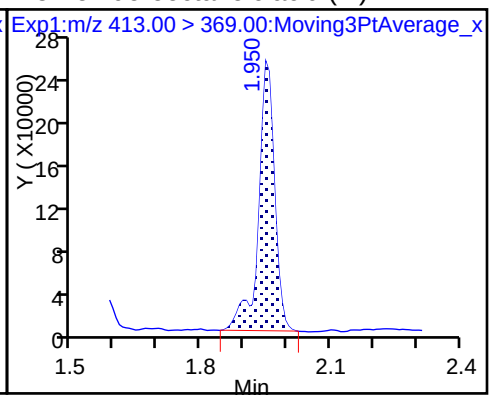
3 Perfluorohexanesulfonic acid



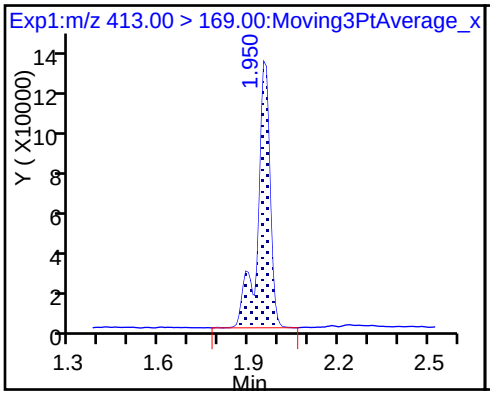
4 Perfluoroheptanoic acid



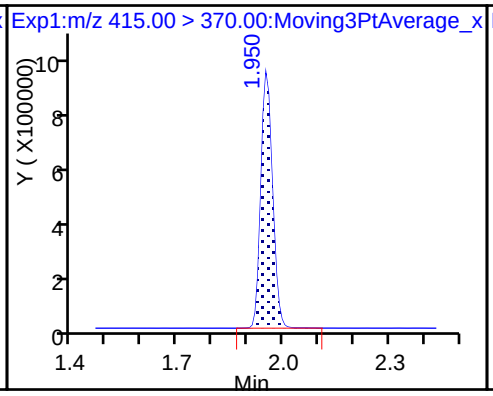
5 Perfluorooctanoic acid (M)



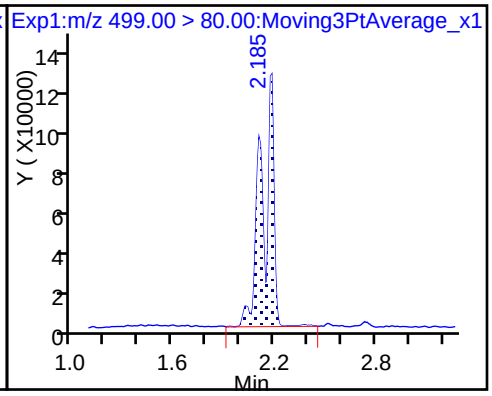
5 Perfluorooctanoic acid



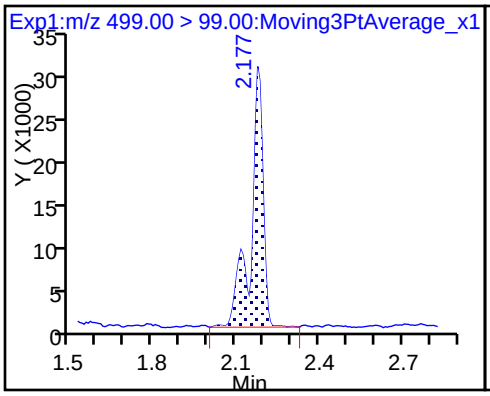
* 6 13C2-PFOA



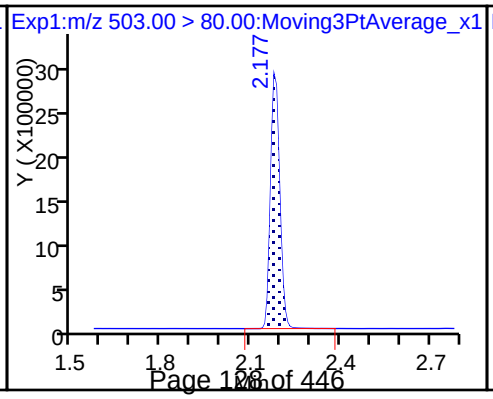
8 Perfluorooctane sulfonic acid



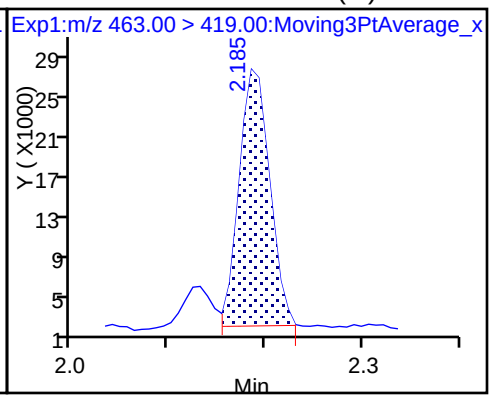
8 Perfluorooctane sulfonic acid



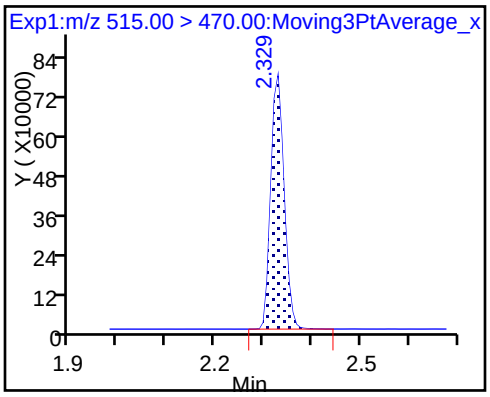
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
Y (X10000)
84
72
60
48
36
24
12
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

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

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

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

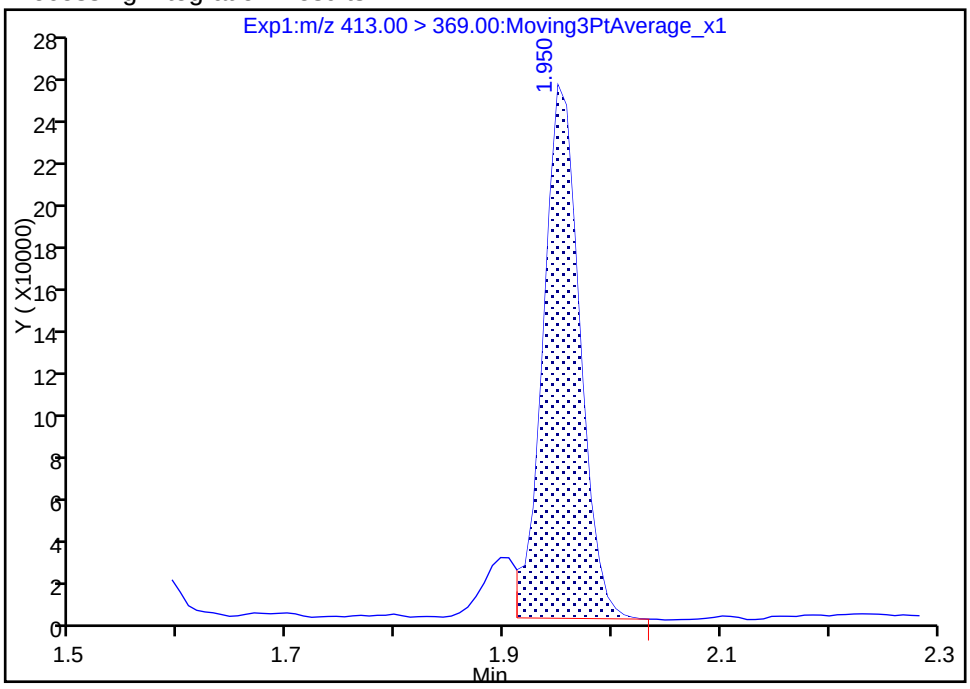
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d				
Injection Date:	16-Aug-2017 12:59:51	Instrument ID:	A8_N		
Lims ID:	320-30191-A-1-A	Lab Sample ID:	320-30191-1		
Client ID:	NAWC-072617-RW-332A				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	5
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

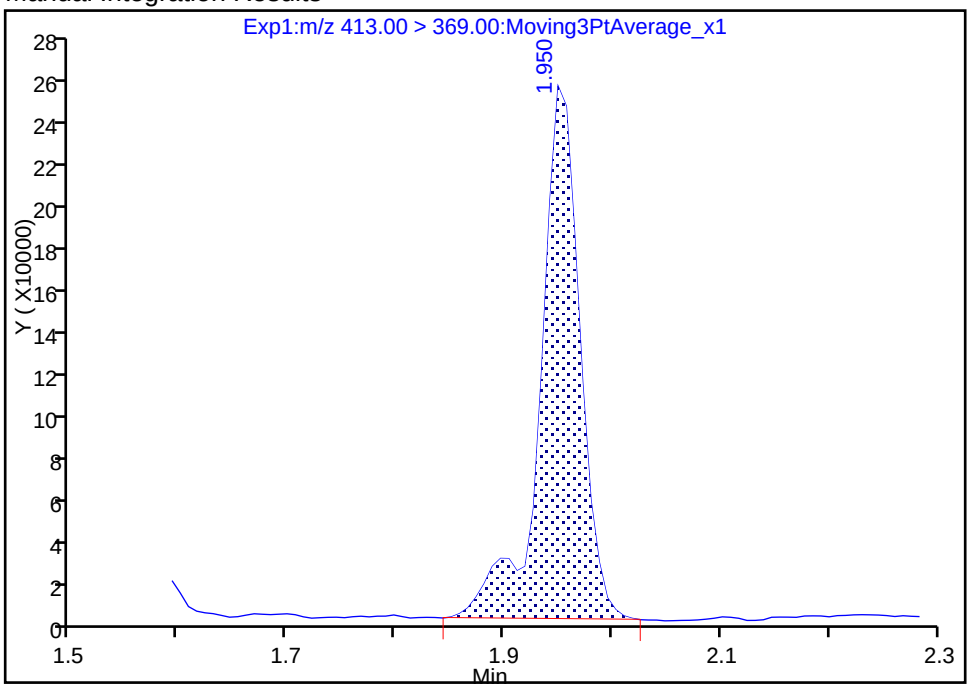
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:31:56

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

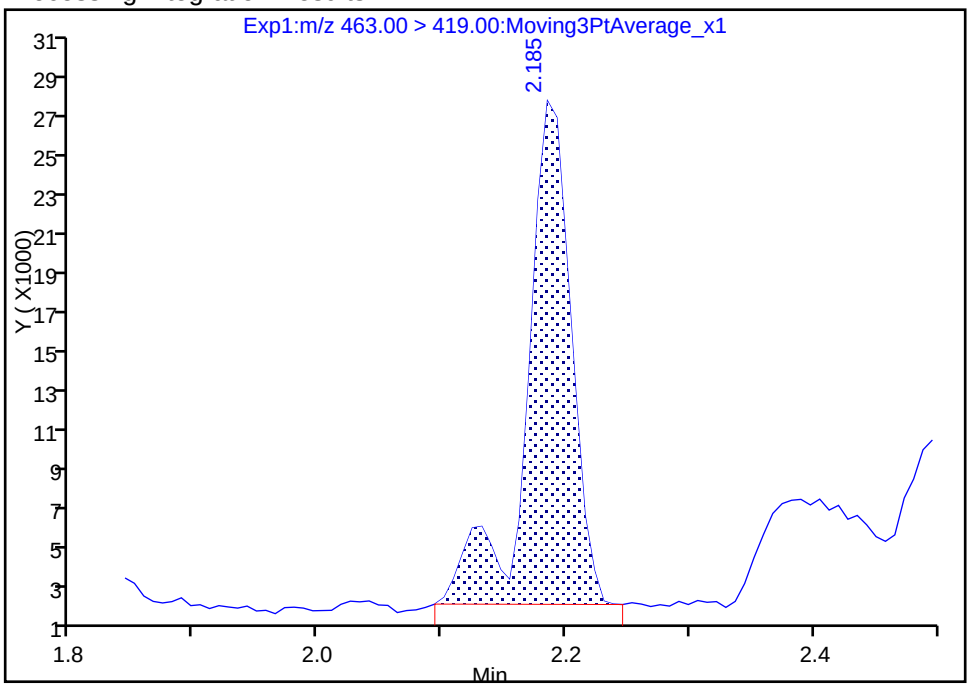
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d				
Injection Date:	16-Aug-2017 12:59:51	Instrument ID:	A8_N		
Lims ID:	320-30191-A-1-A	Lab Sample ID:	320-30191-1		
Client ID:	NAWC-072617-RW-332A				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	5
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

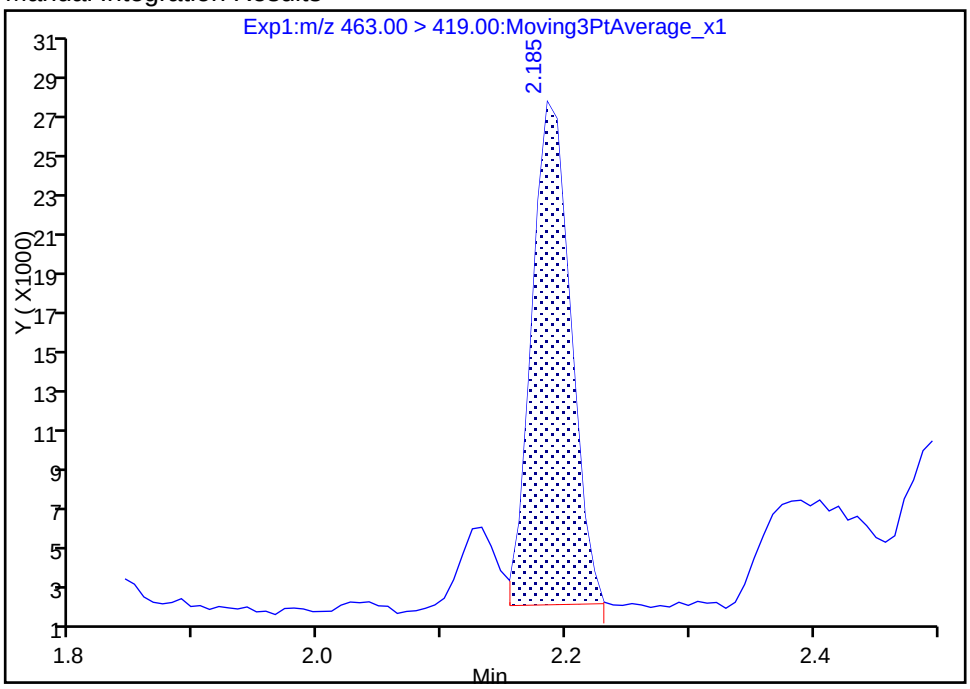
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:35:36

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

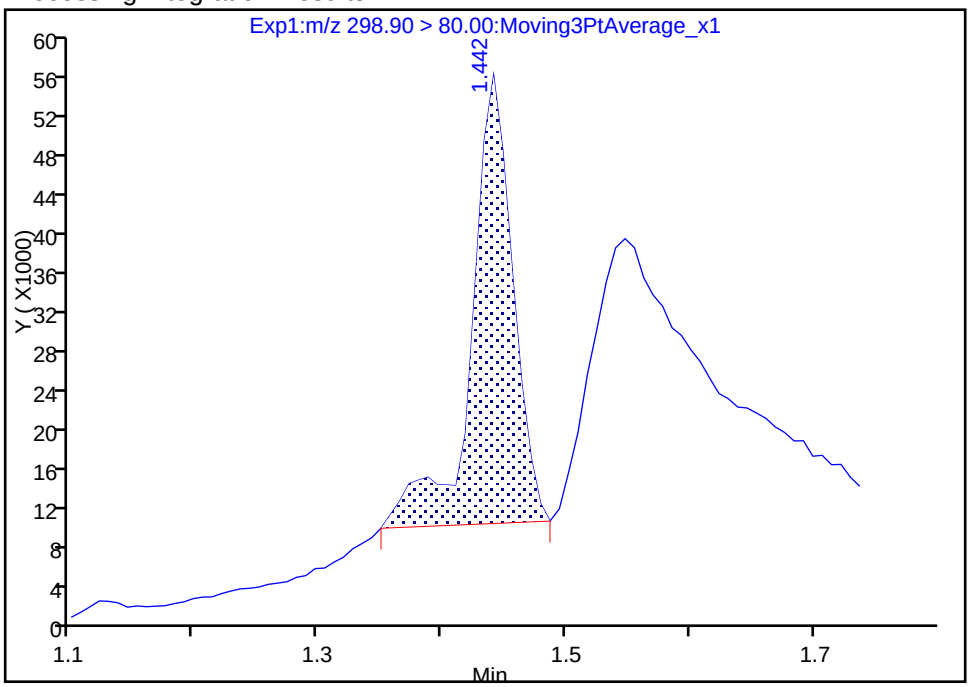
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_005.d				
Injection Date:	16-Aug-2017 12:59:51	Instrument ID:	A8_N		
Lims ID:	320-30191-A-1-A	Lab Sample ID:	320-30191-1		
Client ID:	NAWC-072617-RW-332A				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	5
Injection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

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

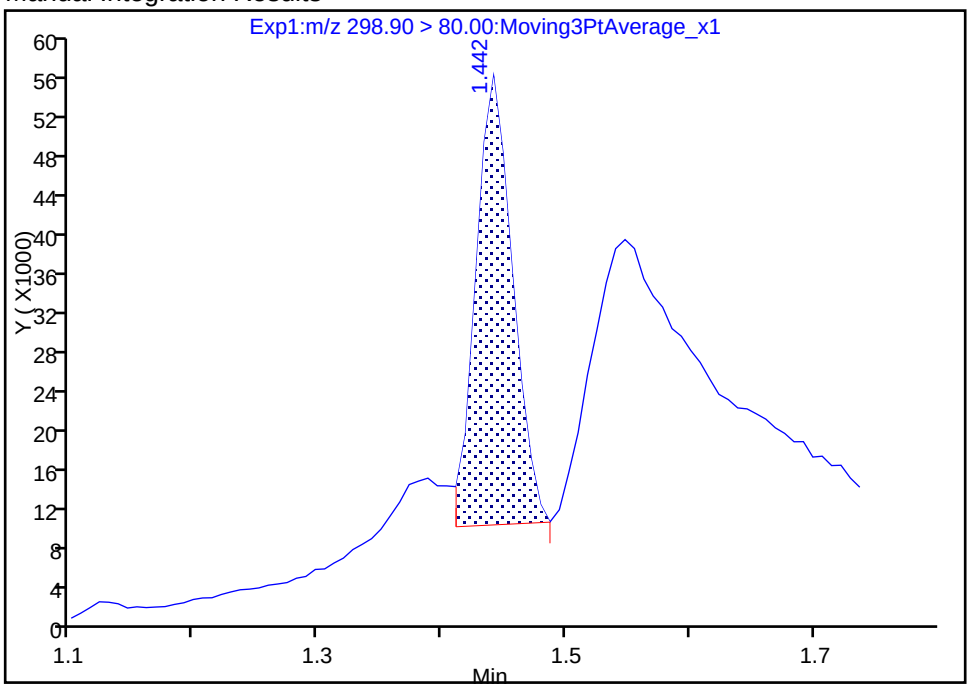
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:33:16

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-RW-332B | Lab Sample ID: 320-30191-2

Matrix: Water | Lab File ID: 2017.08.16_537C_006.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 285.6(mL) | Date Analyzed: 08/16/2017 13:04

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_006.d
Lims ID: 320-30191-A-2-A
Client ID: NAWC-072617-RW-332B
Sample Type: Client
Inject. Date: 16-Aug-2017 13:04:37 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

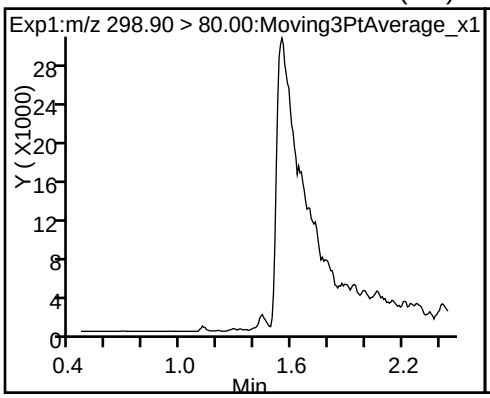
Report Date: 17-Aug-2017 14:27:15 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

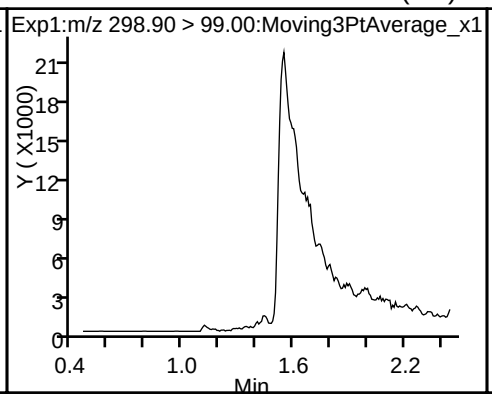
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_006.d

Injection Date:	16-Aug-2017 13:04:37	Instrument ID:	A8_N		
Lims ID:	320-30191-A-2-A	Lab Sample ID:	320-30191-2		
Client ID:	NAWC-072617-RW-332B				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

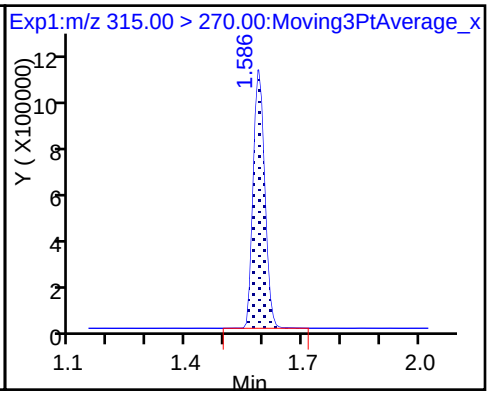
1 Perfluorobutanesulfonic acid (ND)



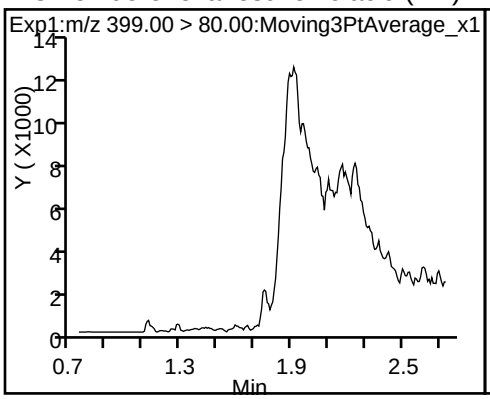
1 Perfluorobutanesulfonic acid (ND)



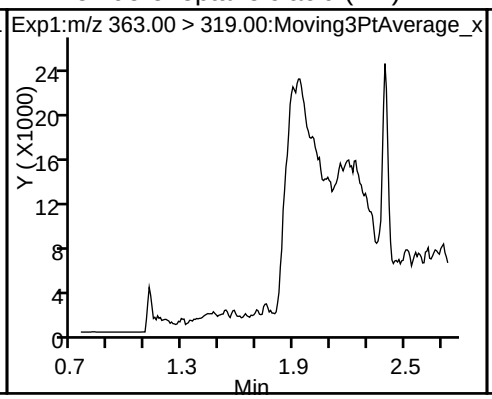
$ 2 13C2 PFHxA



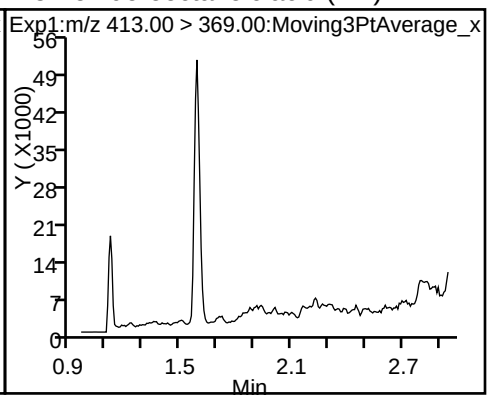
3 Perfluorohexanesulfonic acid (ND)



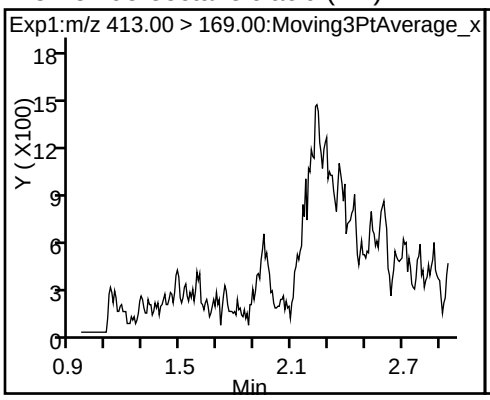
4 Perfluoroheptanoic acid (ND)



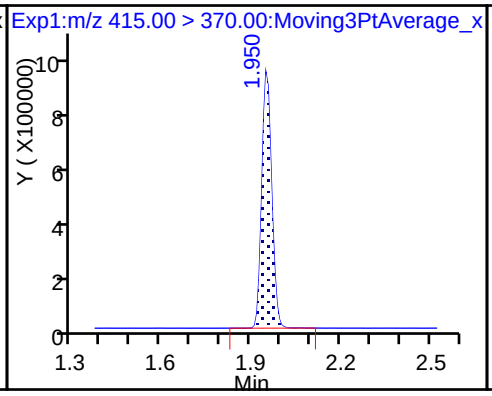
5 Perfluorooctanoic acid (ND)



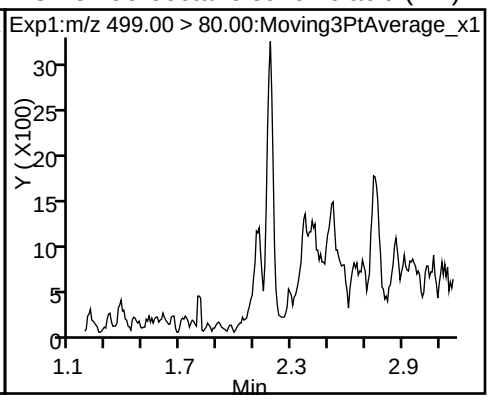
5 Perfluorooctanoic acid (ND)



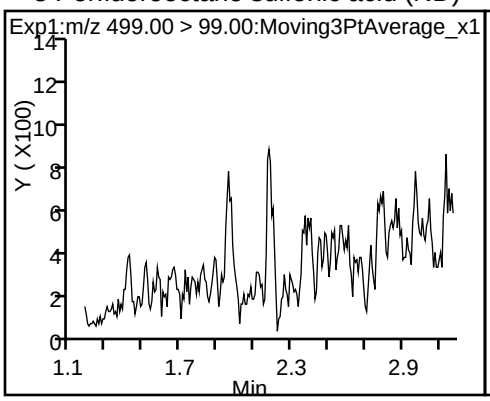
* 6 13C2-PFOA



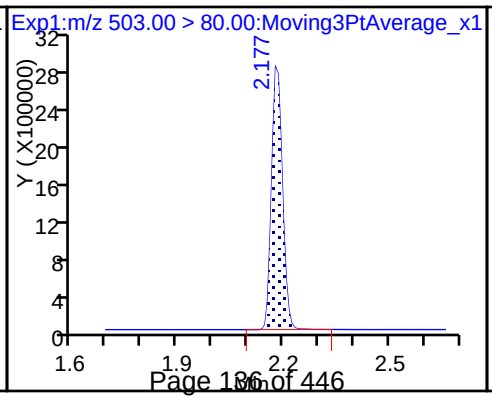
8 Perfluorooctane sulfonic acid (ND)



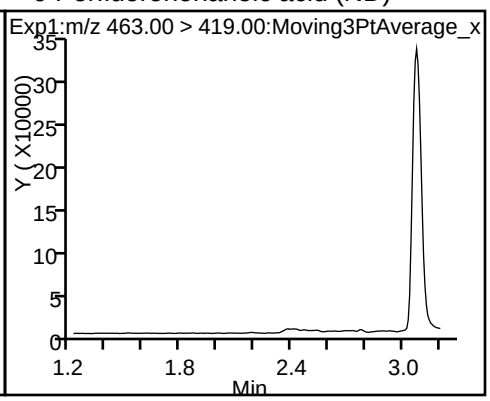
8 Perfluorooctane sulfonic acid (ND)



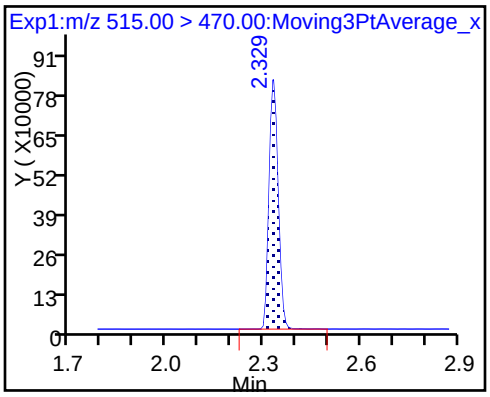
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
Y (X10000)
91
78
65
52
39
26
13
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_006.d				
Lims ID:	320-30191-A-2-A				
Client ID:	NAWC-072617-RW-332B				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 13:04:37	ALS Bottle#:	14	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-2-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:11	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-FRB-332A | Lab Sample ID: 320-30191-3

Matrix: Water | Lab File ID: 2017.08.16_537D_057.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 277.4(mL) | Date Analyzed: 08/16/2017 20:12

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

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

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

Analysis Batch No.: 179920 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_057.d
Lims ID: 320-30191-A-3-A
Client ID: NAWC-072617-FRB-332A
Sample Type: Client
Inject. Date: 16-Aug-2017 20:12:09 ALS Bottle#: 15 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:45:03 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

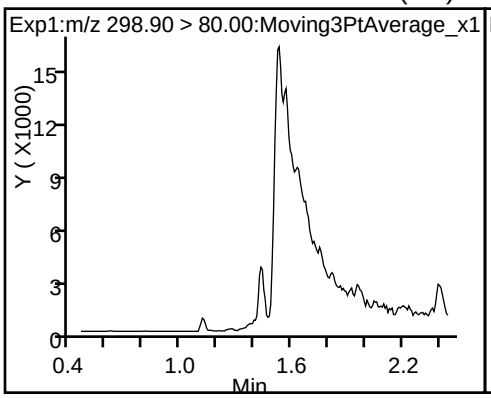
Report Date: 17-Aug-2017 14:45:13 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

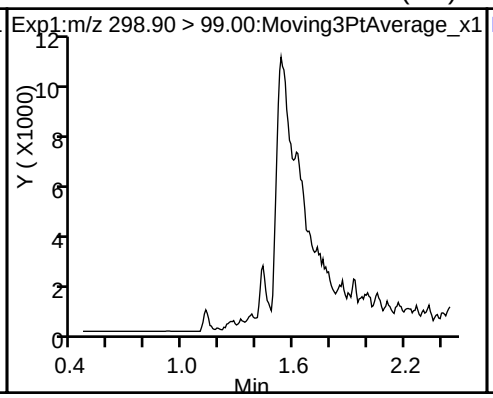
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_057.d

Injection Date:	16-Aug-2017 20:12:09	Instrument ID:	A8_N		
Lims ID:	320-30191-A-3-A	Lab Sample ID:	320-30191-3		
Client ID:	NAWC-072617-FRB-332A				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

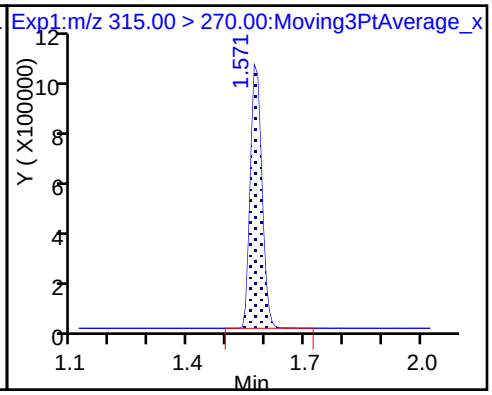
1 Perfluorobutanesulfonic acid (ND)



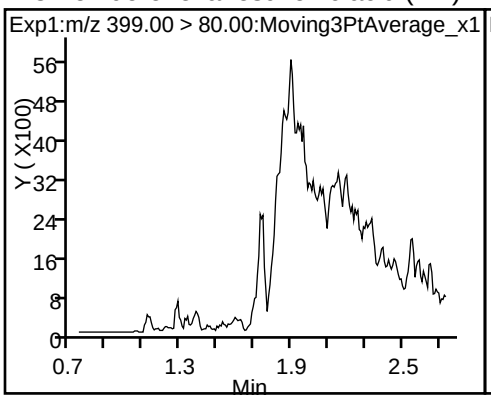
1 Perfluorobutanesulfonic acid (ND)



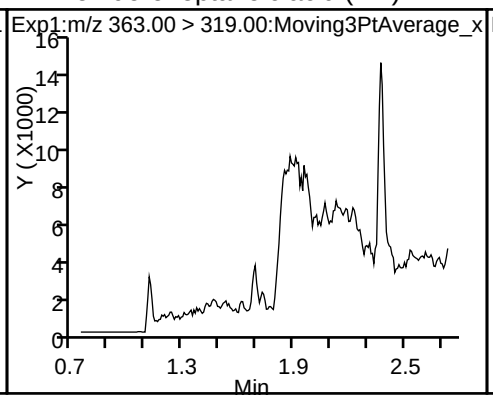
$ 2 13C2 PFHxA



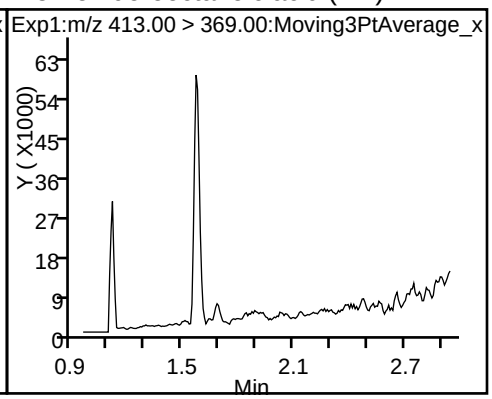
3 Perfluorohexanesulfonic acid (ND)



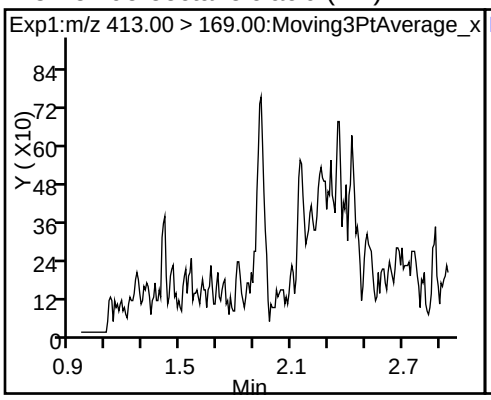
4 Perfluoroheptanoic acid (ND)



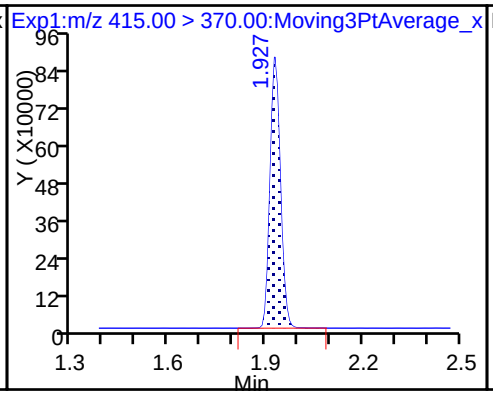
5 Perfluorooctanoic acid (ND)



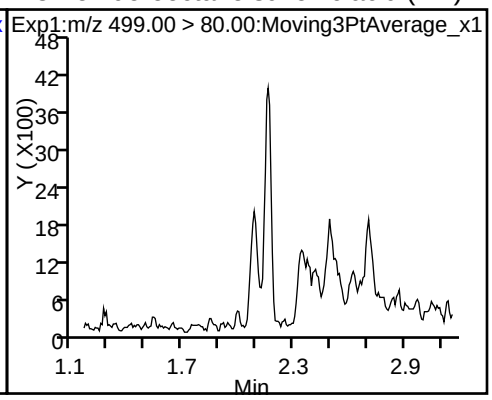
5 Perfluorooctanoic acid (ND)



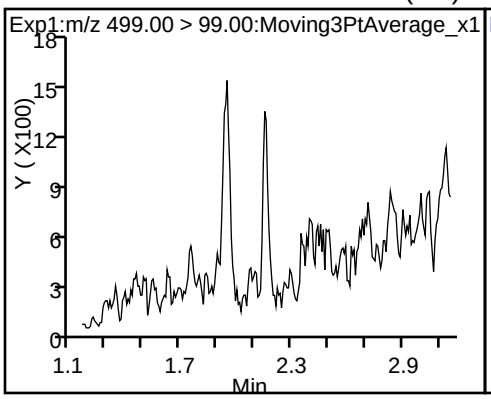
* 6 13C2-PFOA



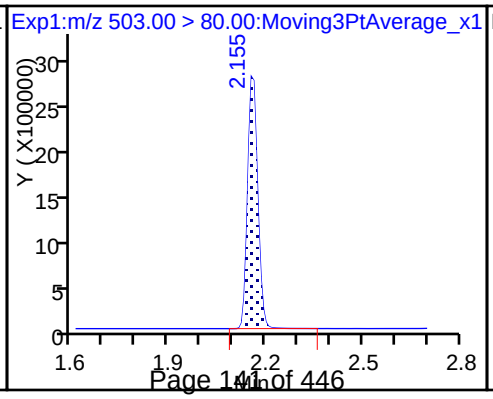
8 Perfluorooctane sulfonic acid (ND)



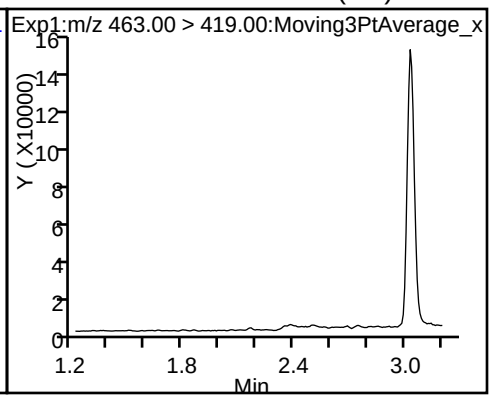
8 Perfluorooctane sulfonic acid (ND)



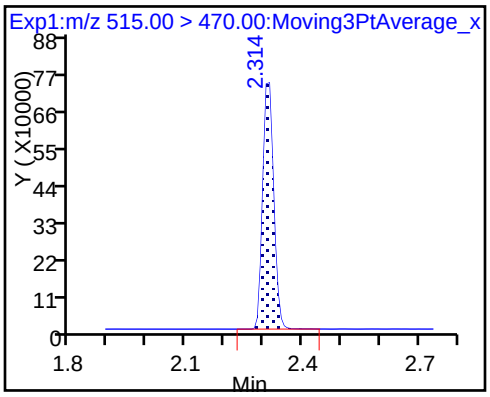
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
88
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_057.d				
Lims ID:	320-30191-A-3-A				
Client ID:	NAWC-072617-FRB-332A				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 20:12:09	ALS Bottle#:	15	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-3-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:45:03	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_008.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 278.5(mL) | Date Analyzed: 08/16/2017 13:14

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d
Lims ID: 320-30191-A-4-A
Client ID: NAWC-072617-RW-341
Sample Type: Client
Inject. Date: 16-Aug-2017 13:14:06 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:16 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 13:14:06 Instrument ID: A8_N

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

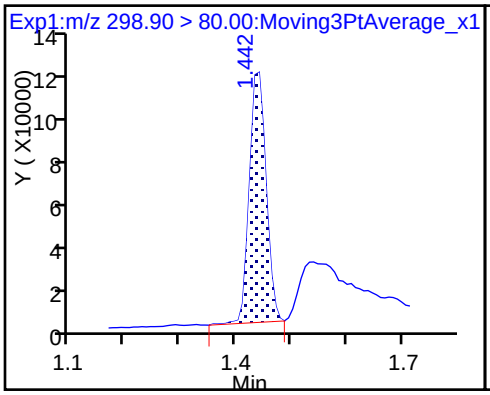
Client ID: NAWC-072617-RW-341

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8

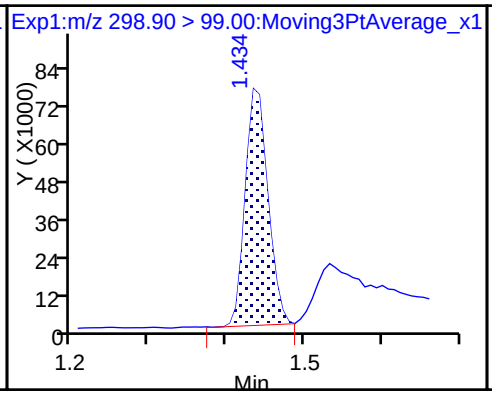
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

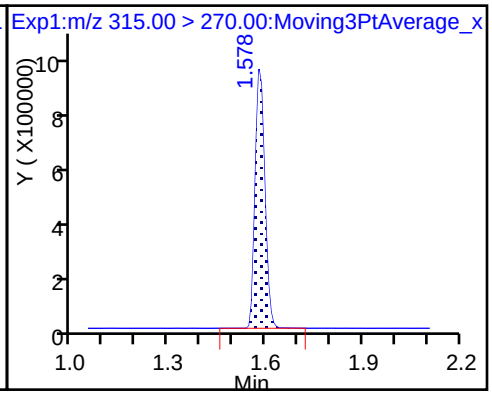
1 Perfluorobutanesulfonic acid



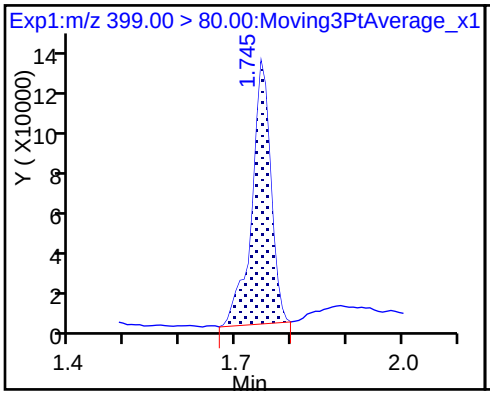
1 Perfluorobutanesulfonic acid



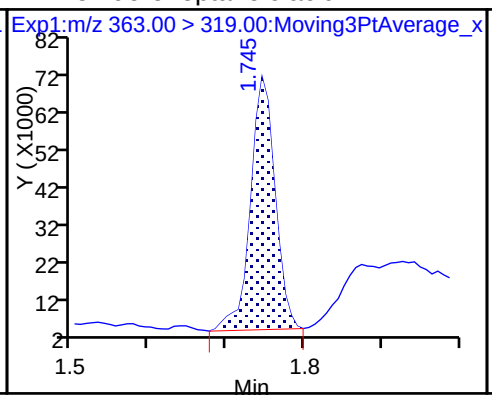
$ 2 13C2 PFHxA



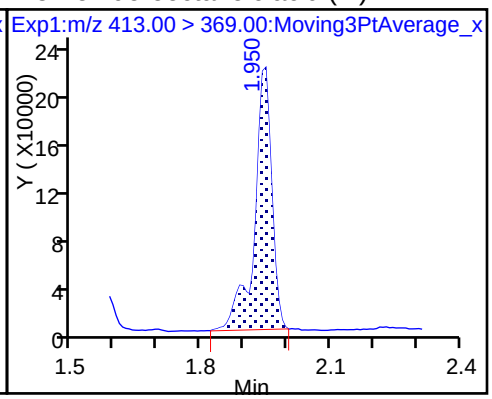
3 Perfluorohexanesulfonic acid



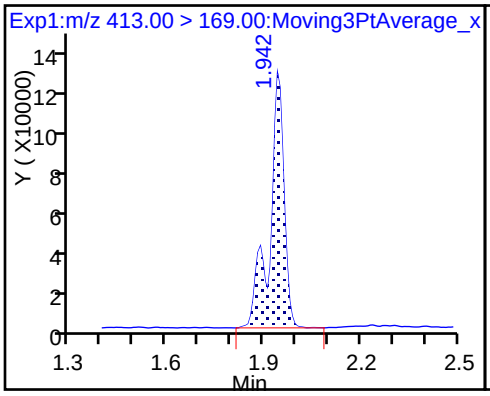
4 Perfluoroheptanoic acid



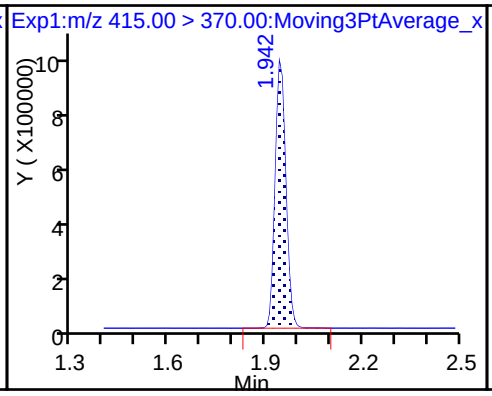
5 Perfluorooctanoic acid (M)



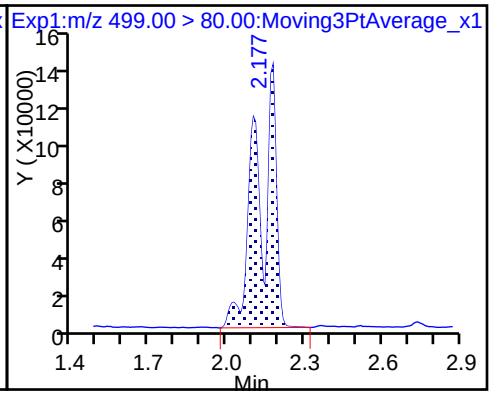
5 Perfluorooctanoic acid



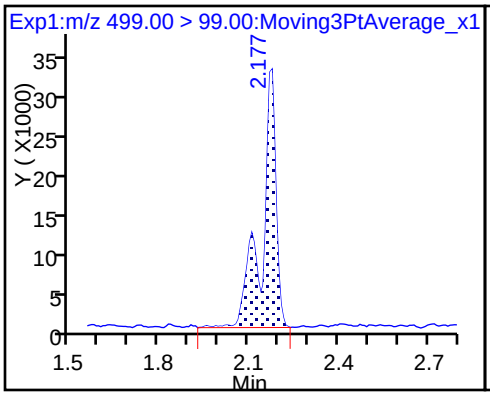
* 6 13C2-PFOA



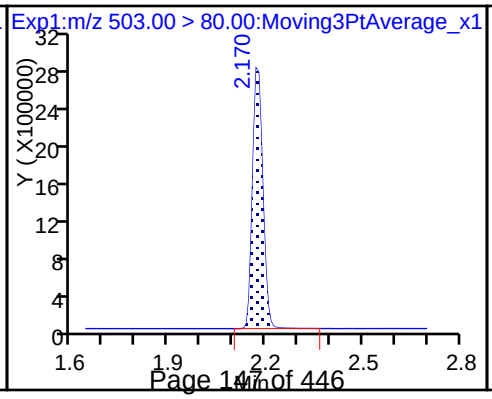
8 Perfluorooctane sulfonic acid



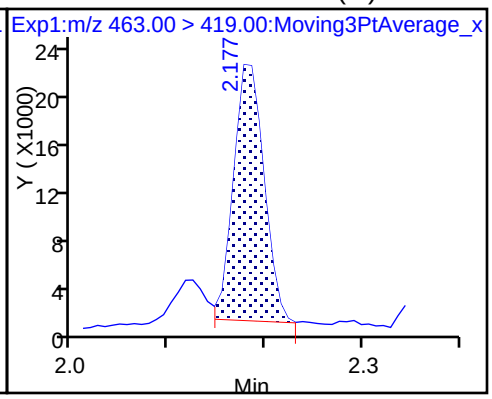
8 Perfluorooctane sulfonic acid



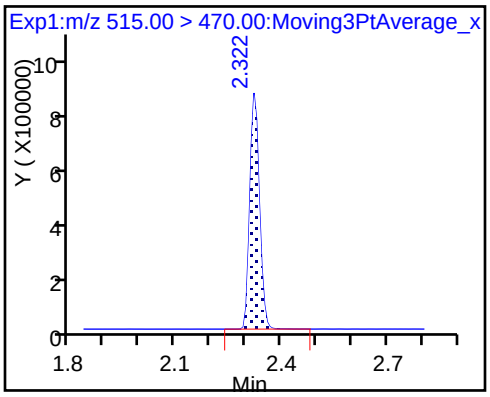
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_008.d				
Lims ID:	320-30191-A-4-A				
Client ID:	NAWC-072617-RW-341				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 13:14:06	ALS Bottle#:	16	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-4-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:11	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

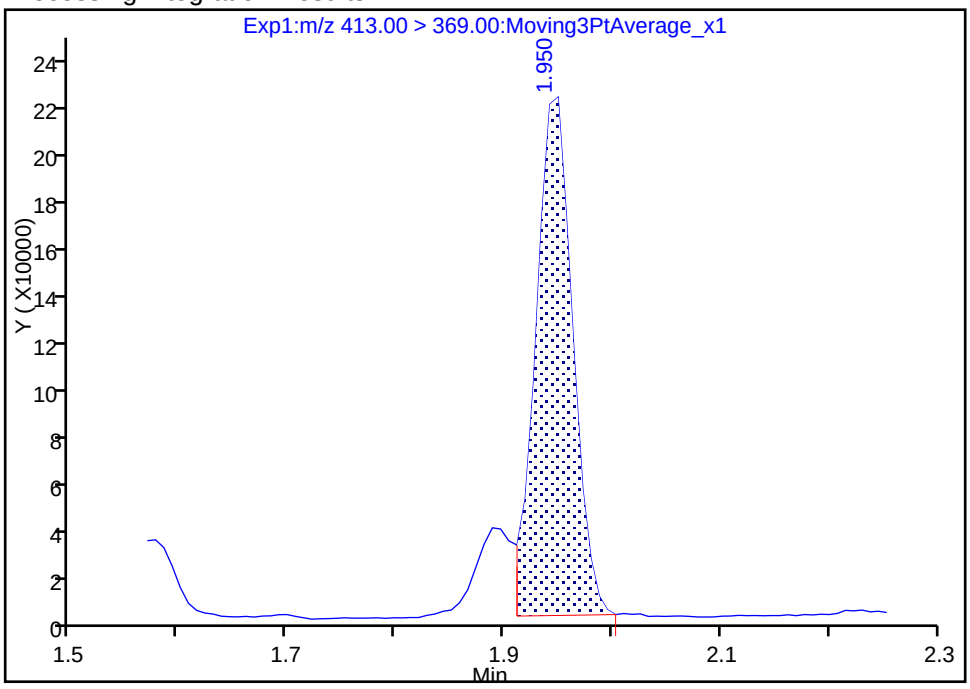
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d				
Injection Date:	16-Aug-2017 13:14:06	Instrument ID:	A8_N		
Lims ID:	320-30191-A-4-A	Lab Sample ID:	320-30191-4		
Client ID:	NAWC-072617-RW-341				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	8
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

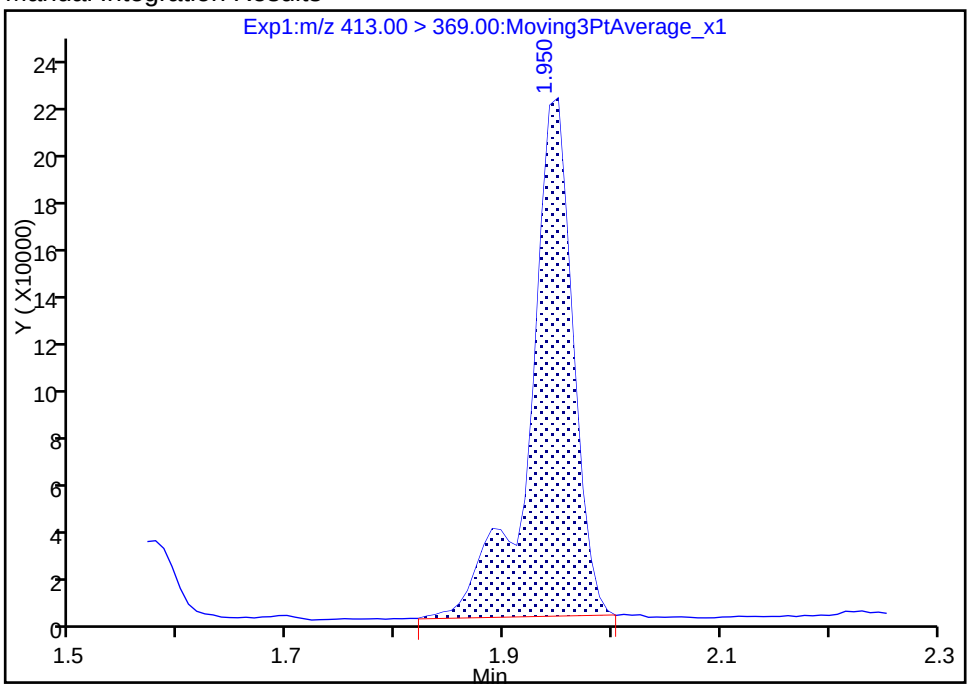
Processing Integration Results

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



Manual Integration Results

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



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

TestAmerica Sacramento

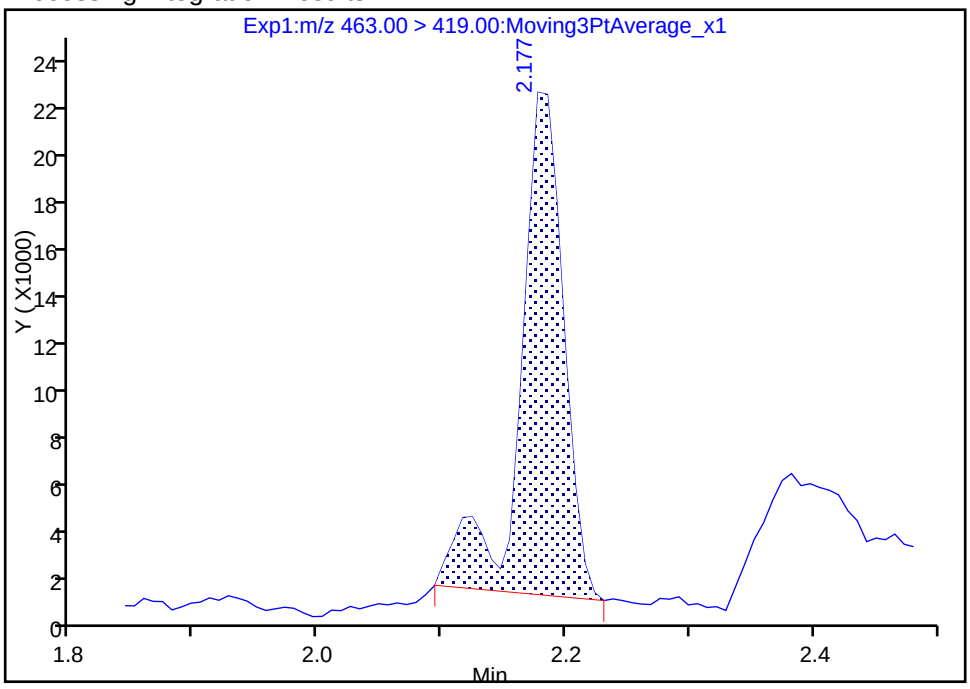
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_008.d				
Injection Date:	16-Aug-2017 13:14:06	Instrument ID:	A8_N		
Lims ID:	320-30191-A-4-A	Lab Sample ID:	320-30191-4		
Client ID:	NAWC-072617-RW-341				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	8
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

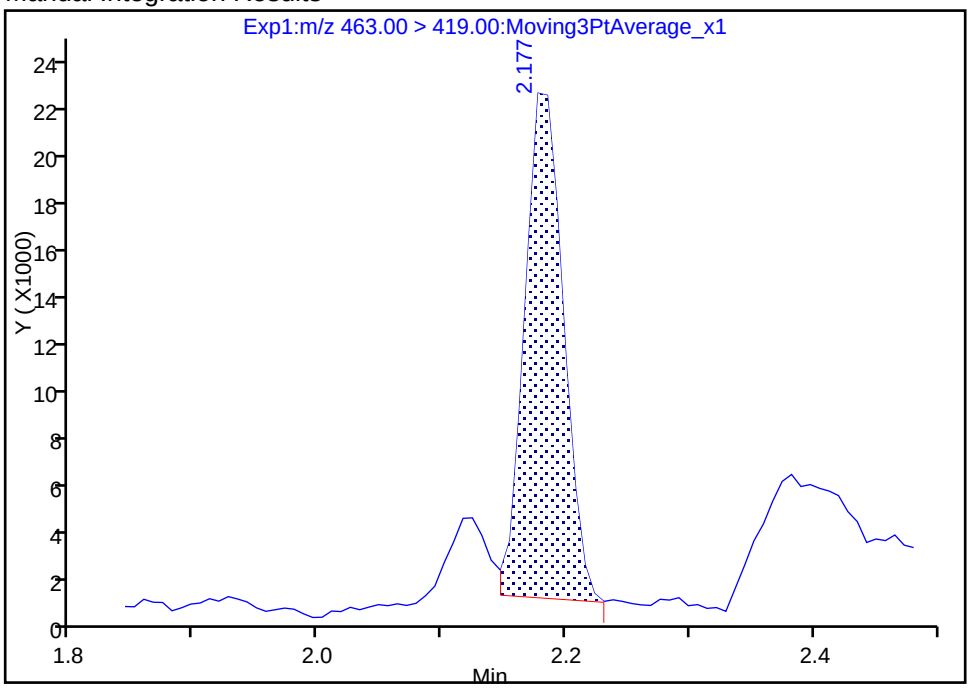
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:36:10
Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-FRB-341 | Lab Sample ID: 320-30191-5

Matrix: Water | Lab File ID: 2017.08.16_537C_009.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 284.6(mL) | Date Analyzed: 08/16/2017 13:18

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_009.d
Lims ID: 320-30191-A-5-A
Client ID: NAWC-072617-FRB-341
Sample Type: Client
Inject. Date: 16-Aug-2017 13:18:51 ALS Bottle#: 17 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

Report Date: 17-Aug-2017 14:27:17 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 13:18:51 Instrument ID: A8_N

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

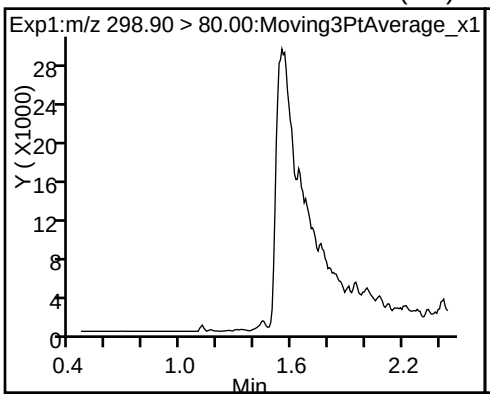
Client ID: NAWC-072617-FRB-341

Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 9

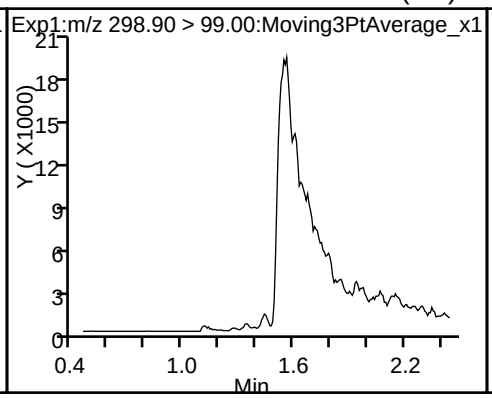
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

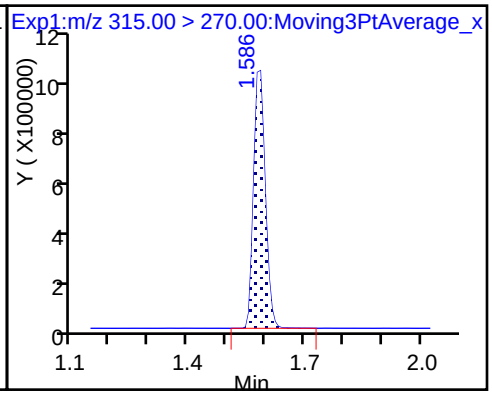
1 Perfluorobutanesulfonic acid (ND)



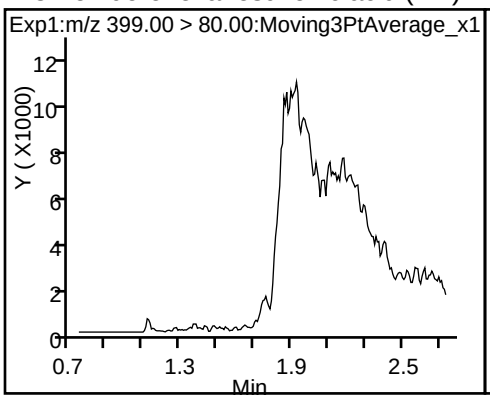
1 Perfluorobutanesulfonic acid (ND)



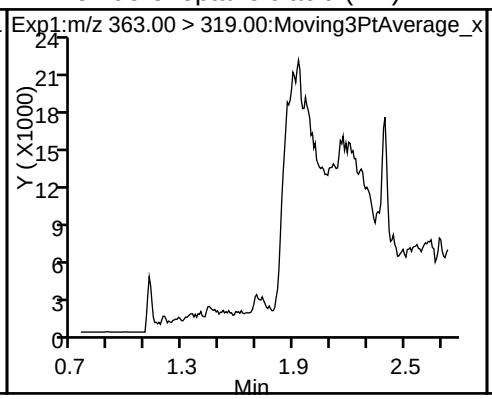
$ 2 13C2 PFHxA



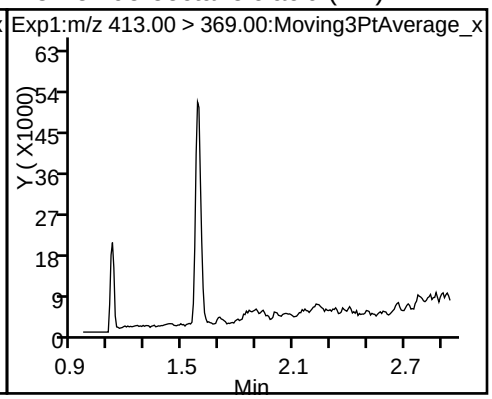
3 Perfluorohexanesulfonic acid (ND)



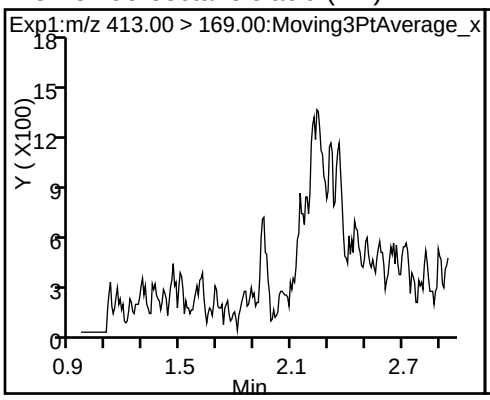
4 Perfluoroheptanoic acid (ND)



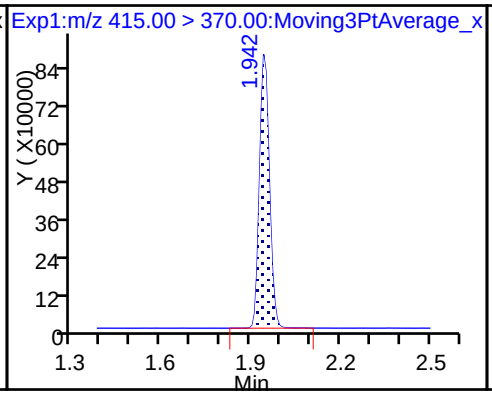
5 Perfluorooctanoic acid (ND)



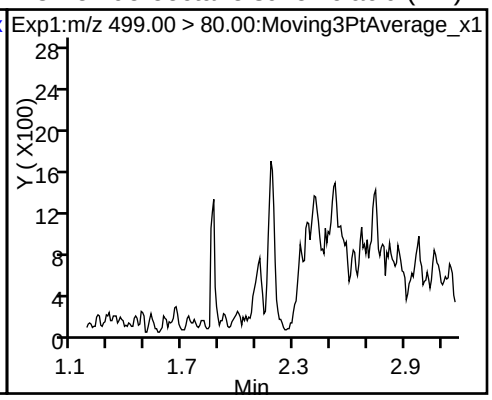
5 Perfluorooctanoic acid (ND)



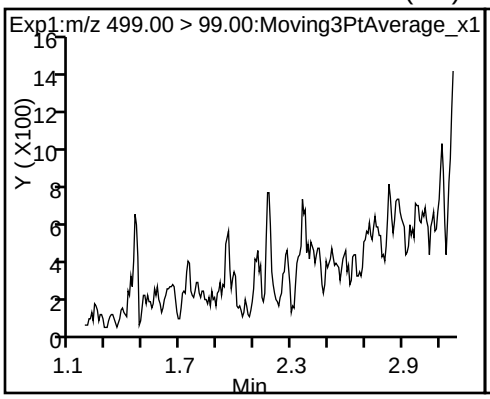
* 6 13C2-PFOA



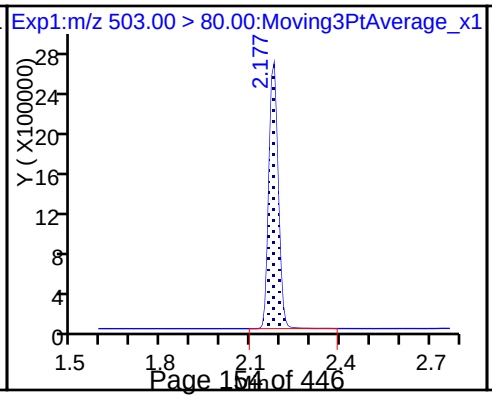
8 Perfluorooctane sulfonic acid (ND)



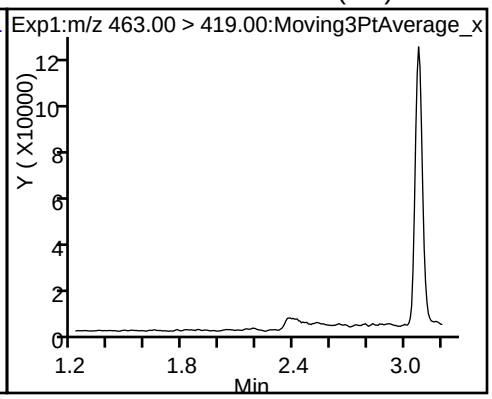
8 Perfluorooctane sulfonic acid (ND)



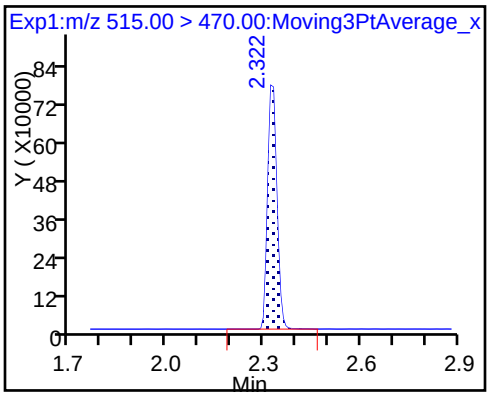
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
84
72
60
48
36
24
12
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_009.d				
Lims ID:	320-30191-A-5-A				
Client ID:	NAWC-072617-FRB-341				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 13:18:51	ALS Bottle#:	17	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-5-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:11	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_010.d

Analysis Method: 537 | Date Collected: 07/26/2017 10:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 288.9(mL) | Date Analyzed: 08/16/2017 13:23

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d
Lims ID: 320-30191-A-6-A
Client ID: NAWC-072617-RW-349
Sample Type: Client
Inject. Date: 16-Aug-2017 13:23:34 ALS Bottle#: 18 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:17 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 13:23:34 Instrument ID: A8_N

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

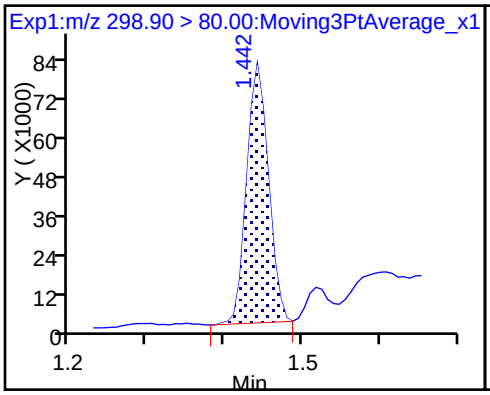
Client ID: NAWC-072617-RW-349

Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 10

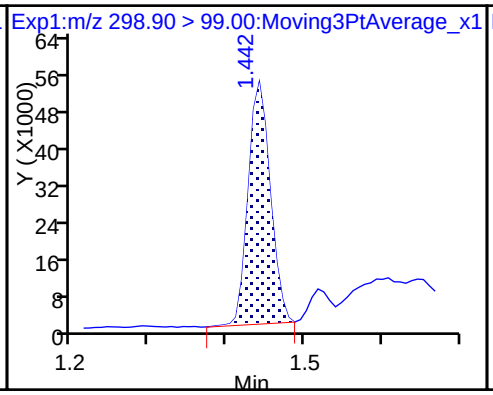
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

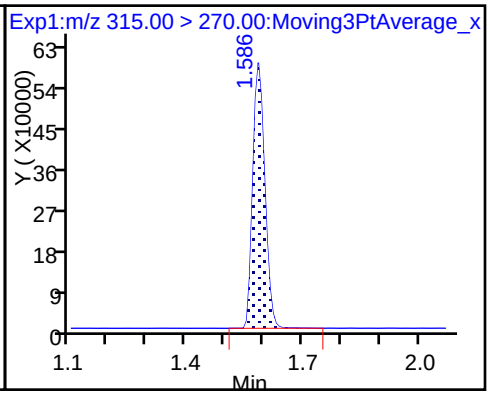
1 Perfluorobutanesulfonic acid



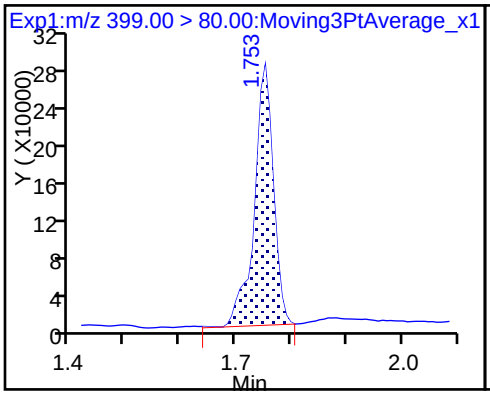
1 Perfluorobutanesulfonic acid



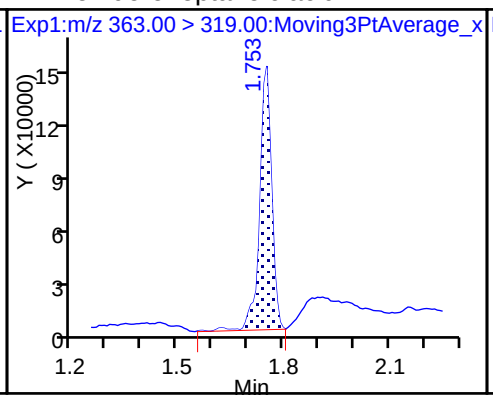
$ 2 13C2 PFHxA



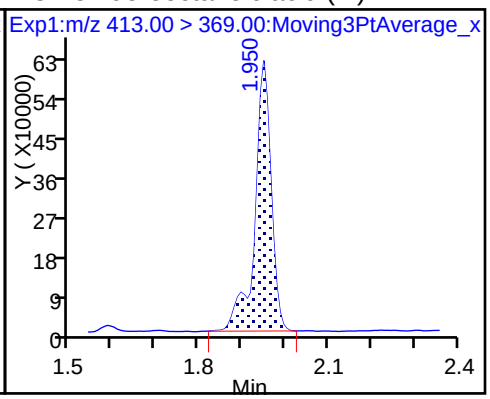
3 Perfluorohexanesulfonic acid



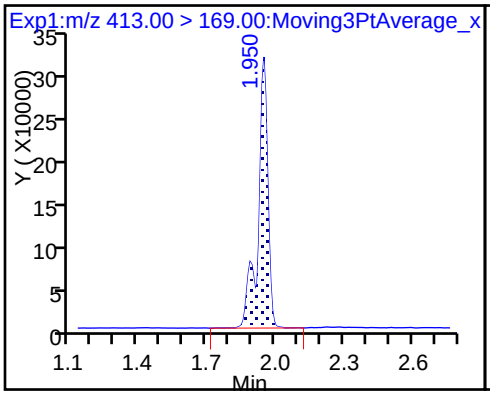
4 Perfluoroheptanoic acid



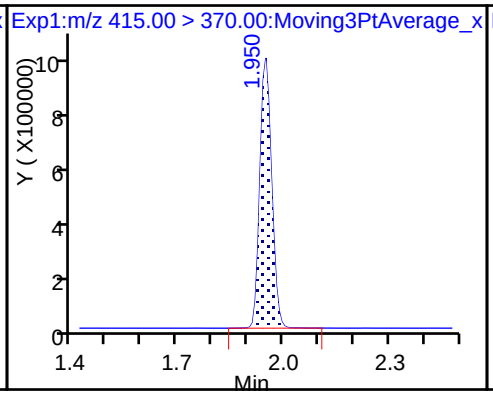
5 Perfluorooctanoic acid (M)



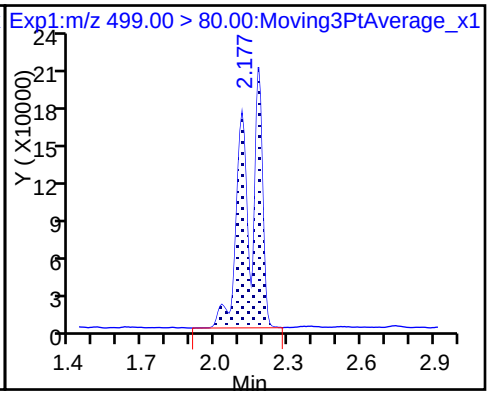
5 Perfluorooctanoic acid



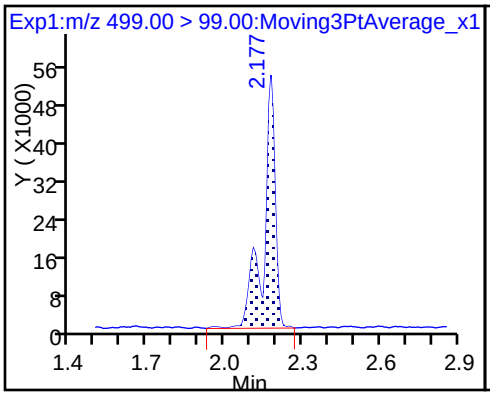
* 6 13C2-PFOA



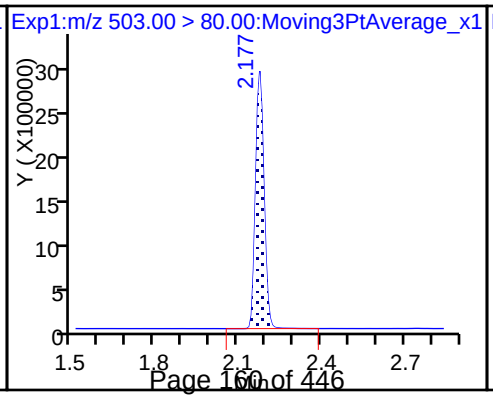
8 Perfluorooctane sulfonic acid



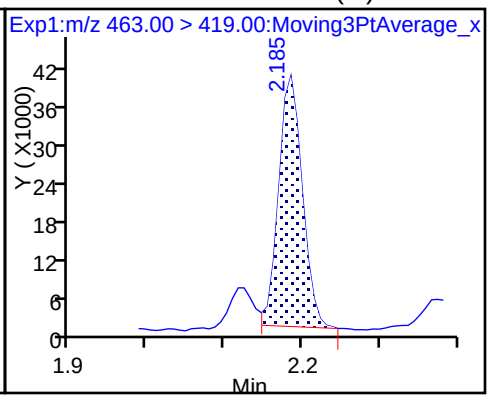
8 Perfluorooctane sulfonic acid



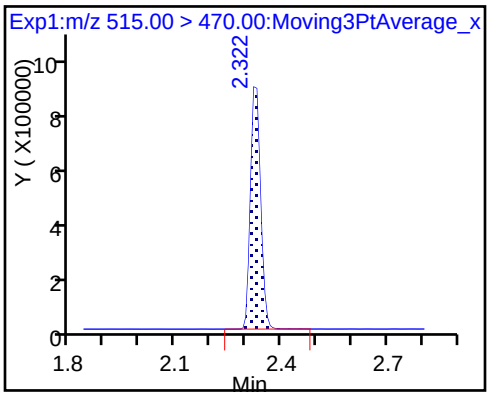
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_010.d				
Lims ID:	320-30191-A-6-A				
Client ID:	NAWC-072617-RW-349				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 13:23:34	ALS Bottle#:	18	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-6-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:11	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

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

TestAmerica Sacramento

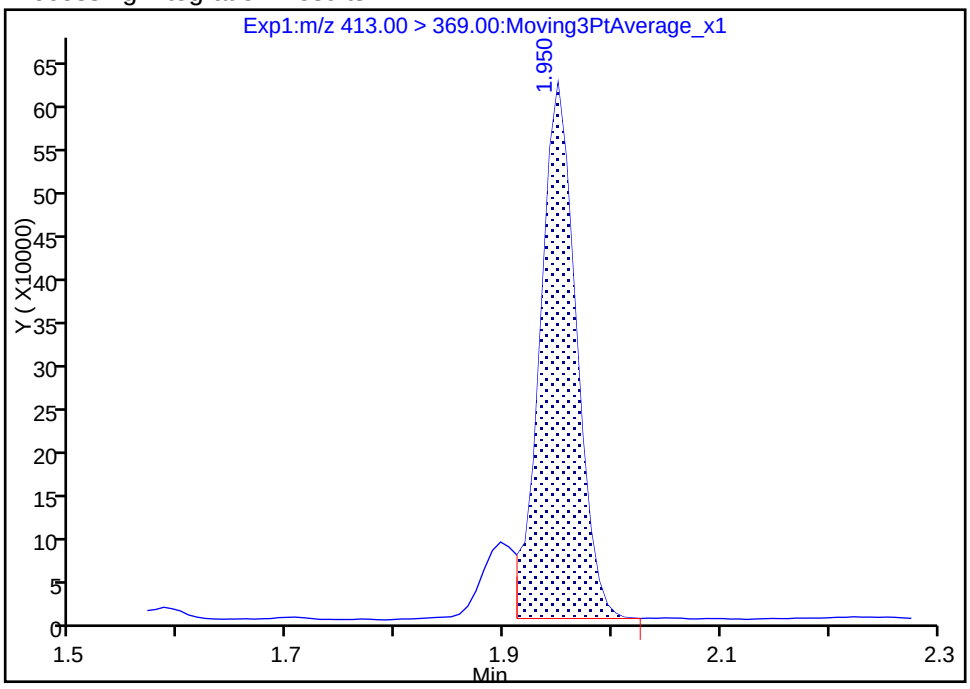
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d				
Injection Date:	16-Aug-2017 13:23:34	Instrument ID:	A8_N		
Lims ID:	320-30191-A-6-A	Lab Sample ID:	320-30191-6		
Client ID:	NAWC-072617-RW-349				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	10
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

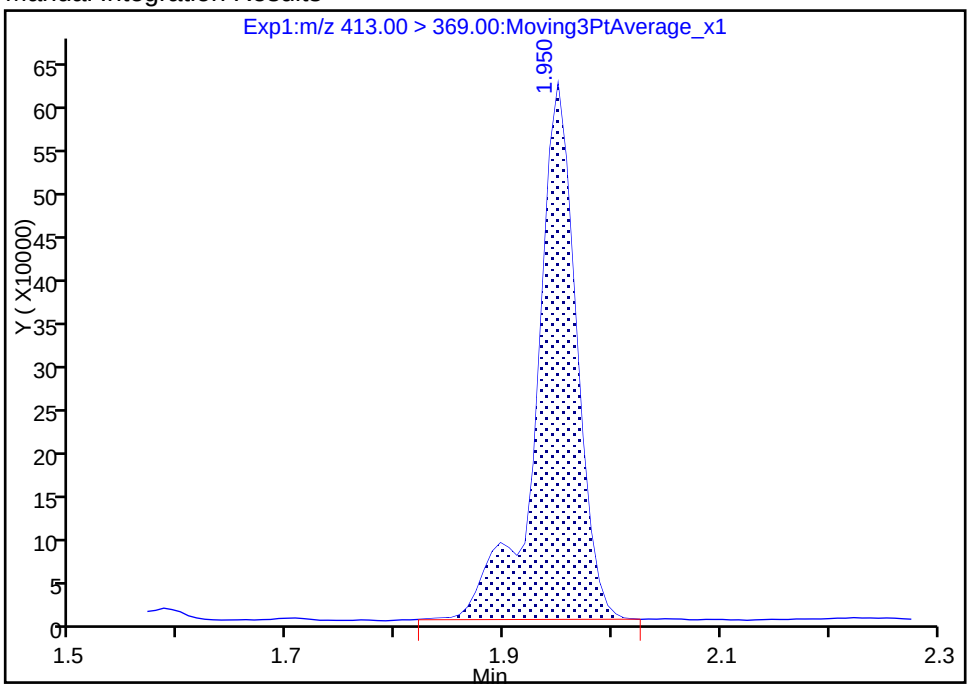
Processing Integration Results

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



Manual Integration Results

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



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

TestAmerica Sacramento

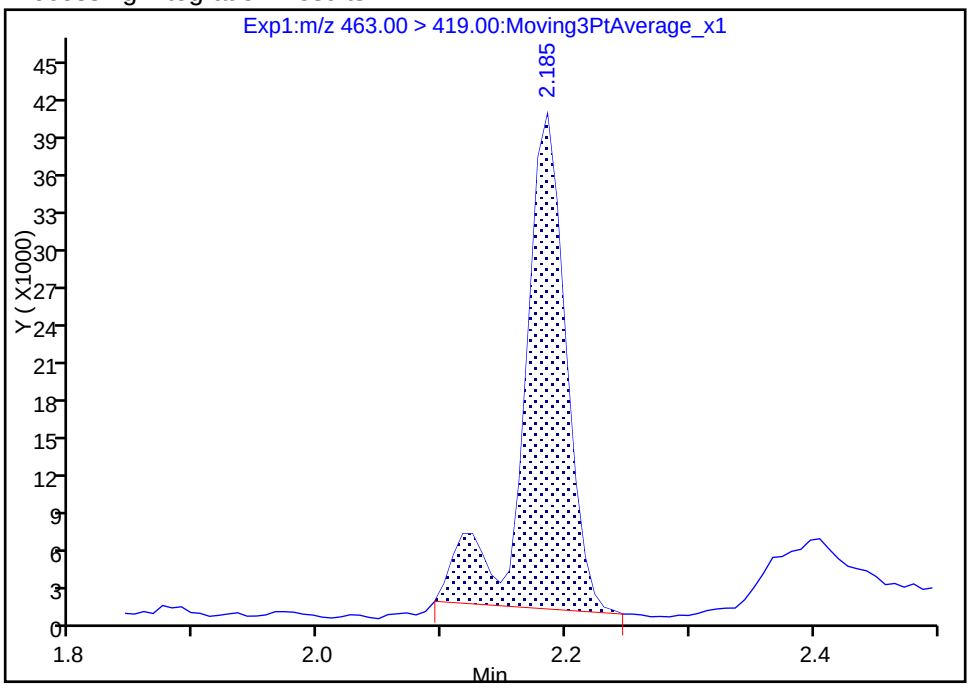
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_010.d				
Injection Date:	16-Aug-2017 13:23:34	Instrument ID:	A8_N		
Lims ID:	320-30191-A-6-A	Lab Sample ID:	320-30191-6		
Client ID:	NAWC-072617-RW-349				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	10
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

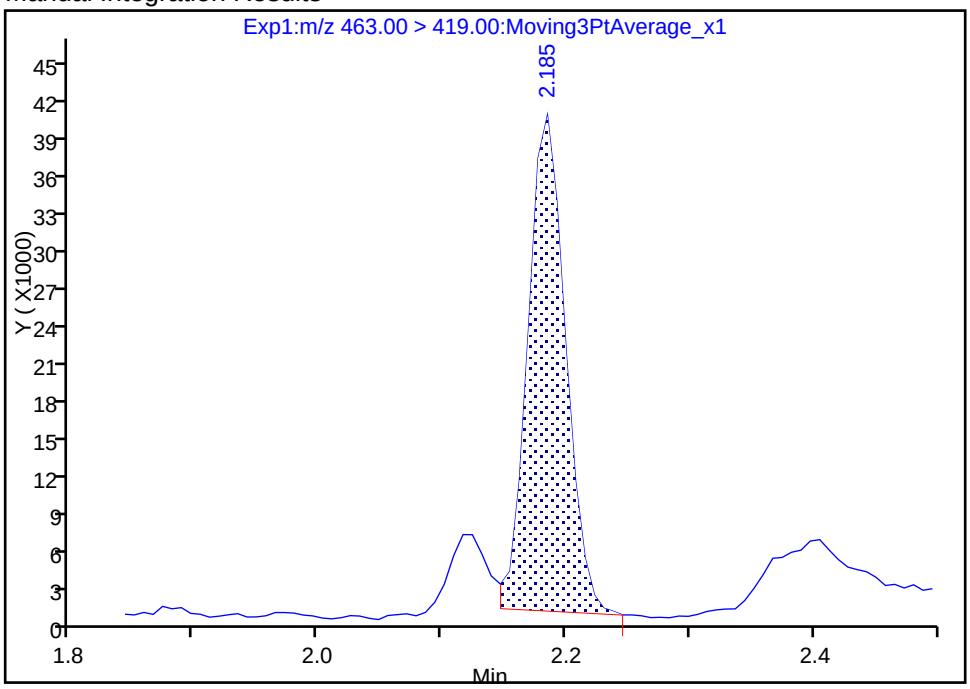
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:36:49
Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-FRB-349 | Lab Sample ID: 320-30191-7

Matrix: Water | Lab File ID: 2017.08.16_537C_015.d

Analysis Method: 537 | Date Collected: 07/26/2017 10:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 286.5(mL) | Date Analyzed: 08/16/2017 13:47

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

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

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

Analysis Batch No.: 179728 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_015.d
Lims ID: 320-30191-A-7-A
Client ID: NAWC-072617-FRB-349
Sample Type: Client
Inject. Date: 16-Aug-2017 13:47:16 ALS Bottle#: 21 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

Report Date: 17-Aug-2017 14:27:21 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 13:47:16 Instrument ID: A8_N

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

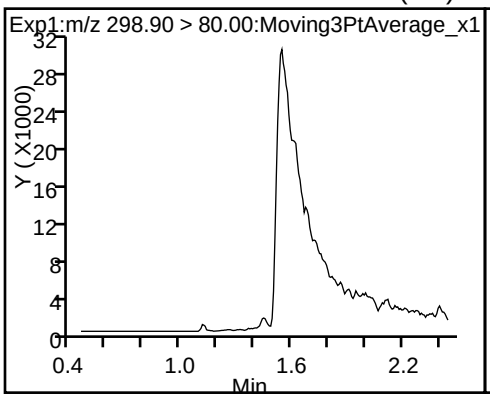
Client ID: NAWC-072617-FRB-349

Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 15

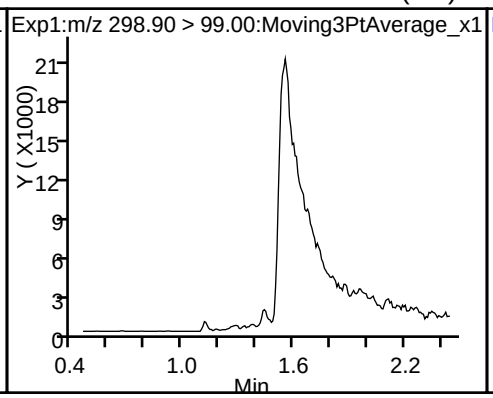
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

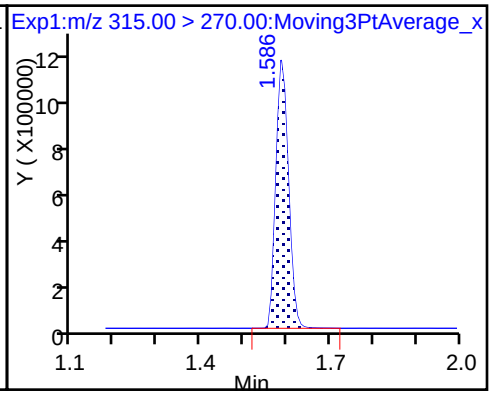
1 Perfluorobutanesulfonic acid (ND)



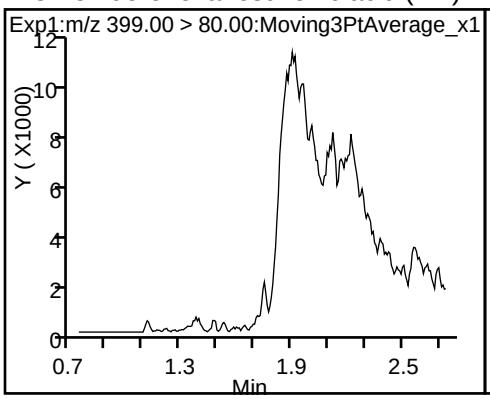
1 Perfluorobutanesulfonic acid (ND)



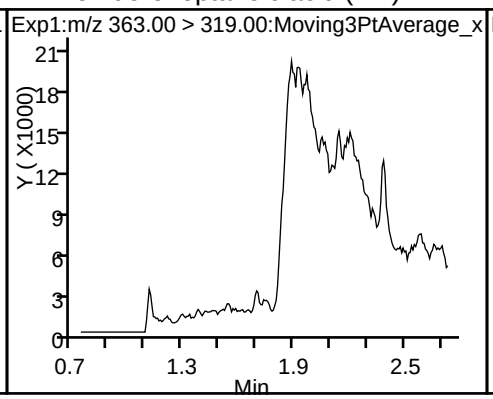
$ 2 13C2 PFHxA



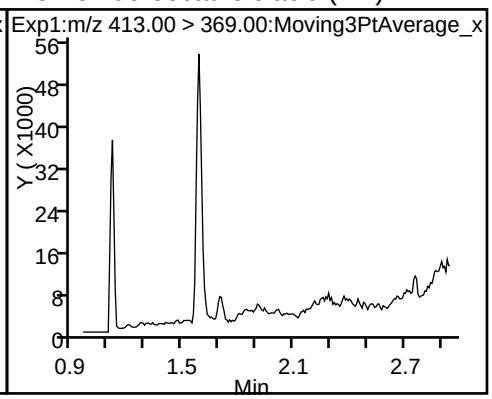
3 Perfluorohexanesulfonic acid (ND)



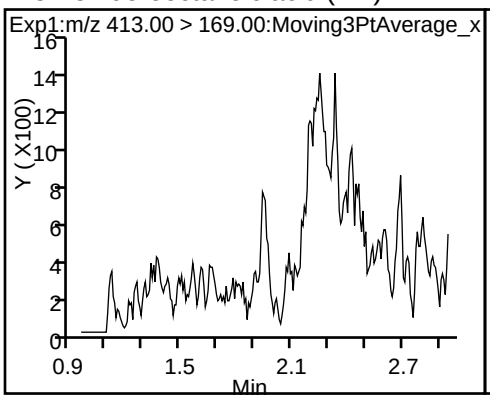
4 Perfluoroheptanoic acid (ND)



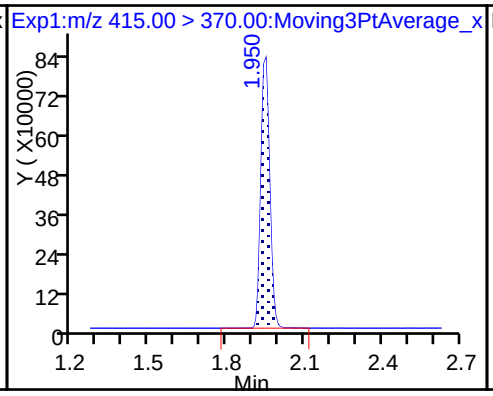
5 Perfluorooctanoic acid (ND)



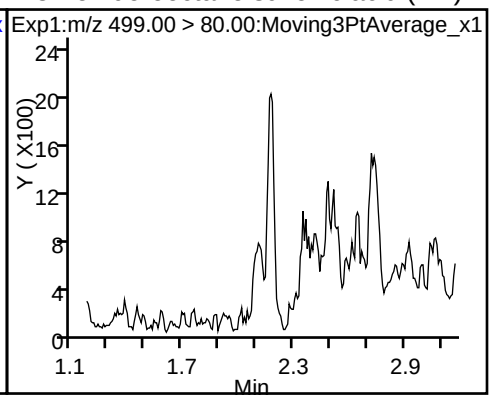
5 Perfluorooctanoic acid (ND)



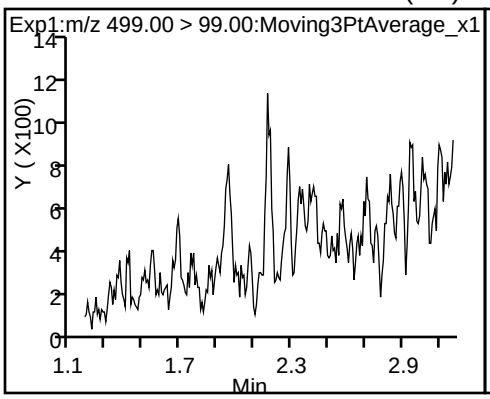
* 6 13C2-PFOA



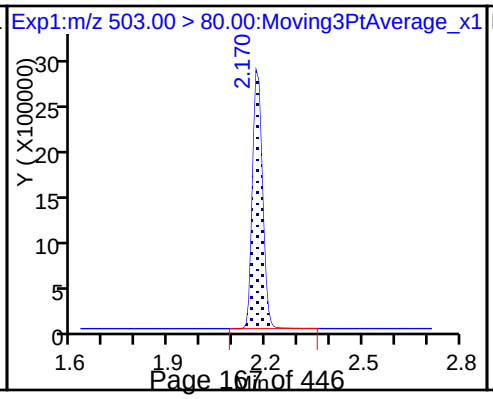
8 Perfluorooctane sulfonic acid (ND)



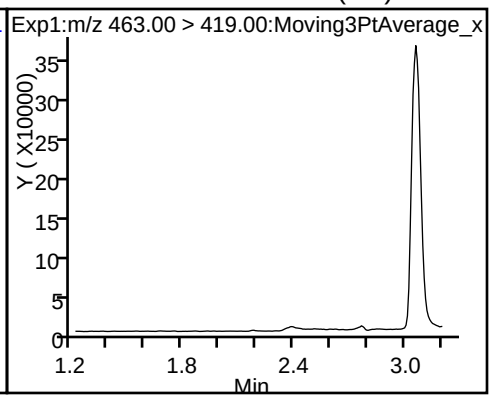
8 Perfluorooctane sulfonic acid (ND)



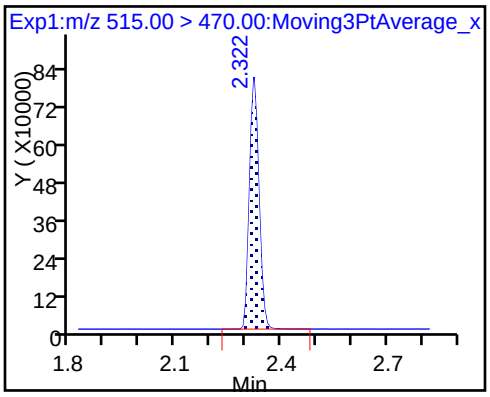
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_015.d				
Lims ID:	320-30191-A-7-A				
Client ID:	NAWC-072617-FRB-349				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 13:47:16	ALS Bottle#:	21	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-7-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:19	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_016.d

Analysis Method: 537 | Date Collected: 07/26/2017 13:55

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 283.7(mL) | Date Analyzed: 08/16/2017 13:52

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

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

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

Analysis Batch No.: 179728 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d
Lims ID: 320-30191-A-8-A
Client ID: NAWC-072617-RW-343
Sample Type: Client
Inject. Date: 16-Aug-2017 13:52:03 ALS Bottle#: 22 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:22 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 13:52:03 Instrument ID: A8_N

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

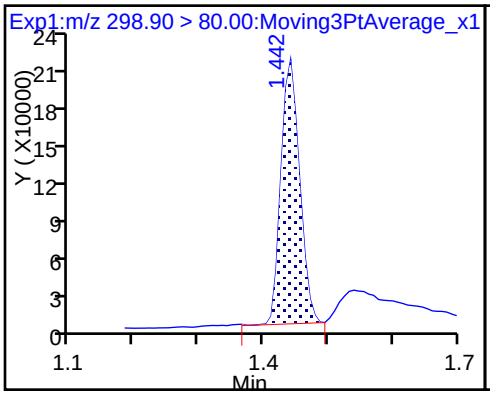
Client ID: NAWC-072617-RW-343

Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 16

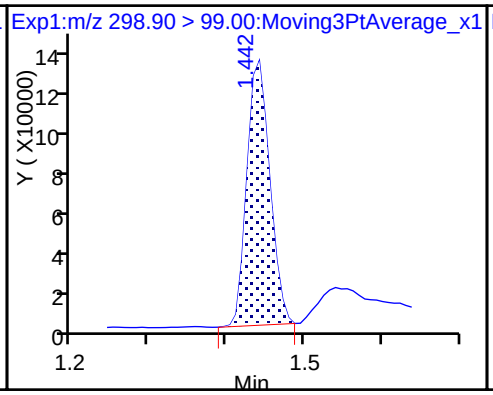
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

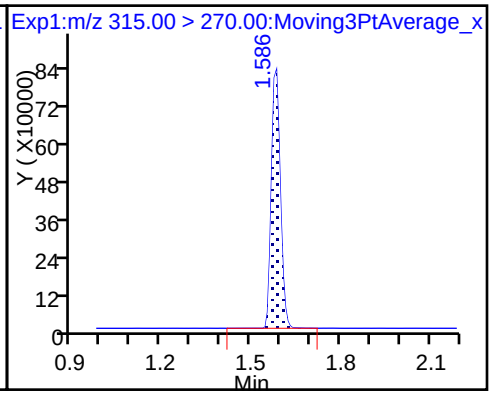
1 Perfluorobutanesulfonic acid



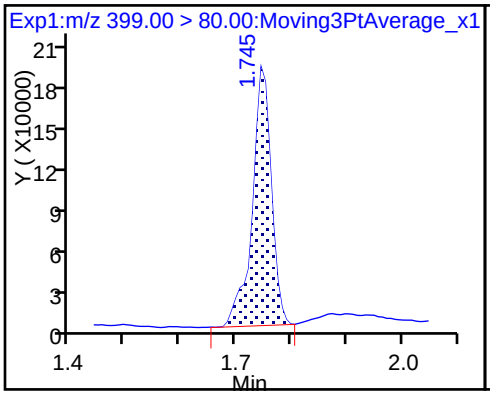
1 Perfluorobutanesulfonic acid



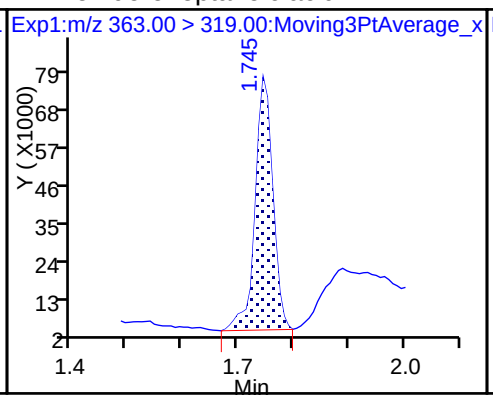
$ 2 13C2 PFHxA



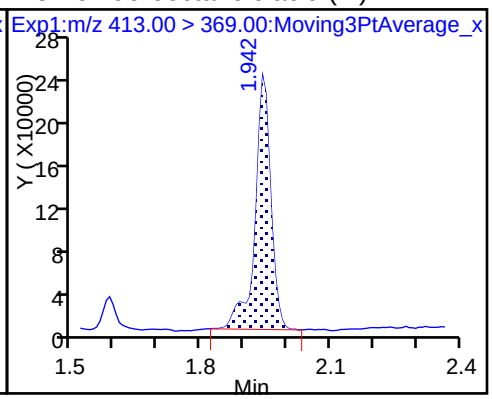
3 Perfluorohexanesulfonic acid



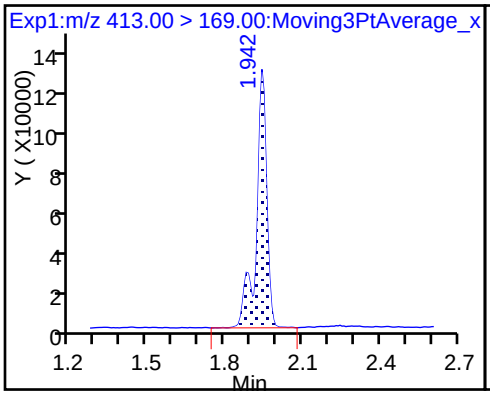
4 Perfluoroheptanoic acid



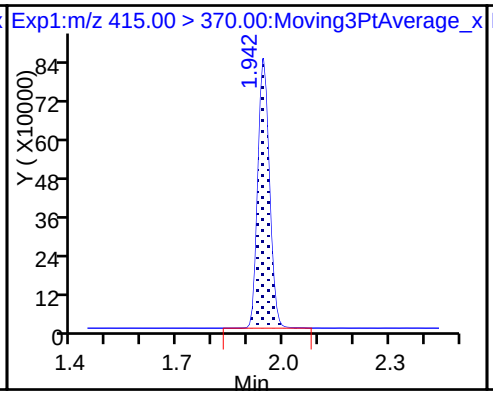
5 Perfluorooctanoic acid (M)



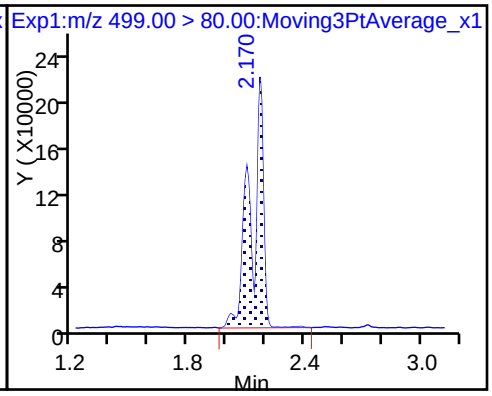
5 Perfluorooctanoic acid



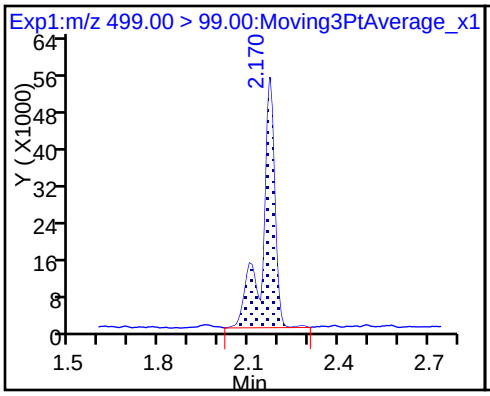
* 6 13C2-PFOA



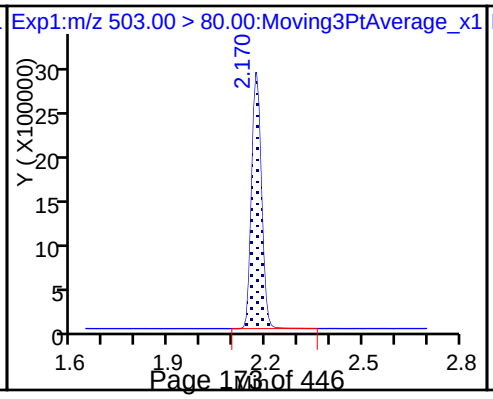
8 Perfluorooctane sulfonic acid



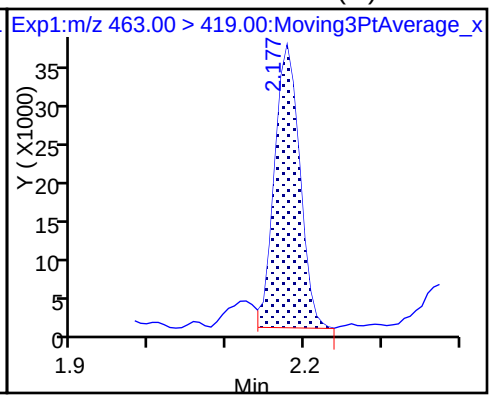
8 Perfluorooctane sulfonic acid



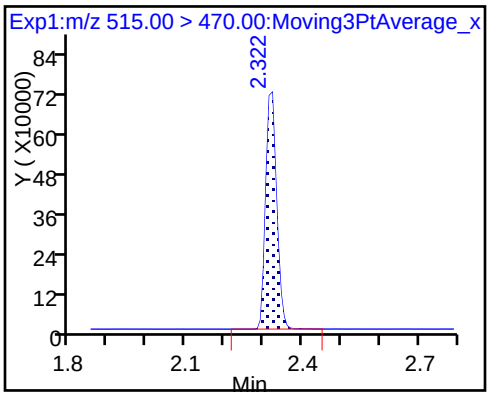
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_016.d
Lims ID: 320-30191-A-8-A
Client ID: NAWC-072617-RW-343
Sample Type: Client
Inject. Date: 16-Aug-2017 13:52:03 ALS Bottle#: 22 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

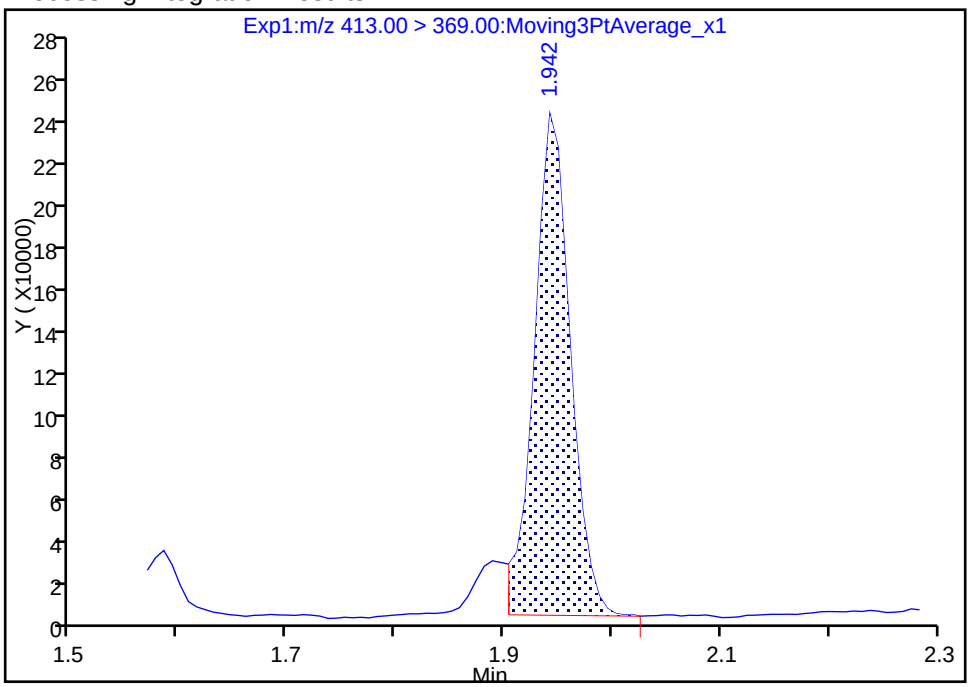
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d				
Injection Date:	16-Aug-2017 13:52:03	Instrument ID:	A8_N		
Lims ID:	320-30191-A-8-A	Lab Sample ID:	320-30191-8		
Client ID:	NAWC-072617-RW-343				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	16
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

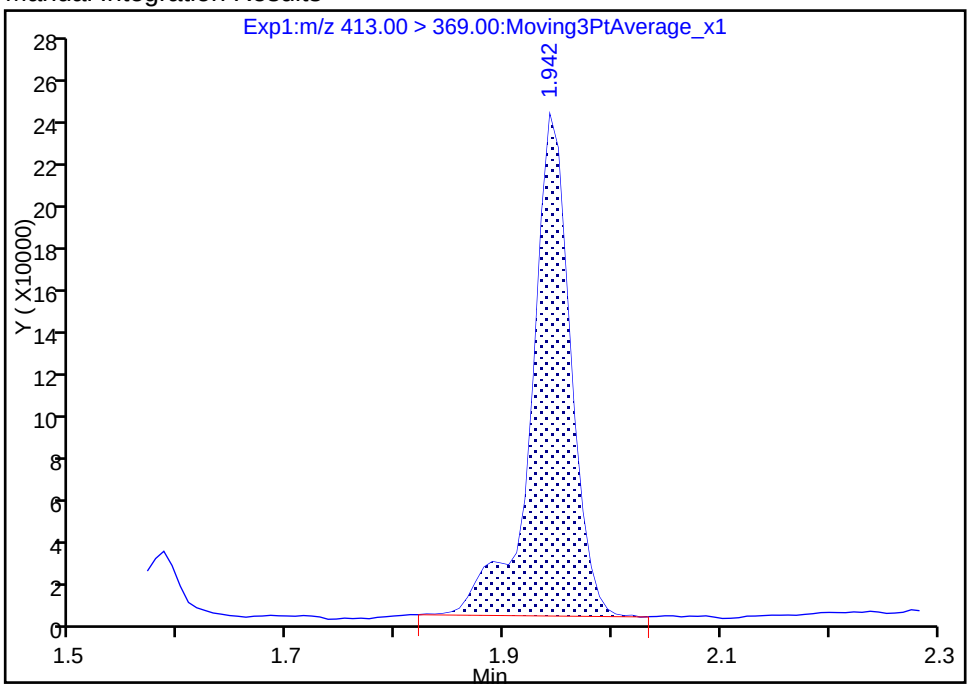
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:40:45

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

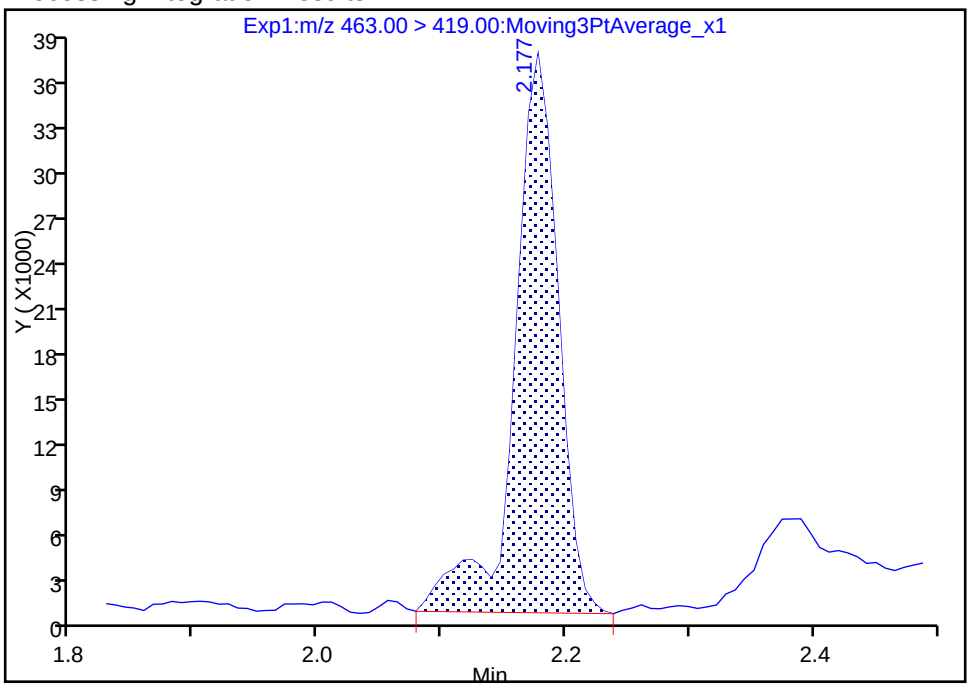
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_016.d				
Injection Date:	16-Aug-2017 13:52:03	Instrument ID:	A8_N		
Lims ID:	320-30191-A-8-A	Lab Sample ID:	320-30191-8		
Client ID:	NAWC-072617-RW-343				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	16
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

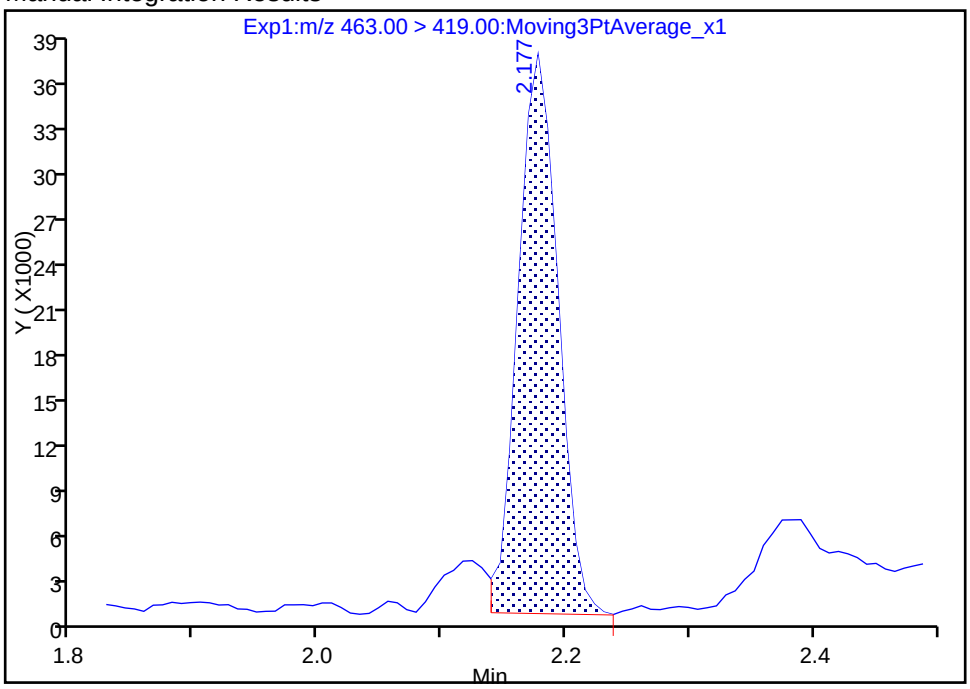
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:41:08

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-FRB-343 | Lab Sample ID: 320-30191-9

Matrix: Water | Lab File ID: 2017.08.16_537C_017.d

Analysis Method: 537 | Date Collected: 07/26/2017 13:50

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 288.4(mL) | Date Analyzed: 08/16/2017 13:56

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

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

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

Analysis Batch No.: 179728 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_017.d
Lims ID: 320-30191-A-9-A
Client ID: NAWC-072617-FRB-343
Sample Type: Client
Inject. Date: 16-Aug-2017 13:56:47 ALS Bottle#: 23 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

Report Date: 17-Aug-2017 14:27:23 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 13:56:47 Instrument ID: A8_N

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

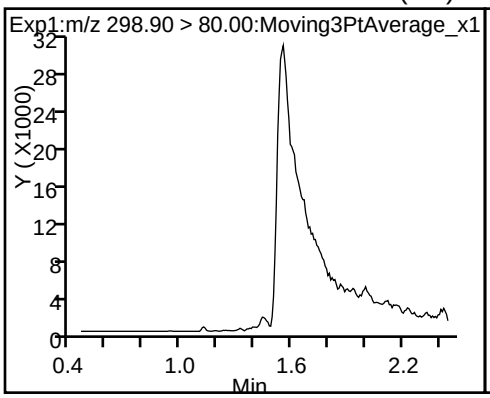
Client ID: NAWC-072617-FRB-343

Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 17

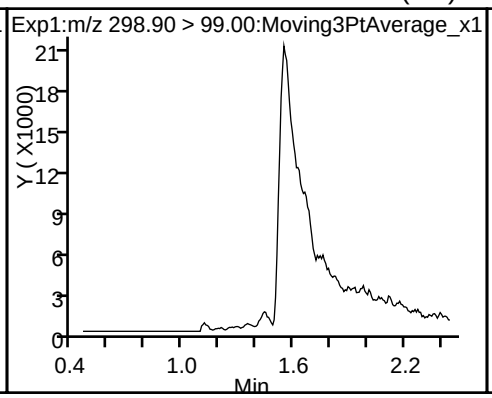
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

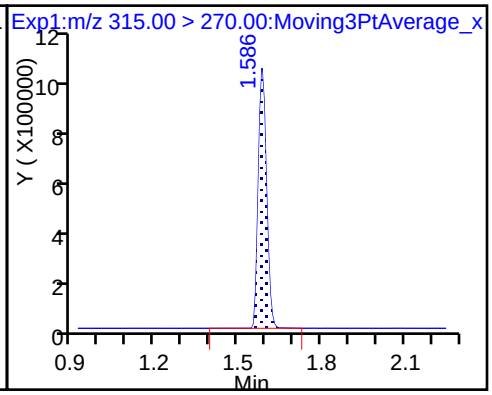
1 Perfluorobutanesulfonic acid (ND)



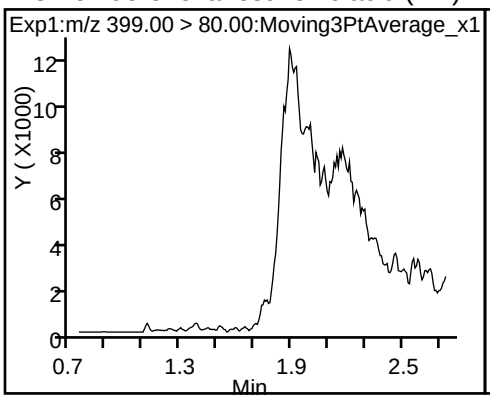
1 Perfluorobutanesulfonic acid (ND)



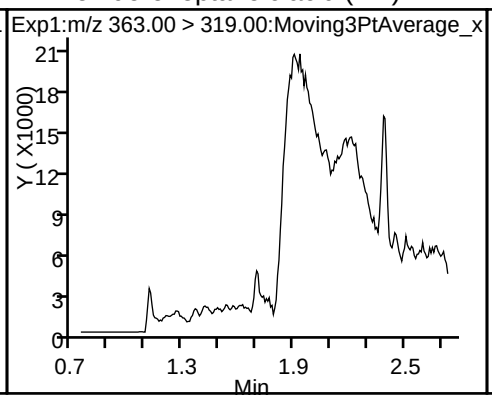
$ 2 13C2 PFHxA



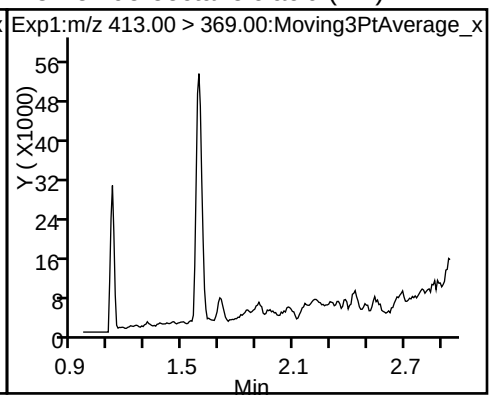
3 Perfluorohexanesulfonic acid (ND)



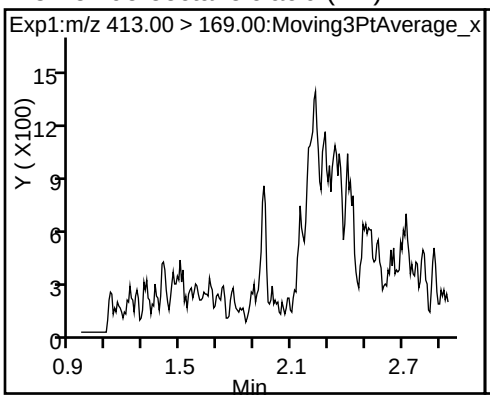
4 Perfluoroheptanoic acid (ND)



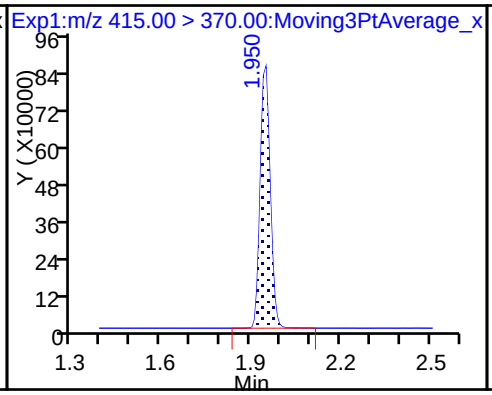
5 Perfluorooctanoic acid (ND)



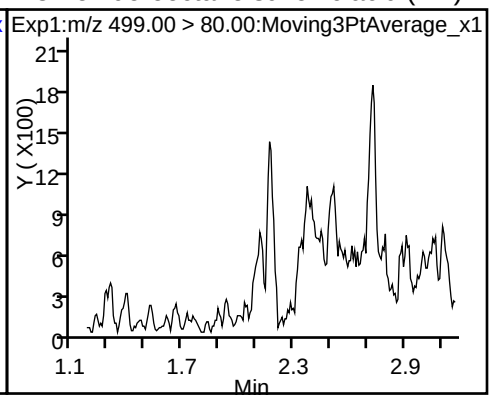
5 Perfluorooctanoic acid (ND)



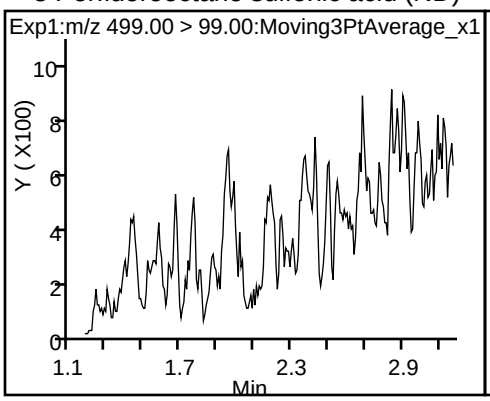
* 6 13C2-PFOA



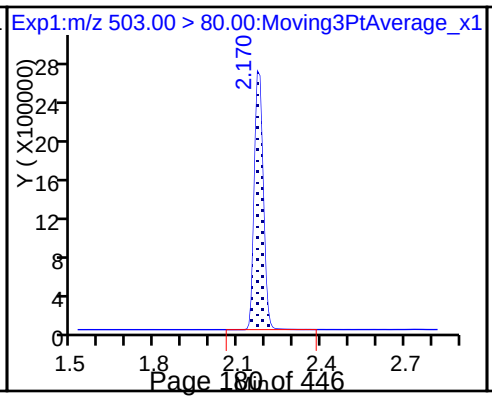
8 Perfluorooctane sulfonic acid (ND)



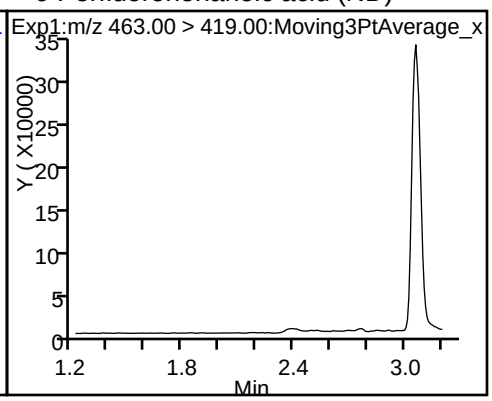
8 Perfluorooctane sulfonic acid (ND)



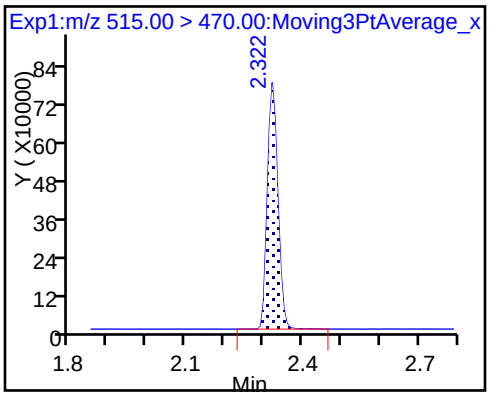
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_017.d				
Lims ID:	320-30191-A-9-A				
Client ID:	NAWC-072617-FRB-343				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 13:56:47	ALS Bottle#:	23	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-9-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:19	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_018.d

Analysis Method: 537 | Date Collected: 07/26/2017 15:15

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 289(mL) | Date Analyzed: 08/16/2017 14:01

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

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

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

Analysis Batch No.: 179728 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d
Lims ID: 320-30191-A-10-A
Client ID: NAWC-072617-RW-345
Sample Type: Client
Inject. Date: 16-Aug-2017 14:01:31 ALS Bottle#: 24 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:23 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 14:01:31 Instrument ID: A8_N

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

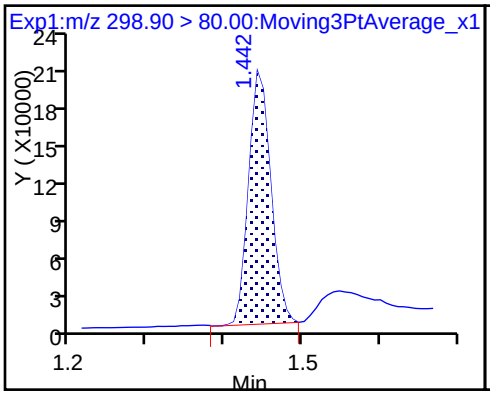
Client ID: NAWC-072617-RW-345

Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 18

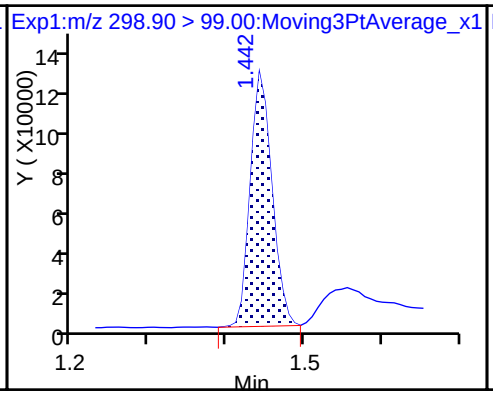
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

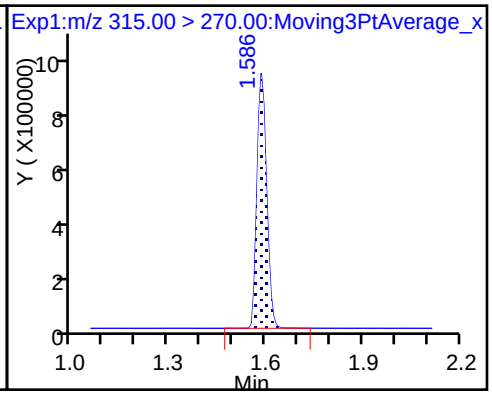
1 Perfluorobutanesulfonic acid



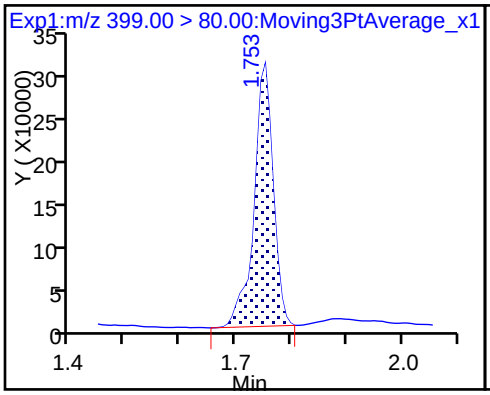
1 Perfluorobutanesulfonic acid



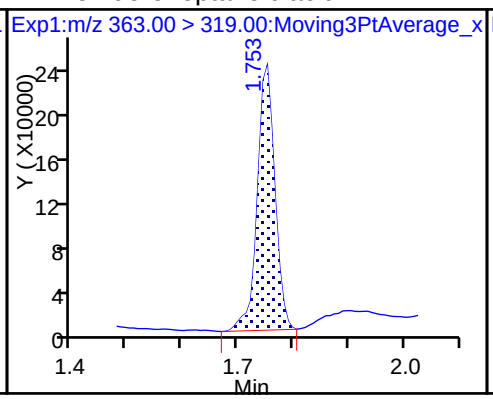
$ 2 13C2 PFHxA



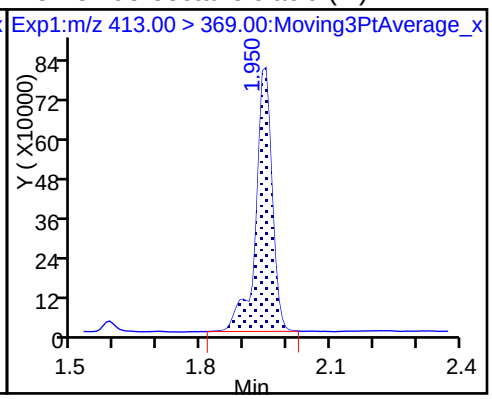
3 Perfluorohexanesulfonic acid



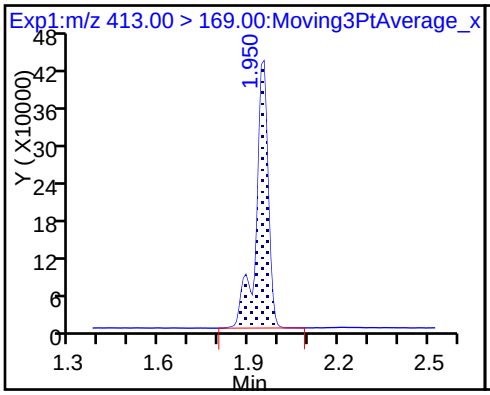
4 Perfluoroheptanoic acid



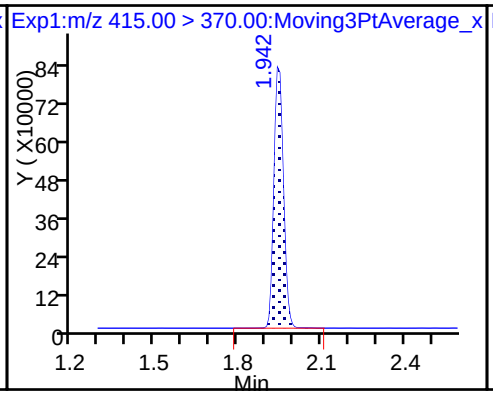
5 Perfluorooctanoic acid (M)



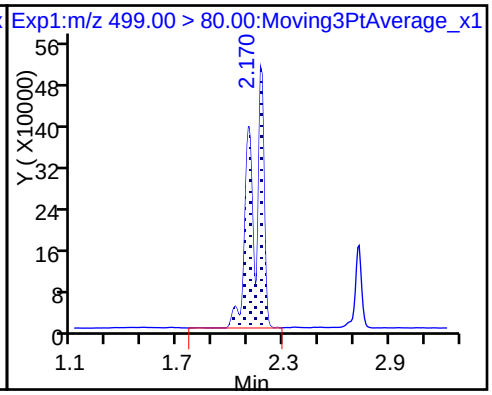
5 Perfluorooctanoic acid



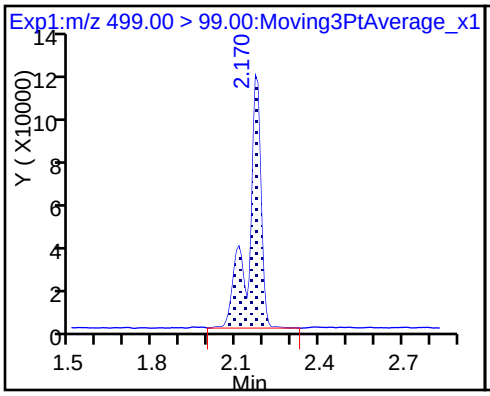
* 6 13C2-PFOA



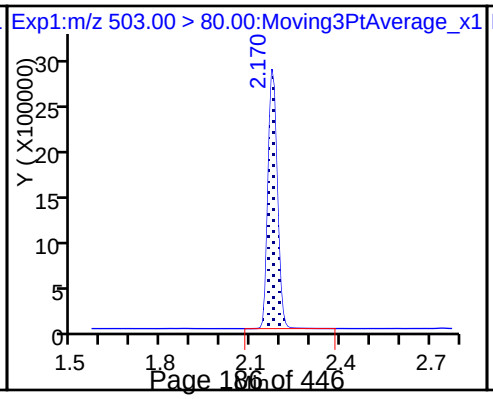
8 Perfluorooctane sulfonic acid



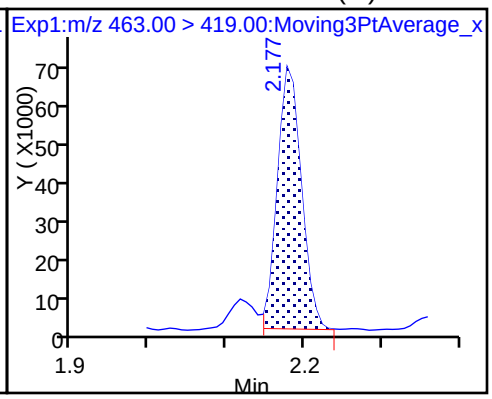
8 Perfluorooctane sulfonic acid



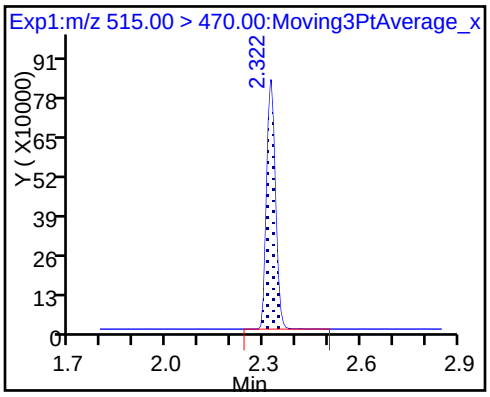
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
91
78
65
52
39
26
13
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d				
Lims ID:	320-30191-A-10-A				
Client ID:	NAWC-072617-RW-345				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 14:01:31	ALS Bottle#:	24	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-10-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:19	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				
First Level Reviewer: barnettj		Date:	16-Aug-2017 15:42:33		

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

TestAmerica Sacramento

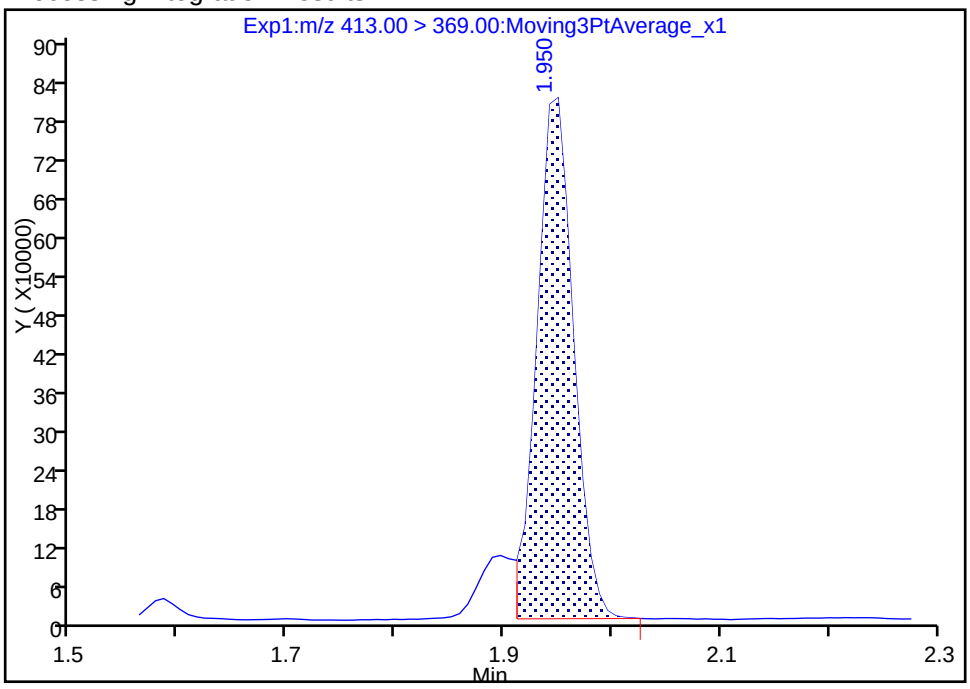
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d				
Injection Date:	16-Aug-2017 14:01:31	Instrument ID:	A8_N		
Lims ID:	320-30191-A-10-A	Lab Sample ID:	320-30191-10		
Client ID:	NAWC-072617-RW-345				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	18
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

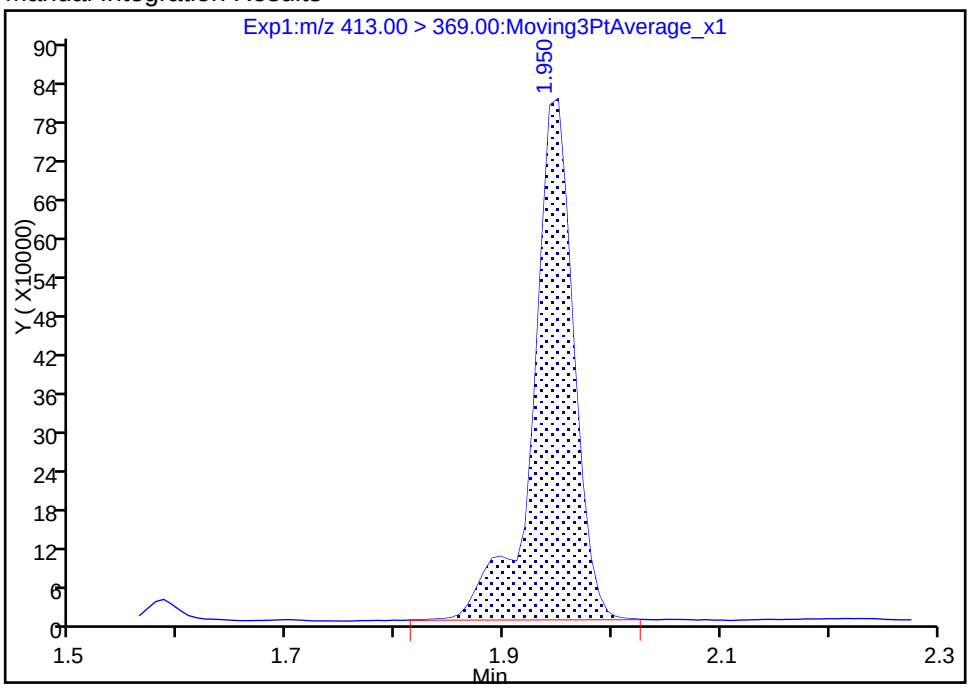
Processing Integration Results

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



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

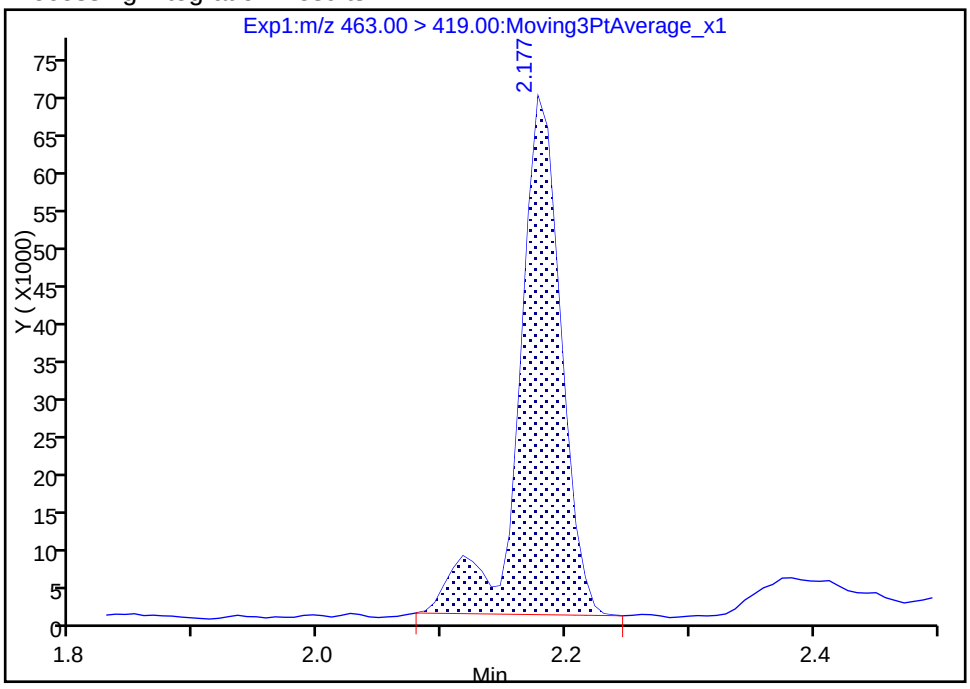
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_018.d				
Injection Date:	16-Aug-2017 14:01:31	Instrument ID:	A8_N		
Lims ID:	320-30191-A-10-A	Lab Sample ID:	320-30191-10		
Client ID:	NAWC-072617-RW-345				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	18
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

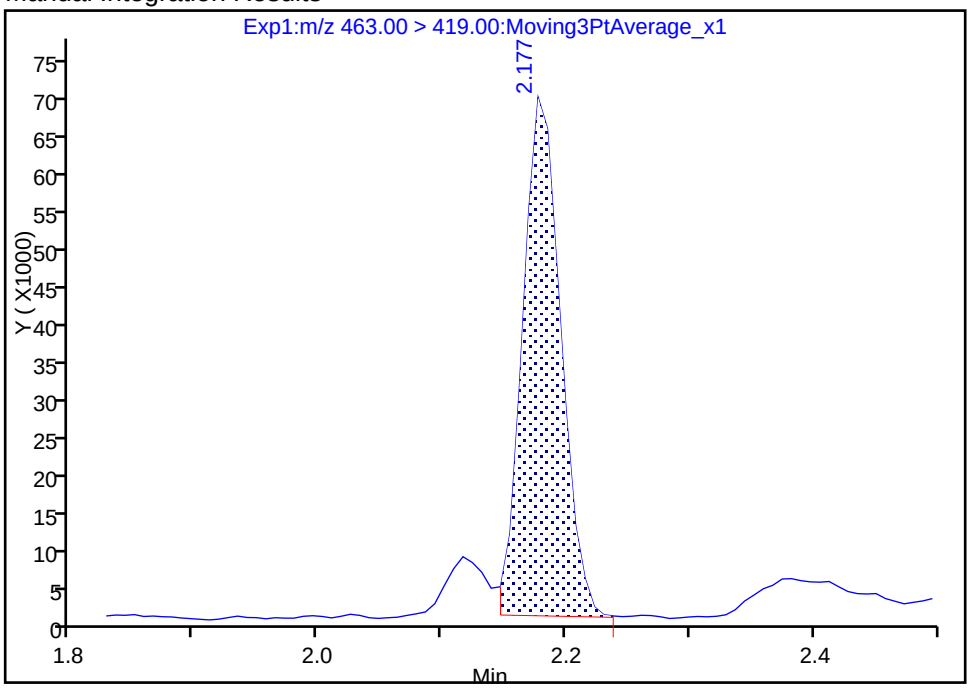
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:42:26

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-FRB-345 | Lab Sample ID: 320-30191-11

Matrix: Water | Lab File ID: 2017.08.16_537C_019.d

Analysis Method: 537 | Date Collected: 07/26/2017 15:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 285.2(mL) | Date Analyzed: 08/16/2017 14:06

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

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

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

Analysis Batch No.: 179728 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_019.d
Lims ID: 320-30191-A-11-A
Client ID: NAWC-072617-FRB-345
Sample Type: Client
Inject. Date: 16-Aug-2017 14:06:15 ALS Bottle#: 25 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

Report Date: 17-Aug-2017 14:27:24 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 14:06:15 Instrument ID: A8_N

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

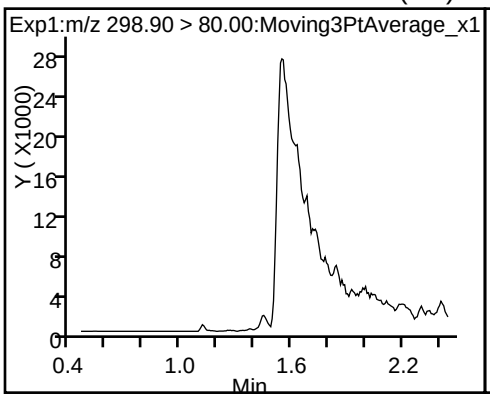
Client ID: NAWC-072617-FRB-345

Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 19

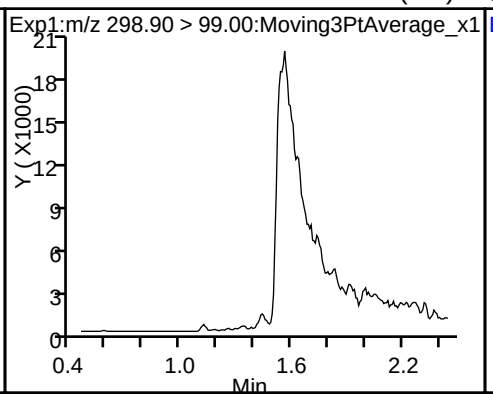
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

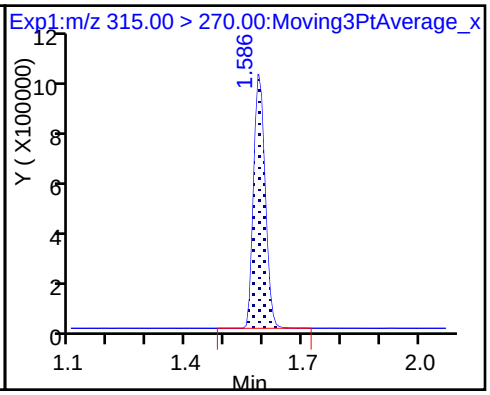
1 Perfluorobutanesulfonic acid (ND)



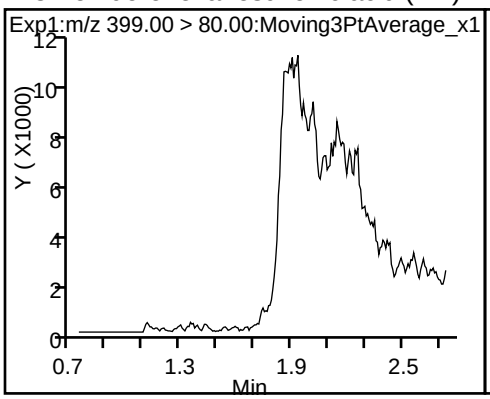
1 Perfluorobutanesulfonic acid (ND)



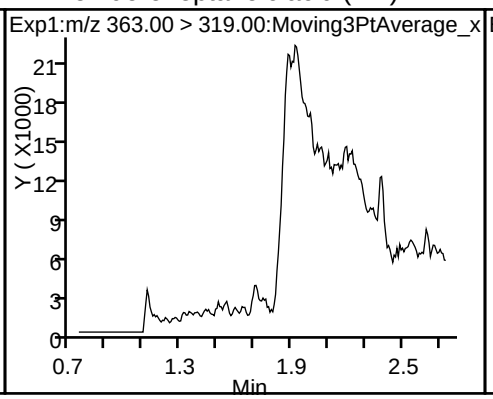
$ 2 13C2 PFHxA



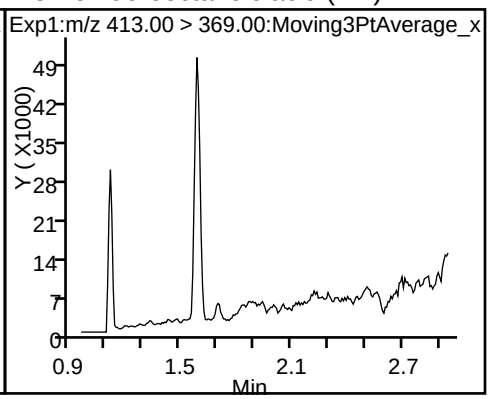
3 Perfluorohexanesulfonic acid (ND)



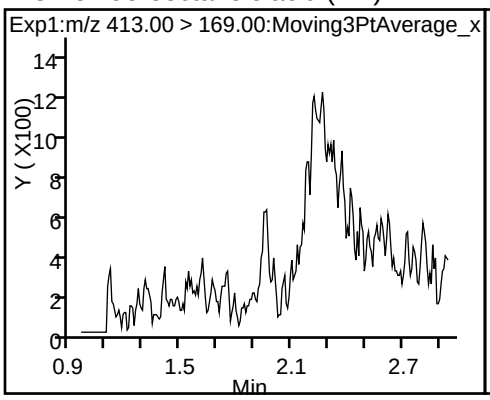
4 Perfluoroheptanoic acid (ND)



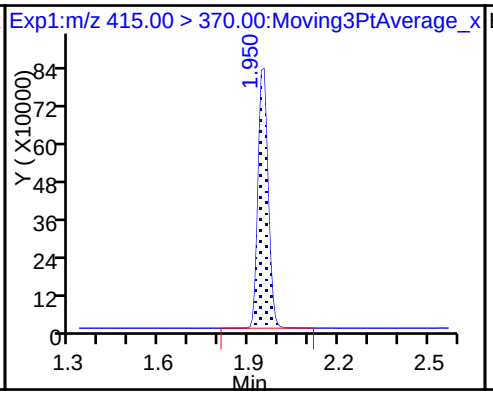
5 Perfluorooctanoic acid (ND)



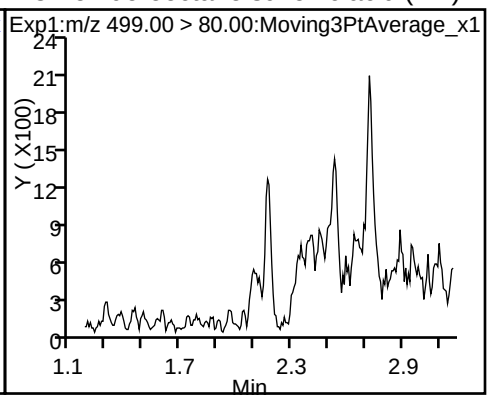
5 Perfluorooctanoic acid (ND)



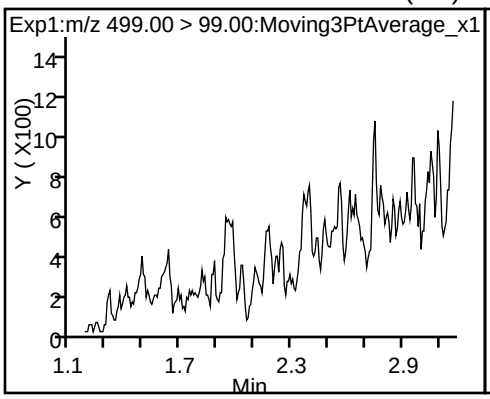
* 6 13C2-PFOA



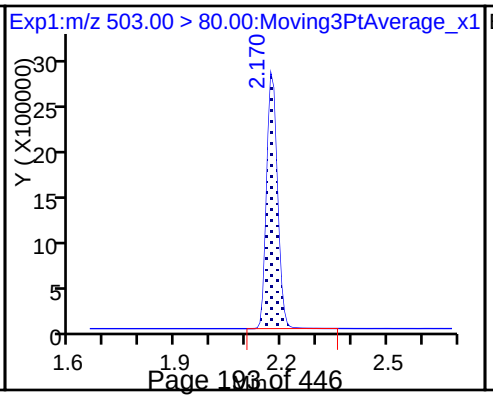
8 Perfluorooctane sulfonic acid (ND)



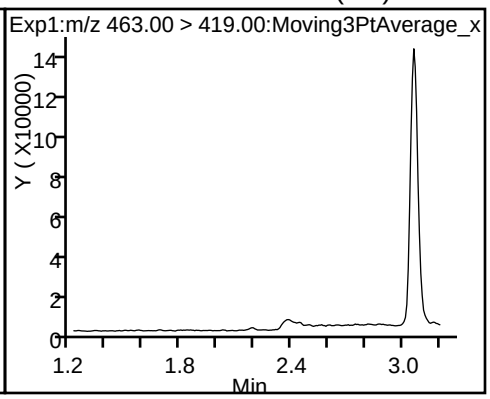
8 Perfluorooctane sulfonic acid (ND)



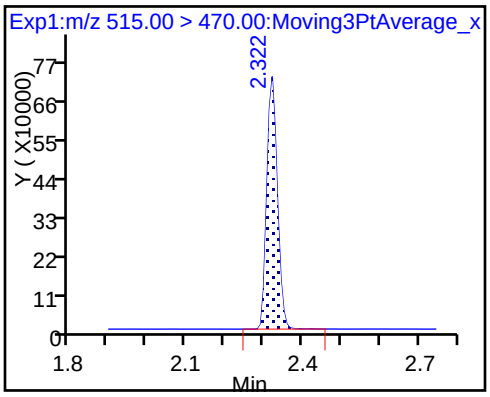
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_019.d				
Lims ID:	320-30191-A-11-A				
Client ID:	NAWC-072617-FRB-345				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 14:06:15	ALS Bottle#:	25	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-11-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:19	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				
First Level Reviewer: barnettj		Date:	16-Aug-2017 15:56:29		

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_025.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 286.3(mL) | Date Analyzed: 08/16/2017 14:34

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d
Lims ID: 320-30191-A-12-A
Client ID: NAWC-072617-DUP03
Sample Type: Client
Inject. Date: 16-Aug-2017 14:34:40 ALS Bottle#: 29 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

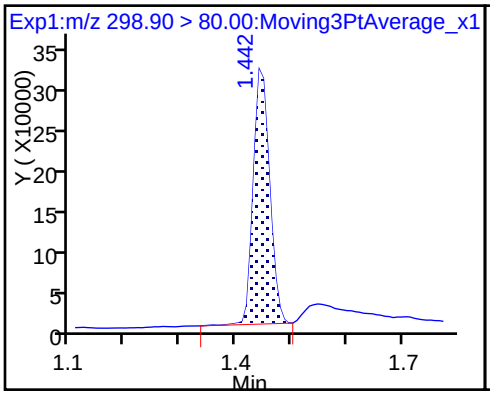
Report Date: 17-Aug-2017 14:27:49 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

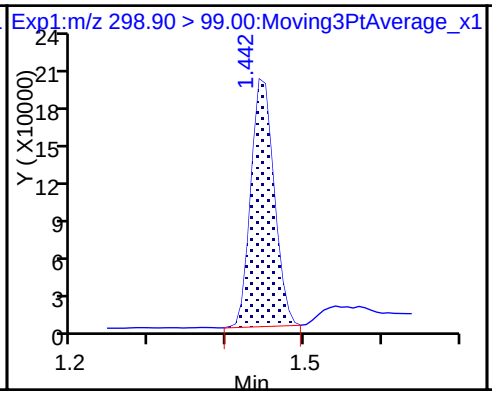
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d

Injection Date:	16-Aug-2017 14:34:40	Instrument ID:	A8_N		
Lims ID:	320-30191-A-12-A	Lab Sample ID:	320-30191-12		
Client ID:	NAWC-072617-DUP03				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

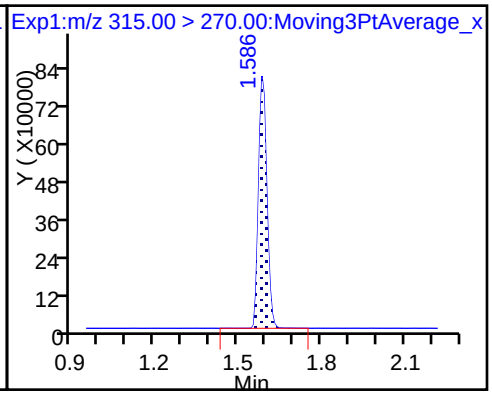
1 Perfluorobutanesulfonic acid



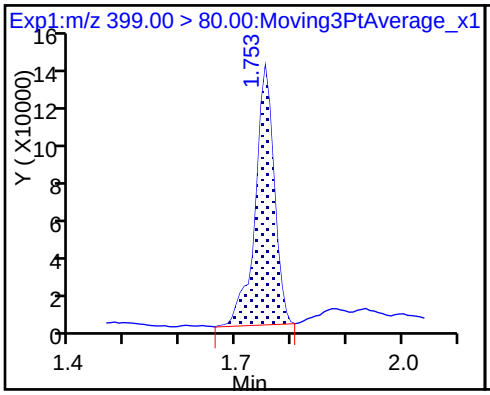
1 Perfluorobutanesulfonic acid



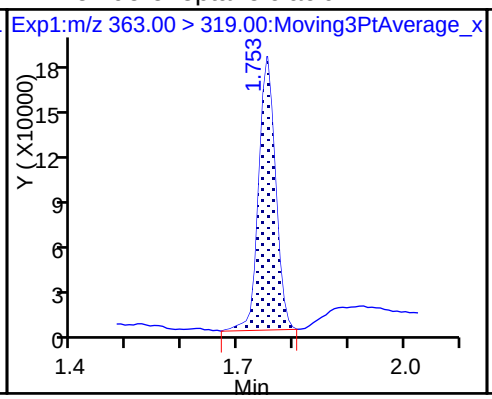
$ 2 13C2 PFHxA



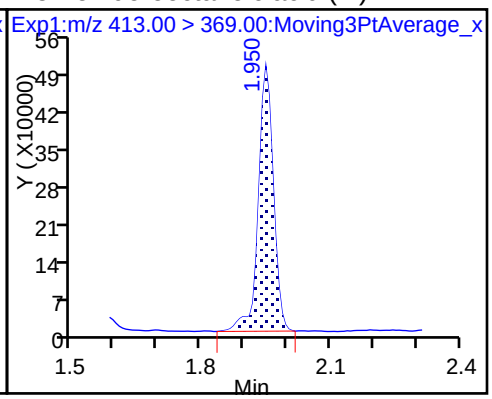
3 Perfluorohexanesulfonic acid



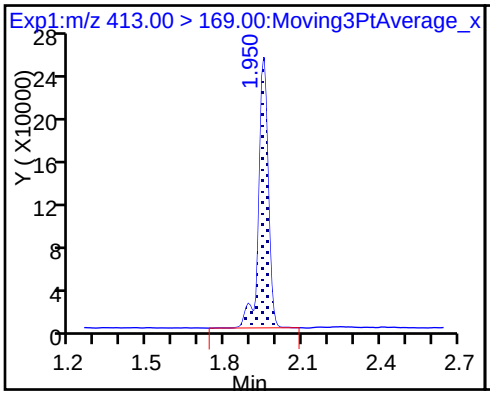
4 Perfluoroheptanoic acid



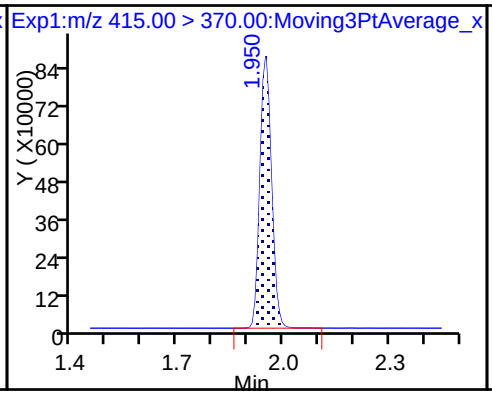
5 Perfluorooctanoic acid (M)



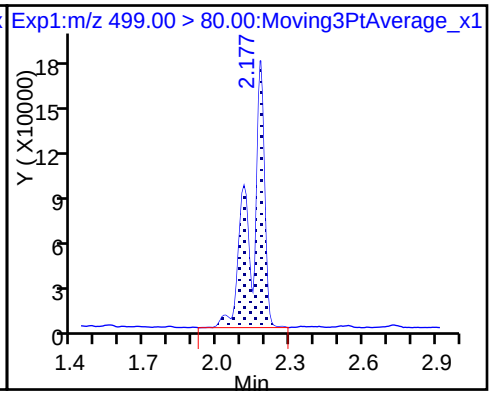
5 Perfluorooctanoic acid



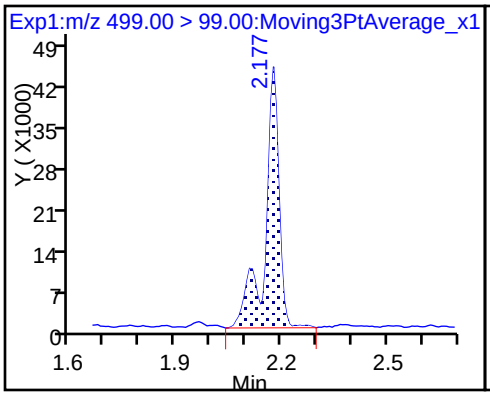
* 6 13C2-PFOA



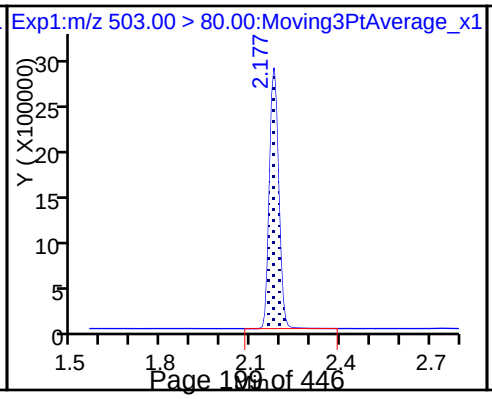
8 Perfluorooctane sulfonic acid



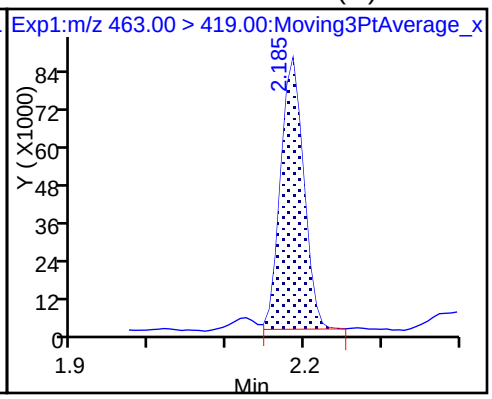
8 Perfluorooctane sulfonic acid



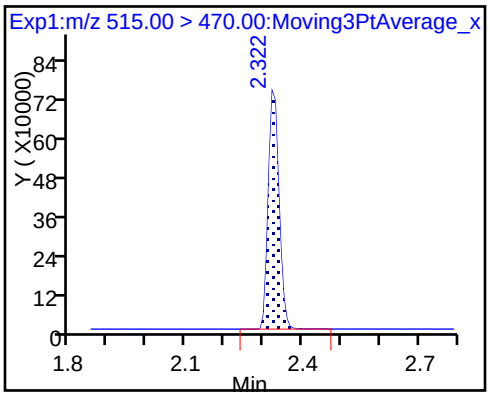
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_025.d				
Lims ID:	320-30191-A-12-A				
Client ID:	NAWC-072617-DUP03				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 14:34:40	ALS Bottle#:	29	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-12-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:44	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				
First Level Reviewer: barnettj		Date:	16-Aug-2017 15:45:27		

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

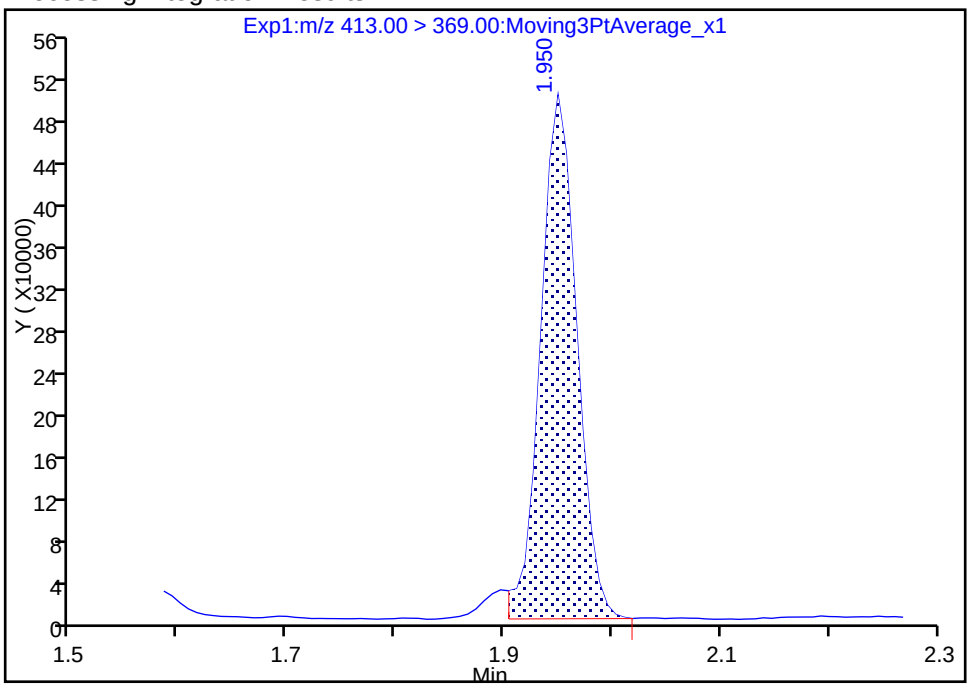
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d				
Injection Date:	16-Aug-2017 14:34:40	Instrument ID:	A8_N		
Lims ID:	320-30191-A-12-A	Lab Sample ID:	320-30191-12		
Client ID:	NAWC-072617-DUP03				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	25
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

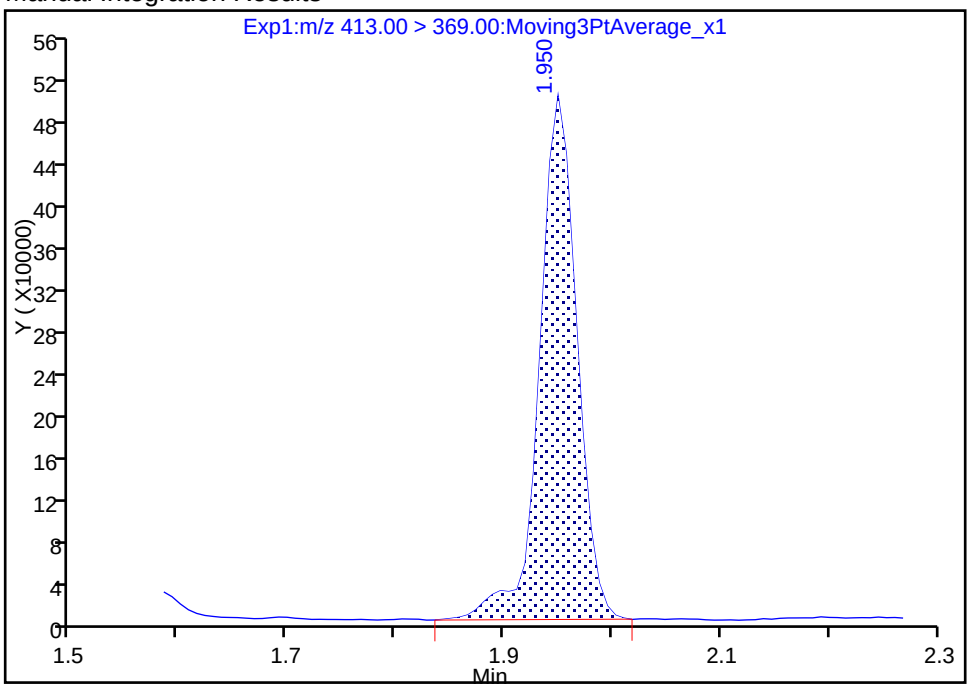
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:44:56

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

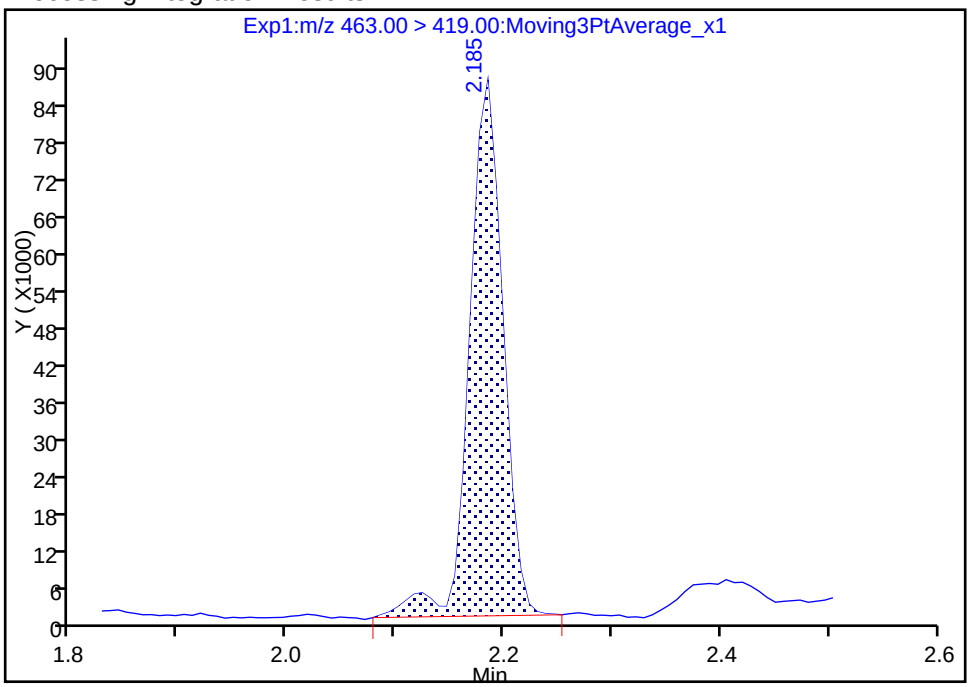
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_025.d				
Injection Date:	16-Aug-2017 14:34:40	Instrument ID:	A8_N		
Lims ID:	320-30191-A-12-A	Lab Sample ID:	320-30191-12		
Client ID:	NAWC-072617-DUP03				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	25
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

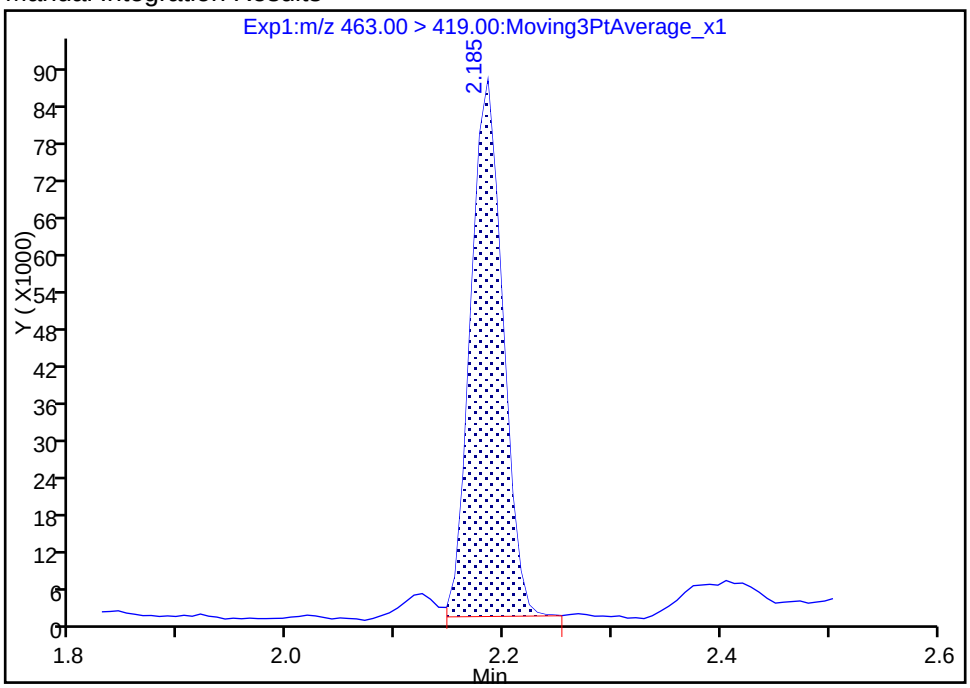
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:45:21

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_026.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 286.4(mL) | Date Analyzed: 08/16/2017 14:39

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d
Lims ID: 320-30191-A-13-A
Client ID: NAWC-072617-RW-342
Sample Type: Client
Inject. Date: 16-Aug-2017 14:39:26 ALS Bottle#: 30 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

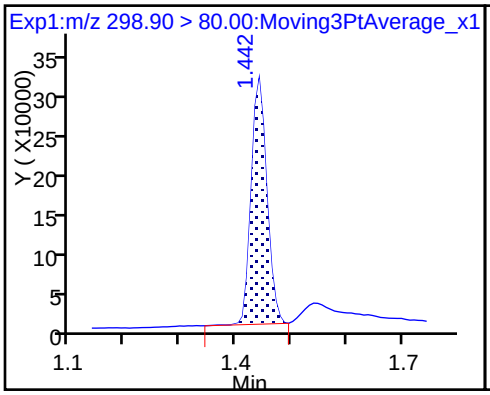
Report Date: 17-Aug-2017 14:27:50 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

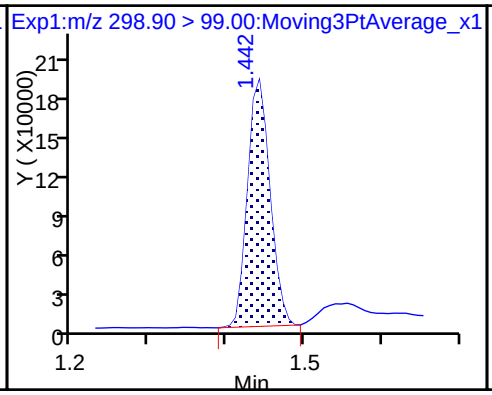
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d

Injection Date:	16-Aug-2017 14:39:26	Instrument ID:	A8_N		
Lims ID:	320-30191-A-13-A	Lab Sample ID:	320-30191-13		
Client ID:	NAWC-072617-RW-342				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	26
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

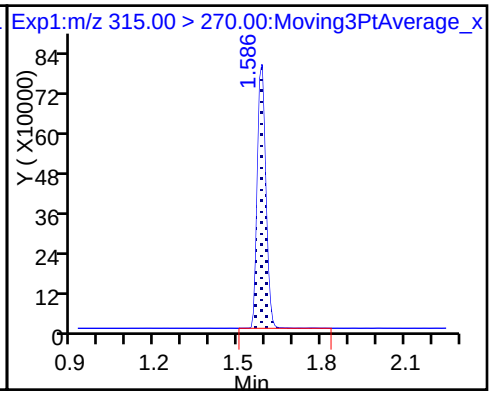
1 Perfluorobutanesulfonic acid



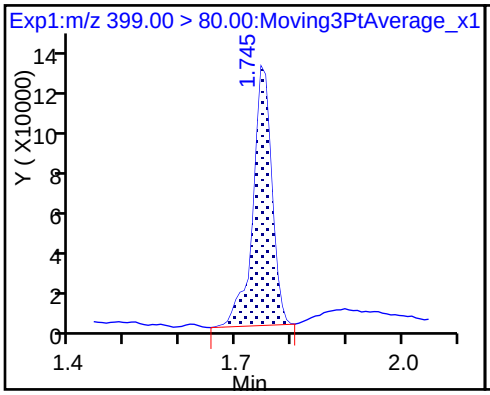
1 Perfluorobutanesulfonic acid



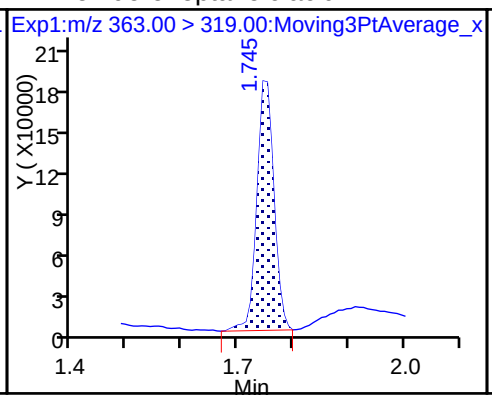
$ 2 13C2 PFHxA



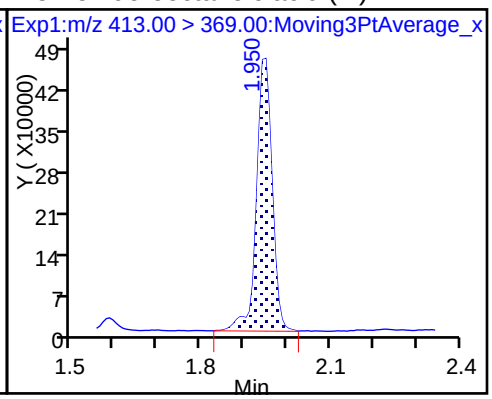
3 Perfluorohexanesulfonic acid



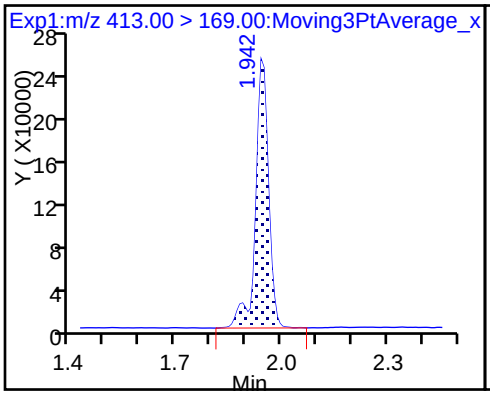
4 Perfluoroheptanoic acid



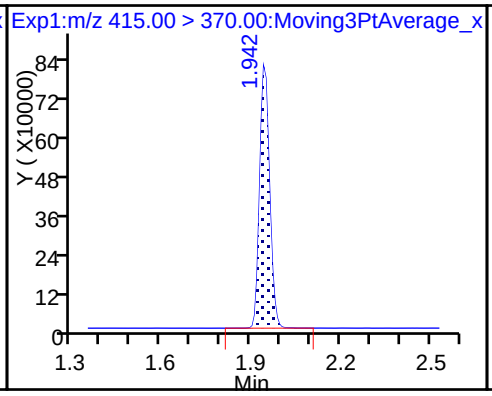
5 Perfluorooctanoic acid (M)



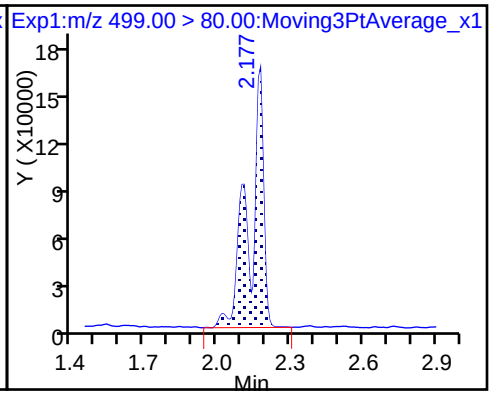
5 Perfluorooctanoic acid



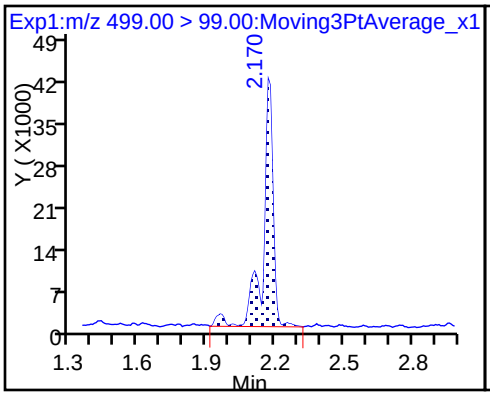
* 6 13C2-PFOA



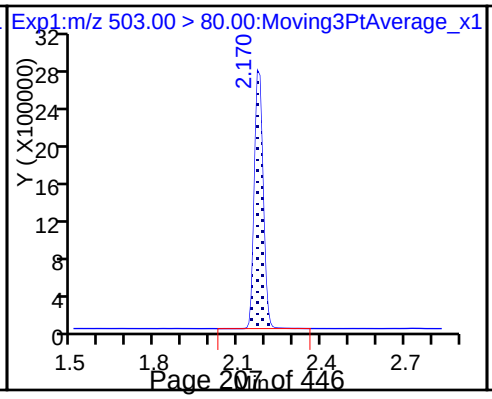
8 Perfluorooctane sulfonic acid



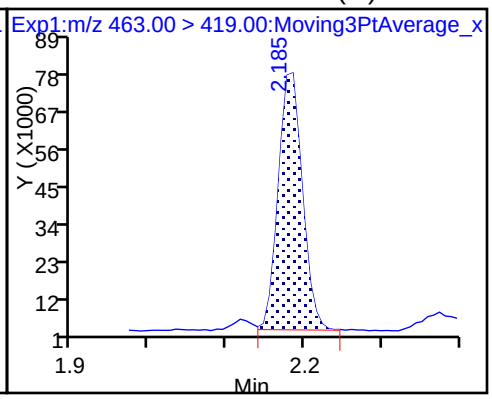
8 Perfluorooctane sulfonic acid



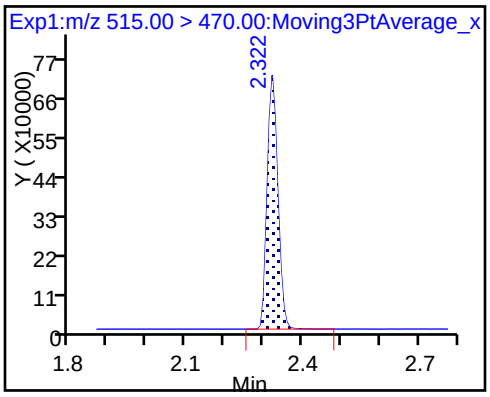
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

Report Date: 17-Aug-2017 14:27:50 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d
Lims ID: 320-30191-A-13-A
Client ID: NAWC-072617-RW-342
Sample Type: Client
Inject. Date: 16-Aug-2017 14:39:26 ALS Bottle#: 30 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

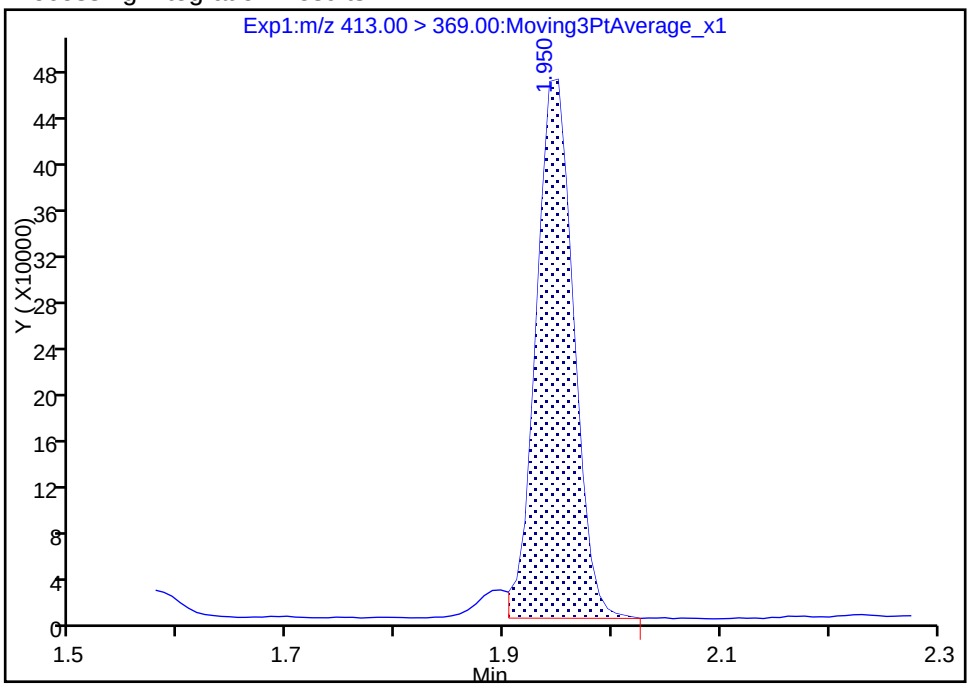
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d				
Injection Date:	16-Aug-2017 14:39:26	Instrument ID:	A8_N		
Lims ID:	320-30191-A-13-A	Lab Sample ID:	320-30191-13		
Client ID:	NAWC-072617-RW-342				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	26
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

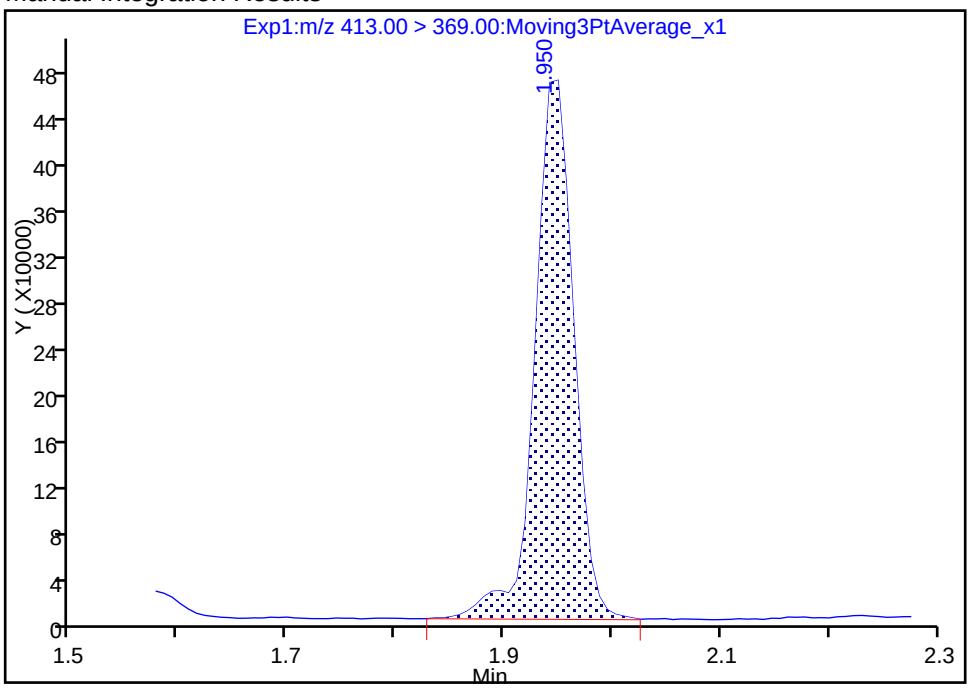
Processing Integration Results

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



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

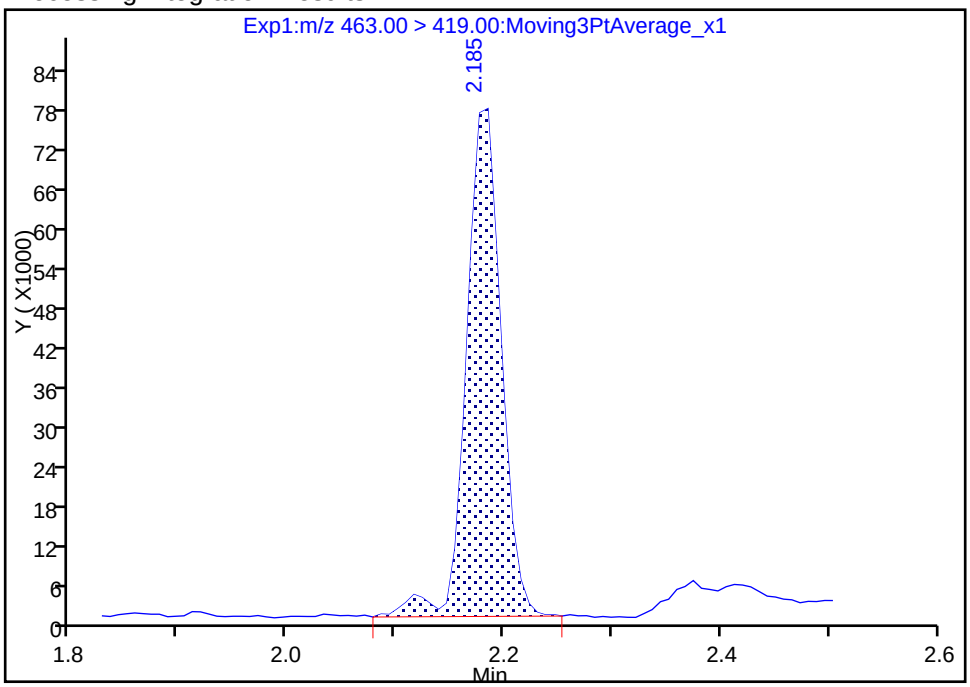
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_026.d				
Injection Date:	16-Aug-2017 14:39:26	Instrument ID:	A8_N		
Lims ID:	320-30191-A-13-A	Lab Sample ID:	320-30191-13		
Client ID:	NAWC-072617-RW-342				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	26
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

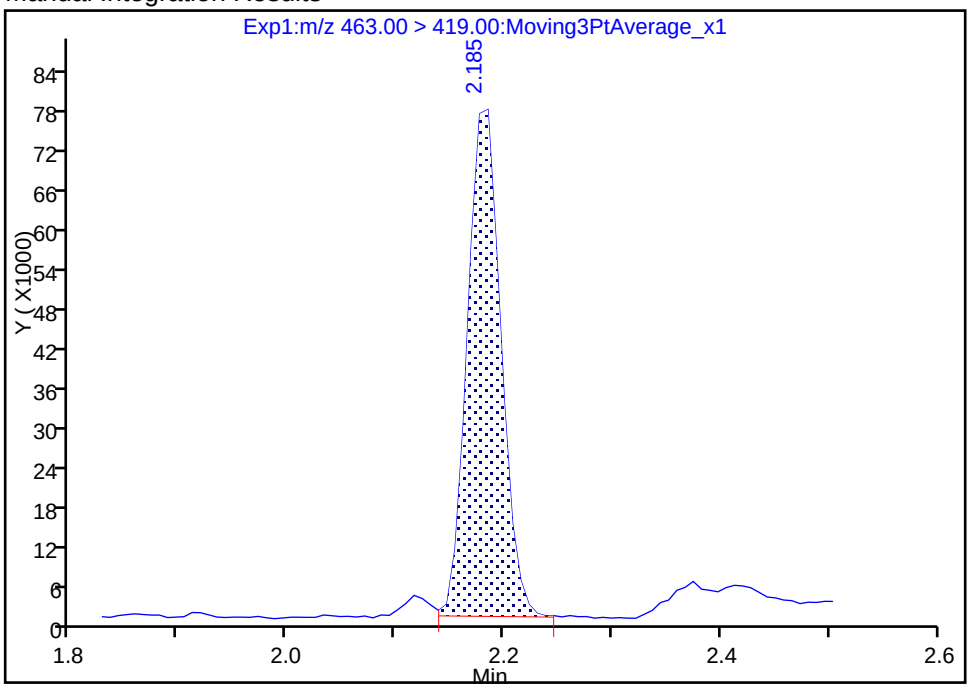
Processing Integration Results

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



Manual Integration Results

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



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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-RW-332B | Lab Sample ID: 320-30191-14

Matrix: Water | Lab File ID: 2017.08.16_537C_027.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 279.6(mL) | Date Analyzed: 08/16/2017 14:44

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_027.d
Lims ID: 320-30191-A-14-A
Client ID: NAWC-072617-RW-332B
Sample Type: Client
Inject. Date: 16-Aug-2017 14:44:09 ALS Bottle#: 31 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

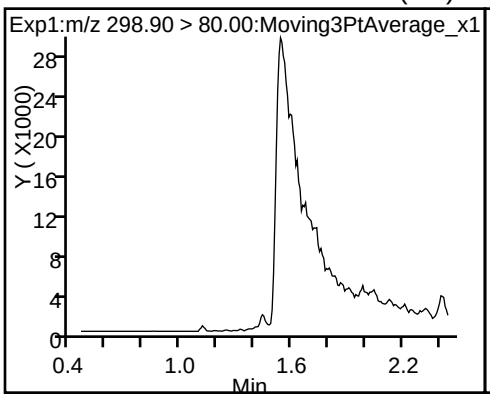
Report Date: 17-Aug-2017 14:27:51 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

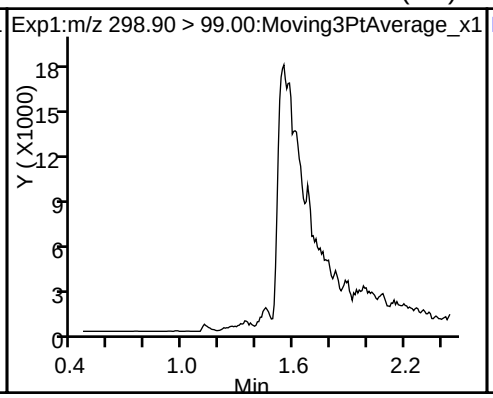
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_027.d

Injection Date:	16-Aug-2017 14:44:09	Instrument ID:	A8_N		
Lims ID:	320-30191-A-14-A	Lab Sample ID:	320-30191-14		
Client ID:	NAWC-072617-RW-332B				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	31	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

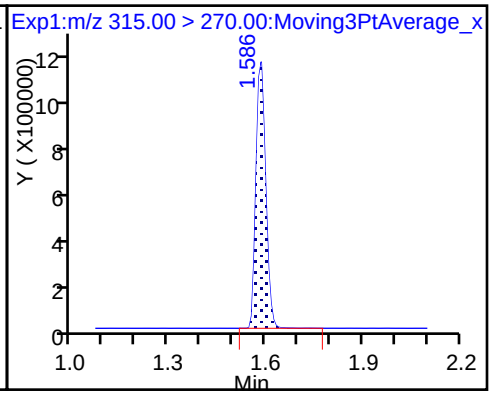
1 Perfluorobutanesulfonic acid (ND)



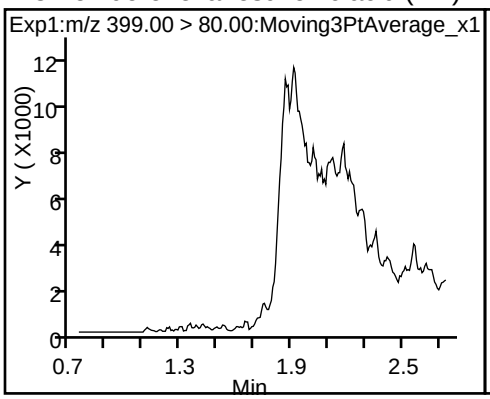
1 Perfluorobutanesulfonic acid (ND)



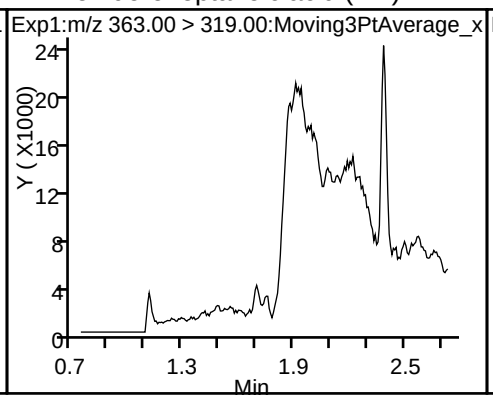
$ 2 13C2 PFHxA



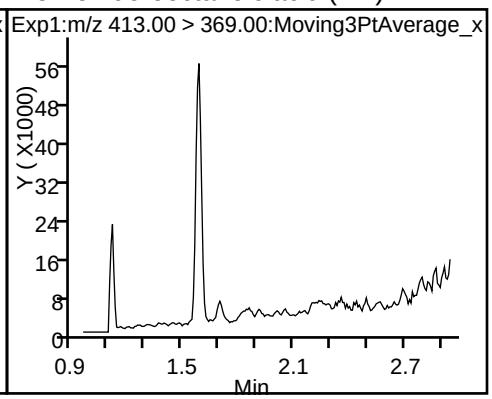
3 Perfluorohexanesulfonic acid (ND)



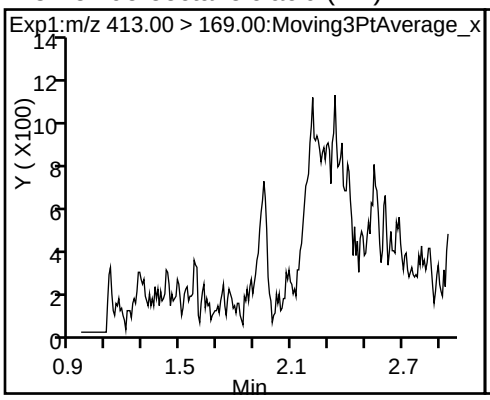
4 Perfluoroheptanoic acid (ND)



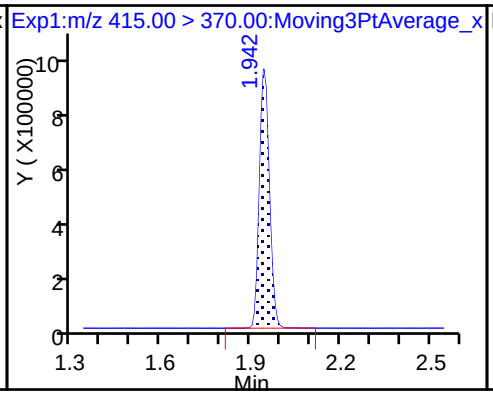
5 Perfluorooctanoic acid (ND)



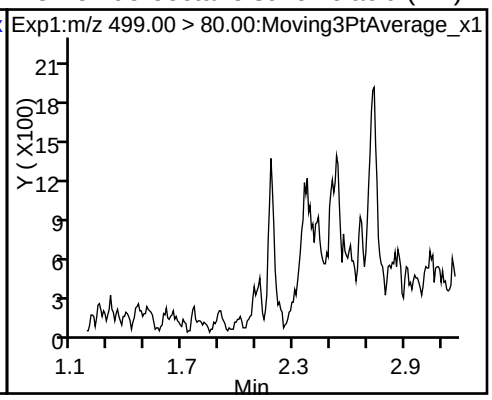
5 Perfluorooctanoic acid (ND)



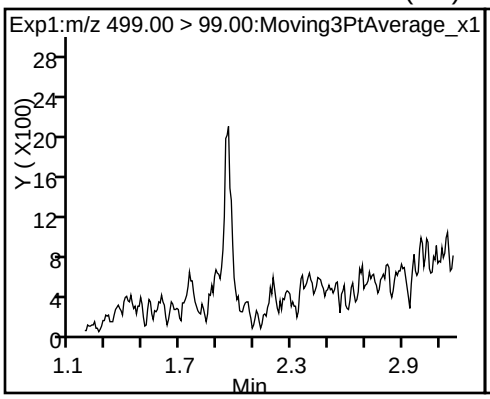
* 6 13C2-PFOA



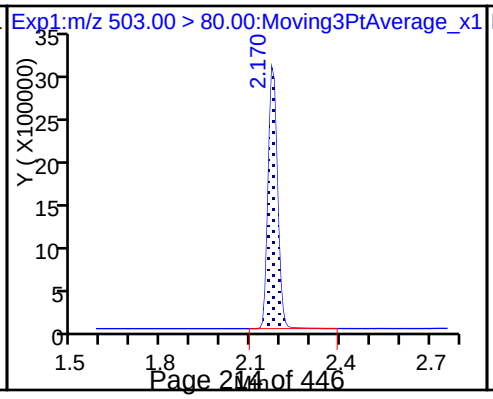
8 Perfluorooctane sulfonic acid (ND)



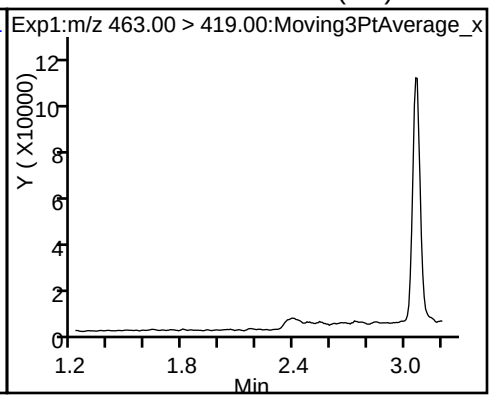
8 Perfluorooctane sulfonic acid (ND)



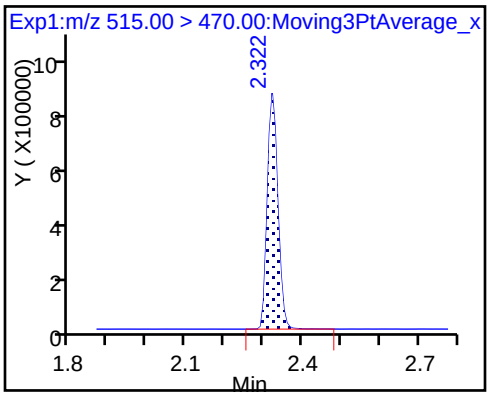
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_027.d				
Lims ID:	320-30191-A-14-A				
Client ID:	NAWC-072617-RW-332B				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 14:44:09	ALS Bottle#:	31	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-14-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:44	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_028.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 292.6(mL) | Date Analyzed: 08/16/2017 14:48

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d
Lims ID: 320-30191-A-15-A
Client ID: NAWC-072617-RW-117
Sample Type: Client
Inject. Date: 16-Aug-2017 14:48:53 ALS Bottle#: 32 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-15-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:52 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 14:48:53 Instrument ID: A8_N

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

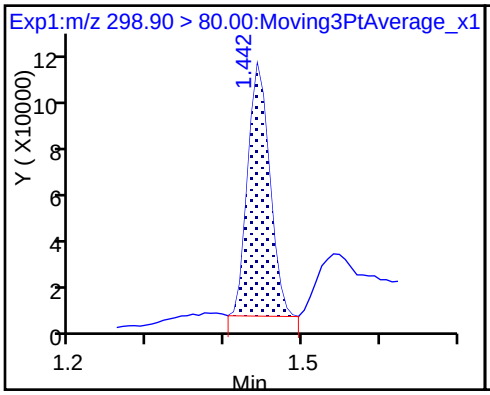
Client ID: NAWC-072617-RW-117

Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 28

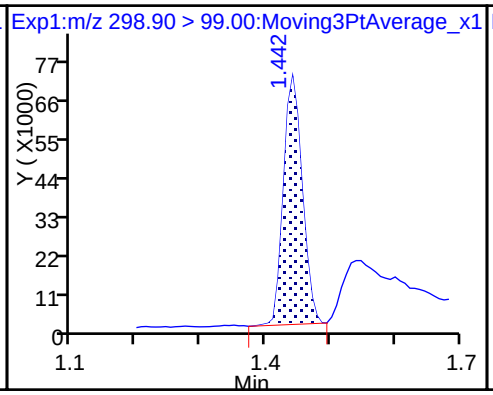
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

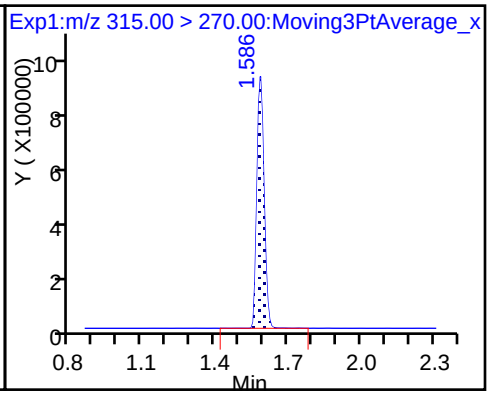
1 Perfluorobutanesulfonic acid



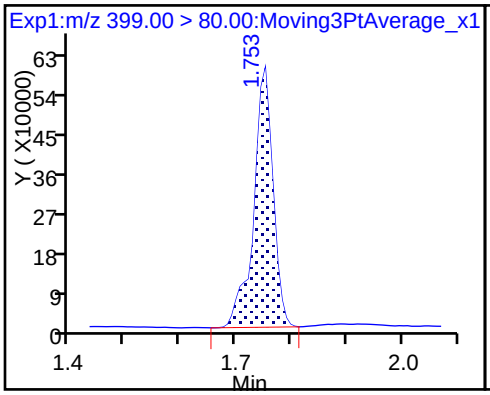
1 Perfluorobutanesulfonic acid



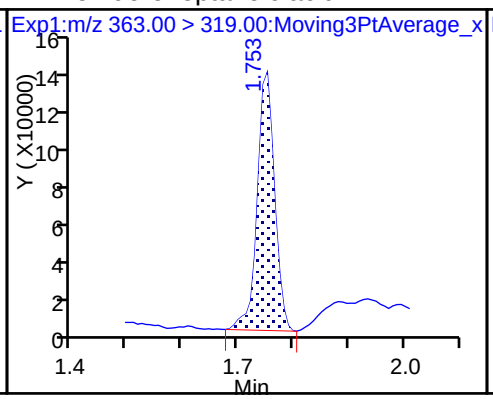
$ 2 13C2 PFHxA



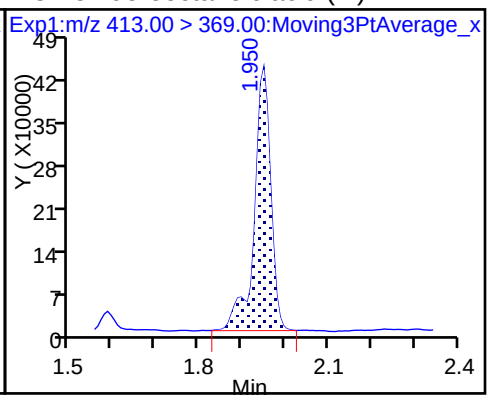
3 Perfluorohexanesulfonic acid



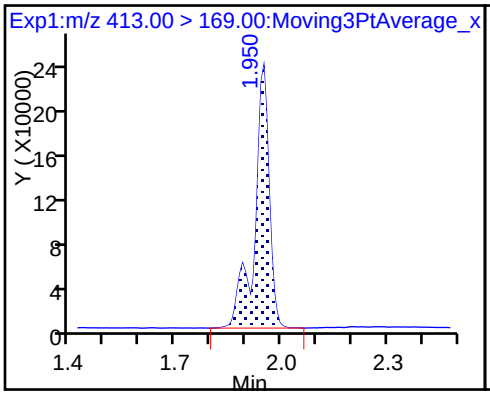
4 Perfluoroheptanoic acid



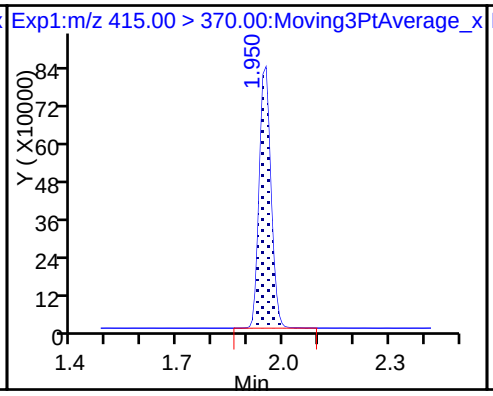
5 Perfluorooctanoic acid (M)



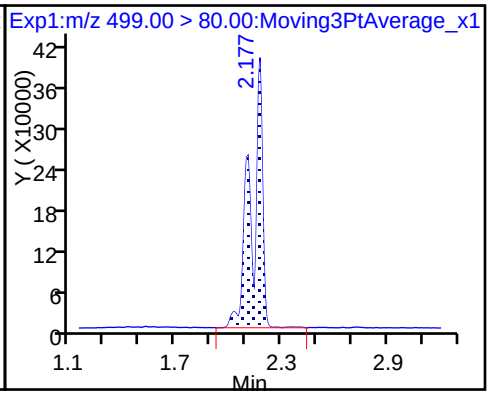
5 Perfluorooctanoic acid



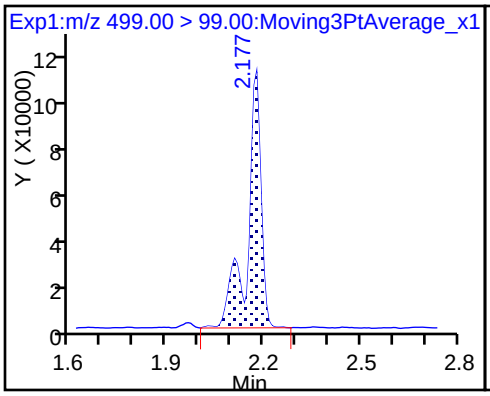
* 6 13C2-PFOA



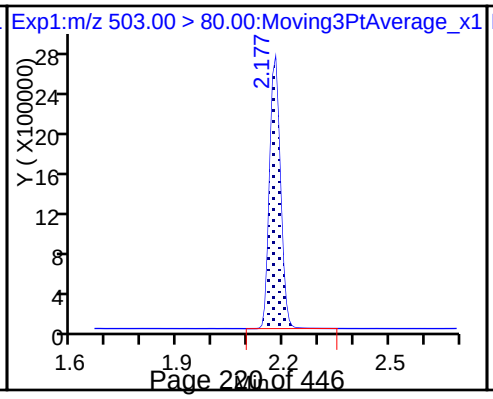
8 Perfluorooctane sulfonic acid



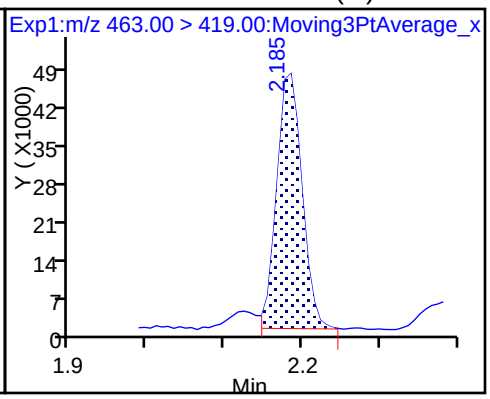
8 Perfluorooctane sulfonic acid



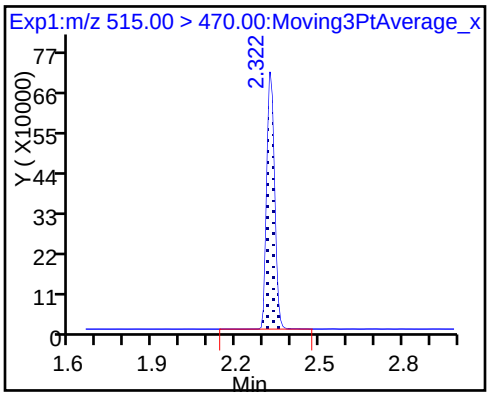
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.6
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

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

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

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

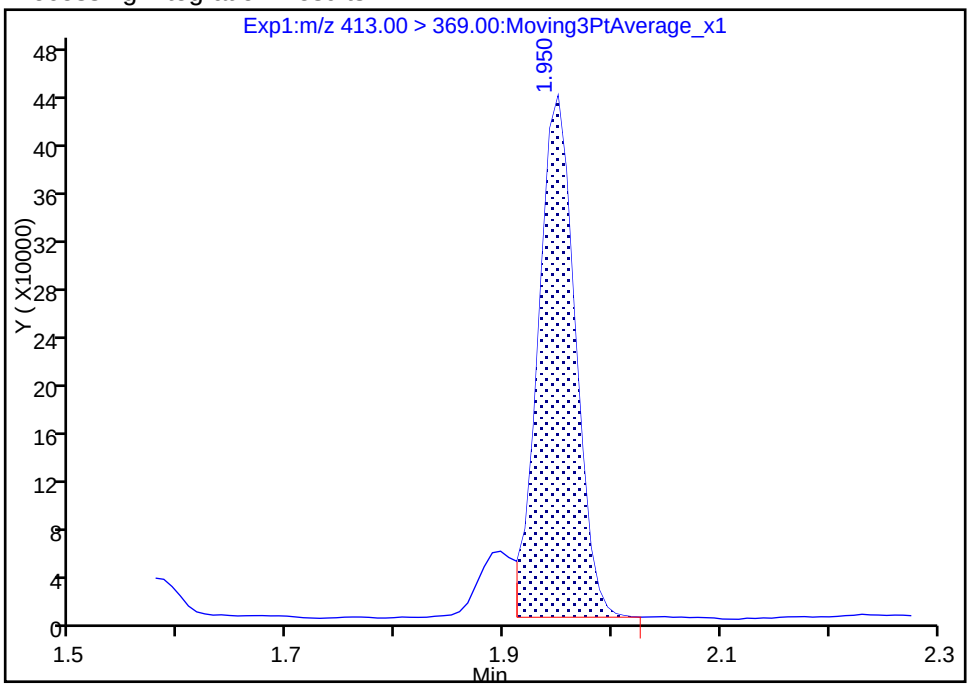
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d				
Injection Date:	16-Aug-2017 14:48:53	Instrument ID:	A8_N		
Lims ID:	320-30191-A-15-A	Lab Sample ID:	320-30191-15		
Client ID:	NAWC-072617-RW-117				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	28
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

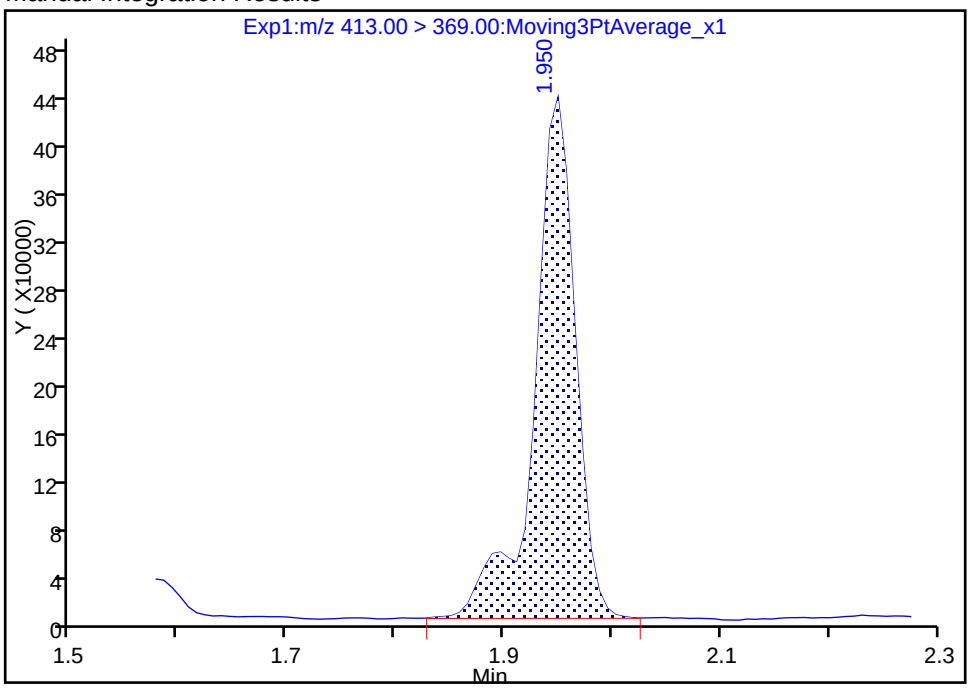
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:46:59

Audit Action: Manually Integrated Audit Reason: Isomers

TestAmerica Sacramento

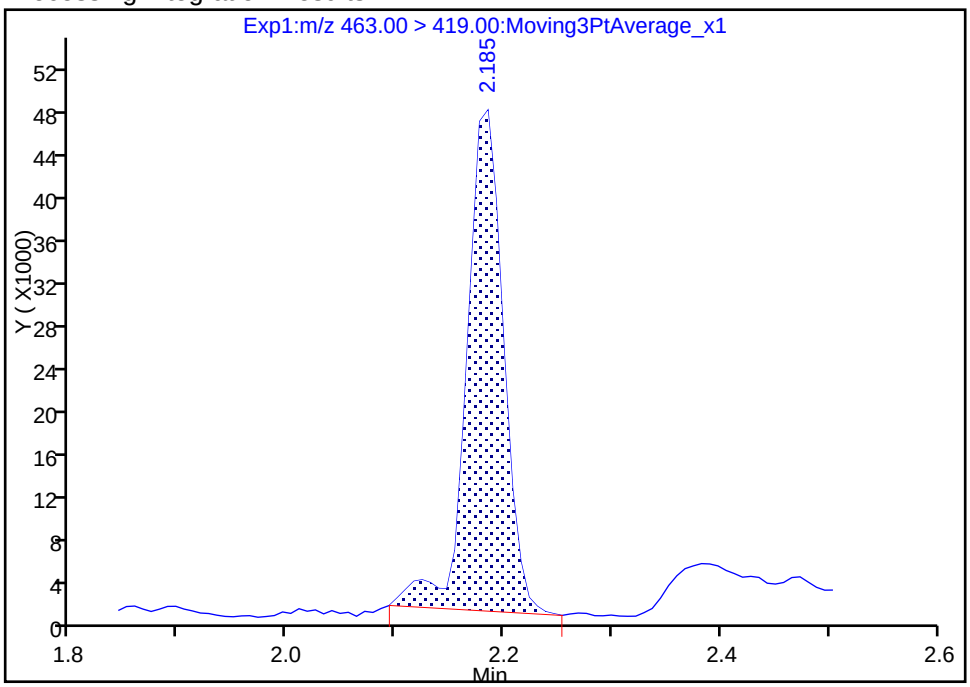
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_028.d				
Injection Date:	16-Aug-2017 14:48:53	Instrument ID:	A8_N		
Lims ID:	320-30191-A-15-A	Lab Sample ID:	320-30191-15		
Client ID:	NAWC-072617-RW-117				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	28
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

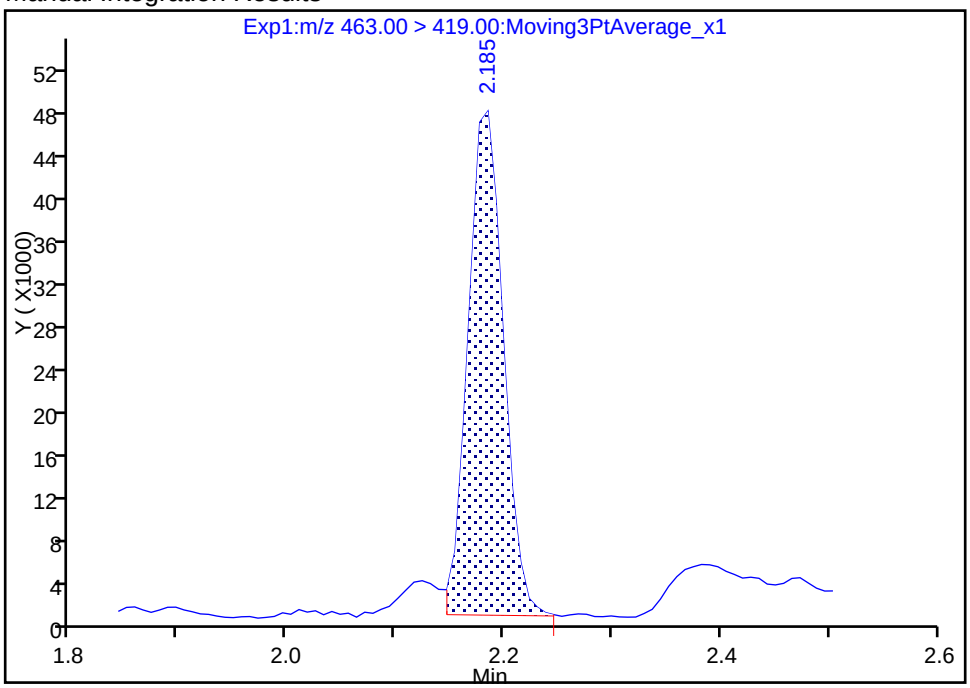
Processing Integration Results

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



Manual Integration Results

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



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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-FRB-117 | Lab Sample ID: 320-30191-16

Matrix: Water | Lab File ID: 2017.08.16_537C_029.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 278.9(mL) | Date Analyzed: 08/16/2017 14:53

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_029.d
Lims ID: 320-30191-A-16-A
Client ID: NAWC-072617-FRB-117
Sample Type: Client
Inject. Date: 16-Aug-2017 14:53:38 ALS Bottle#: 33 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-16-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

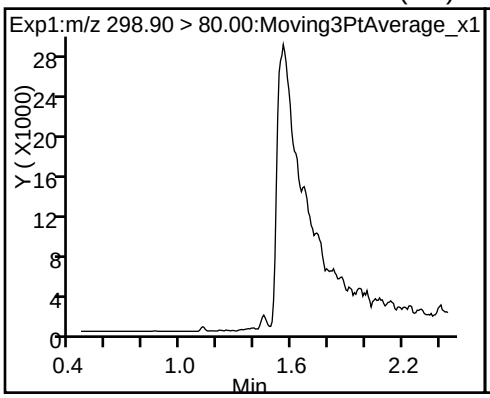
Report Date: 17-Aug-2017 14:27:52 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

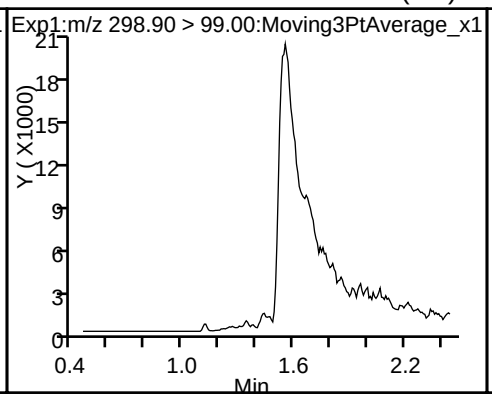
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_029.d

Injection Date:	16-Aug-2017 14:53:38	Instrument ID:	A8_N		
Lims ID:	320-30191-A-16-A	Lab Sample ID:	320-30191-16		
Client ID:	NAWC-072617-FRB-117				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

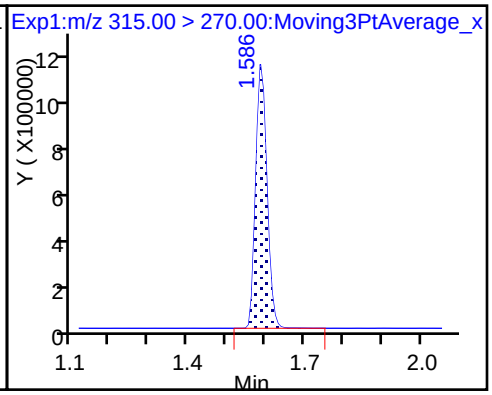
1 Perfluorobutanesulfonic acid (ND)



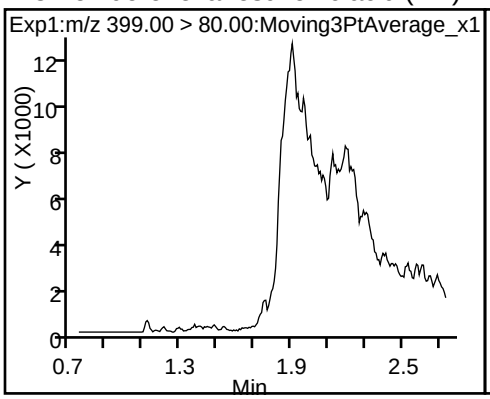
1 Perfluorobutanesulfonic acid (ND)



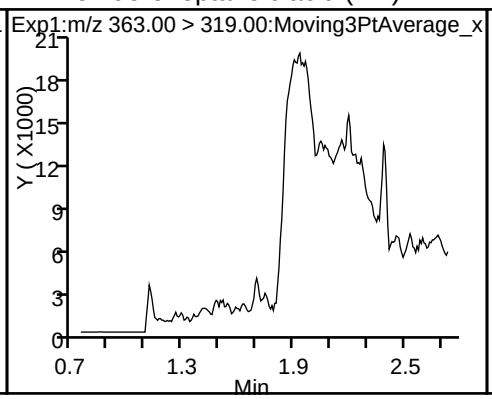
$ 2 13C2 PFHxA



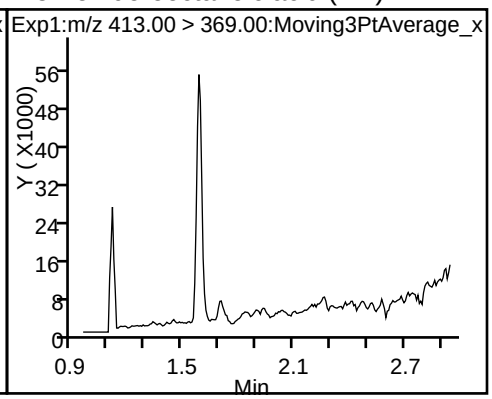
3 Perfluorohexanesulfonic acid (ND)



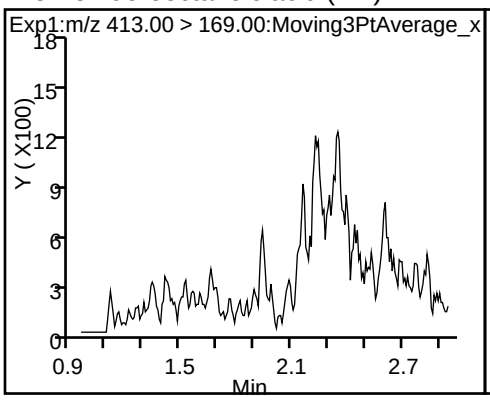
4 Perfluoroheptanoic acid (ND)



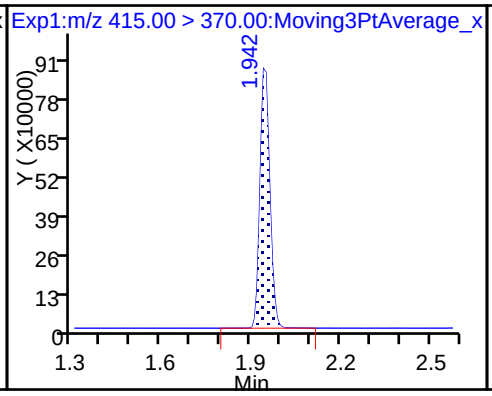
5 Perfluorooctanoic acid (ND)



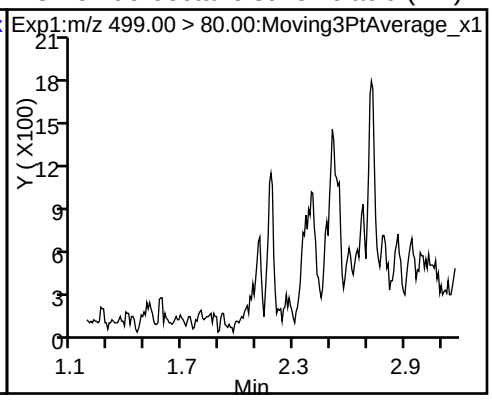
5 Perfluorooctanoic acid (ND)



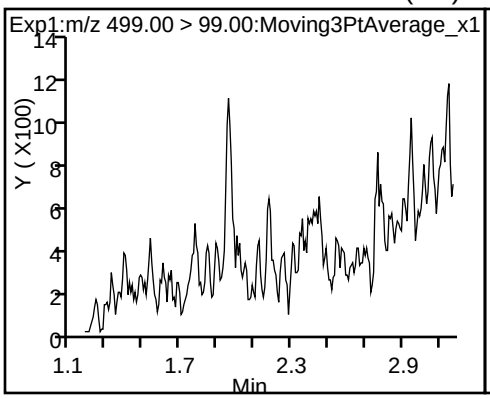
* 6 13C2-PFOA



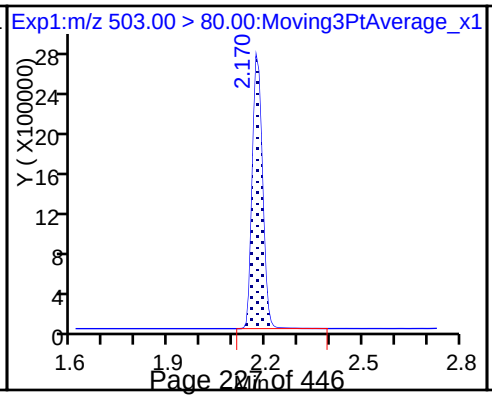
8 Perfluorooctane sulfonic acid (ND)



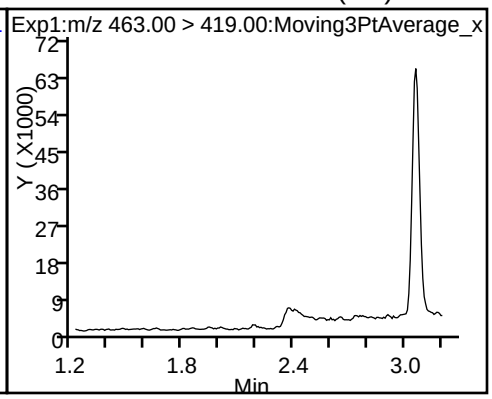
8 Perfluorooctane sulfonic acid (ND)



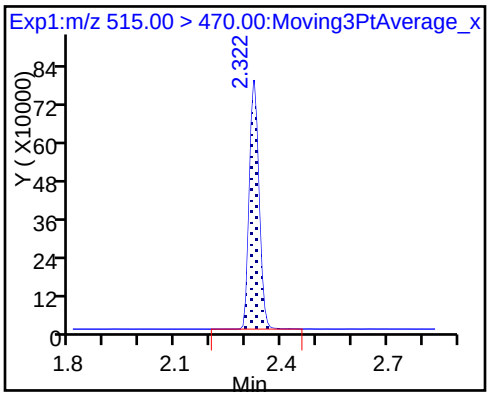
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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\20170816-46772.b\2017.08.16_537C_029.d				
Lims ID:	320-30191-A-16-A				
Client ID:	NAWC-072617-FRB-117				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 14:53:38	ALS Bottle#:	33	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-16-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:44	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_030.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 279(mL) | Date Analyzed: 08/16/2017 14:58

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d
Lims ID: 320-30191-A-17-A
Client ID: NAWC-072617-DUP04
Sample Type: Client
Inject. Date: 16-Aug-2017 14:58:23 ALS Bottle#: 34 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-17-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:53 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 14:58:23 Instrument ID: A8_N

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

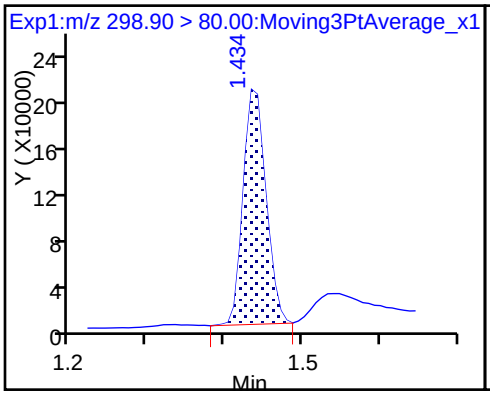
Client ID: NAWC-072617-DUP04

Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 30

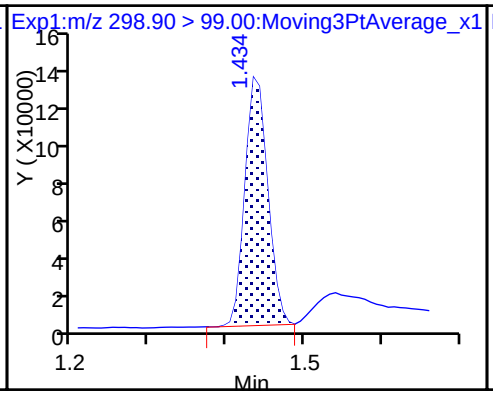
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

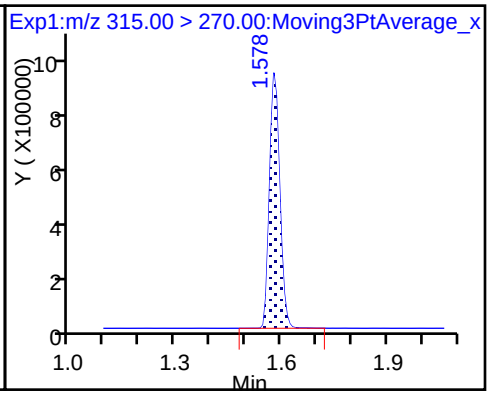
1 Perfluorobutanesulfonic acid



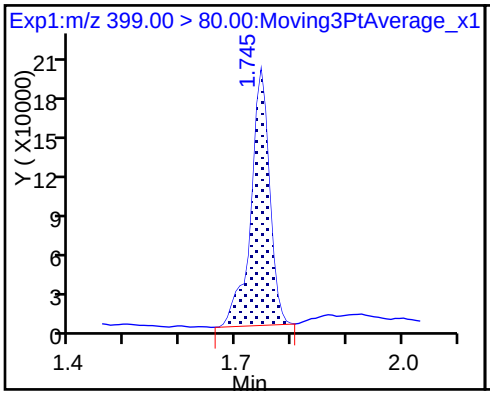
1 Perfluorobutanesulfonic acid



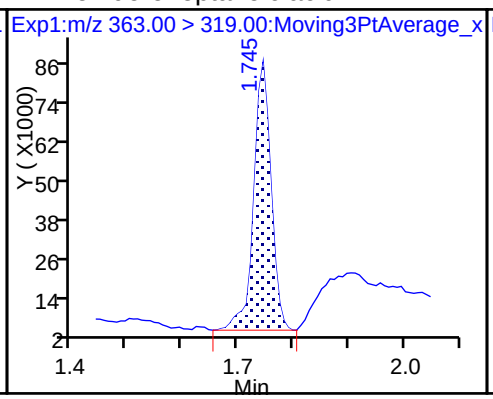
$ 2 13C2 PFHxA



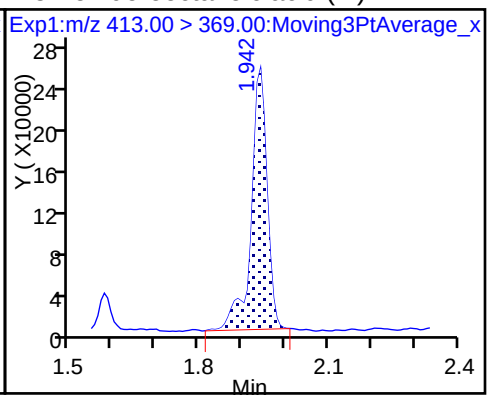
3 Perfluorohexanesulfonic acid



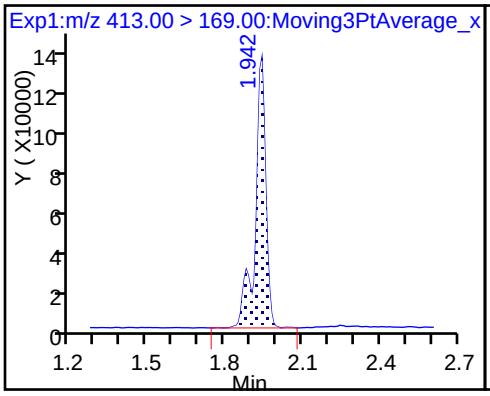
4 Perfluoroheptanoic acid



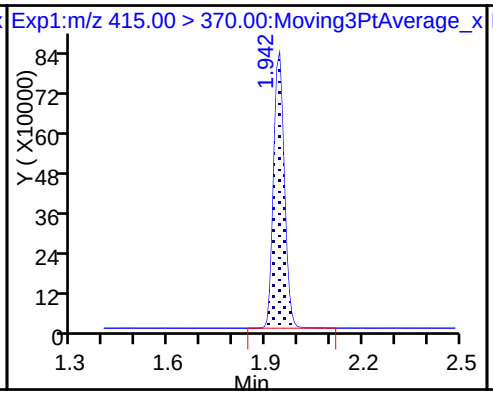
5 Perfluorooctanoic acid (M)



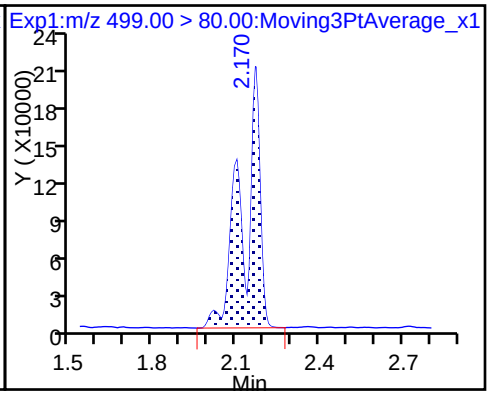
5 Perfluorooctanoic acid



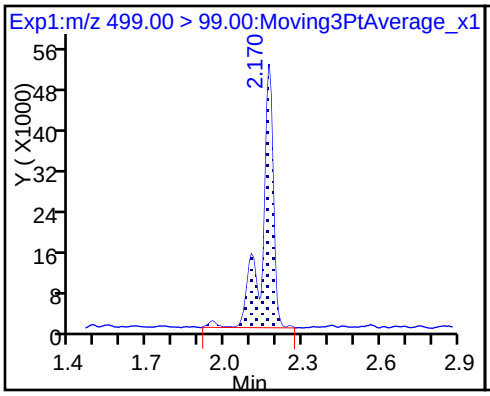
* 6 13C2-PFOA



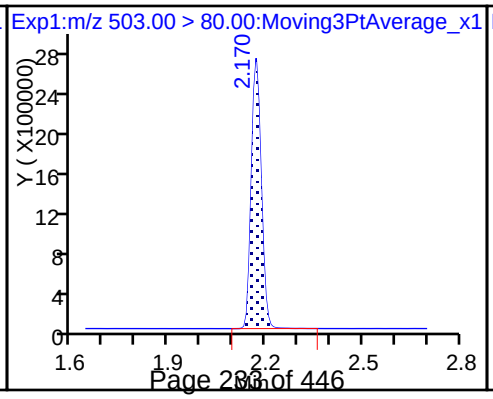
8 Perfluorooctane sulfonic acid



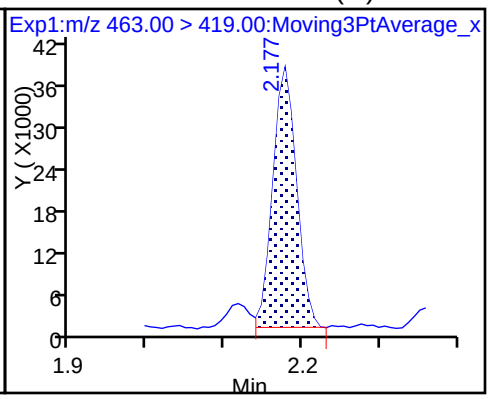
8 Perfluorooctane sulfonic acid



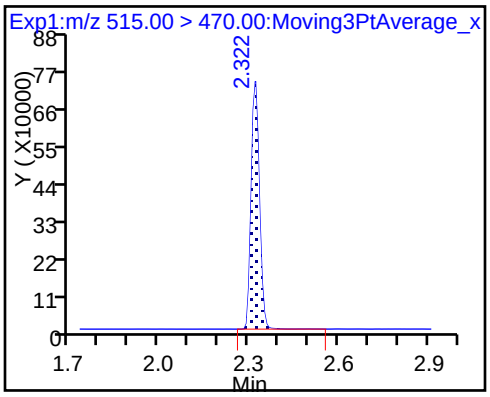
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
88
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
2.9
Min

Report Date: 17-Aug-2017 14:27:53 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d				
Lims ID:	320-30191-A-17-A				
Client ID:	NAWC-072617-DUP04				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 14:58:23	ALS Bottle#:	34	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-17-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:44	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				
First Level Reviewer: barnettj		Date:	16-Aug-2017 15:48:29		

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

TestAmerica Sacramento

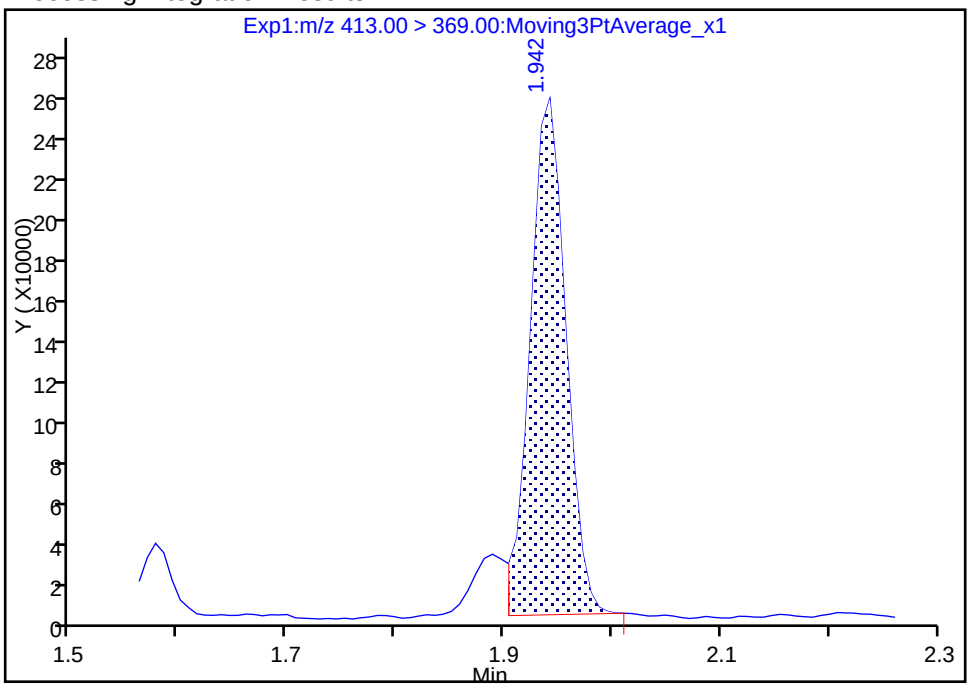
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d				
Injection Date:	16-Aug-2017 14:58:23	Instrument ID:	A8_N		
Lims ID:	320-30191-A-17-A	Lab Sample ID:	320-30191-17		
Client ID:	NAWC-072617-DUP04				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	30
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

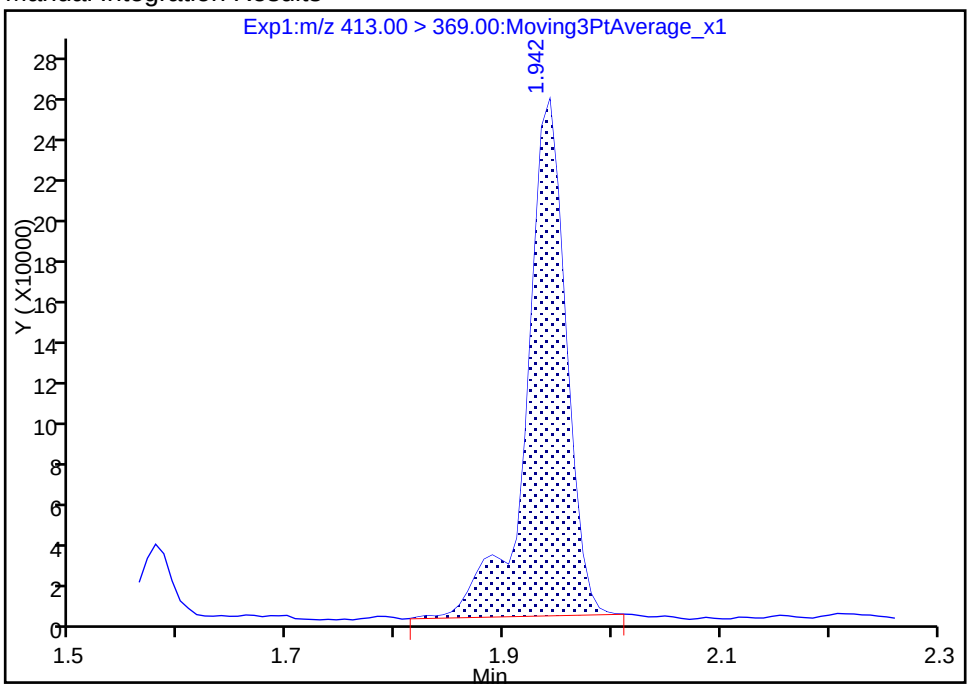
Processing Integration Results

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



Manual Integration Results

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



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

TestAmerica Sacramento

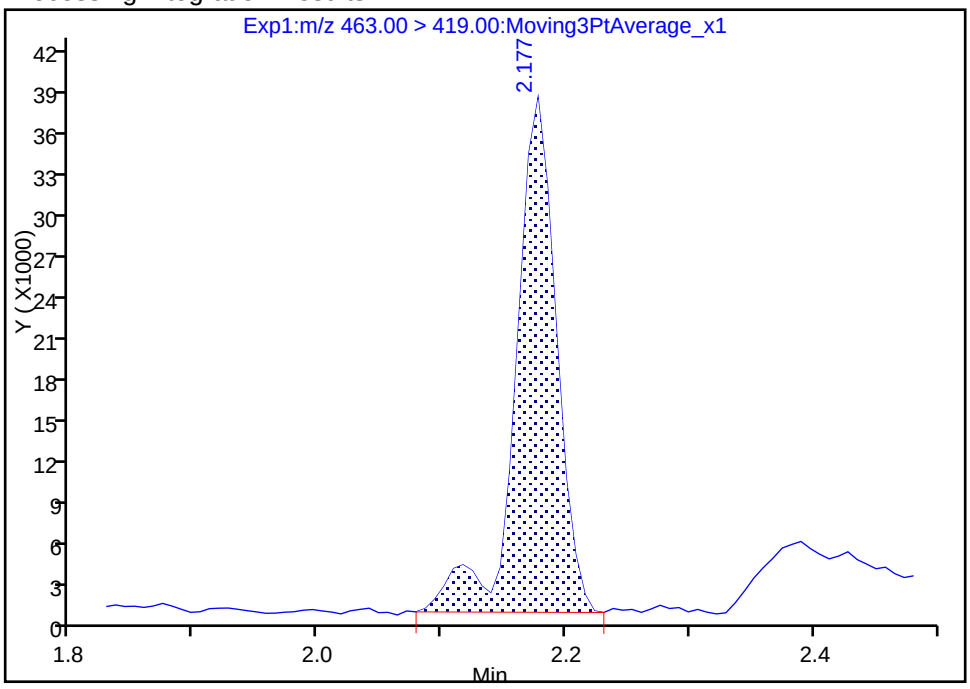
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_030.d				
Injection Date:	16-Aug-2017 14:58:23	Instrument ID:	A8_N		
Lims ID:	320-30191-A-17-A	Lab Sample ID:	320-30191-17		
Client ID:	NAWC-072617-DUP04				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	30
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

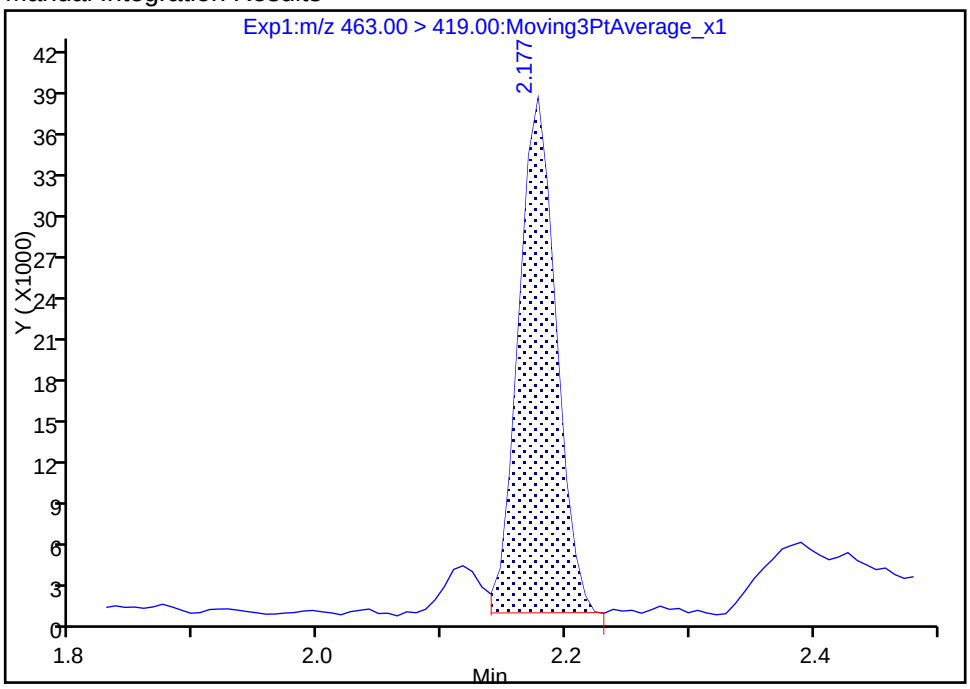
Processing Integration Results

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



Manual Integration Results

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



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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_031.d

Analysis Method: 537 | Date Collected: 07/26/2017 09:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 298.7(mL) | Date Analyzed: 08/16/2017 15:03

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d
Lims ID: 320-30191-A-18-A
Client ID: WGNA-072617-RW-4844
Sample Type: Client
Inject. Date: 16-Aug-2017 15:03:07 ALS Bottle#: 35 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-18-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

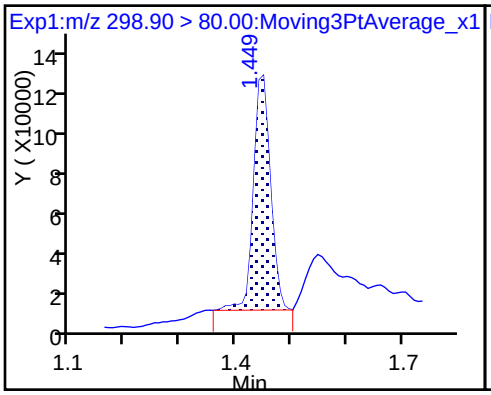
Report Date: 17-Aug-2017 14:27:54 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

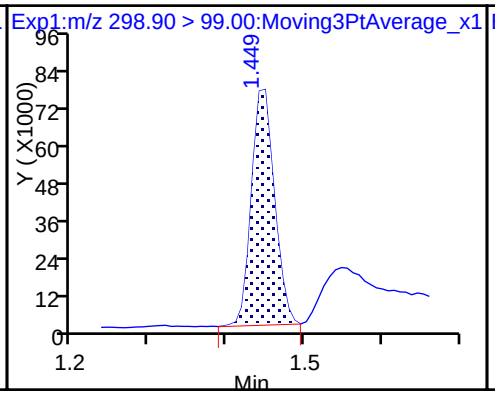
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d

Injection Date:	16-Aug-2017 15:03:07	Instrument ID:	A8_N		
Lims ID:	320-30191-A-18-A	Lab Sample ID:	320-30191-18		
Client ID:	WGNA-072617-RW-4844				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

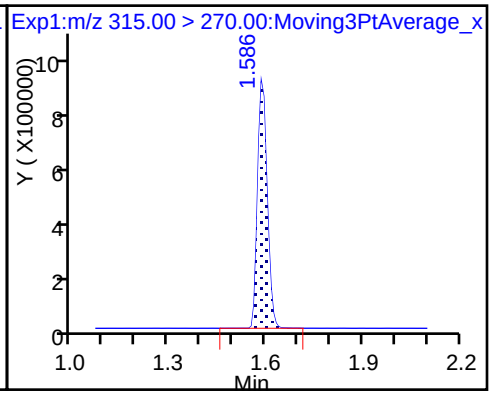
1 Perfluorobutanesulfonic acid



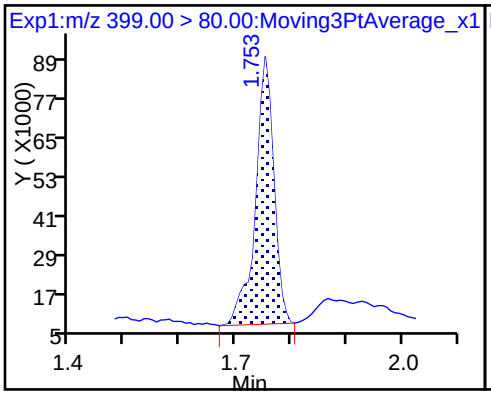
1 Perfluorobutanesulfonic acid



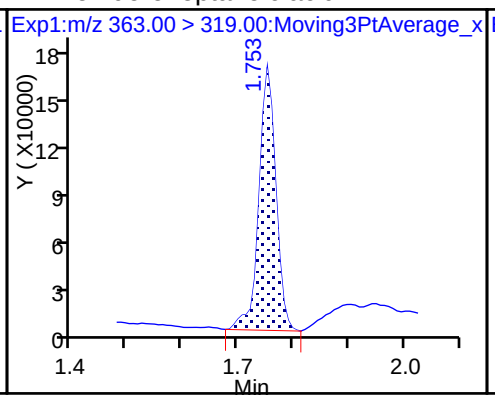
$ 2 13C2 PFHxA



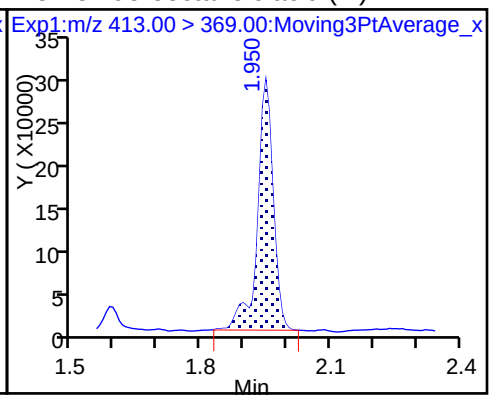
3 Perfluorohexanesulfonic acid



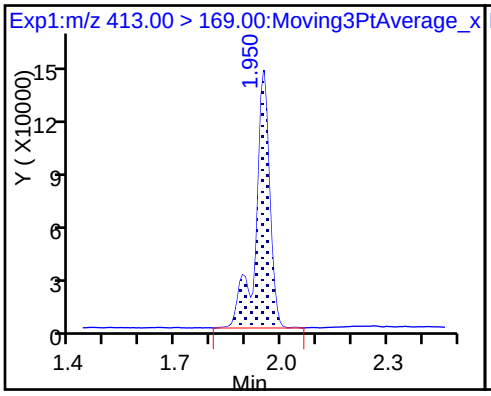
4 Perfluoroheptanoic acid



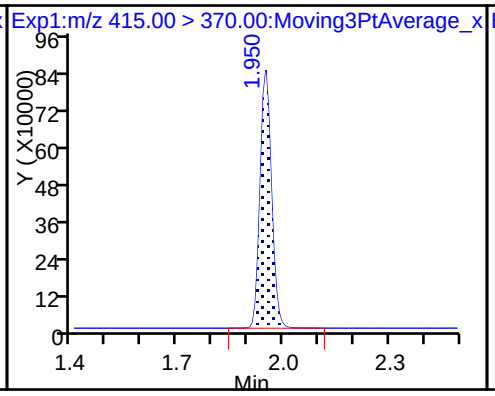
5 Perfluorooctanoic acid (M)



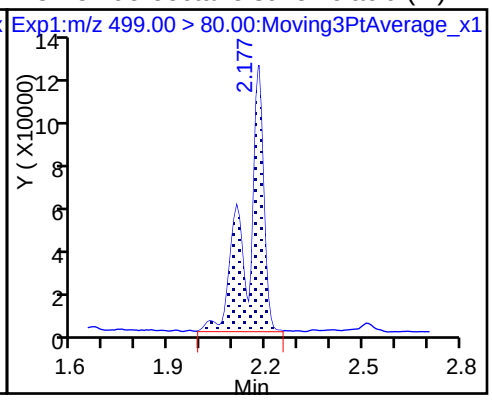
5 Perfluorooctanoic acid



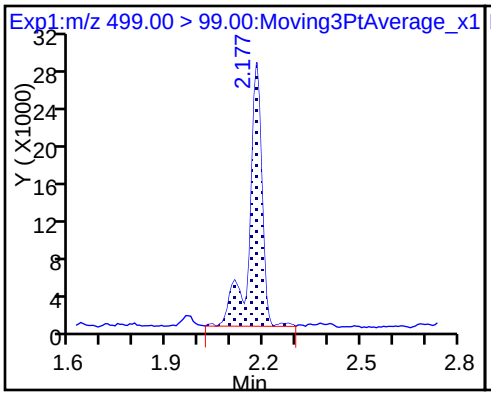
* 6 13C2-PFOA



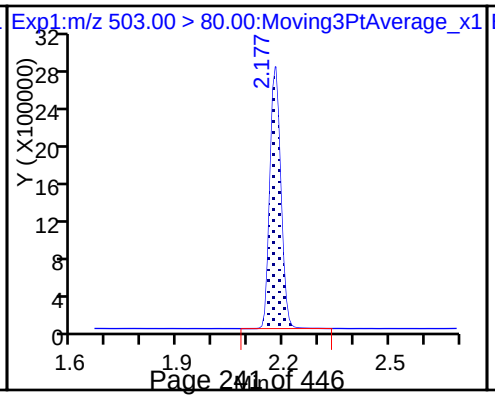
8 Perfluorooctane sulfonic acid (M)



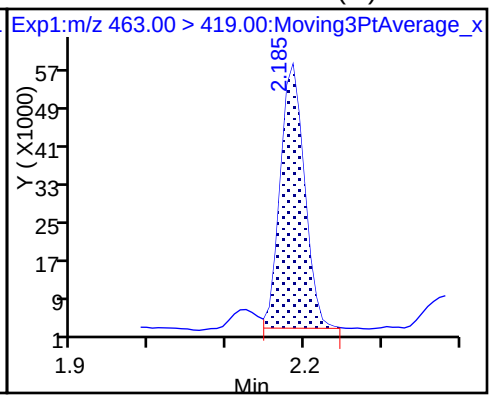
8 Perfluorooctane sulfonic acid



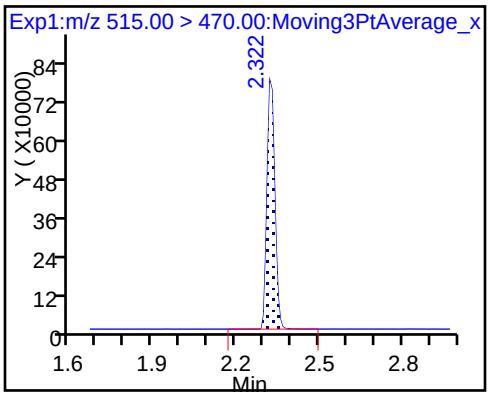
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
84
72
60
48
36
24
12
0
1.6
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

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

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

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

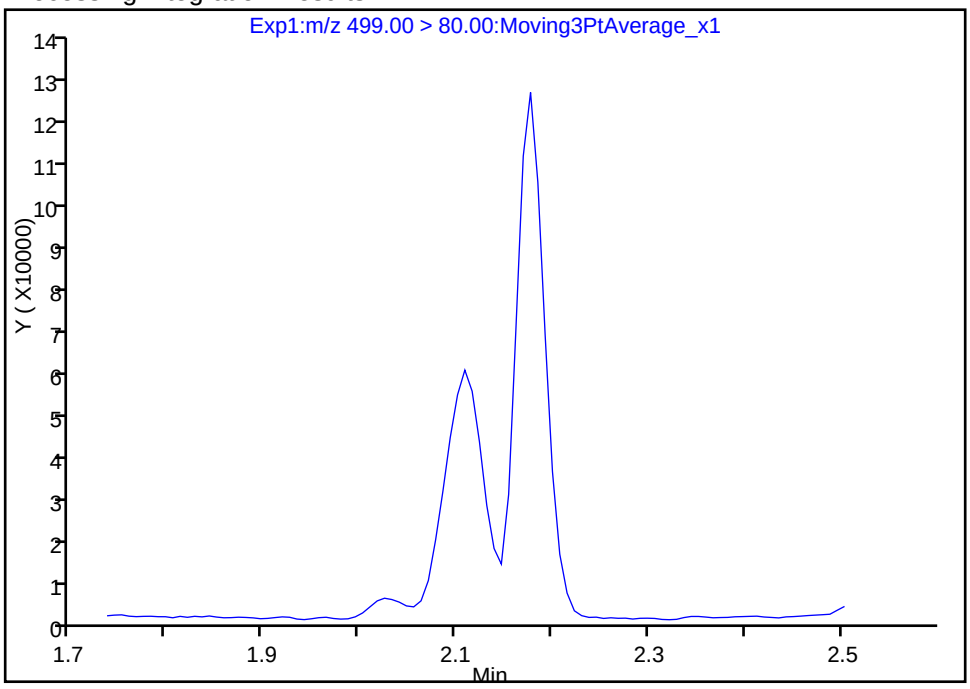
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d				
Injection Date:	16-Aug-2017 15:03:07	Instrument ID:	A8_N		
Lims ID:	320-30191-A-18-A	Lab Sample ID:	320-30191-18		
Client ID:	WGNA-072617-RW-4844				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	31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

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

Signal: 1

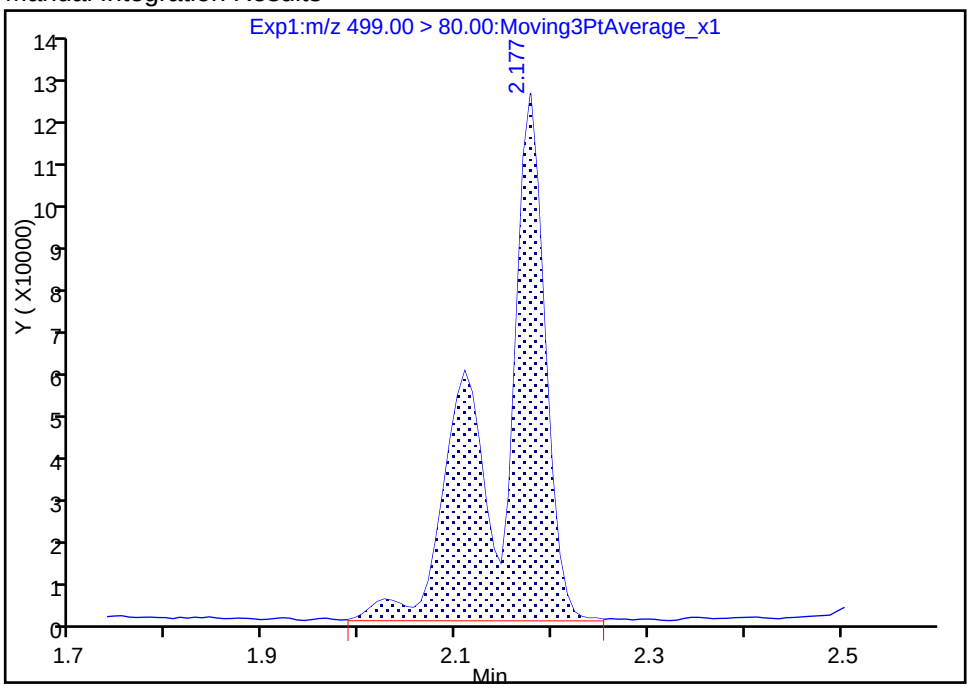
Not Detected
Expected RT: 2.18

Processing Integration Results



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

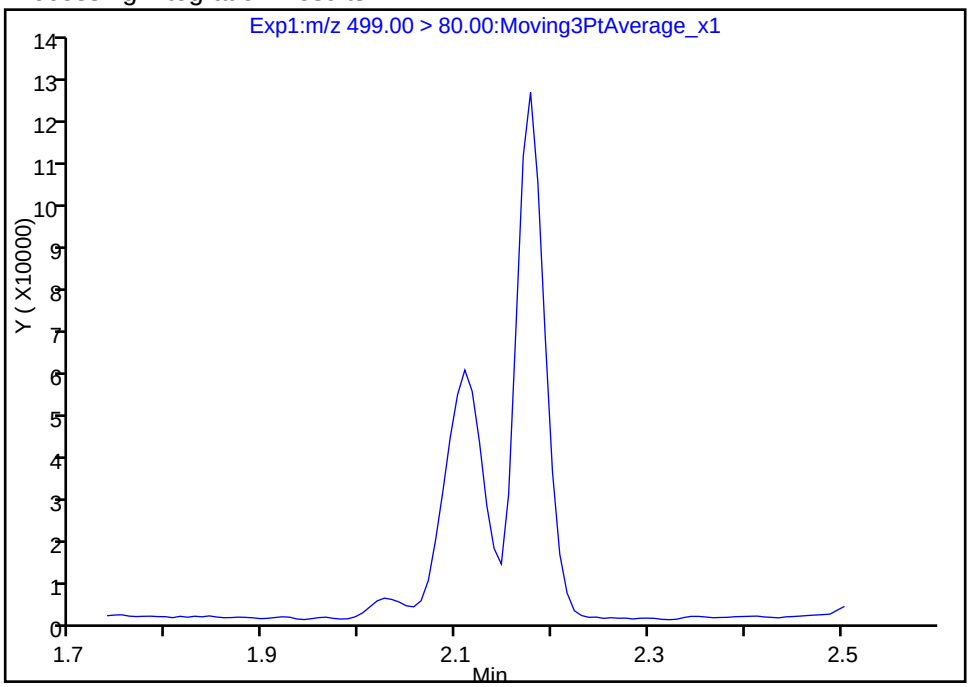
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d				
Injection Date:	16-Aug-2017 15:03:07	Instrument ID:	A8_N		
Lims ID:	320-30191-A-18-A	Lab Sample ID:	320-30191-18		
Client ID:	WGNA-072617-RW-4844				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	31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

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

Signal: 1

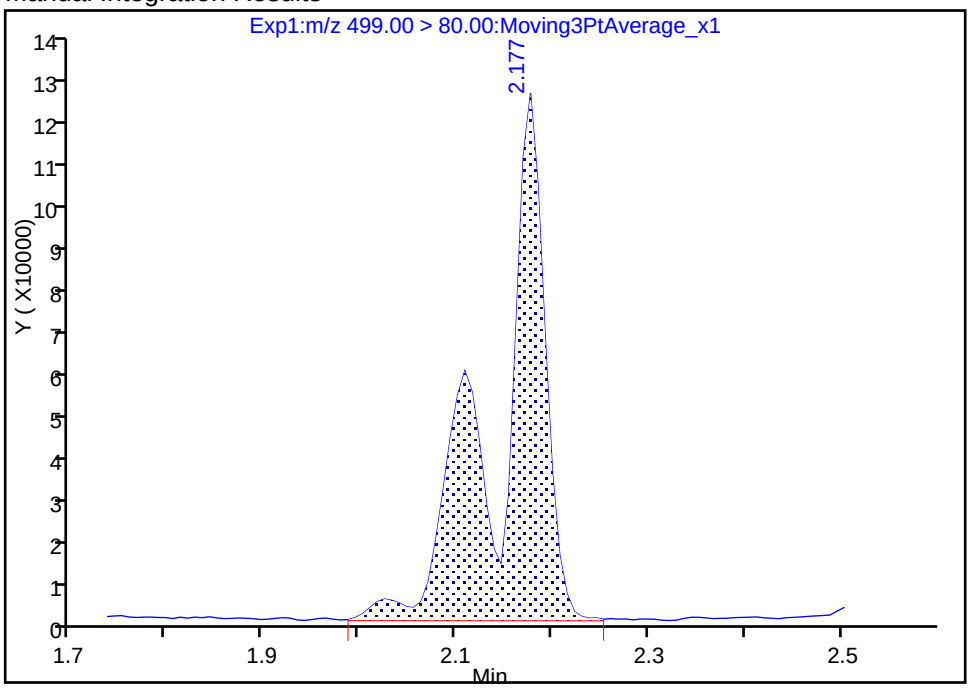
Not Detected
Expected RT: 2.18

Processing Integration Results



Manual Integration Results

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



Reviewer: barnettj, 16-Aug-2017 15:48:51
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento

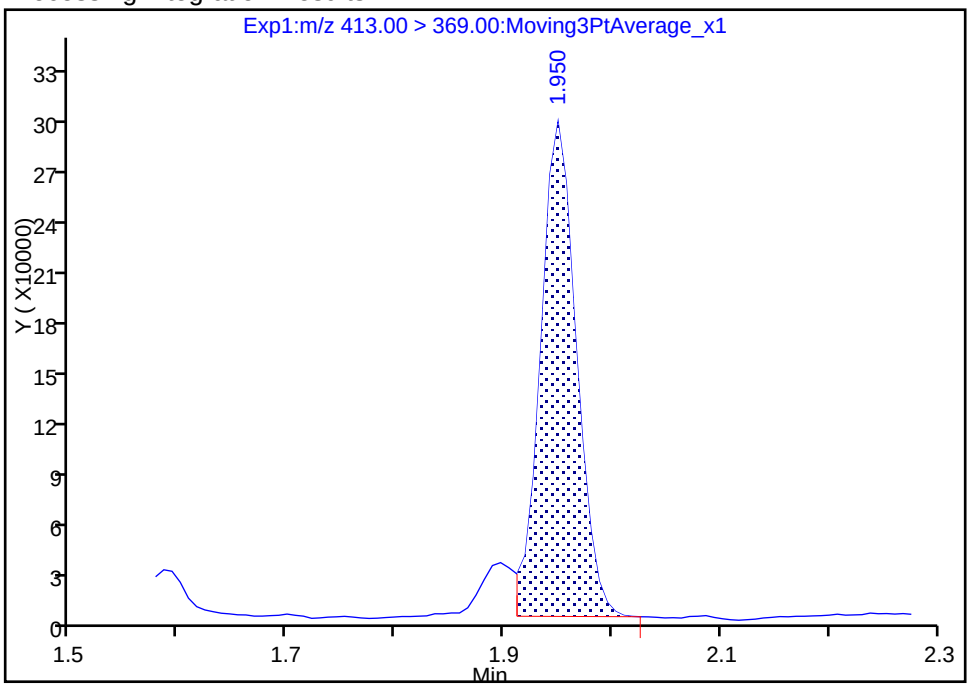
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d				
Injection Date:	16-Aug-2017 15:03:07	Instrument ID:	A8_N		
Lims ID:	320-30191-A-18-A	Lab Sample ID:	320-30191-18		
Client ID:	WGNA-072617-RW-4844				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	31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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

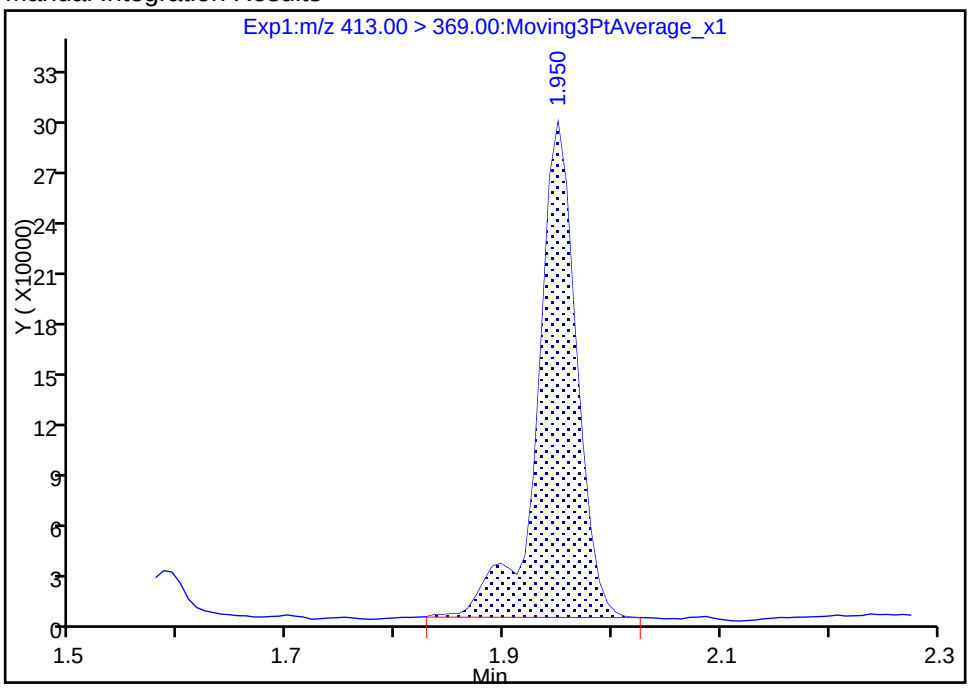
Processing Integration Results

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



Manual Integration Results

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



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

TestAmerica Sacramento

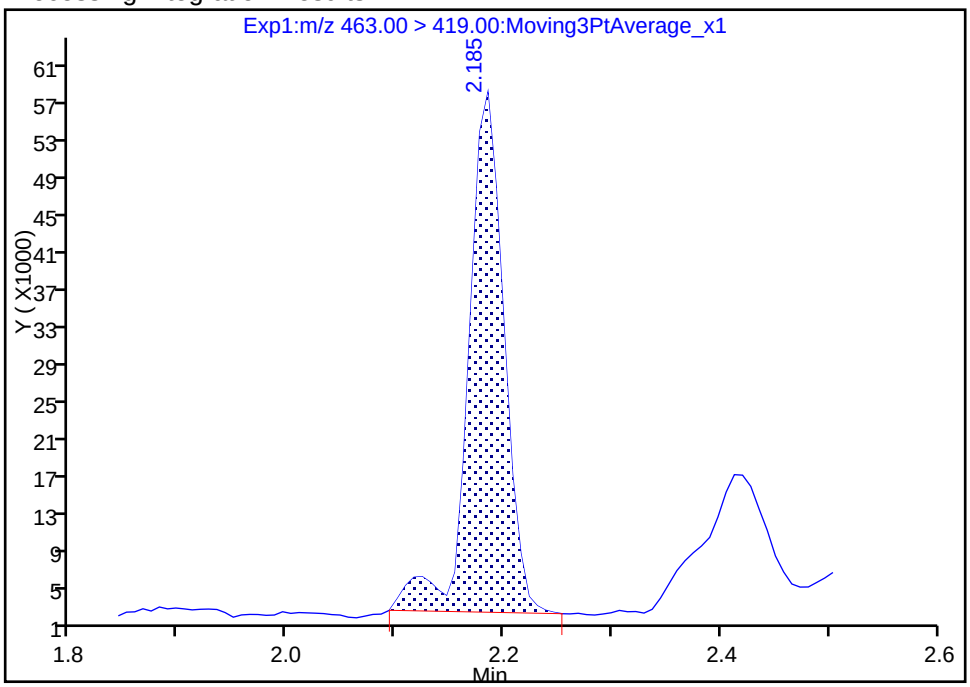
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_031.d				
Injection Date:	16-Aug-2017 15:03:07	Instrument ID:	A8_N		
Lims ID:	320-30191-A-18-A	Lab Sample ID:	320-30191-18		
Client ID:	WGNA-072617-RW-4844				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	31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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

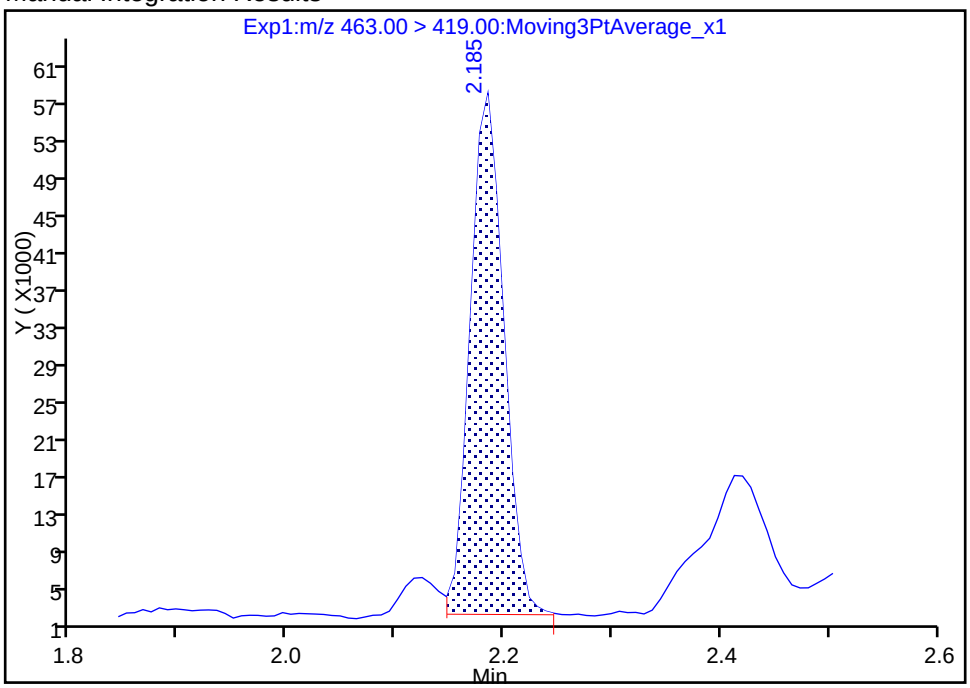
Processing Integration Results

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



Manual Integration Results

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



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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: WGNA-072617-FRB-4844 | Lab Sample ID: 320-30191-19

Matrix: Water | Lab File ID: 2017.08.16_537C_034.d

Analysis Method: 537 | Date Collected: 07/25/2017 09:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 276(mL) | Date Analyzed: 08/16/2017 15:17

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

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

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

Analysis Batch No.: 179733 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_034.d
Lims ID: 320-30191-A-19-A
Client ID: WGNA-072617-FRB-4844
Sample Type: Client
Inject. Date: 16-Aug-2017 15:17:21 ALS Bottle#: 36 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-19-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

Report Date: 17-Aug-2017 14:27:57 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 15:17:21 Instrument ID: A8_N

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

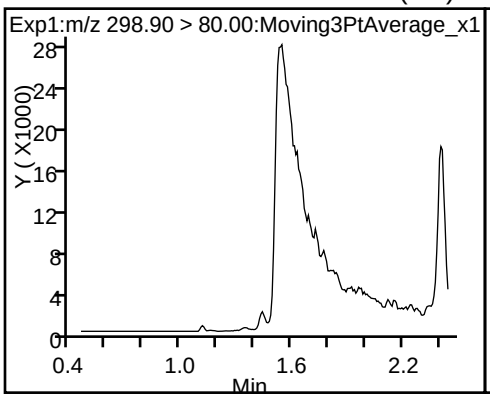
Client ID: WGNA-072617-FRB-4844

Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 34

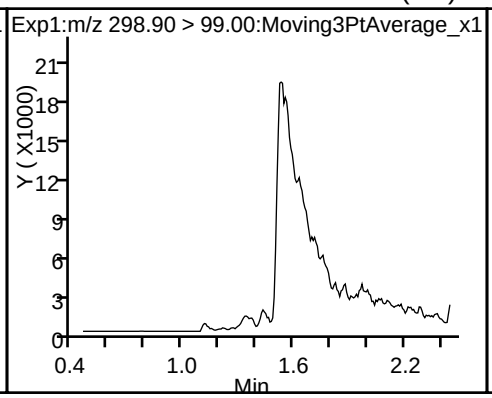
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

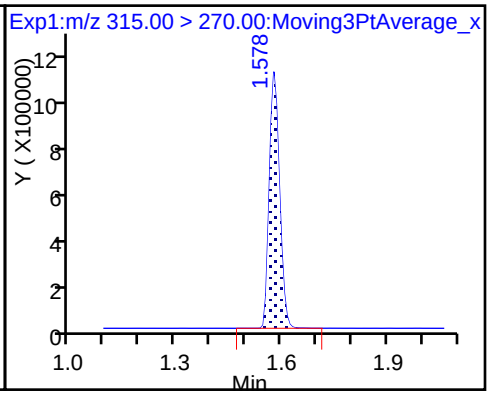
1 Perfluorobutanesulfonic acid (ND)



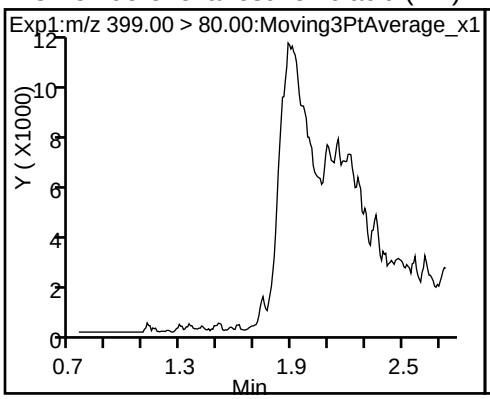
1 Perfluorobutanesulfonic acid (ND)



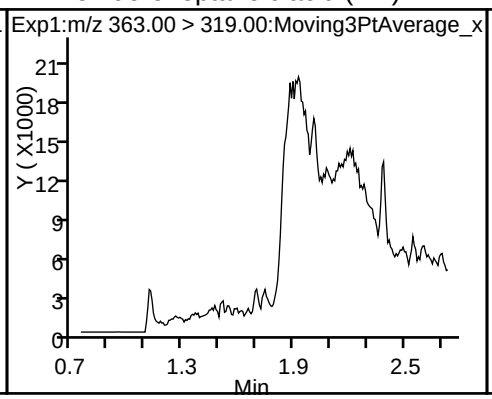
$ 2 13C2 PFHxA



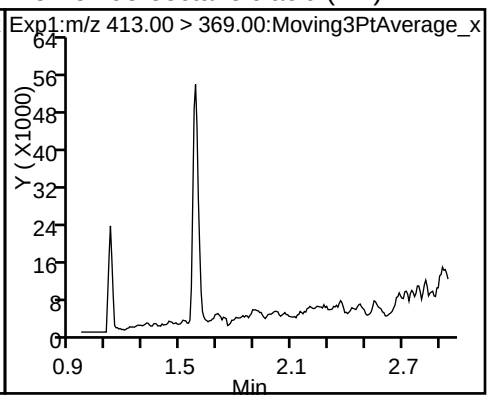
3 Perfluorohexanesulfonic acid (ND)



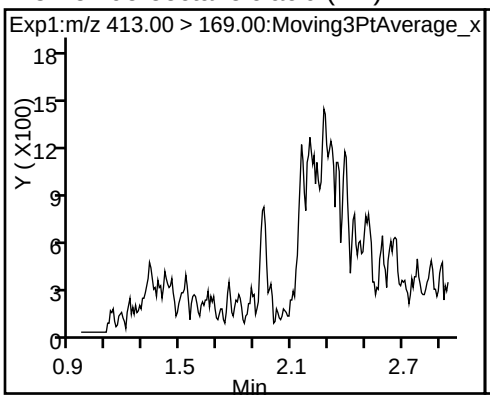
4 Perfluoroheptanoic acid (ND)



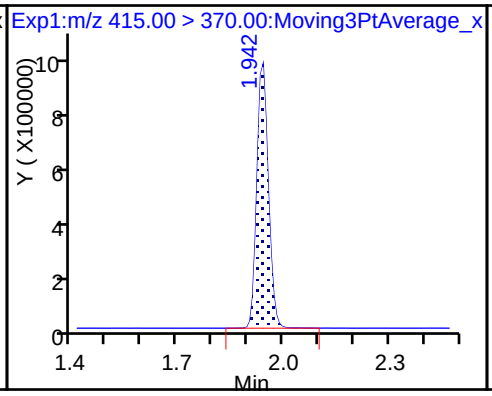
5 Perfluorooctanoic acid (ND)



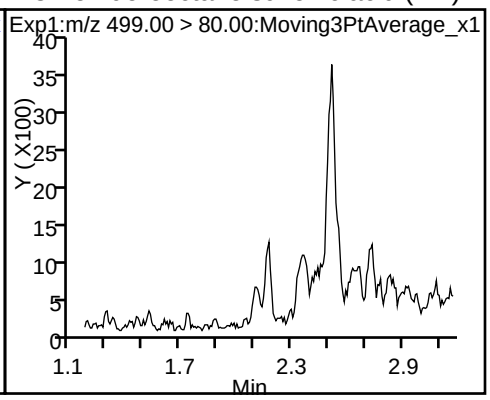
5 Perfluorooctanoic acid (ND)



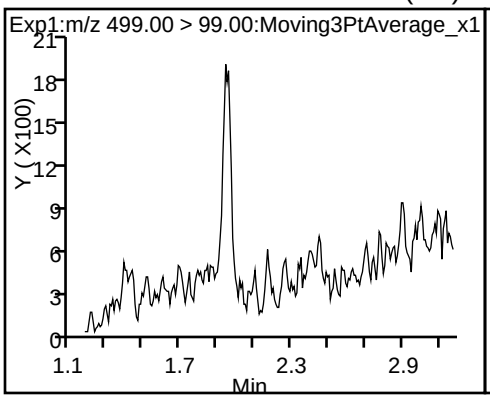
* 6 13C2-PFOA



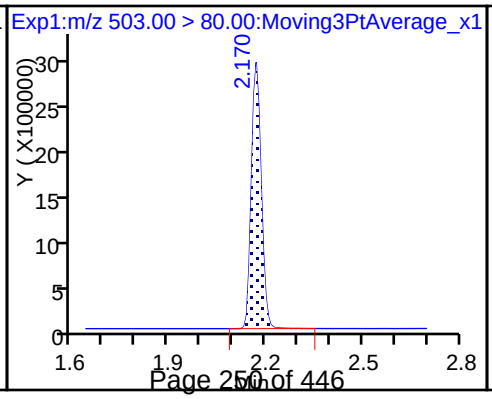
8 Perfluorooctane sulfonic acid (ND)



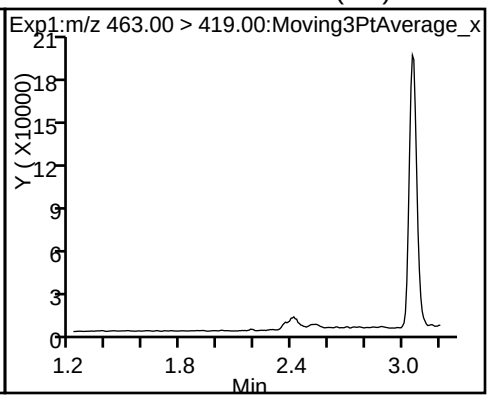
8 Perfluorooctane sulfonic acid (ND)



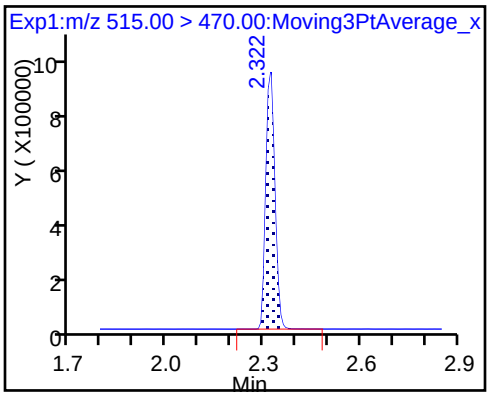
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X100000)
10
8
6
4
2
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_034.d				
Lims ID:	320-30191-A-19-A				
Client ID:	WGNA-072617-FRB-4844				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 15:17:21	ALS Bottle#:	36	Worklist Smp#:	34
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-19-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:55	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_035.d

Analysis Method: 537 | Date Collected: 07/26/2017 11:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 276.6(mL) | Date Analyzed: 08/16/2017 15:22

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

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

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

Analysis Batch No.: 179733 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d
Lims ID: 320-30191-A-20-A
Client ID: WGNA-072617-RW-3103
Sample Type: Client
Inject. Date: 16-Aug-2017 15:22:05 ALS Bottle#: 37 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-20-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

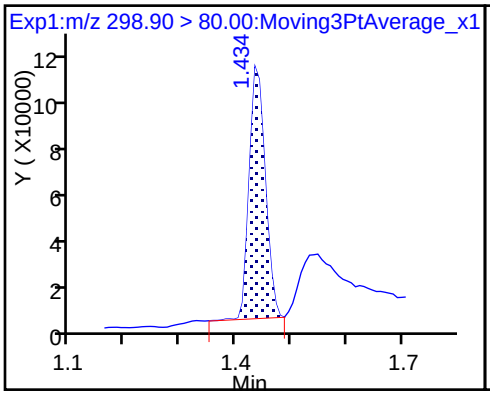
Report Date: 17-Aug-2017 14:27:58 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

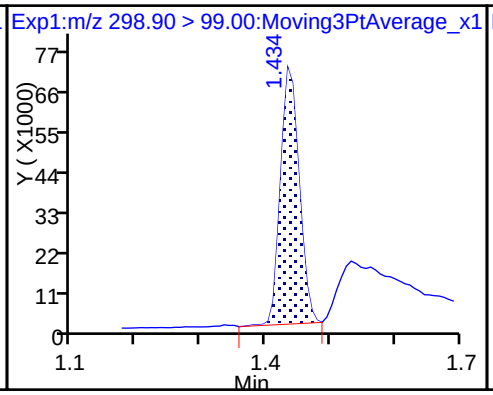
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d

Injection Date:	16-Aug-2017 15:22:05	Instrument ID:	A8_N		
Lims ID:	320-30191-A-20-A	Lab Sample ID:	320-30191-20		
Client ID:	WGNA-072617-RW-3103				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	35
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

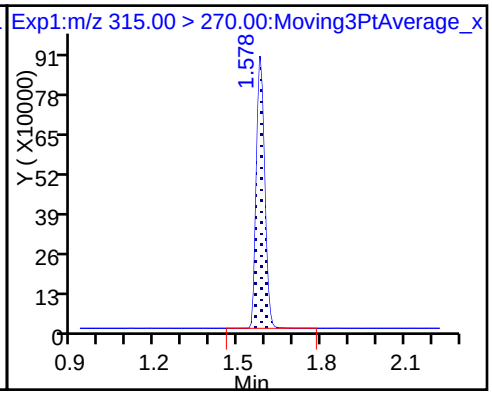
1 Perfluorobutanesulfonic acid



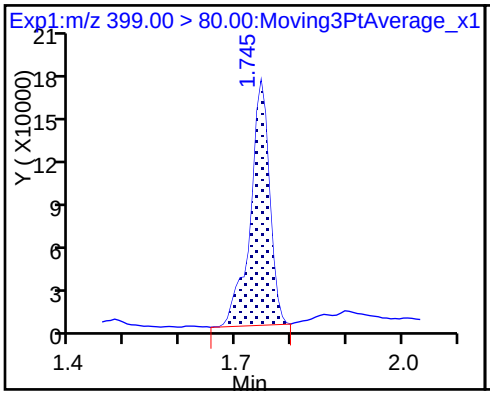
1 Perfluorobutanesulfonic acid



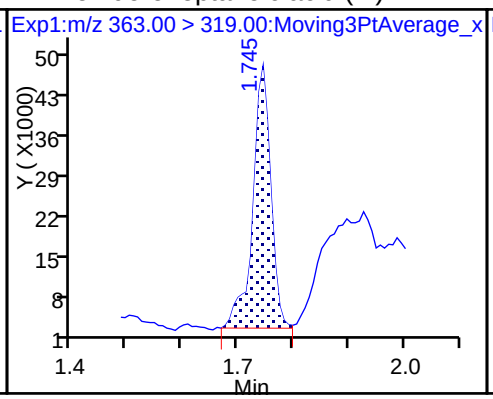
$ 2 13C2 PFHxA



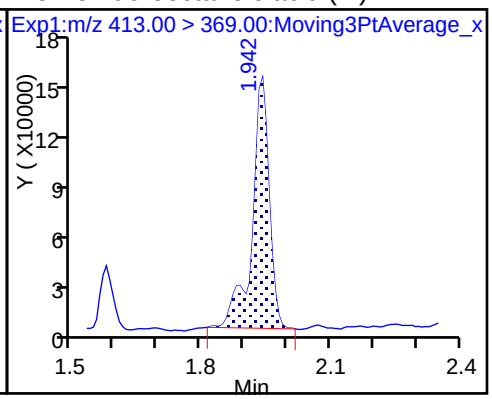
3 Perfluorohexanesulfonic acid



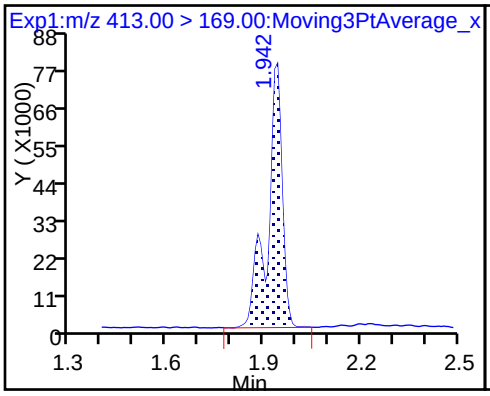
4 Perfluoroheptanoic acid (M)



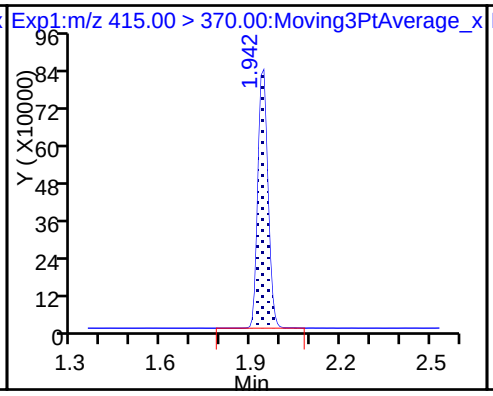
5 Perfluorooctanoic acid (M)



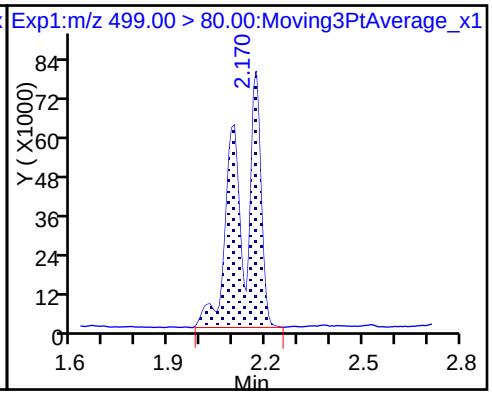
5 Perfluorooctanoic acid



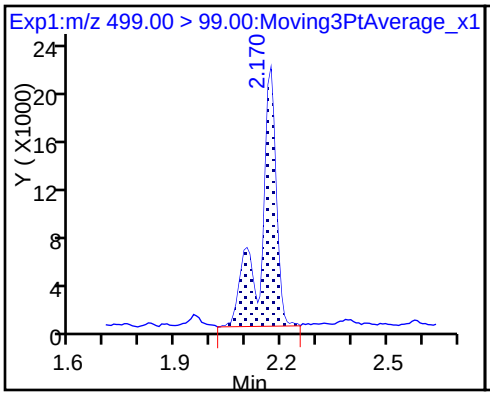
* 6 13C2-PFOA



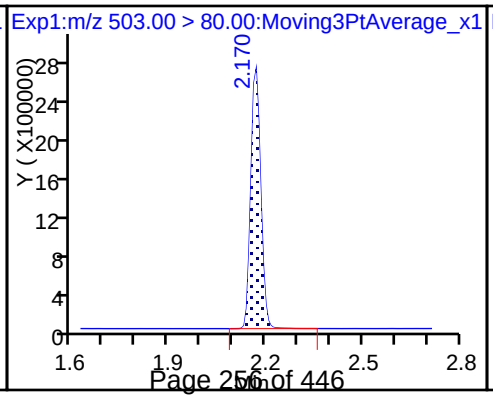
8 Perfluorooctane sulfonic acid



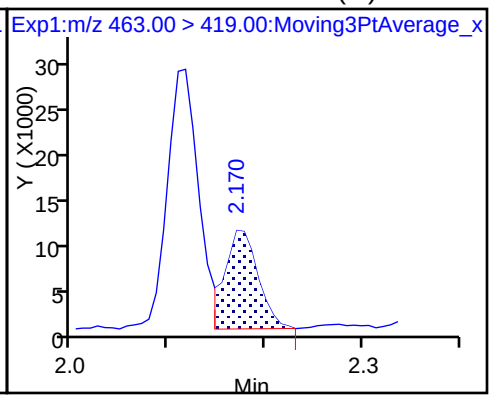
8 Perfluorooctane sulfonic acid



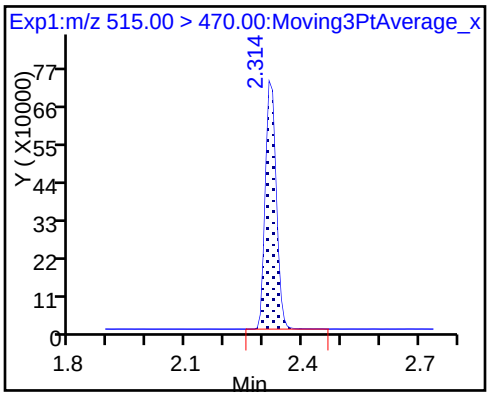
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

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

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

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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

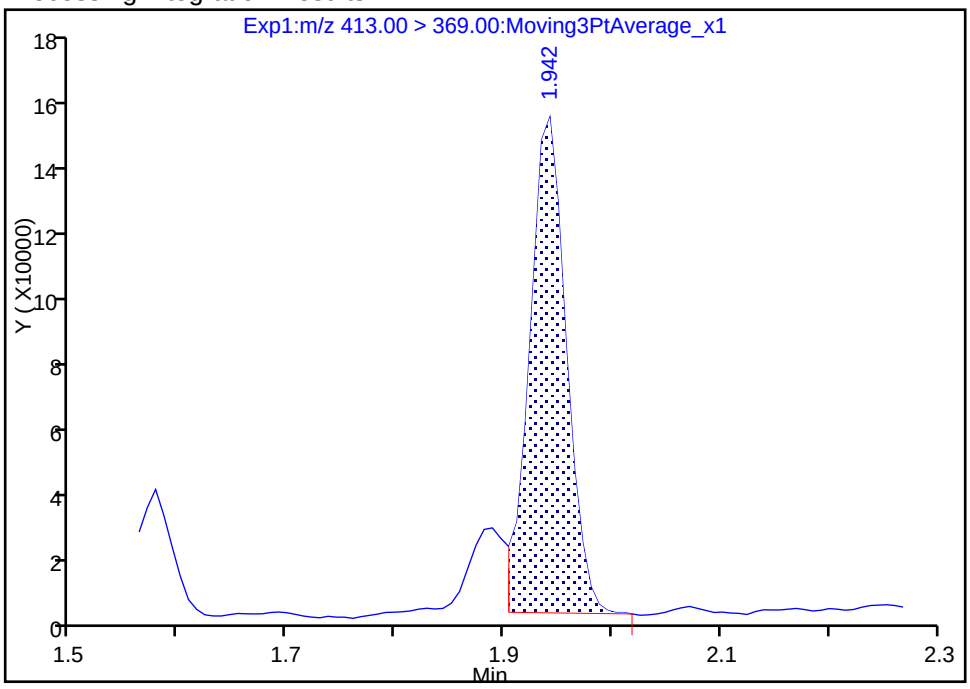
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d				
Injection Date:	16-Aug-2017 15:22:05	Instrument ID:	A8_N		
Lims ID:	320-30191-A-20-A	Lab Sample ID:	320-30191-20		
Client ID:	WGNA-072617-RW-3103				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	35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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

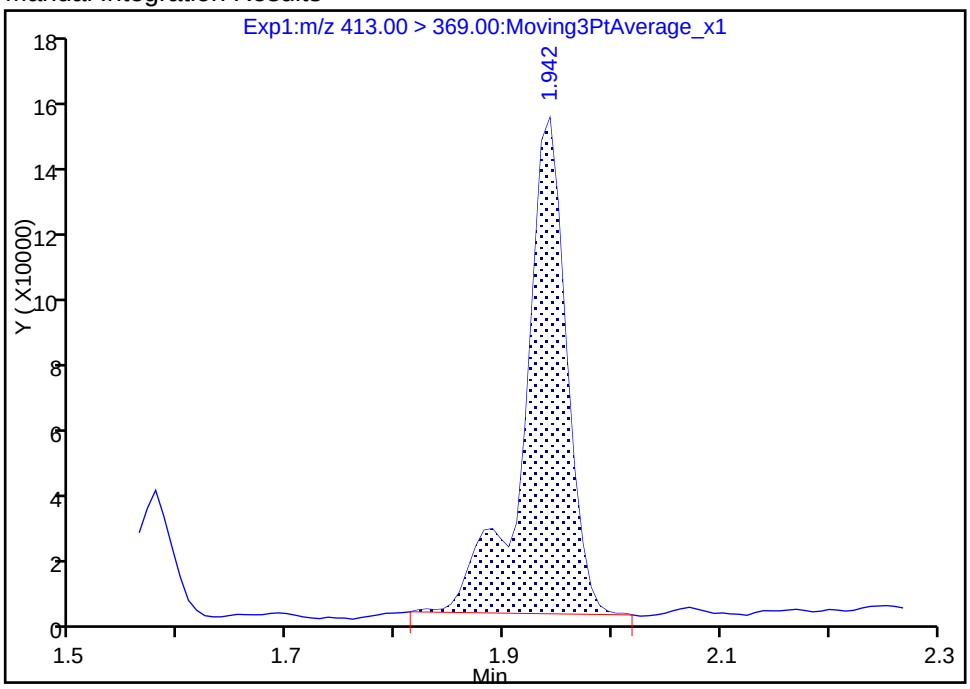
Processing Integration Results

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



Manual Integration Results

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



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

TestAmerica Sacramento

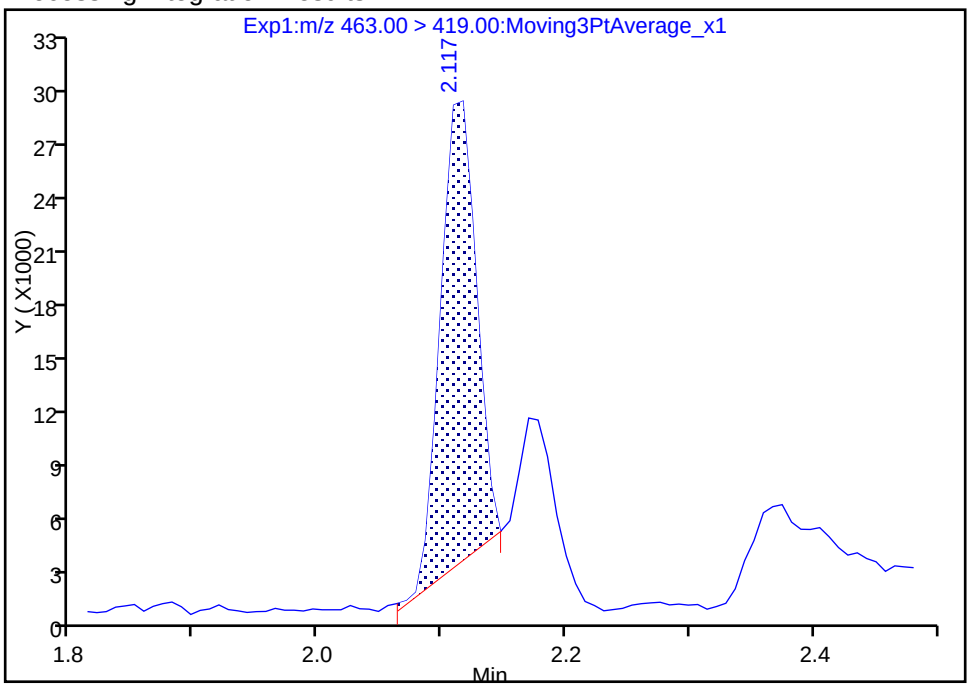
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d				
Injection Date:	16-Aug-2017 15:22:05	Instrument ID:	A8_N		
Lims ID:	320-30191-A-20-A	Lab Sample ID:	320-30191-20		
Client ID:	WGNA-072617-RW-3103				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	35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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

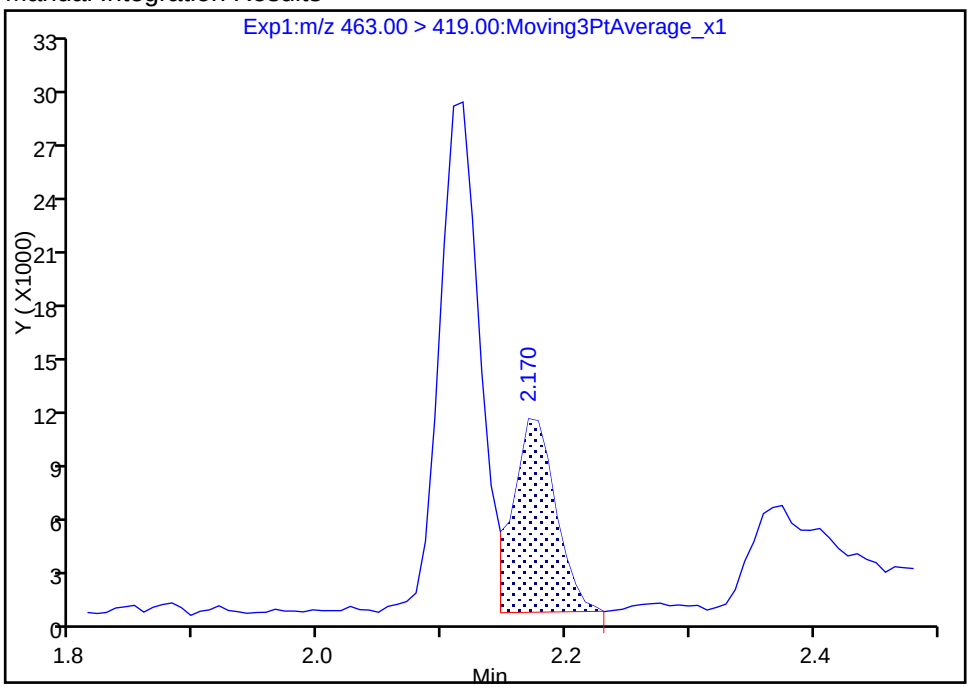
Processing Integration Results

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



Manual Integration Results

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



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

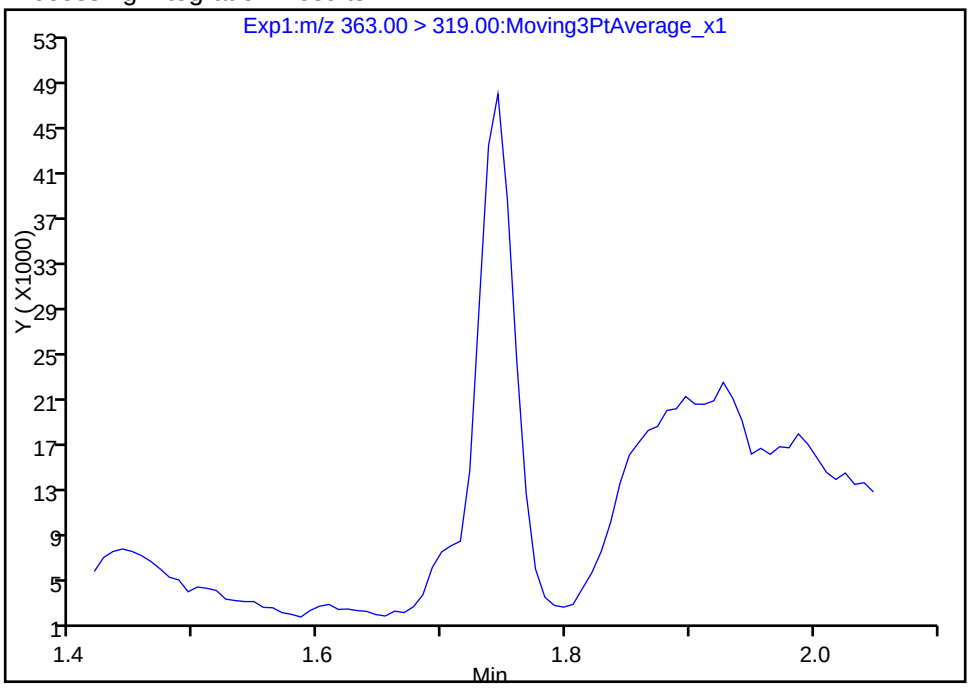
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_035.d				
Injection Date:	16-Aug-2017 15:22:05	Instrument ID:	A8_N		
Lims ID:	320-30191-A-20-A	Lab Sample ID:	320-30191-20		
Client ID:	WGNA-072617-RW-3103				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	35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

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

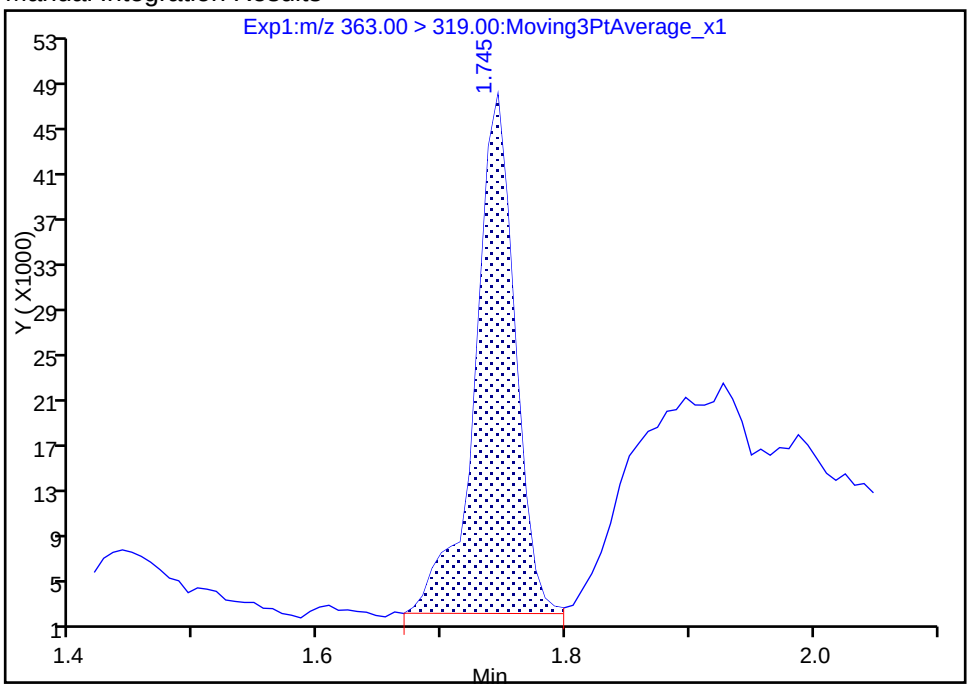
Not Detected
Expected RT: 1.74

Processing Integration Results



Manual Integration Results

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



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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: WGNA-072617-FRB-3103 | Lab Sample ID: 320-30191-21

Matrix: Water | Lab File ID: 2017.08.16_537C_036.d

Analysis Method: 537 | Date Collected: 07/26/2017 11:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 285.1(mL) | Date Analyzed: 08/16/2017 15:26

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

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

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

Analysis Batch No.: 179733 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_036.d
Lims ID: 320-30191-A-21-A
Client ID: WGNA-072617-FRB-3103
Sample Type: Client
Inject. Date: 16-Aug-2017 15:26:51 ALS Bottle#: 38 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-21-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

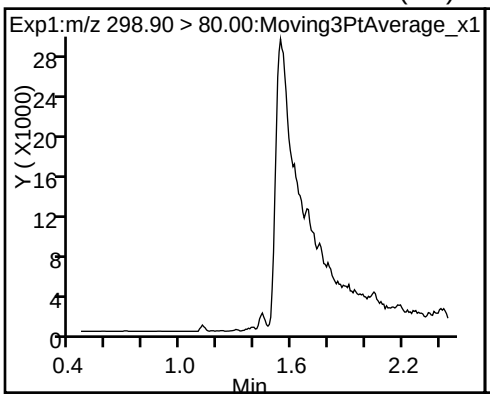
Report Date: 17-Aug-2017 14:27:59 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

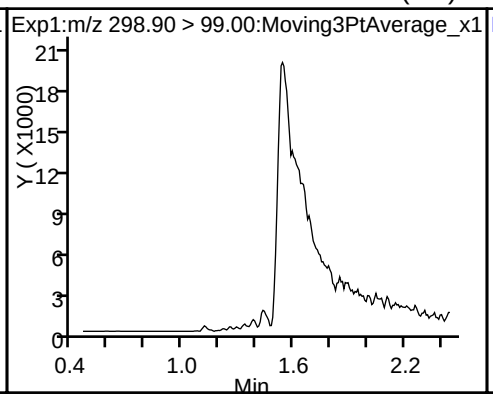
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_036.d

Injection Date:	16-Aug-2017 15:26:51	Instrument ID:	A8_N		
Lims ID:	320-30191-A-21-A	Lab Sample ID:	320-30191-21		
Client ID:	WGNA-072617-FRB-3103				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	36
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

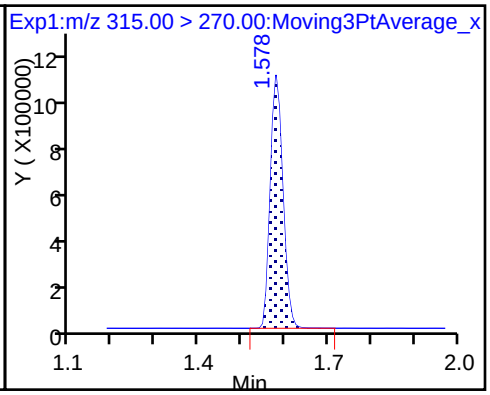
1 Perfluorobutanesulfonic acid (ND)



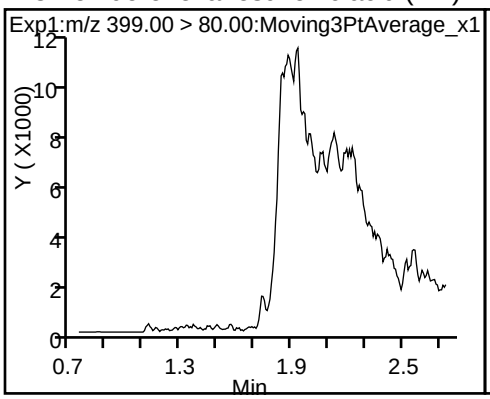
1 Perfluorobutanesulfonic acid (ND)



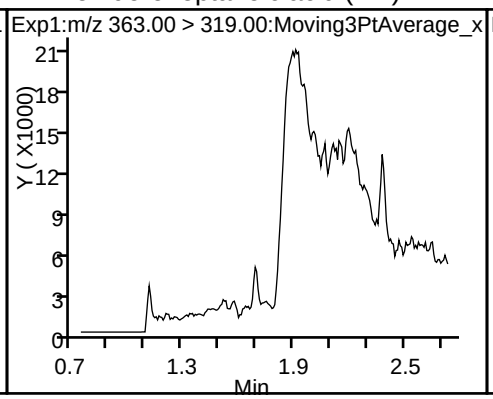
$ 2 13C2 PFHxA



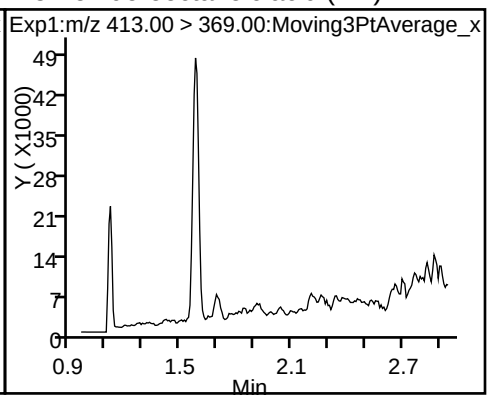
3 Perfluorohexanesulfonic acid (ND)



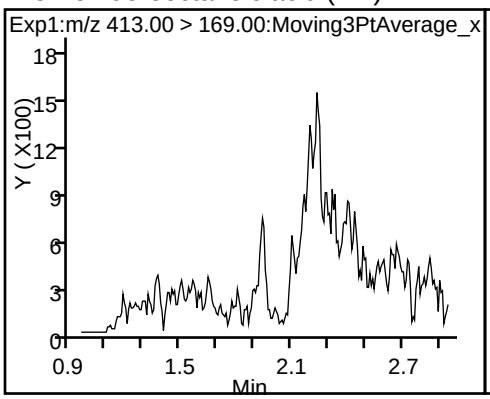
4 Perfluoroheptanoic acid (ND)



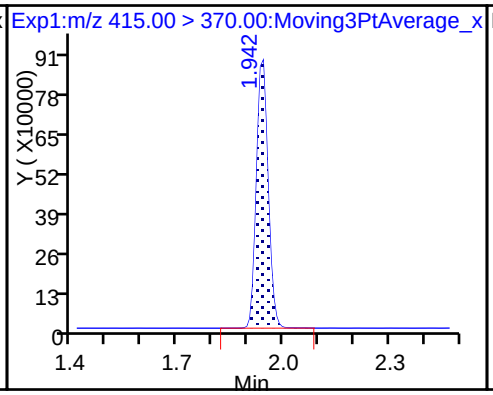
5 Perfluorooctanoic acid (ND)



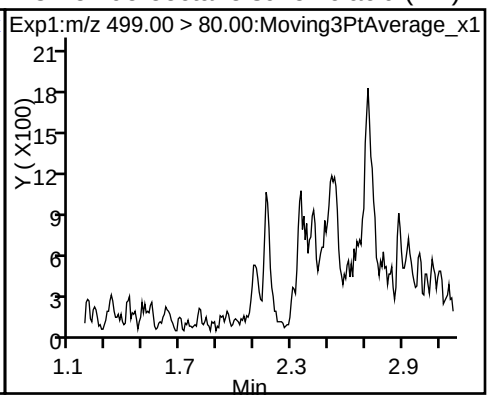
5 Perfluorooctanoic acid (ND)



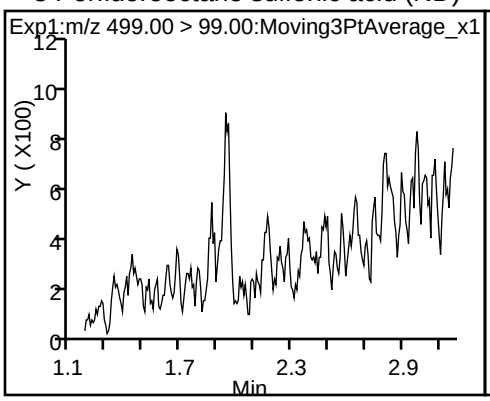
* 6 13C2-PFOA



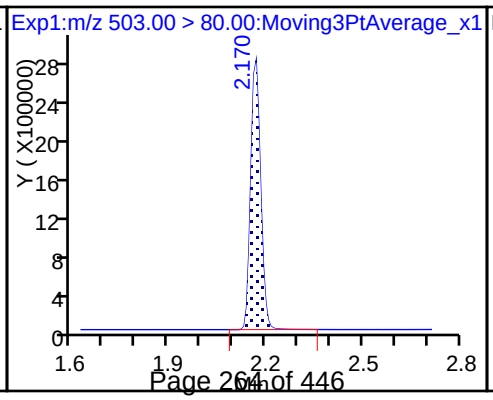
8 Perfluorooctane sulfonic acid (ND)



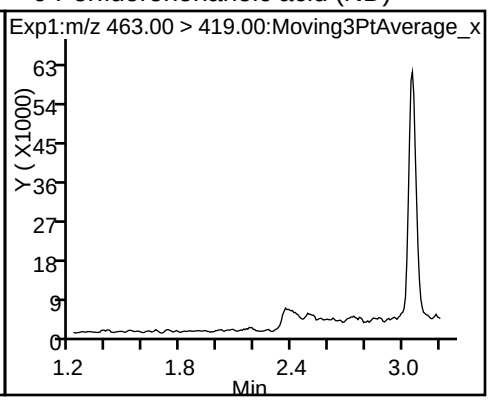
8 Perfluorooctane sulfonic acid (ND)



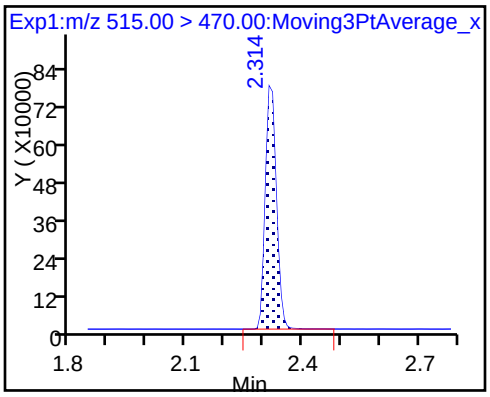
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
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\20170816-46772.b\2017.08.16_537C_036.d				
Lims ID:	320-30191-A-21-A				
Client ID:	WGNA-072617-FRB-3103				
Sample Type:	Client				
Inject. Date:	16-Aug-2017 15:26:51	ALS Bottle#:	38	Worklist Smp#:	36
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-21-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:55	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_037.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 284.7(mL) | Date Analyzed: 08/16/2017 15:31

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

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

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

Analysis Batch No.: 179733 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d
Lims ID: 320-30191-A-22-A
Client ID: WGNA-072617-DUP03
Sample Type: Client
Inject. Date: 16-Aug-2017 15:31:34 ALS Bottle#: 39 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-22-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:59 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

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

Injection Date: 16-Aug-2017 15:31:34 Instrument ID: A8_N

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

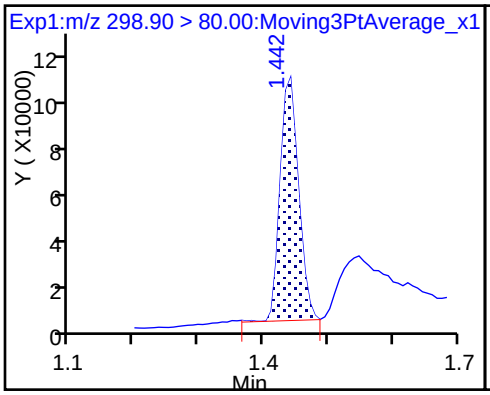
Client ID: WGNA-072617-DUP03

Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 37

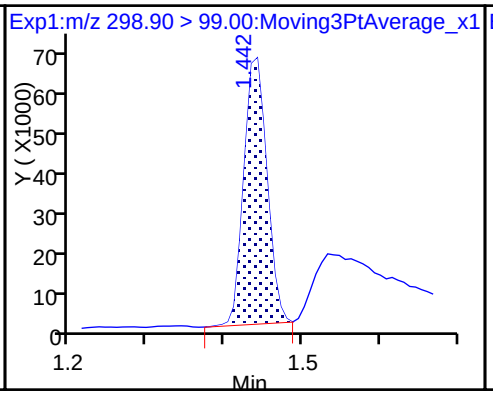
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

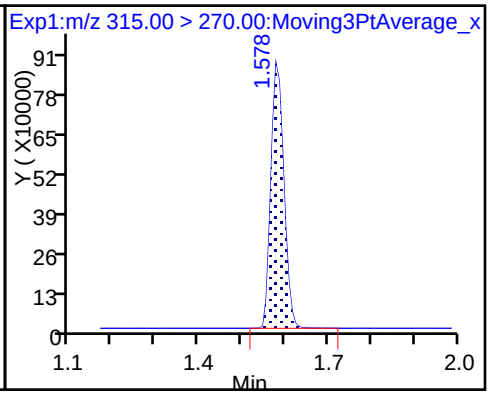
1 Perfluorobutanesulfonic acid



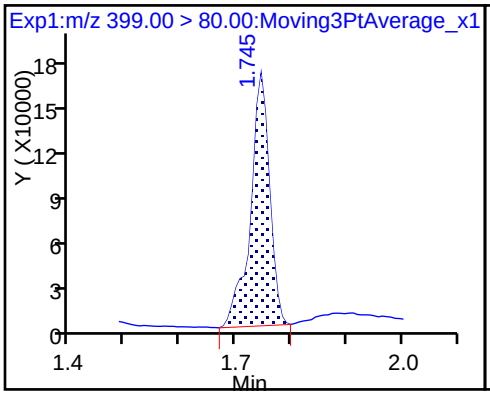
1 Perfluorobutanesulfonic acid



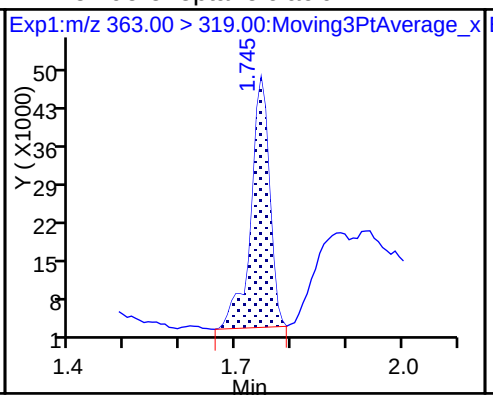
$ 2 13C2 PFHxA



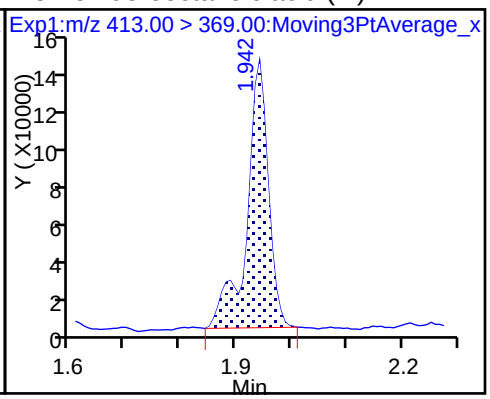
3 Perfluorohexanesulfonic acid



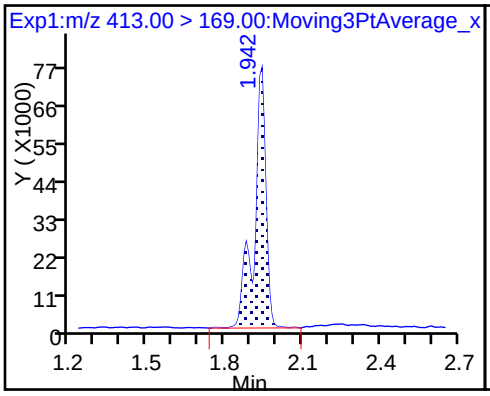
4 Perfluoroheptanoic acid



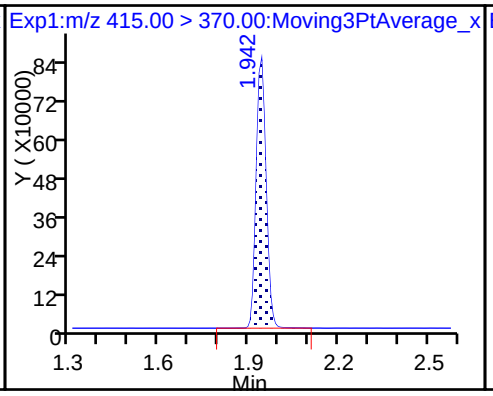
5 Perfluorooctanoic acid (M)



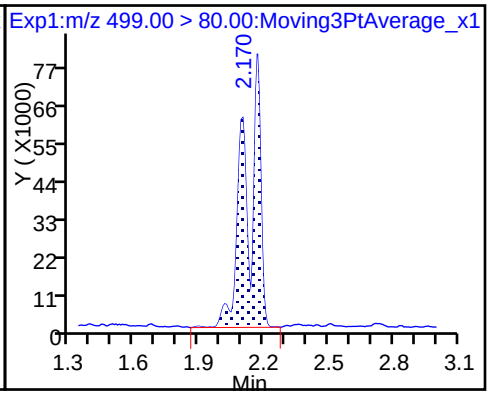
5 Perfluorooctanoic acid



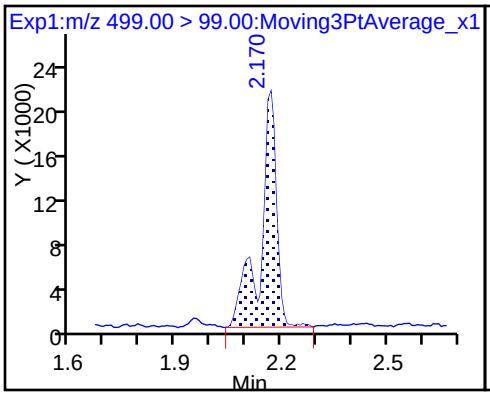
* 6 13C2-PFOA



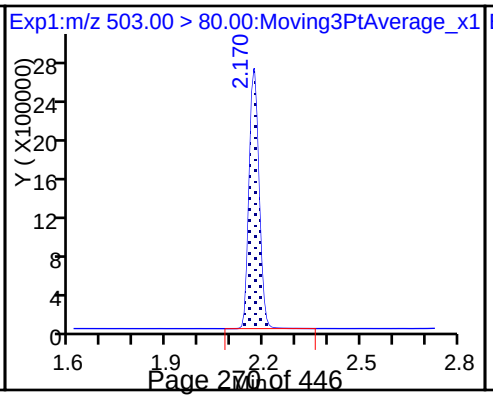
8 Perfluorooctane sulfonic acid



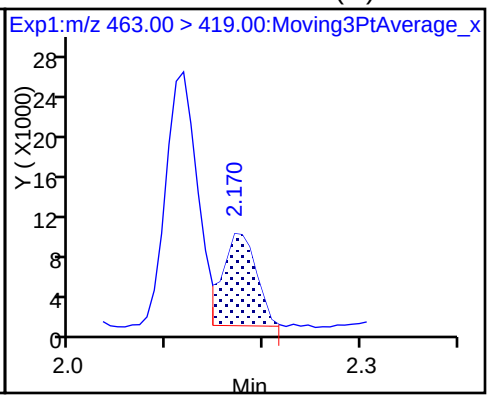
8 Perfluorooctane sulfonic acid



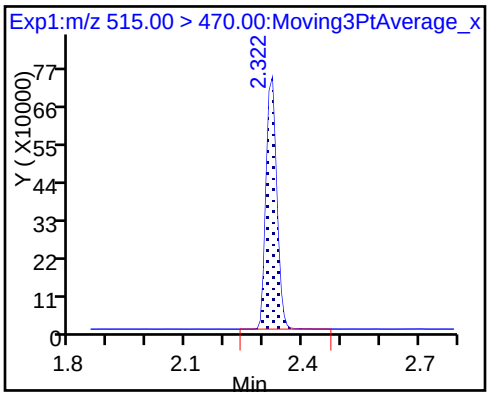
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

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

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

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

TestAmerica Sacramento

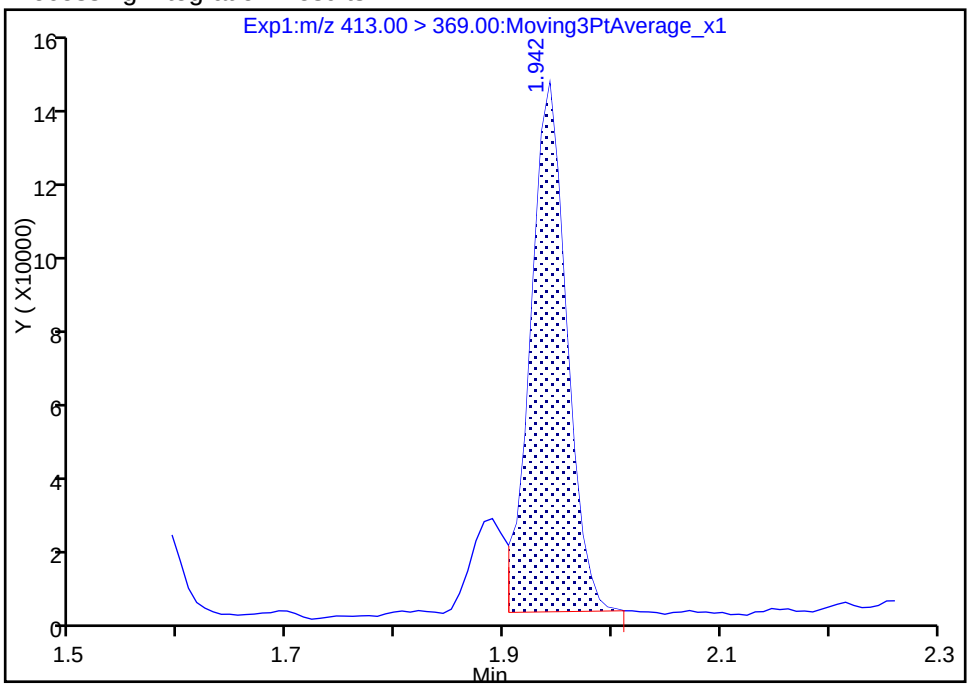
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d				
Injection Date:	16-Aug-2017 15:31:34	Instrument ID:	A8_N		
Lims ID:	320-30191-A-22-A	Lab Sample ID:	320-30191-22		
Client ID:	WGNA-072617-DUP03				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	39	Worklist Smp#:	37
Injection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

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

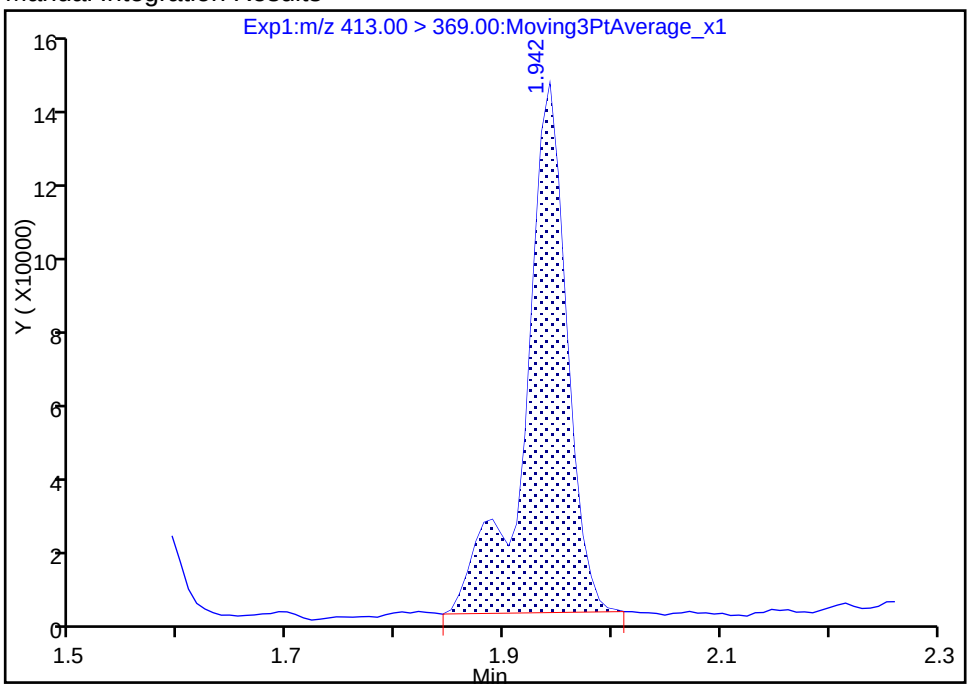
Processing Integration Results

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



Manual Integration Results

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



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

TestAmerica Sacramento

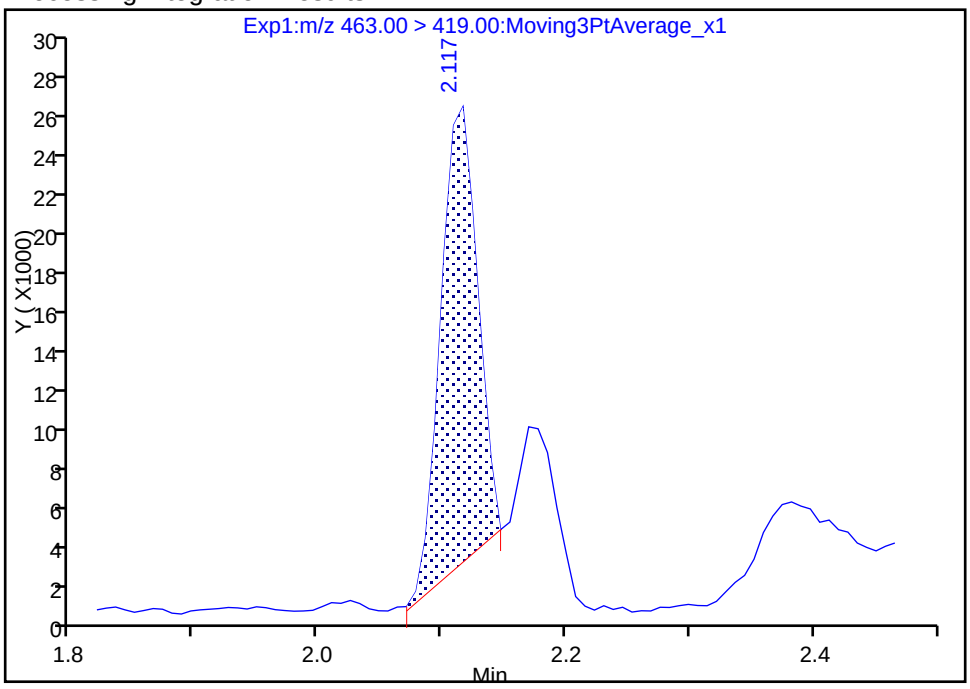
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_037.d				
Injection Date:	16-Aug-2017 15:31:34	Instrument ID:	A8_N		
Lims ID:	320-30191-A-22-A	Lab Sample ID:	320-30191-22		
Client ID:	WGNA-072617-DUP03				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	39	Worklist Smp#:	37
Injection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

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

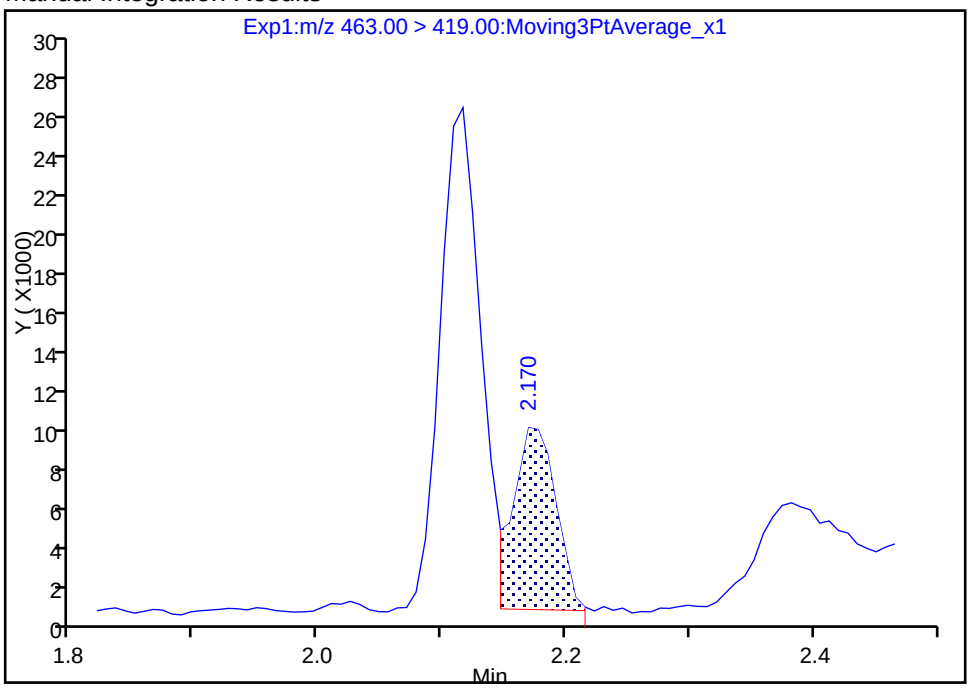
Processing Integration Results

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



Manual Integration Results

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



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

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

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

SDG No.:

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

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

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1417 0.7313	1.1495	1.0943	0.9210	0.7959	QuaF		1.1266	-0.002254						0.9980		0.9600
Perfluoroheptanoic acid (PFHpA)	0.8346 0.8325	0.8724	0.8737	0.8715	0.8517	Ave		0.8560				2.2		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.4757 1.3970	1.5378	1.5080	1.5703	1.4756	Ave		1.4941				4.0		30.0			
Perfluorooctanoic acid (PFOA)	0.8851 0.9102	0.8837	0.8984	0.9375	0.9261	Ave		0.9068				2.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8922 0.9252	0.9148	0.9148	0.9461	0.9486	Ave		0.9236				2.3		30.0			
Perfluorononanoic acid (PFNA)	0.5491 0.5714	0.5670	0.5764	0.5665	0.5686	Ave		0.5665				1.6		30.0			
13C2 PFHxA	1.0141 1.0999	1.0032	1.0998	1.0933	1.1053	Ave		1.0693				4.4		30.0			
13C2 PFDA	0.5512 0.6012	0.5785	0.5919	0.5906	0.6127	Ave		0.5877				3.6		30.0			

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

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

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

SDG No.:

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

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

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	2176776 26040065	4858409	10071471	16707104	21165476	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	198176 3589599	455479	965342	1966143	2763295	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	938005 16584369	2166866	4626981	9496666	13083092	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	420599 7854398	923370	1986507	4232647	6012905	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	756213 14645432	1718775	3742396	7629588	11213929	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	260762 4927051	592024	1273686	2556105	3689416	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	2407096 2370885	2356458	2429839	2465941	2390227	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1308306 1295768	1358920	1307668	1332089	1324957	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

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

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

SDG No.:

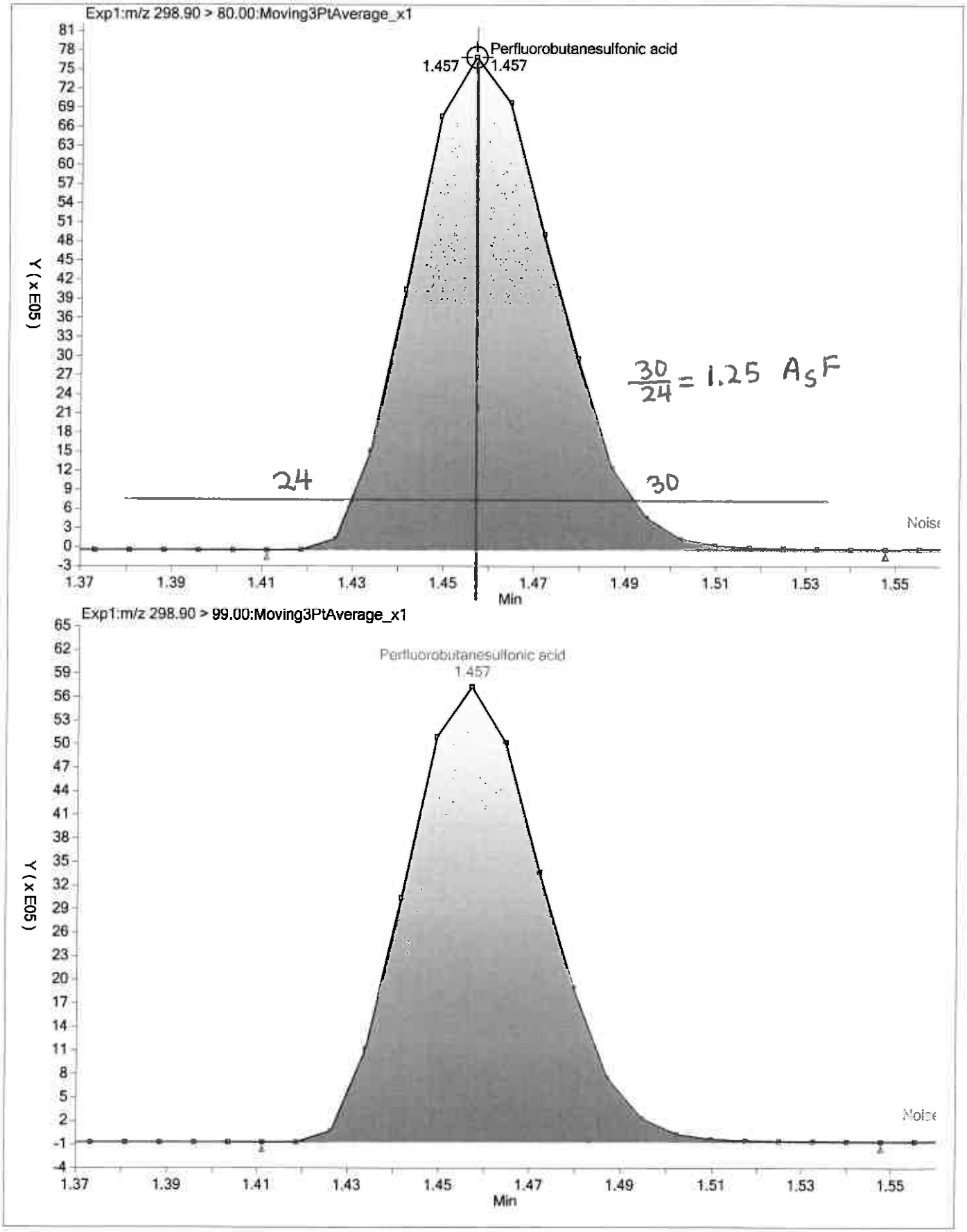
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

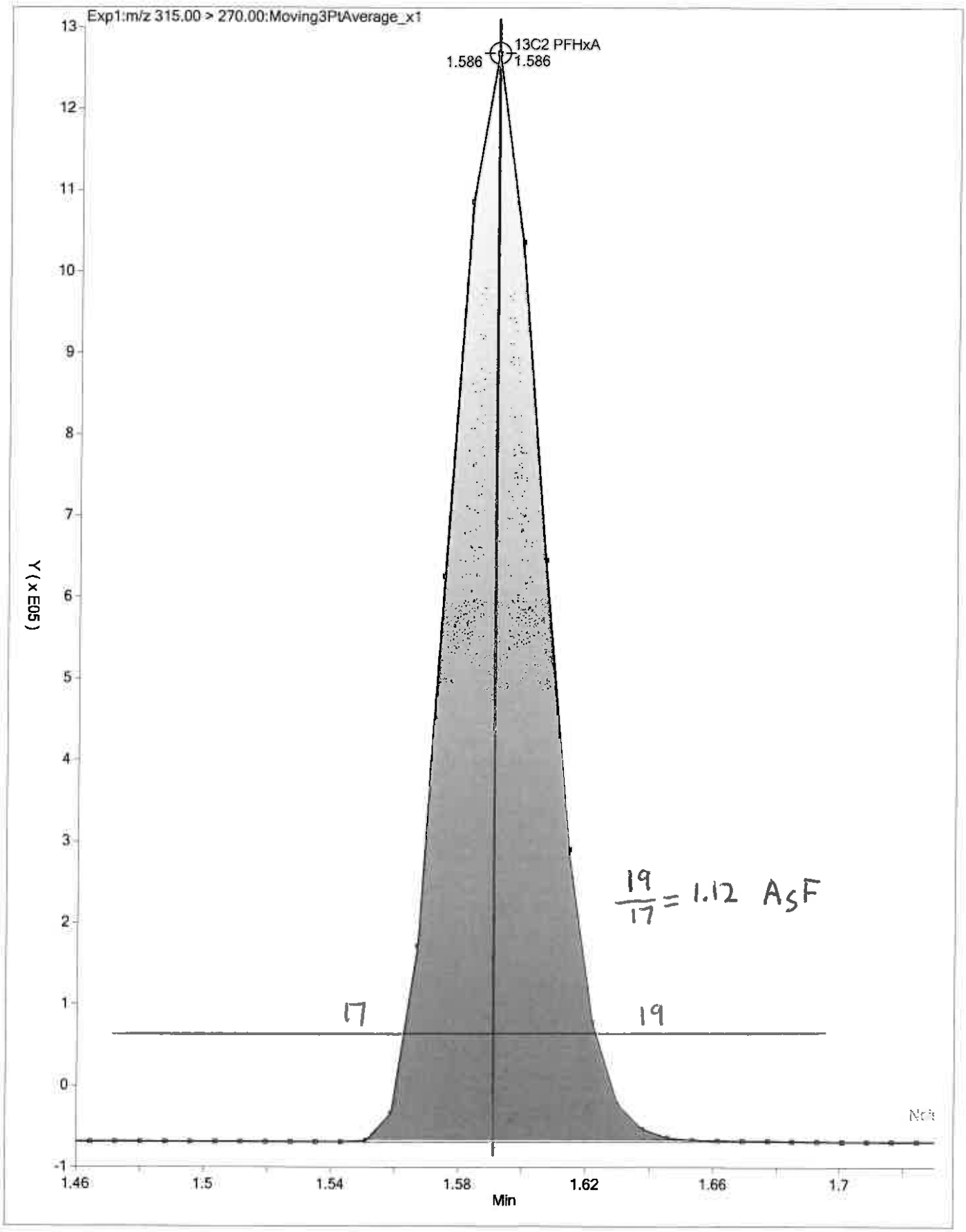
Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	3.3	6.6	7.5	-0.4	-5.0	3.4	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-2.5	1.9	2.1	1.8	-0.5	-2.8	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-1.2	2.9	0.9	5.1	-1.2	-6.5	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-2.4	-2.5	-0.9	3.4	2.1	0.4	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-3.4	-1.0	-1.0	2.4	2.7	0.2	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	-3.1	0.1	1.7	0.0	0.4	0.9	50	50	50	50	50	50
13C2 PFHxA	-5.2	-6.2	2.9	2.2	3.4	2.9	30	30	30	30	30	30
13C2 PFDA	-6.2	-1.6	0.7	0.5	4.3	2.3	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.457
1.457
Y (x E05)
24
30
30/24 = 1.25 AsF
Noise
Min
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.457
Y (x E05)
Noise
Min


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.586
1.586
Y (x E05)
Min
1.46
1.5
1.54
1.58
1.62
1.66
1.7
17
19
19/17 = 1.12 ASF

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_002.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 14-Aug-2017 12:48:56 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:02 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

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

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

Reagents:

LC537-L1_00020 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:02 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_002.d

Injection Date: 14-Aug-2017 12:48:56 Instrument ID: A8_N

Lims ID: IC L1

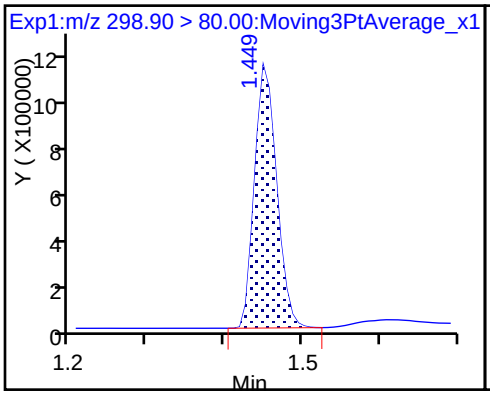
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2

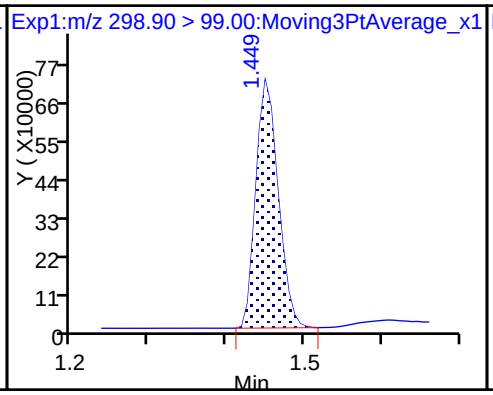
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

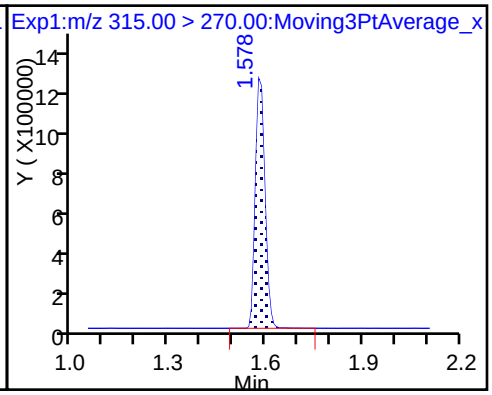
1 Perfluorobutanesulfonic acid



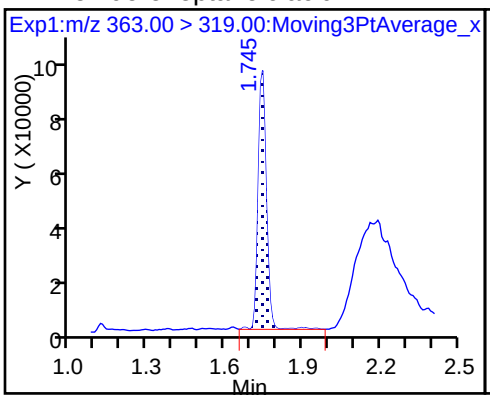
1 Perfluorobutanesulfonic acid



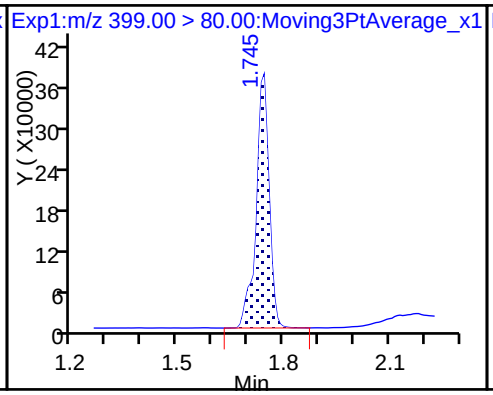
$ 2 13C2 PFHxA



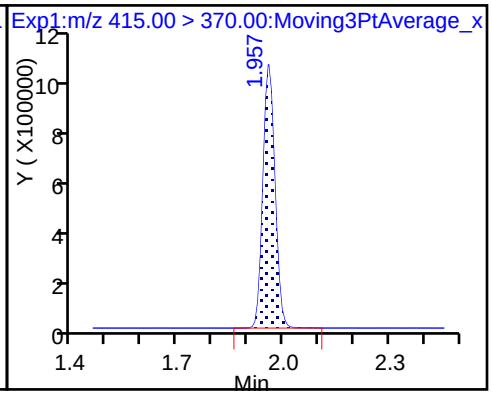
4 Perfluoroheptanoic acid



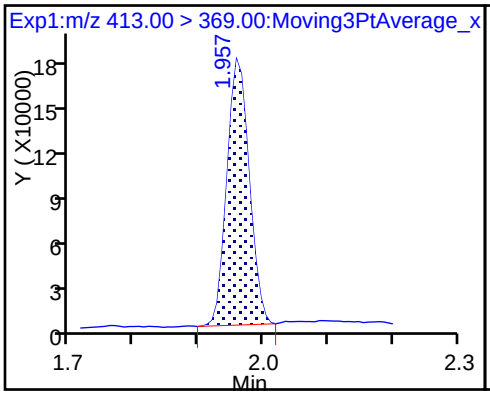
3 Perfluorohexanesulfonic acid



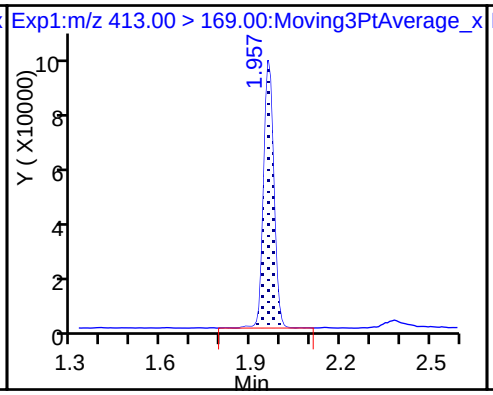
* 6 13C2-PFOA



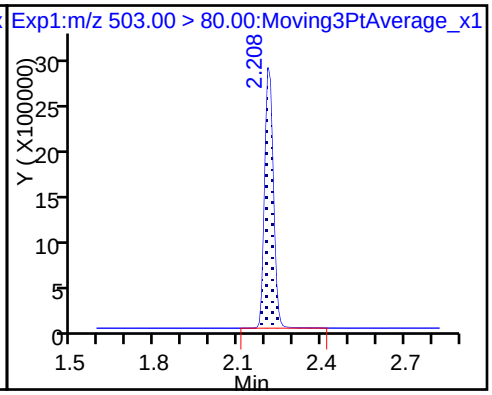
5 Perfluorooctanoic acid



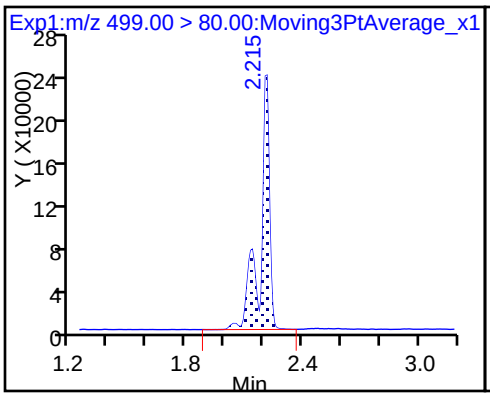
5 Perfluorooctanoic acid



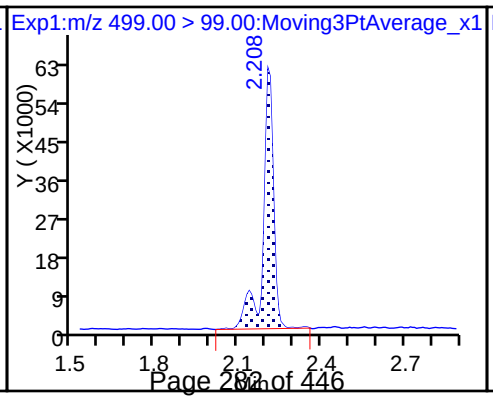
* 7 13C4 PFOS



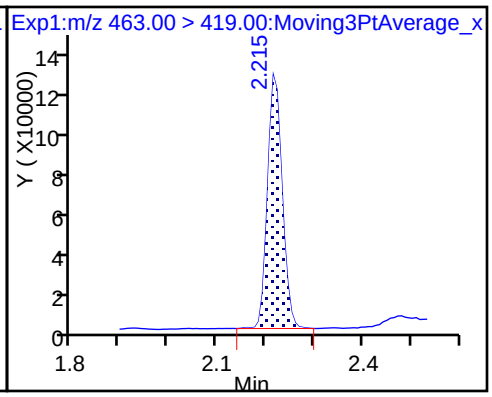
8 Perfluorooctane sulfonic acid



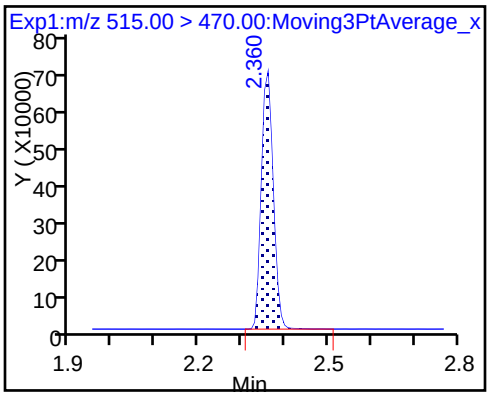
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.360
Y (X10000)
80
70
60
50
40
30
20
10
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_003.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 14-Aug-2017 12:53:41 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:03 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

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

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

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:03 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

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

Injection Date: 14-Aug-2017 12:53:41 Instrument ID: A8_N

Lims ID: IC L2

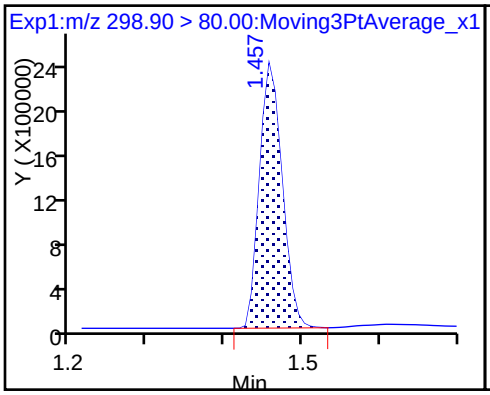
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3

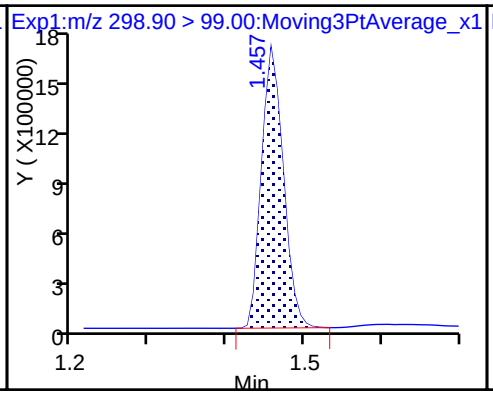
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

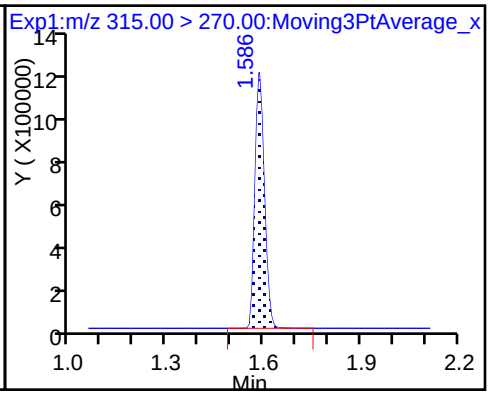
1 Perfluorobutanesulfonic acid



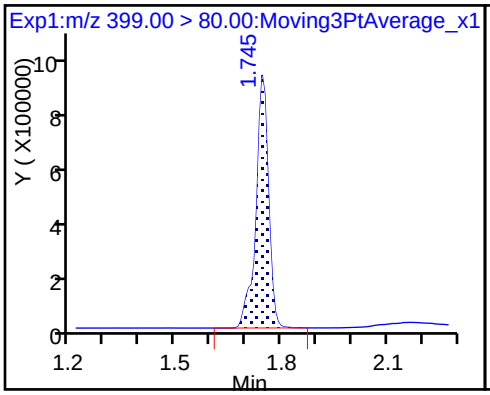
1 Perfluorobutanesulfonic acid



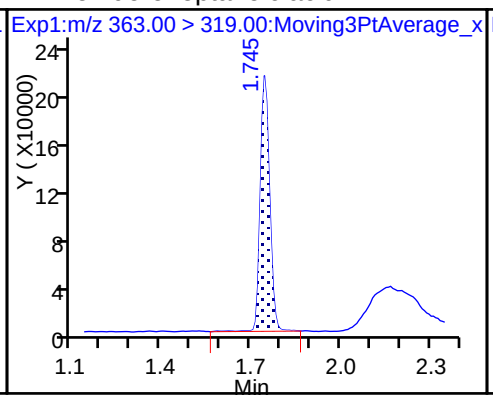
$ 2 13C2 PFHxA



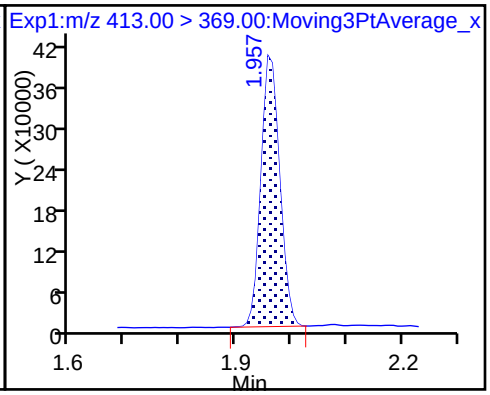
3 Perfluorohexanesulfonic acid



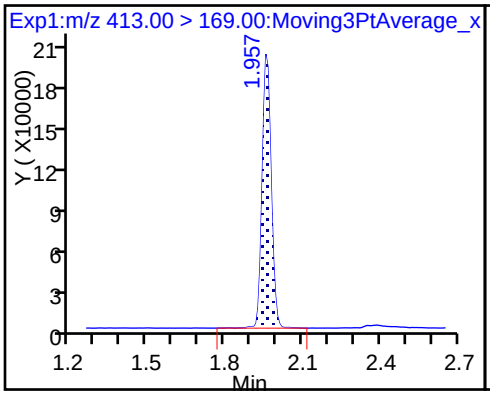
4 Perfluoroheptanoic acid



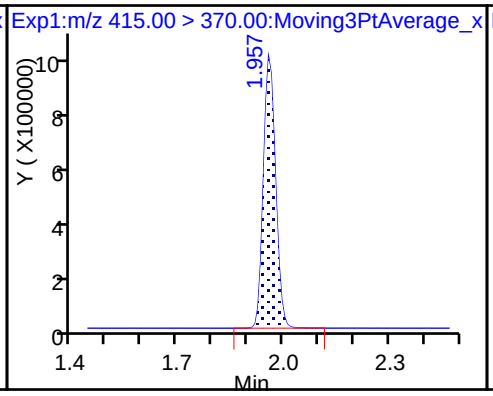
5 Perfluorooctanoic acid



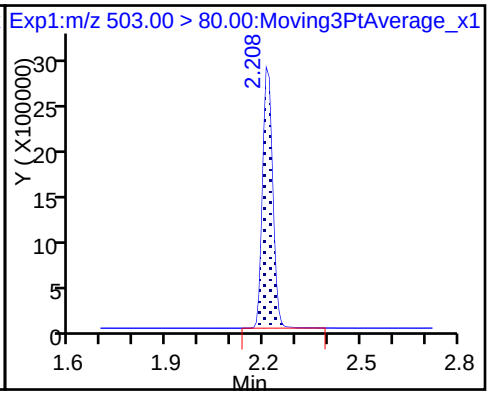
5 Perfluorooctanoic acid



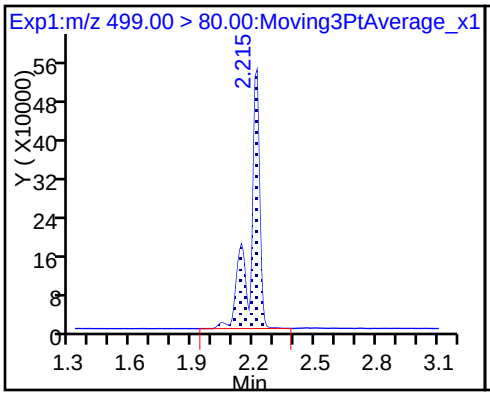
* 6 13C2-PFOA



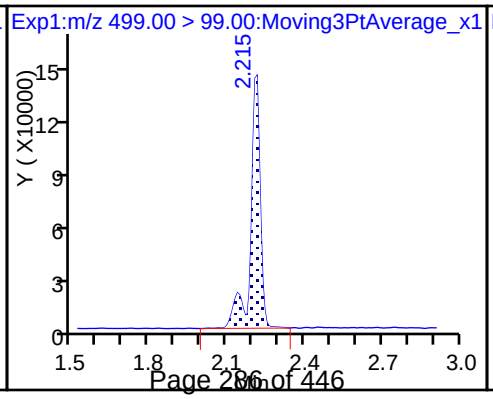
* 7 13C4 PFOS



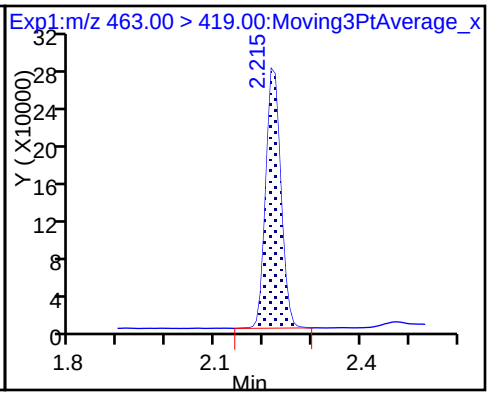
8 Perfluorooctane sulfonic acid



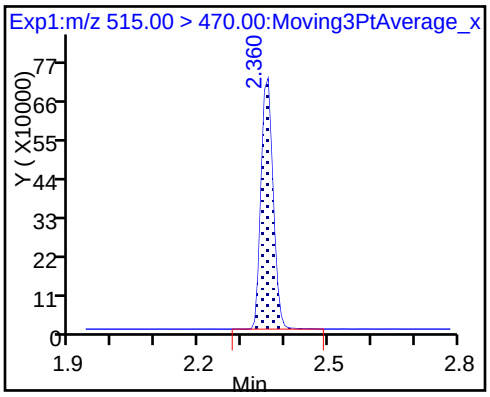
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.360
Y (X10000)
77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_004.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 14-Aug-2017 12:58:26 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:04 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

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

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

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:04 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_004.d

Injection Date: 14-Aug-2017 12:58:26 Instrument ID: A8_N

Lims ID: IC L3

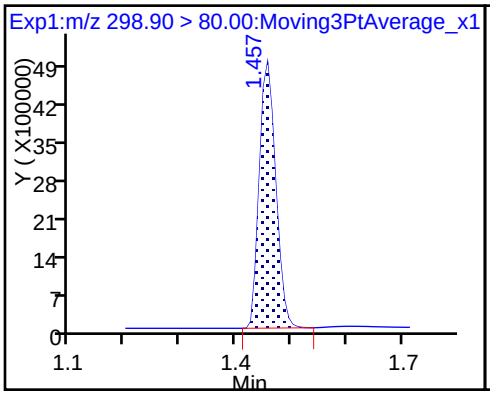
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 4

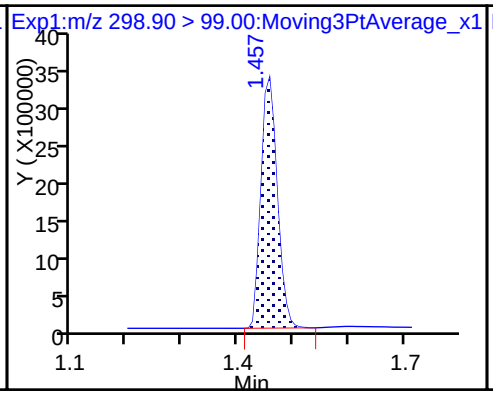
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

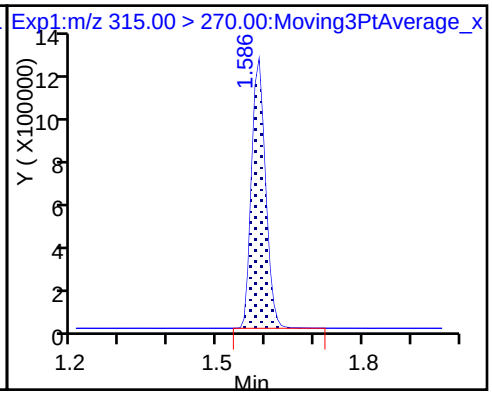
1 Perfluorobutanesulfonic acid



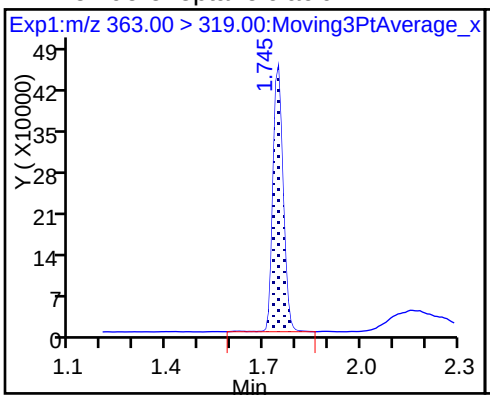
1 Perfluorobutanesulfonic acid



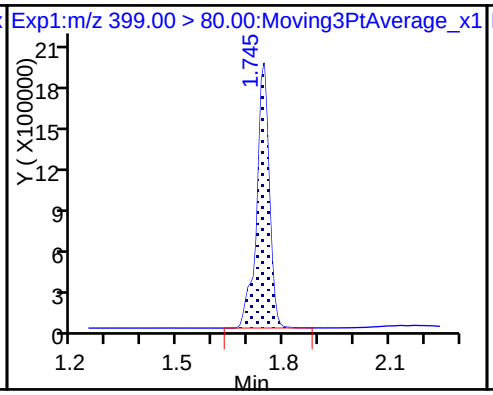
$ 2 13C2 PFHxA



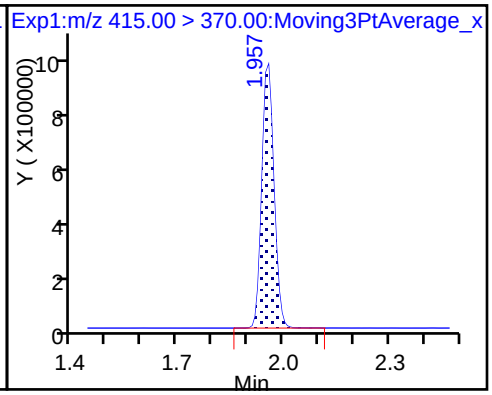
4 Perfluoroheptanoic acid



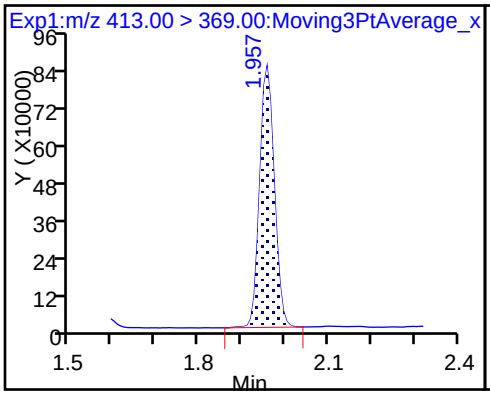
3 Perfluorohexanesulfonic acid



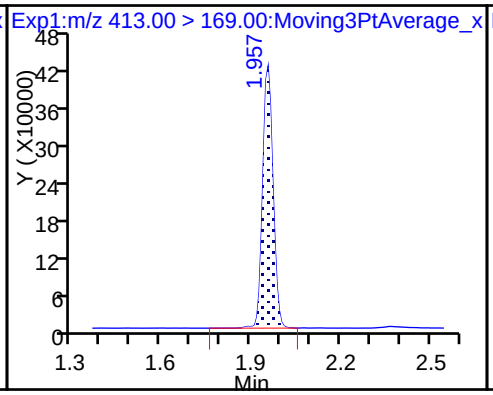
* 6 13C2-PFOA



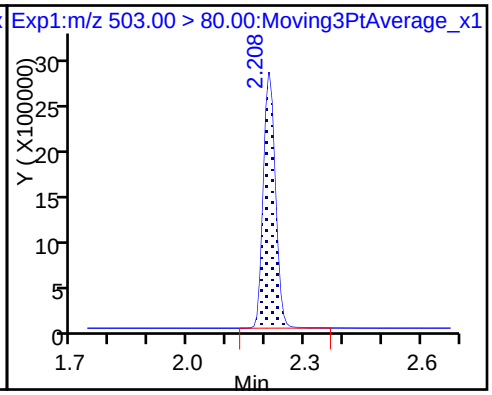
5 Perfluorooctanoic acid



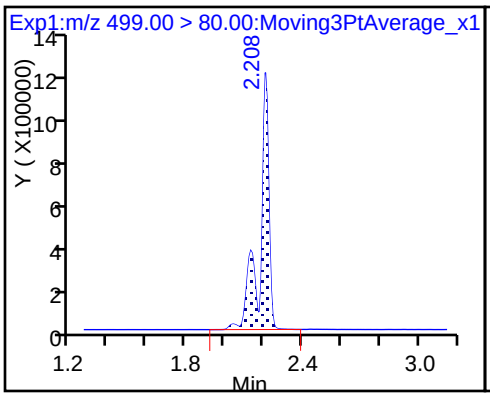
5 Perfluorooctanoic acid



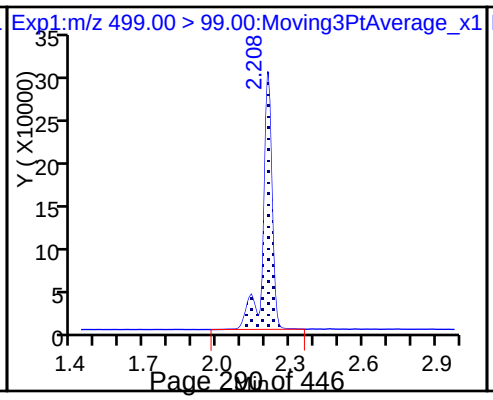
* 7 13C4 PFOS



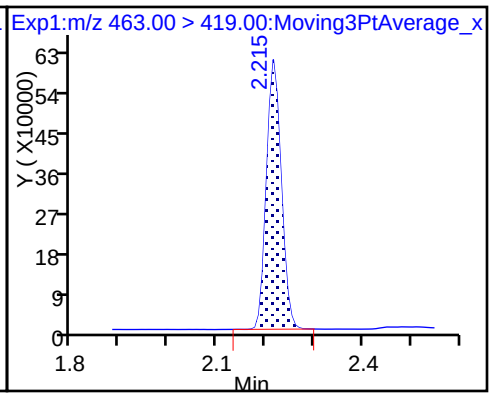
8 Perfluorooctane sulfonic acid



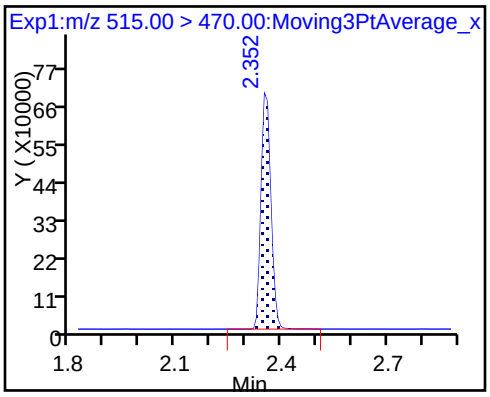
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.352
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_005.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 14-Aug-2017 13:03:11 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:04 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

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

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

Reagents:

LC537-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:05 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

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

Injection Date: 14-Aug-2017 13:03:11 Instrument ID: A8_N

Lims ID: IC L4

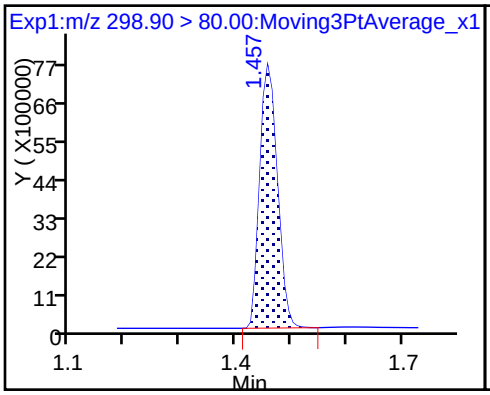
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 5

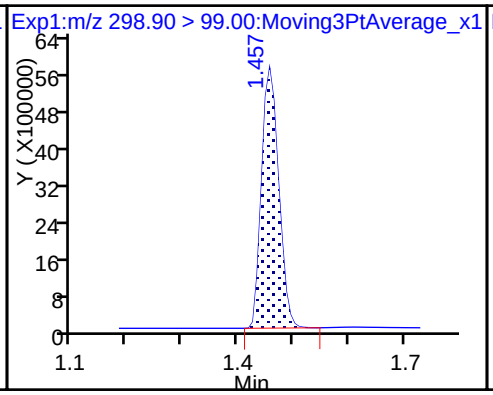
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

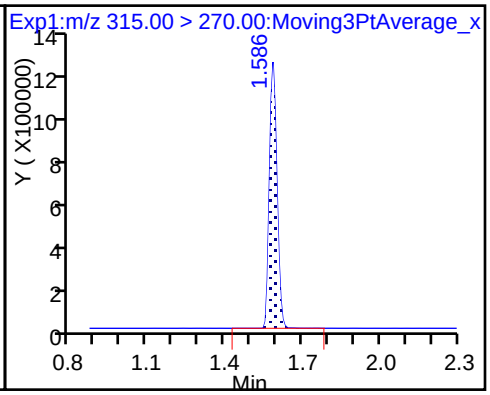
1 Perfluorobutanesulfonic acid



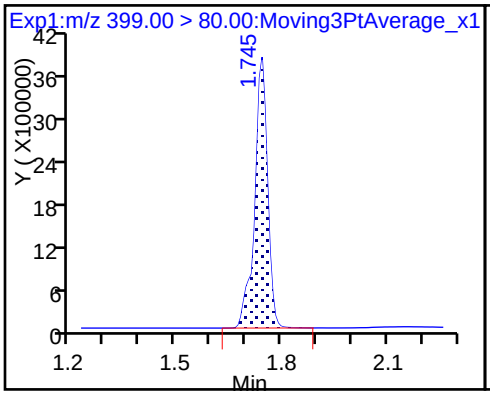
1 Perfluorobutanesulfonic acid



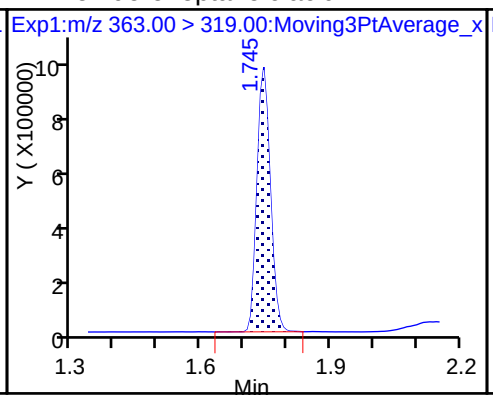
$ 2 13C2 PFHxA



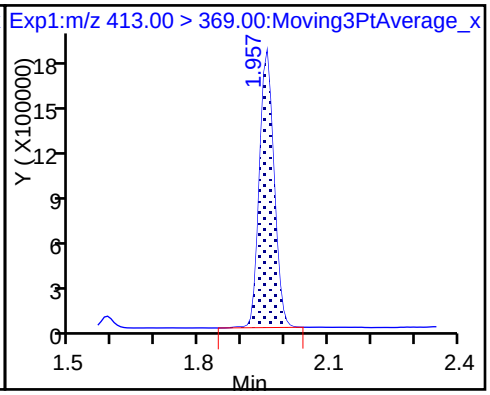
3 Perfluorohexanesulfonic acid



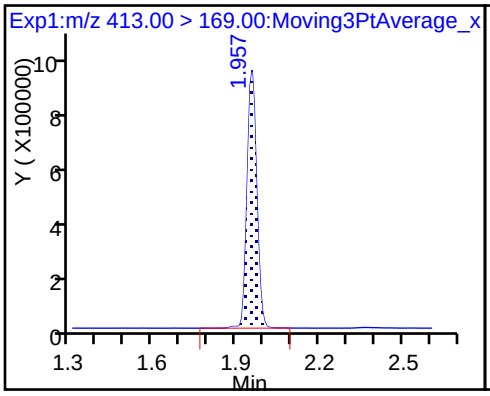
4 Perfluoroheptanoic acid



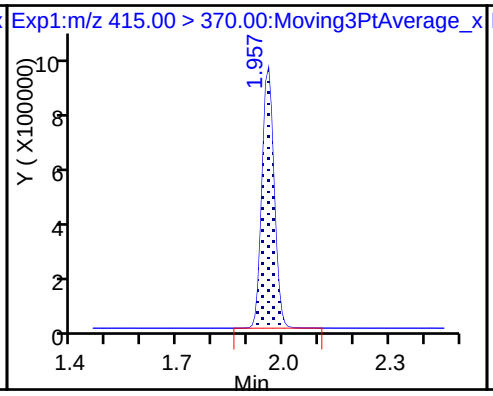
5 Perfluorooctanoic acid



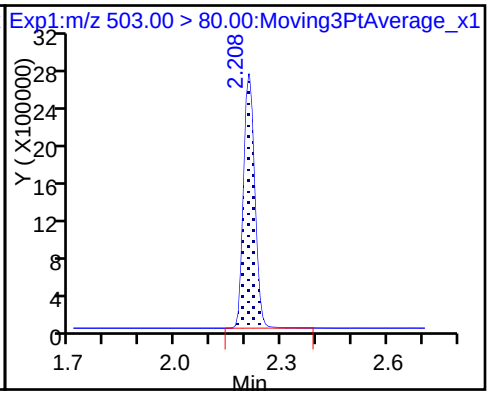
5 Perfluorooctanoic acid



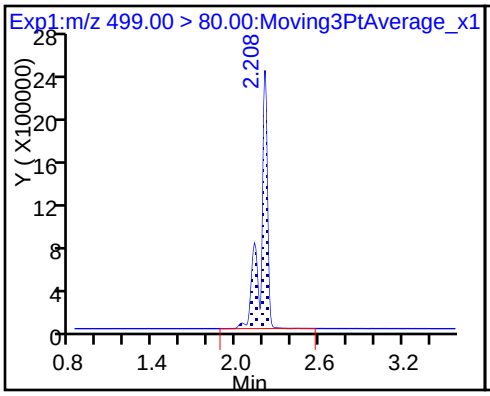
* 6 13C2-PFOA



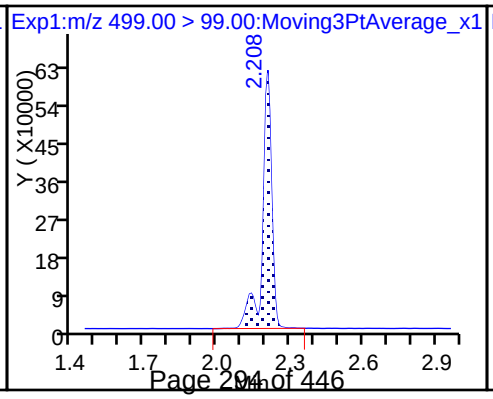
* 7 13C4 PFOS



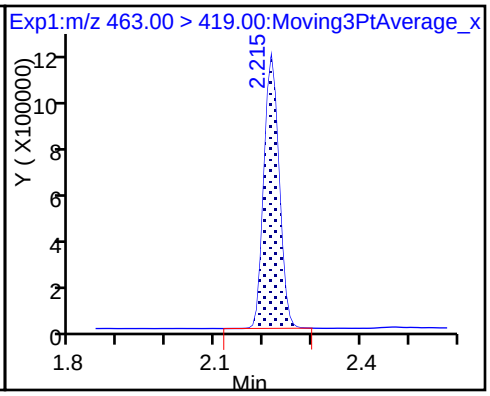
8 Perfluorooctane sulfonic acid



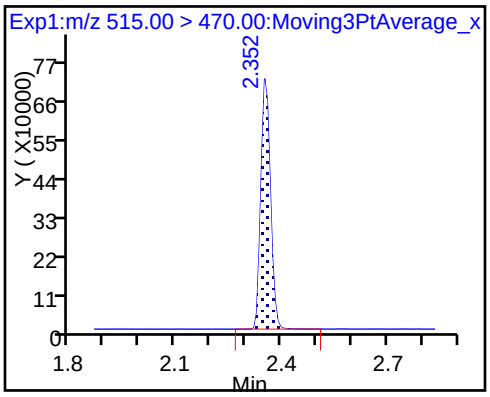
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.352
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_006.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 14-Aug-2017 13:07:55 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:05 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

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

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

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

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

Injection Date: 14-Aug-2017 13:07:55 Instrument ID: A8_N

Lims ID: IC L5

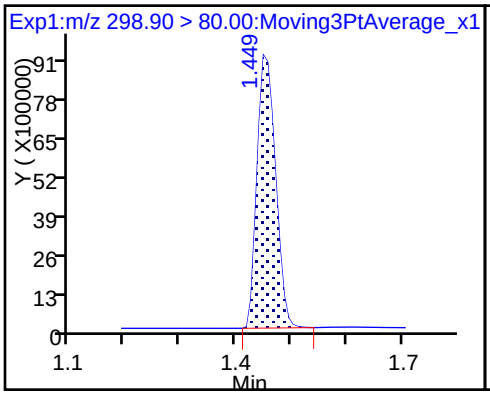
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 6

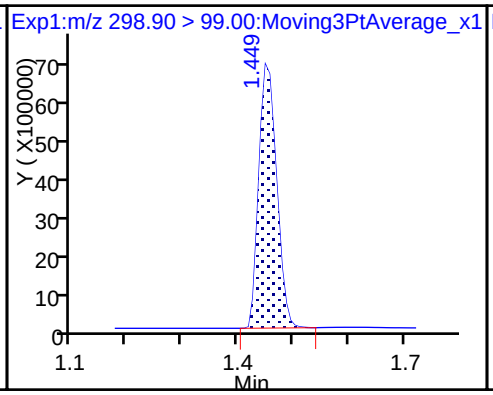
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

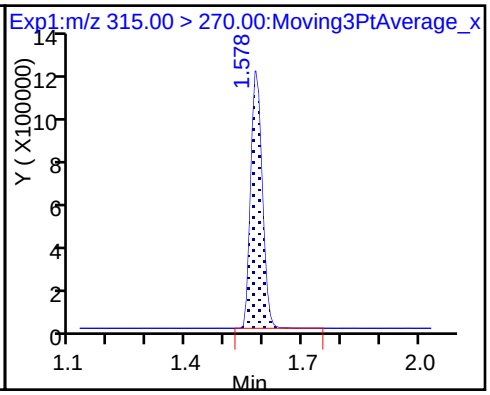
1 Perfluorobutanesulfonic acid



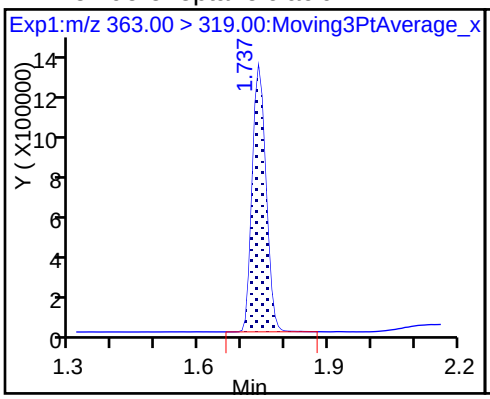
1 Perfluorobutanesulfonic acid



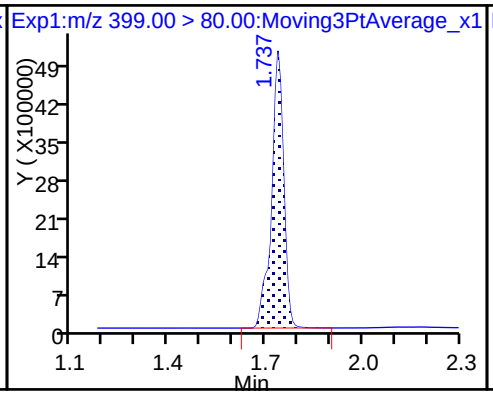
$ 2 13C2 PFHxA



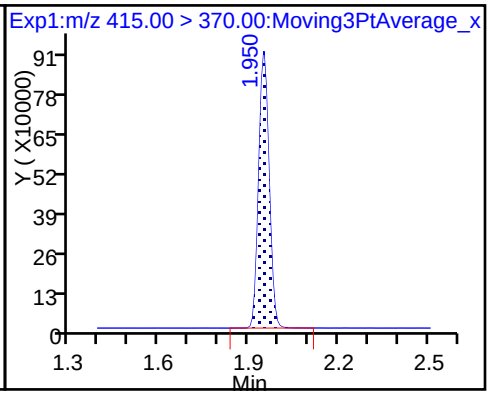
4 Perfluoroheptanoic acid



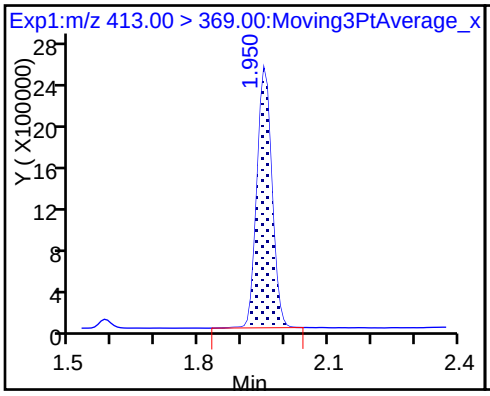
3 Perfluorohexanesulfonic acid



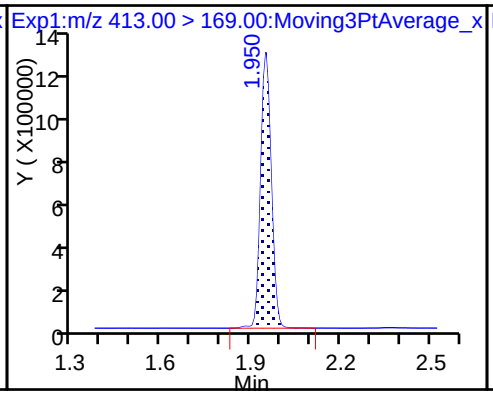
* 6 13C2-PFOA



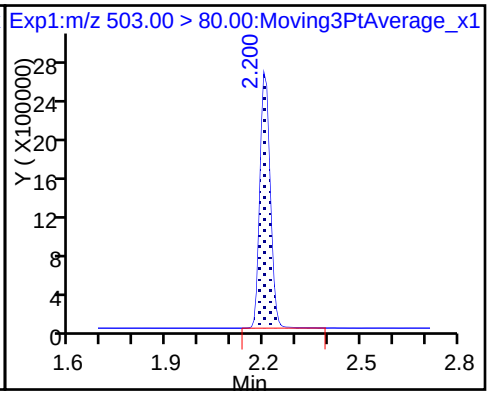
5 Perfluorooctanoic acid



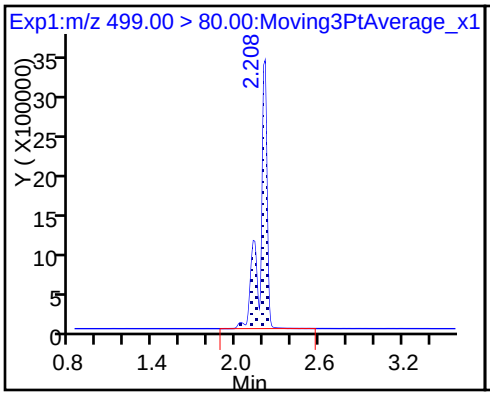
5 Perfluorooctanoic acid



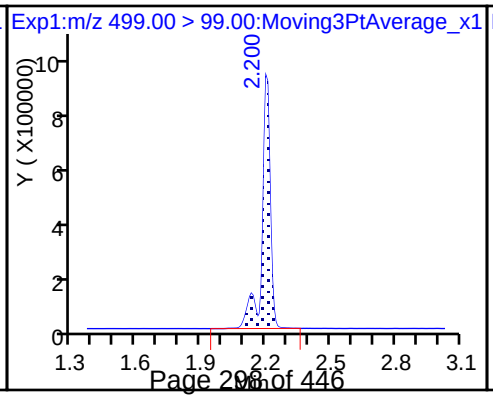
* 7 13C4 PFOS



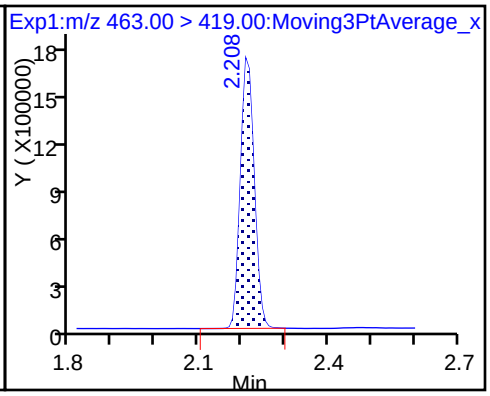
8 Perfluorooctane sulfonic acid



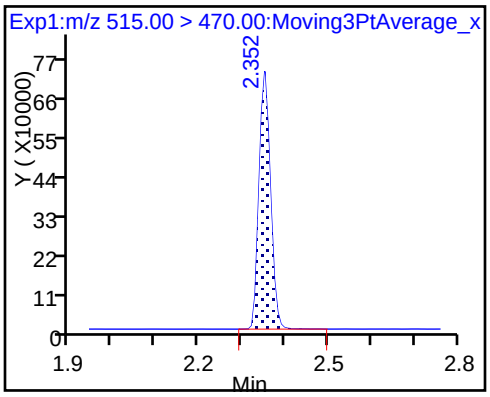
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.352
Y (X10000)
77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 14-Aug-2017 13:12:40 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:07 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

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

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

Reagents:

LC537-L6_00020 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:07 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Injection Date: 14-Aug-2017 13:12:40 Instrument ID: A8_N

Lims ID: IC L6

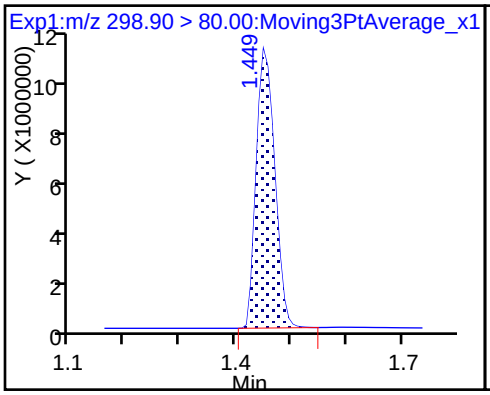
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7

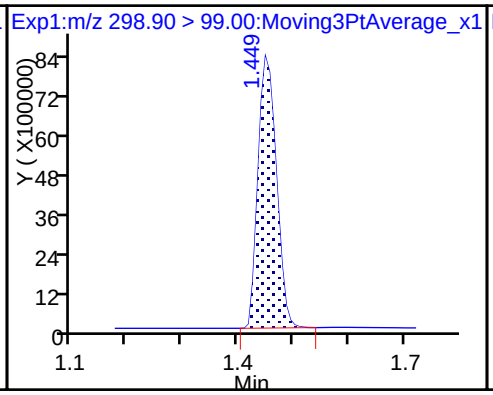
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

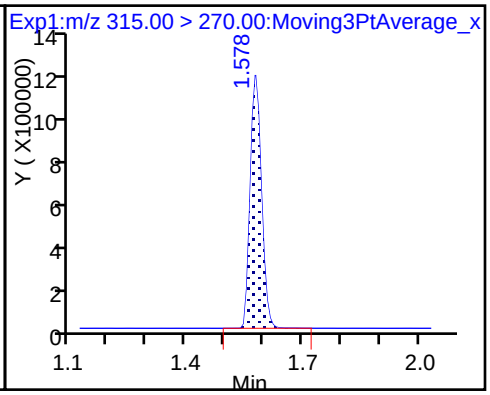
1 Perfluorobutanesulfonic acid



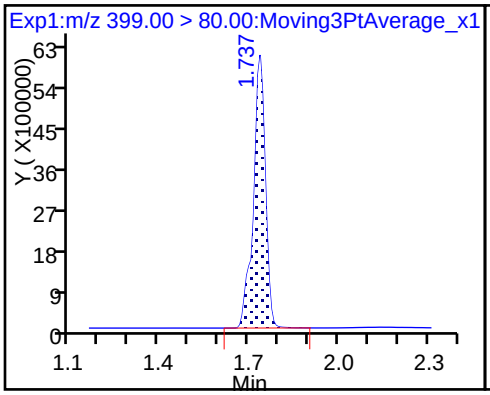
1 Perfluorobutanesulfonic acid



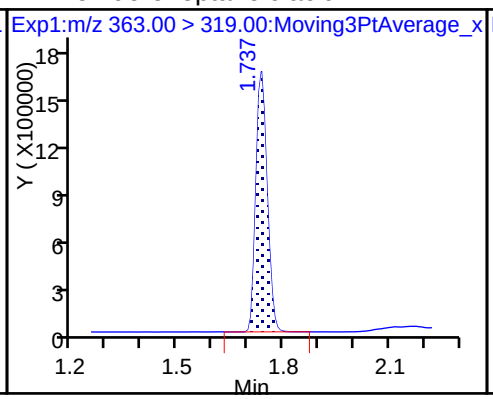
$ 2 13C2 PFHxA



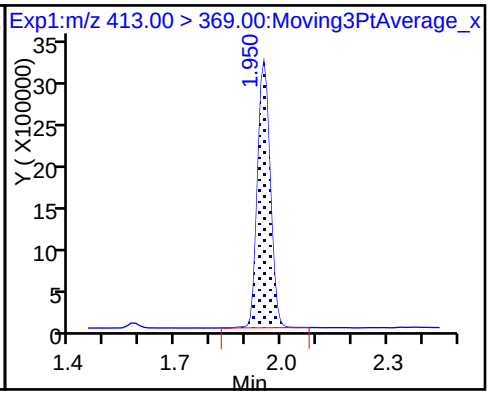
3 Perfluorohexanesulfonic acid



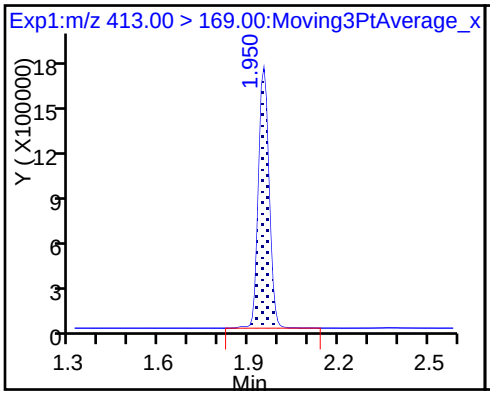
4 Perfluoroheptanoic acid



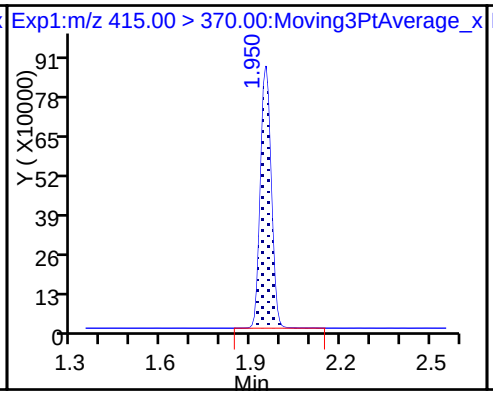
5 Perfluorooctanoic acid



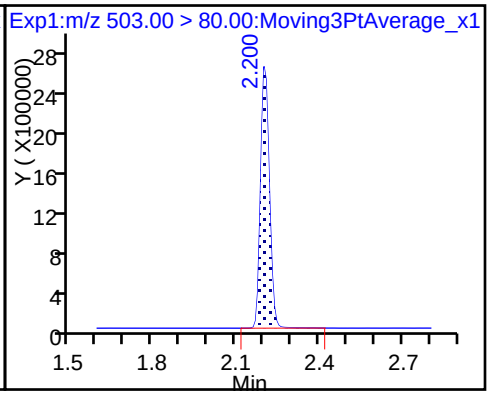
5 Perfluorooctanoic acid



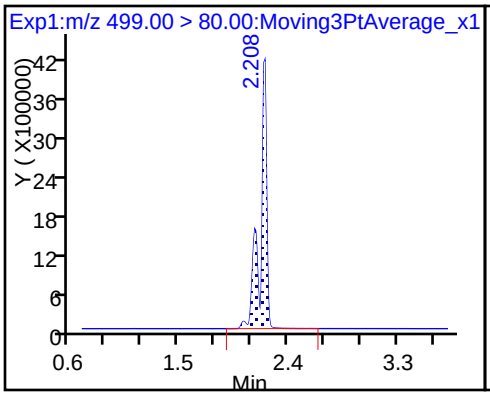
* 6 13C2-PFOA



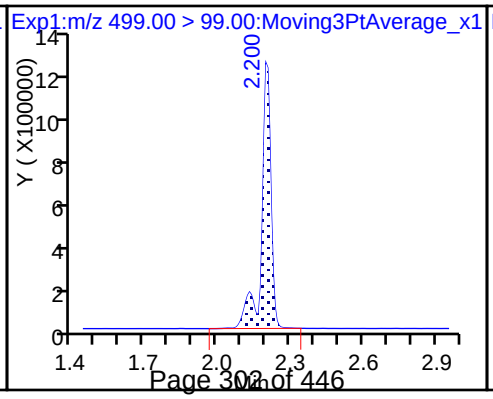
* 7 13C4 PFOS



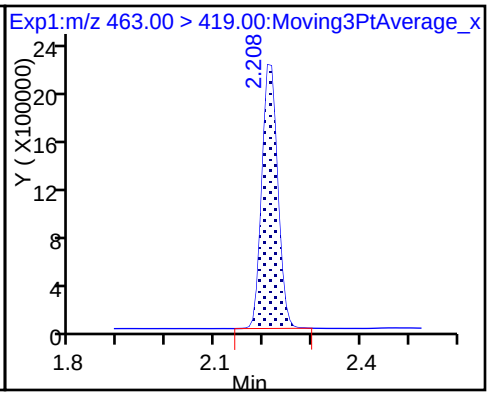
8 Perfluorooctane sulfonic acid



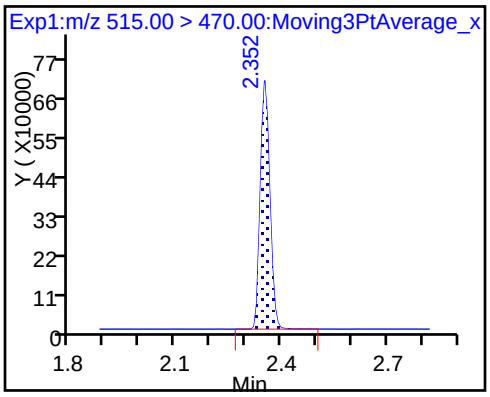
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.352
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.: 320-30191-1

SDG No.:

Lab Sample ID: CCVL 320-179319/9 Calibration Date: 08/14/2017 13:22

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.14_537ICAL_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.212		22.5	20.0	12.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9386		2.44	2.22	9.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.568		7.00	6.67	4.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9308		4.57	4.45	2.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9255		8.91	8.89	0.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6283		4.93	4.45	10.9	50.0
13C2 PFHxA	Ave	1.069	1.128		10.5	10.0	5.5	30.0
13C2 PFDA	Ave	0.5877	0.6289		10.7	10.0	7.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_009.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 14-Aug-2017 13:22:09 ALS Bottle#: 2 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:08 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:17:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	5069955	22.5		689	
298.90 > 99.00	1.449	1.453	-0.004	1.000	3233517		1.57(0.00-0.00)	644	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2456705	10.5		7072	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.742	-0.005	1.000	454396	2.44		40.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.742	-0.005	1.000	2186681	7.00		343	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		2177935	10.0		9587	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	901705	4.57		50.1	
413.00 > 169.00	1.942	1.955	-0.013	1.000	476593		1.89(0.00-0.00)	869	
* 7 13C4 PFOS									
503.00 > 80.00	2.200	2.205	-0.005		5998180	28.7		5754	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.200	2.208	-0.008	1.000	1720862	8.91		1437	
499.00 > 99.00	2.200	2.208	-0.008	1.000	364893		4.72(0.00-0.00)	416	
9 Perfluorononanoic acid									
463.00 > 419.00	2.208	2.213	-0.005	1.000	608257	4.93		144	
$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1369753	10.7		8253	

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:09 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_009.d

Injection Date: 14-Aug-2017 13:22:09 Instrument ID: A8_N

Lims ID: CCVL

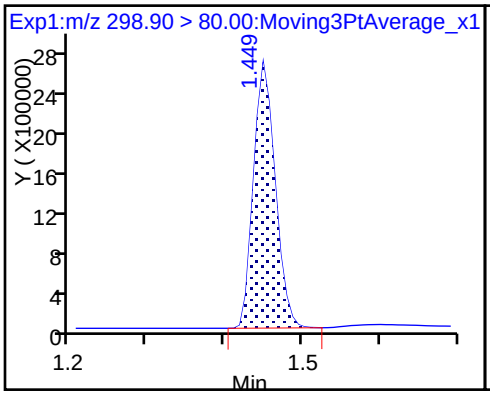
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 9

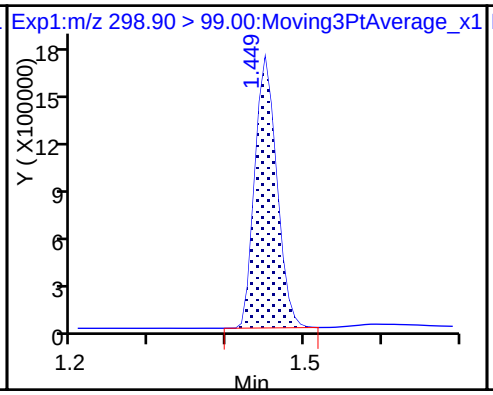
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

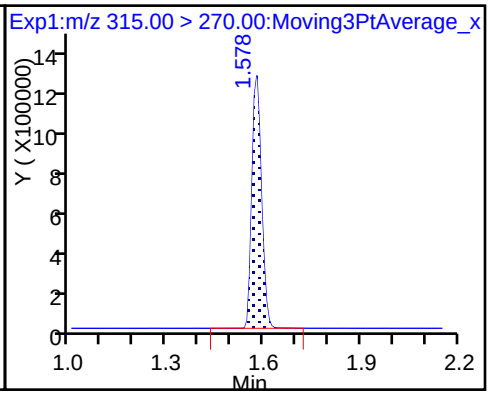
1 Perfluorobutanesulfonic acid



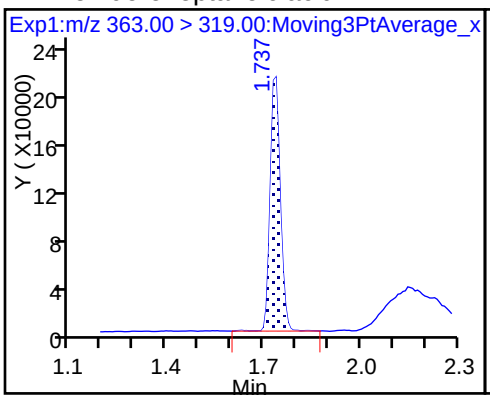
1 Perfluorobutanesulfonic acid



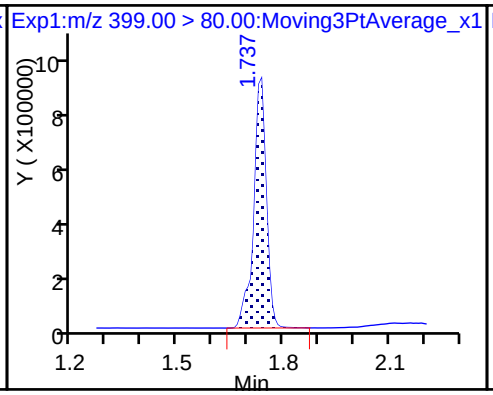
$ 2 13C2 PFHxA



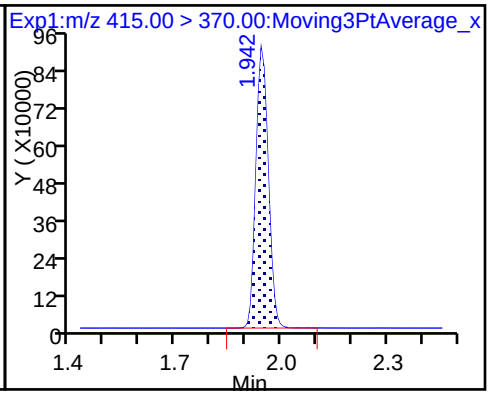
4 Perfluoroheptanoic acid



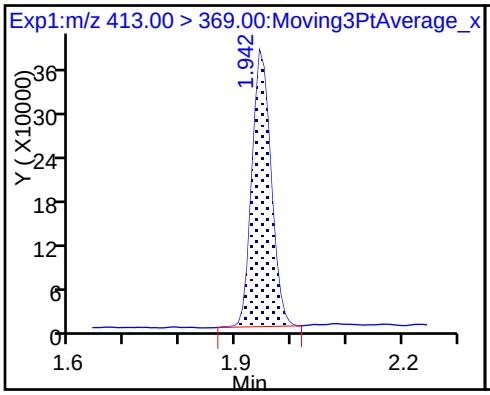
3 Perfluorohexanesulfonic acid



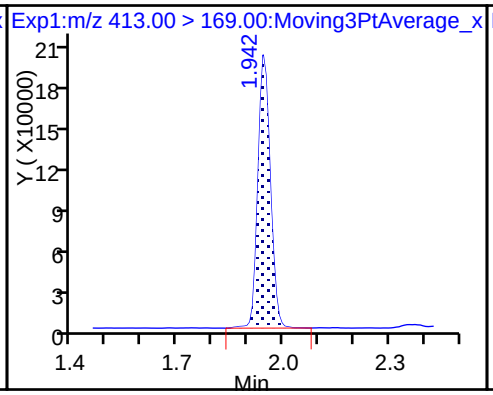
* 6 13C2-PFOA



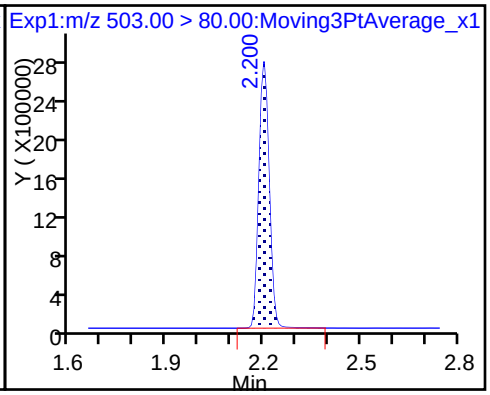
5 Perfluorooctanoic acid



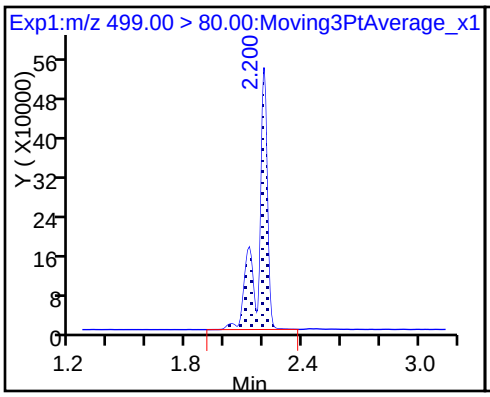
5 Perfluorooctanoic acid



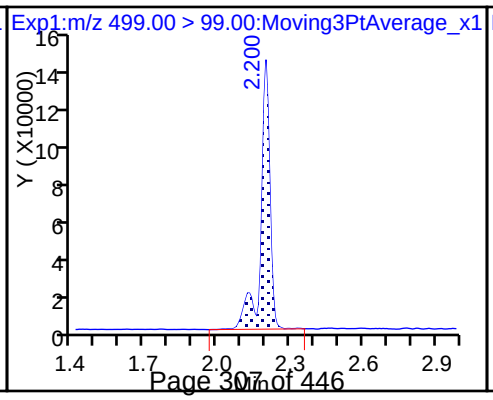
* 7 13C4 PFOS



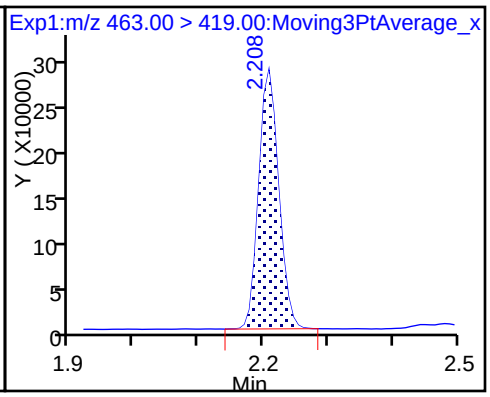
8 Perfluorooctane sulfonic acid



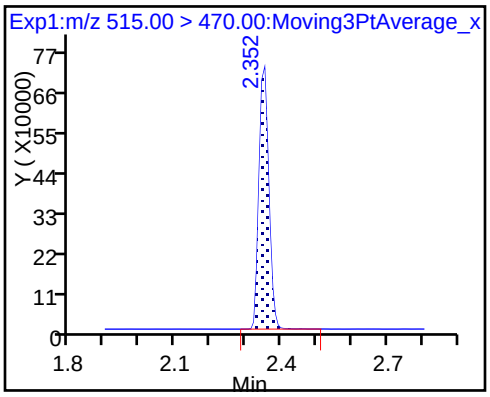
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.352
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.: 320-30191-1

SDG No.:

Lab Sample ID: ICV 320-179319/11 Calibration Date: 08/14/2017 13:31

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.14_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9251		104	100	3.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9672		11.3	10.0	13.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.761		23.7	20.1	17.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9396		21.2	20.5	3.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.7333		26.1	20.1	29.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	1.121		23.9	19.7	21.3	30.0
13C2 PFHxA	Ave	1.069	1.124		10.5	10.0	5.1	30.0
13C2 PFDA	Ave	0.5877	0.6385		10.9	10.0	8.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_011.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 14-Aug-2017 13:31:37 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 14-Aug-2017 14:36:10 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: phomsophat Date: 14-Aug-2017 14:18:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	18809532	103.7		1920	
298.90 > 99.00	1.449	1.453	-0.004	1.000	13567533		1.39(0.00-0.00)	2047	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2224871	10.5		6402	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.742	-0.012	1.000	1914446	11.3		166	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.742	-0.012	1.000	7180754	23.7		1082	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1980065	10.0		9656	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	3810943	21.2		220	
413.00 > 169.00	1.942	1.955	-0.013	1.000	2037831		1.87(0.00-0.00)	3256	
* 7 13C4 PFOS									
503.00 > 80.00	2.193	2.205	-0.012		5824653	28.7		5480	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.200	2.208	-0.008	1.000	4482668	23.9		3801	
499.00 > 99.00	2.200	2.208	-0.008	1.000	847951		5.29(0.00-0.00)	940	
9 Perfluorononanoic acid									
463.00 > 419.00	2.200	2.213	-0.013	1.000	2922223	26.1		737	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.354	-0.010	1.000	1264298	10.9		7686	

Reagents:

LC537-ICV_00028 Amount Added: 1.00 Units: mL

Report Date: 14-Aug-2017 14:36:10 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_011.d

Injection Date: 14-Aug-2017 13:31:37 Instrument ID: A8_N

Lims ID: ICV

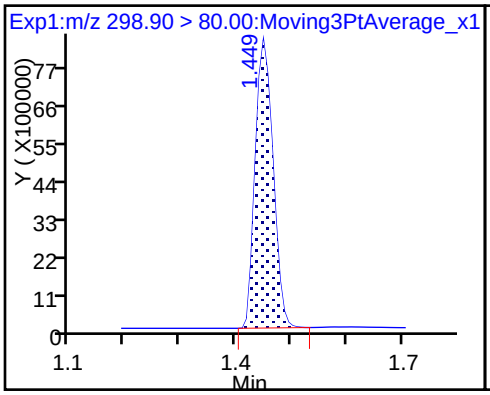
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 11

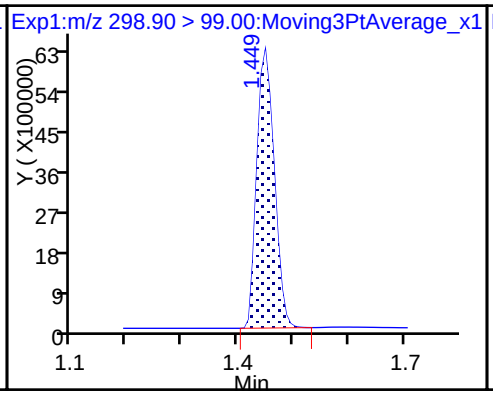
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

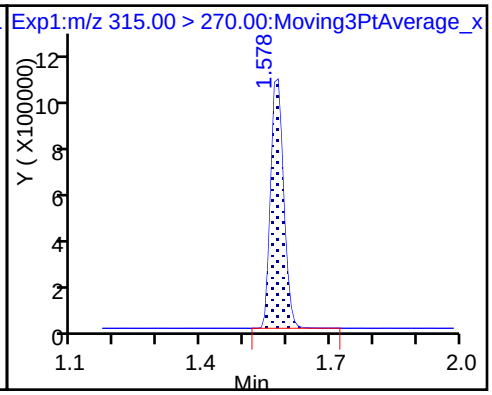
1 Perfluorobutanesulfonic acid



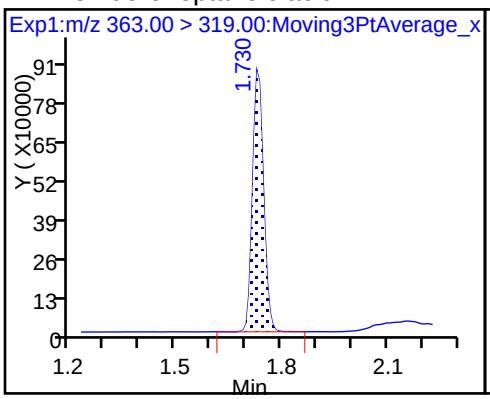
1 Perfluorobutanesulfonic acid



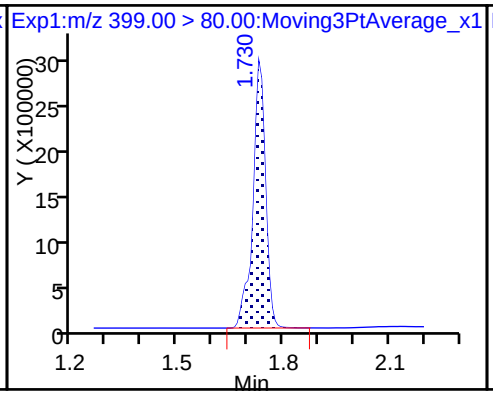
$ 2 13C2 PFHxA



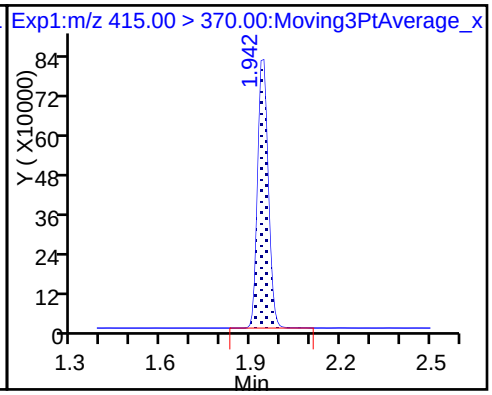
4 Perfluoroheptanoic acid



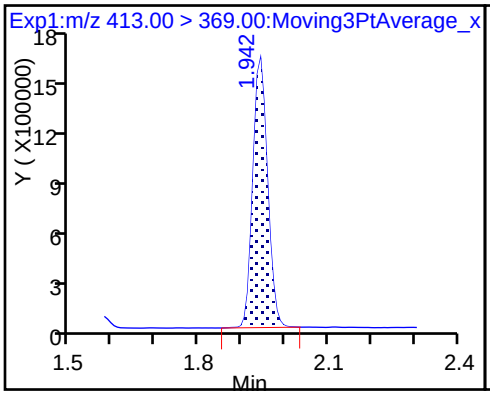
3 Perfluorohexanesulfonic acid



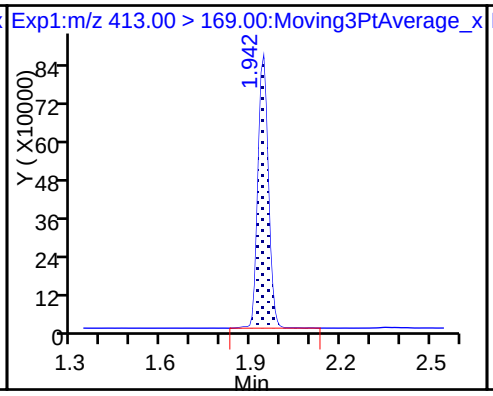
* 6 13C2-PFOA



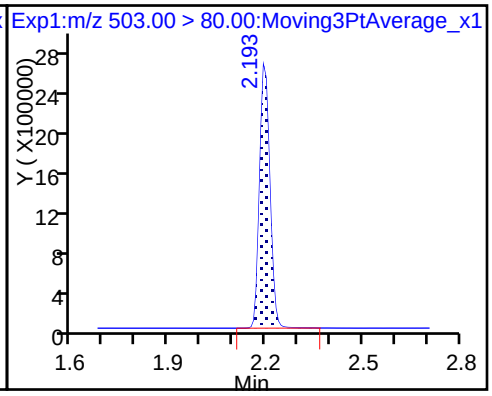
5 Perfluorooctanoic acid



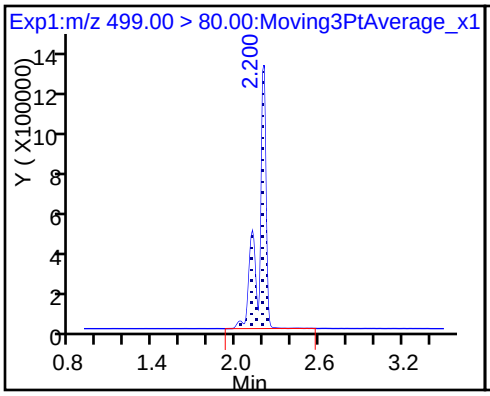
5 Perfluorooctanoic acid



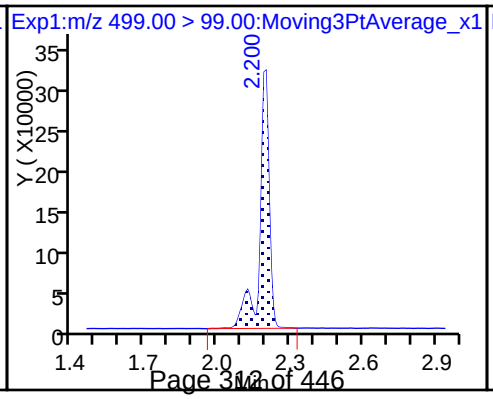
* 7 13C4 PFOS



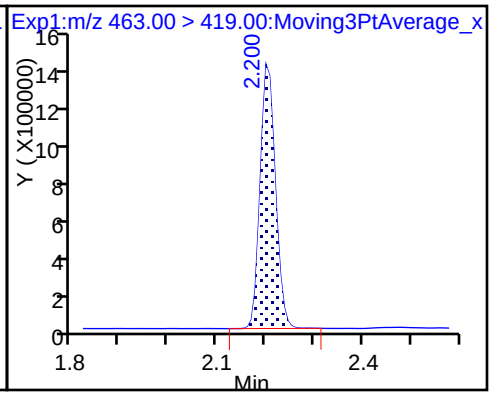
8 Perfluorooctane sulfonic acid



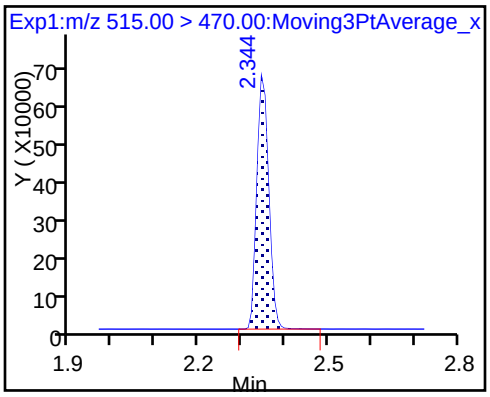
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
70
60
50
40
30
20
10
0
1.9
2.2
2.5
2.8
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCVL 320-179695/4 Calibration Date: 08/16/2017 09:11

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.15_537A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.167		21.7	20.0	8.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.7567		1.96	2.22	-11.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.526		6.81	6.67	2.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9013		4.42	4.45	-0.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9279		8.93	8.89	0.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.5763		4.52	4.45	1.7	50.0
13C2 PFHxA	Ave	1.069	0.9803		9.17	10.0	-8.3	30.0
13C2 PFDA	Ave	0.5877	0.6186		10.5	10.0	5.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46763.b\2017.08.15_537A_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 16-Aug-2017 09:11:57 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46763.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2017 14:01:43 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK009

First Level Reviewer: barnettj Date: 16-Aug-2017 13:35:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	4908309	21.7		621	
298.90 > 99.00	1.449	1.453	-0.004	1.000	3217797		1.53(0.00-0.00)	635	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.601	1.582	0.019	1.000	2392442	9.17		3409	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.775	1.742	0.033	1.000	2140738	6.81		291	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.775	1.742	0.033	1.000	410489	1.96		20.5	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.988	1.955	0.033	1.000	978392	4.42		59.6	
413.00 > 169.00	1.988	1.955	0.033	1.000	519425		1.88(0.00-0.00)	490	
* 6 13C2-PFOA									
415.00 > 370.00	1.988	1.955	0.033		2440436	10.0		8227	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.208	2.185	0.023	1.000	1735194	8.93		562	
499.00 > 99.00	2.208	2.185	0.023	1.000	374503		4.63(0.00-0.00)	303	
* 7 13C4 PFOS									
503.00 > 80.00	2.208	2.205	0.003		6032262	28.7		5656	
9 Perfluorononanoic acid									
463.00 > 419.00	2.215	2.213	0.002	1.000	625131	4.52		100	
$ 10 13C2 PFDA									
515.00 > 470.00	2.352	2.354	-0.002	1.000	1509624	10.5		3939	

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2017 14:01:44 Chrom Revision: 2.2 08-Aug-2017 17:51:08

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46763.b\2017.08.15_537A_004.d

Injection Date: 16-Aug-2017 09:11:57 Instrument ID: A8_N

Lims ID: CCVL

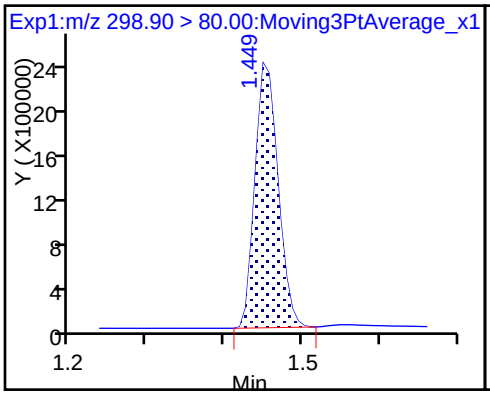
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4

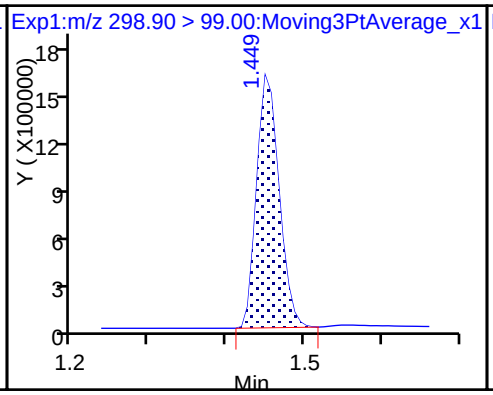
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

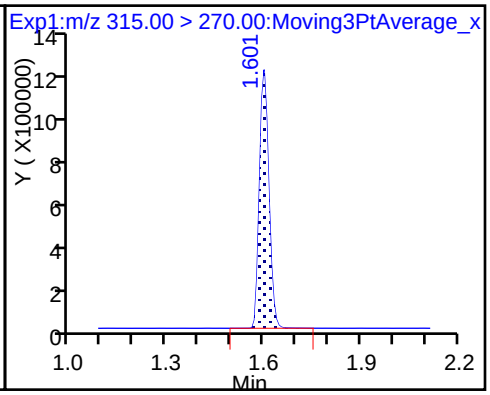
1 Perfluorobutanesulfonic acid



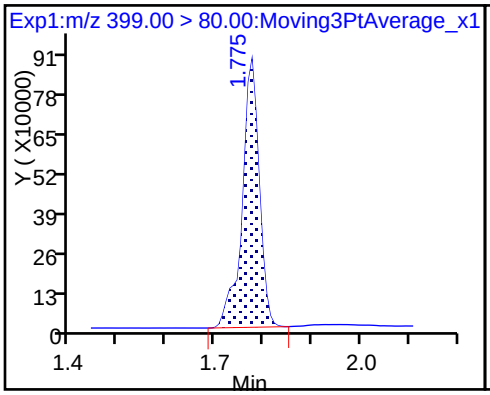
1 Perfluorobutanesulfonic acid



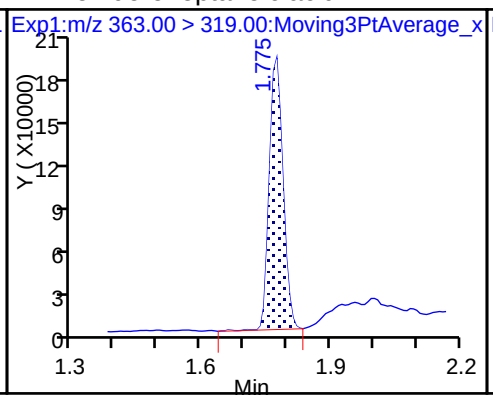
$ 2 13C2 PFHxA



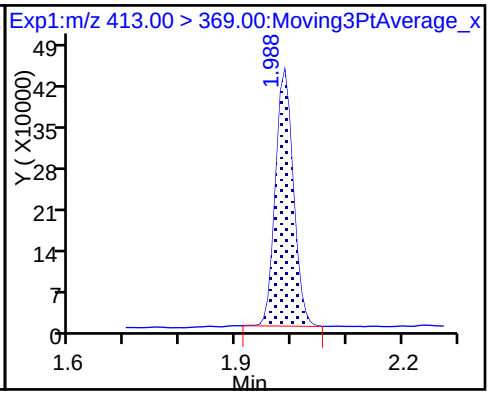
3 Perfluorohexanesulfonic acid



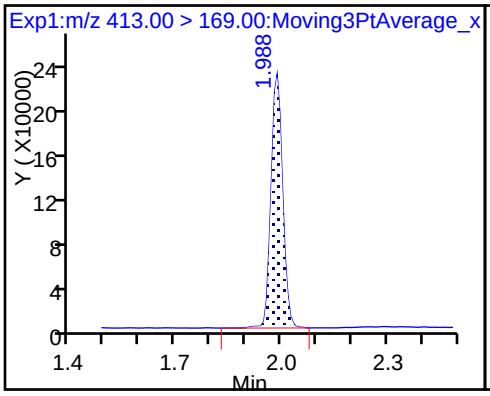
4 Perfluoroheptanoic acid



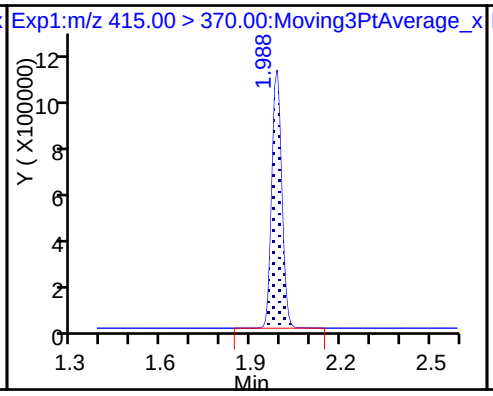
5 Perfluorooctanoic acid



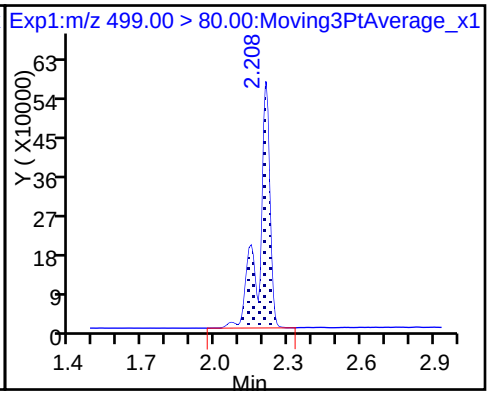
5 Perfluorooctanoic acid



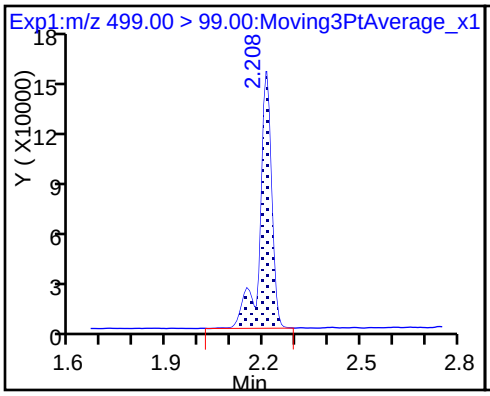
* 6 13C2-PFOA



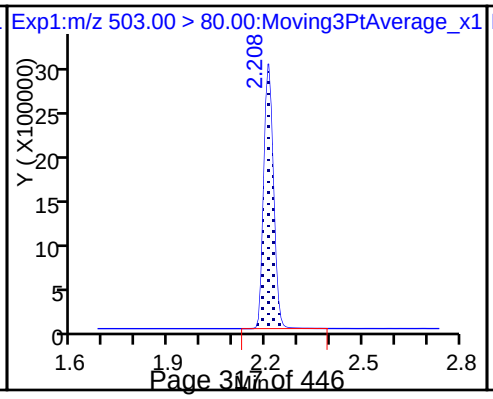
8 Perfluorooctane sulfonic acid



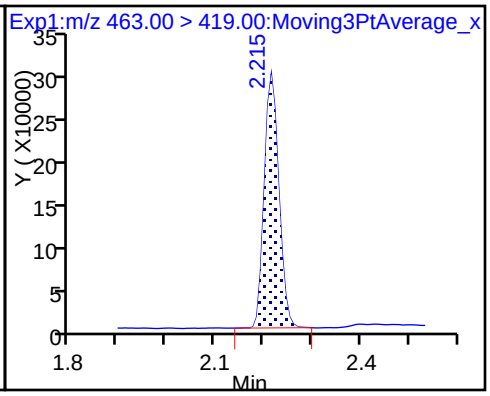
8 Perfluorooctane sulfonic acid



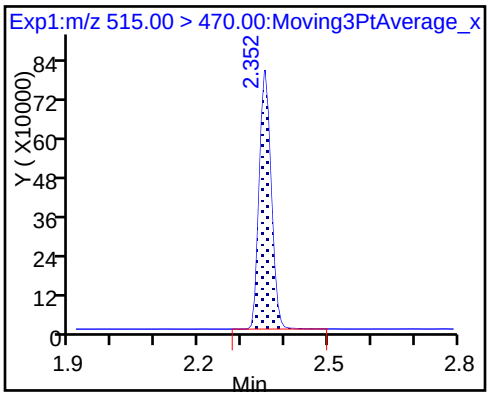
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.352
Y (X10000)
84
72
60
48
36
24
12
0
1.9
2.2
2.5
2.8
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179727/1 Calibration Date: 08/16/2017 12:40

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.062		46.8	45.0	4.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9427		5.51	5.00	10.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.585		15.9	15.0	6.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9145		10.1	10.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9443		20.5	20.0	2.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6560		11.6	10.0	15.8	30.0
13C2 PFHxA	Ave	1.069	1.200		11.2	10.0	12.3	30.0
13C2 PFDA	Ave	0.5877	0.7379		12.6	10.0	25.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_001.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 12:40:52 ALS Bottle#: 3 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:30:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9597921	46.8		1227	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6669440		1.44(0.00-0.00)	1163	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2447120	11.2		5436	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	4775829	15.9		716	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	961151	5.51		72.0	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1866038	10.1		112	
413.00 > 169.00	1.950	1.955	-0.005	1.000	978044		1.91(0.00-0.00)	1159	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2038727	10.0		5709	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	3793211	20.5		2438	
499.00 > 99.00	2.177	2.177	0.0	1.000	784658		4.83(0.00-0.00)	755	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5758922	28.7		5514	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	1337628	11.6		227	
$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1504309	12.6		5136	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 17-Aug-2017 14:27:11 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_001.d

Injection Date: 16-Aug-2017 12:40:52 Instrument ID: A8_N

Lims ID: CCV L3

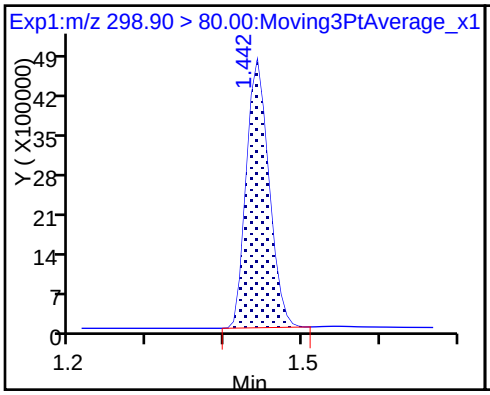
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1

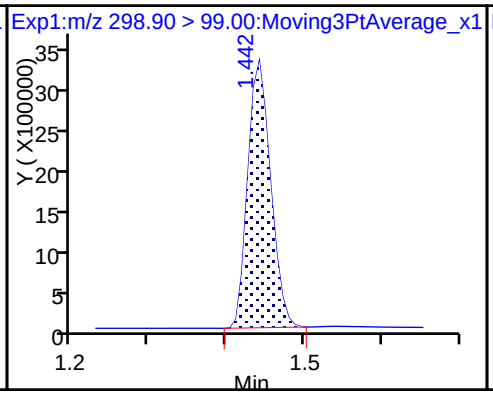
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

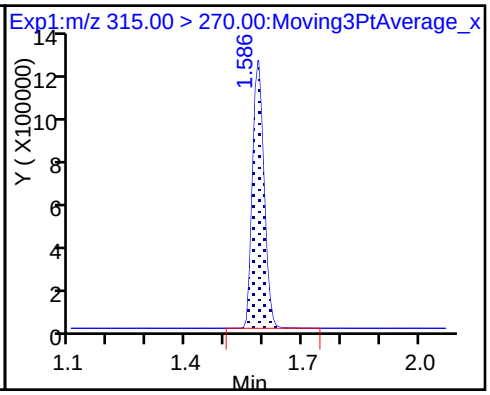
1 Perfluorobutanesulfonic acid



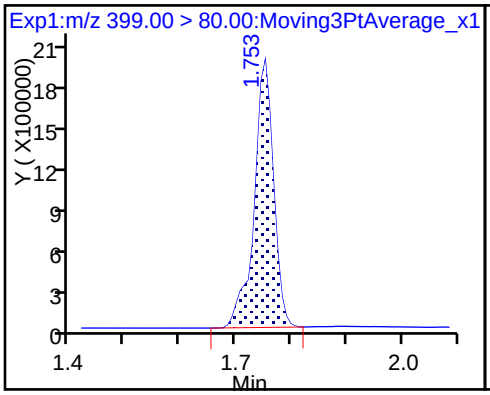
1 Perfluorobutanesulfonic acid



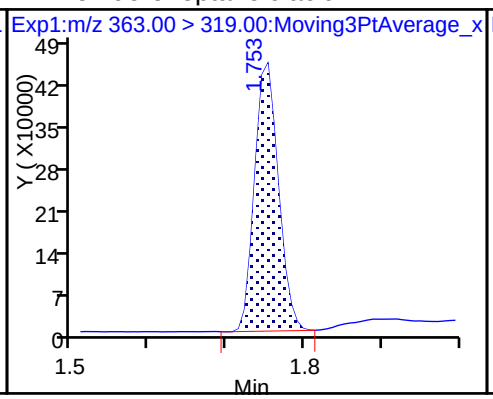
$ 2 13C2 PFHxA



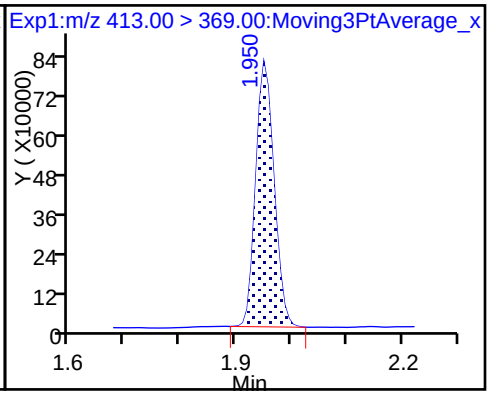
3 Perfluorohexanesulfonic acid



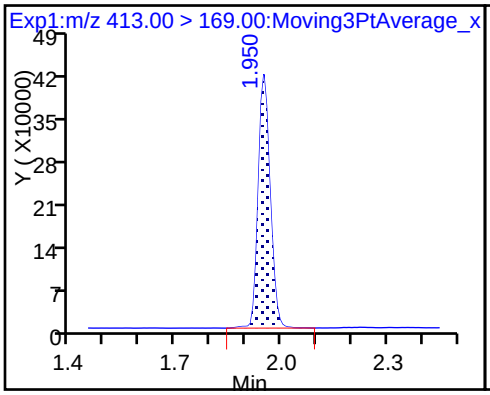
4 Perfluoroheptanoic acid



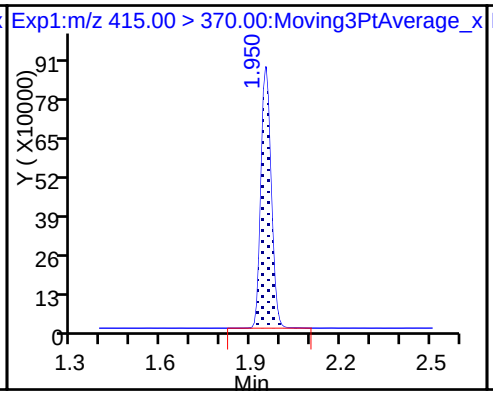
5 Perfluorooctanoic acid



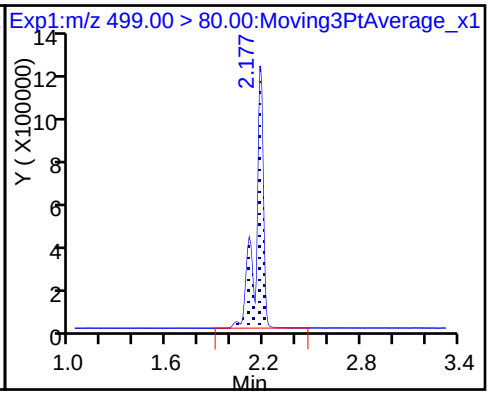
5 Perfluorooctanoic acid



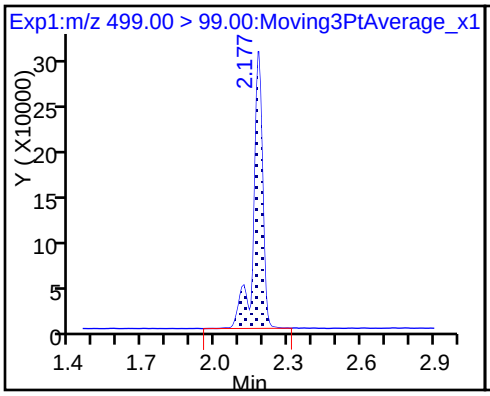
* 6 13C2-PFOA



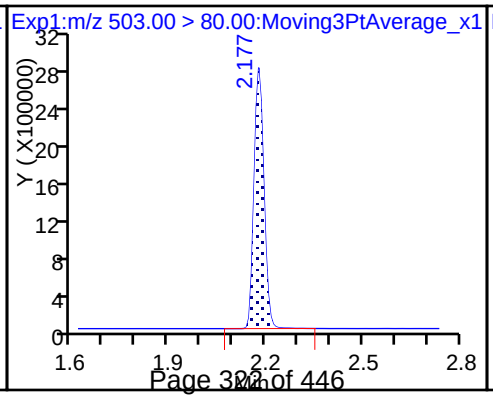
8 Perfluorooctane sulfonic acid



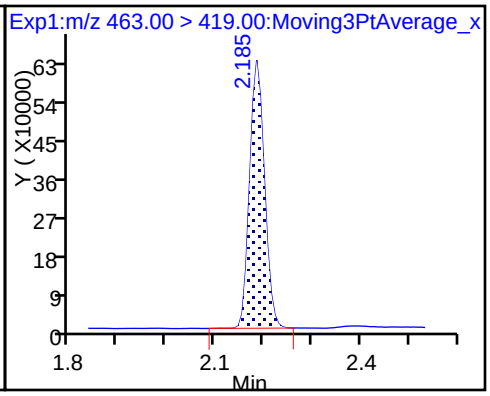
8 Perfluorooctane sulfonic acid



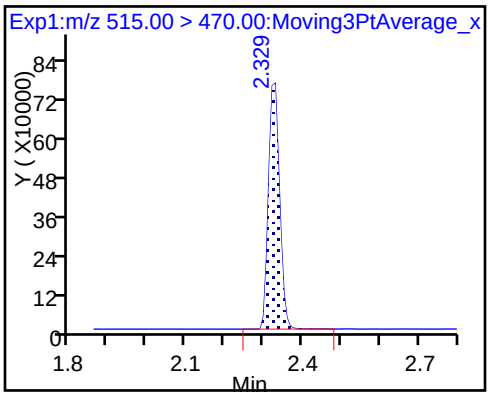
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
Y (X10000)
84
72
60
48
36
24
12
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179727/13 Calibration Date: 08/16/2017 13:37

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179728/13 Calibration Date: 08/16/2017 13:37

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_013.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 13:37:48 ALS Bottle#: 5 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:30:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	21733470	131.9		2243	
298.90 > 99.00	1.449	1.453	-0.004	1.000	15934232		1.36(0.00-0.00)	2480	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.593	1.582	0.011	1.000	2312497	11.6		6465	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13368176	45.0		1861	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2624805	16.4		229	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5081880	30.0		249	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2671084		1.90(0.00-0.00)	3011	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1866257	10.0		6208	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11121234	60.6		5042	
499.00 > 99.00	2.177	2.177	0.0	1.000	2375717		4.68(0.00-0.00)	1948	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5698459	28.7		5778	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3721491	35.2		497	
$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1280680	11.7		5563	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_013.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 13:37:48 ALS Bottle#: 5 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:19 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:30:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	21733470	131.9		2243	
298.90 > 99.00	1.449	1.453	-0.004	1.000	15934232		1.36(0.00-0.00)	2480	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.593	1.582	0.011	1.000	2312497	11.6		6465	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13368176	45.0		1861	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2624805	16.4		229	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5081880	30.0		249	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2671084		1.90(0.00-0.00)	3011	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1866257	10.0		6208	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11121234	60.6		5042	
499.00 > 99.00	2.177	2.177	0.0	1.000	2375717		4.68(0.00-0.00)	1948	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5698459	28.7		5778	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3721491	35.2		497	
$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1280680	11.7		5563	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 17-Aug-2017 14:27:20 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_013.d

Injection Date: 16-Aug-2017 13:37:48 Instrument ID: A8_N

Lims ID: CCV L5

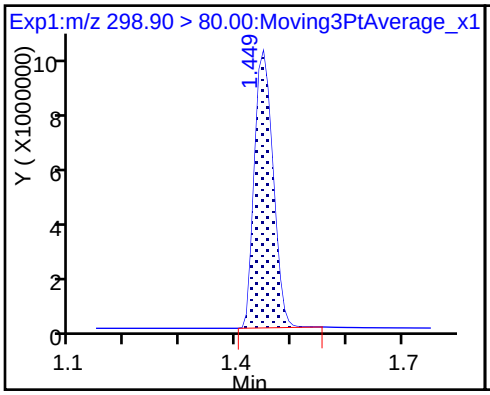
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13

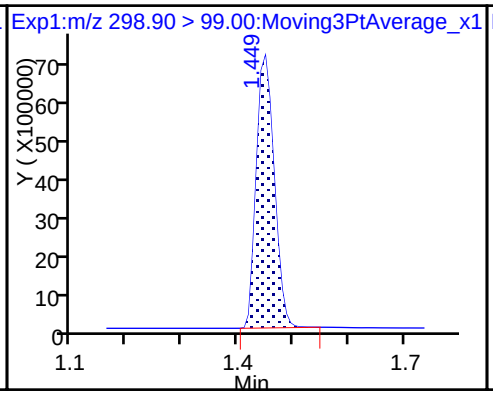
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

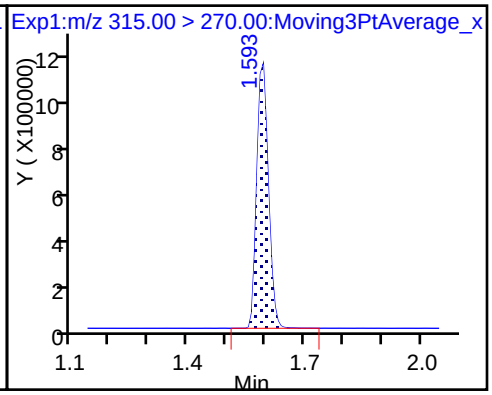
1 Perfluorobutanesulfonic acid



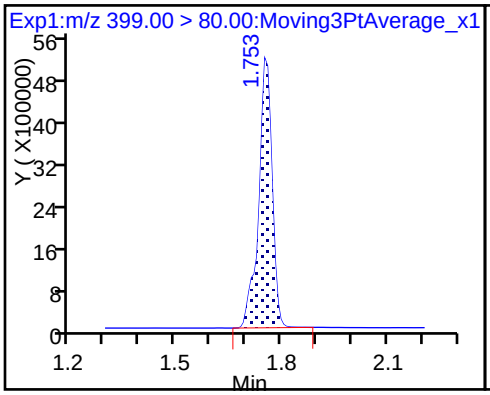
1 Perfluorobutanesulfonic acid



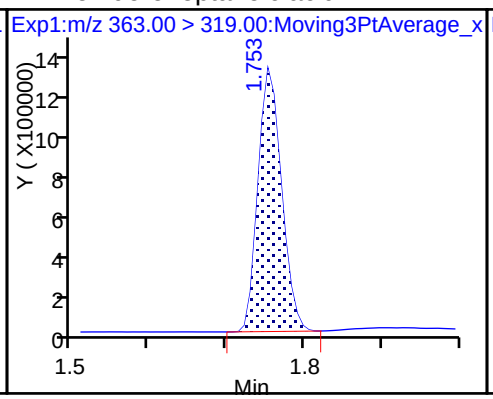
$ 2 13C2 PFHxA



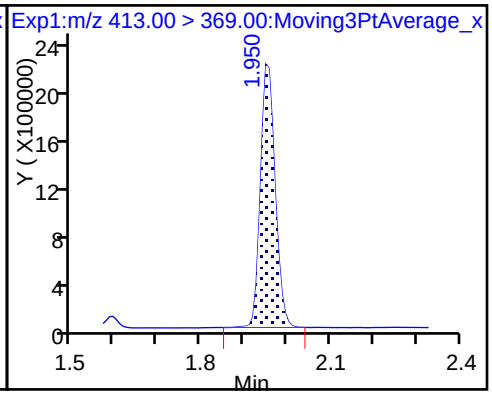
3 Perfluorohexanesulfonic acid



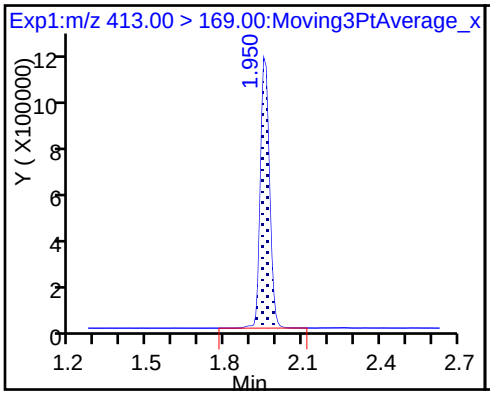
4 Perfluoroheptanoic acid



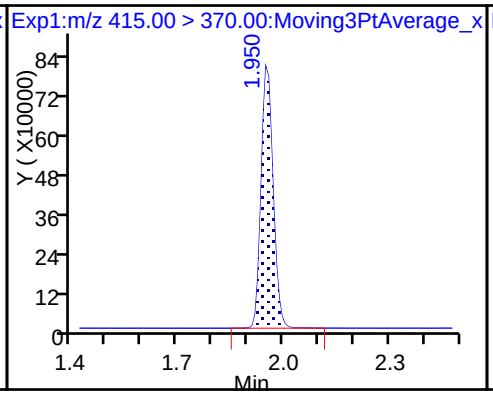
5 Perfluorooctanoic acid



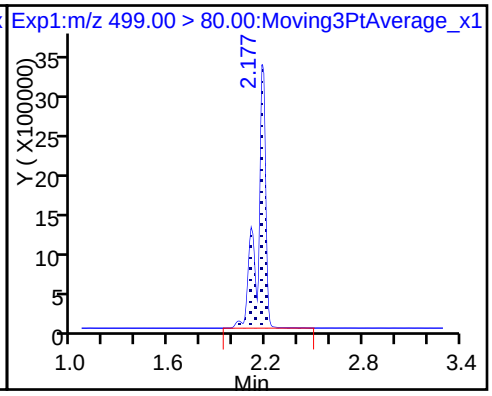
5 Perfluorooctanoic acid



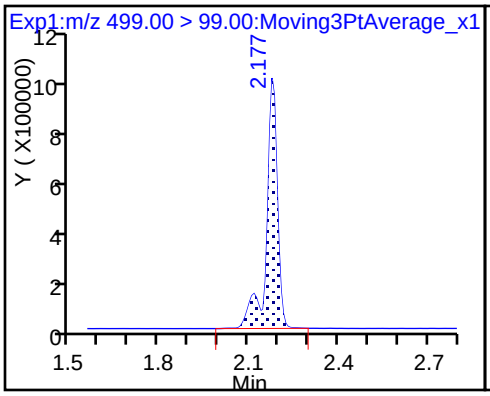
* 6 13C2-PFOA



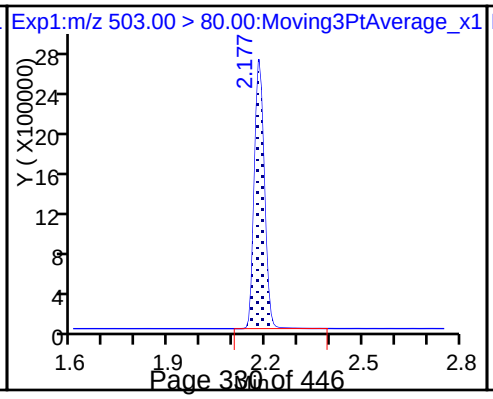
8 Perfluorooctane sulfonic acid



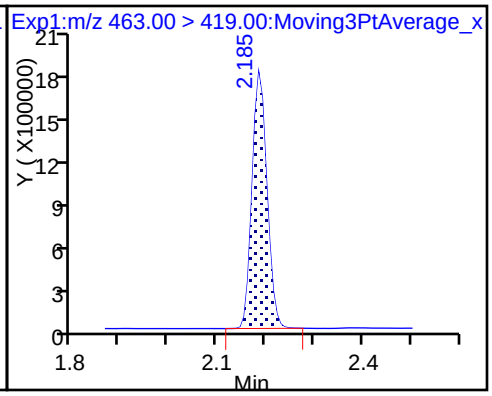
8 Perfluorooctane sulfonic acid



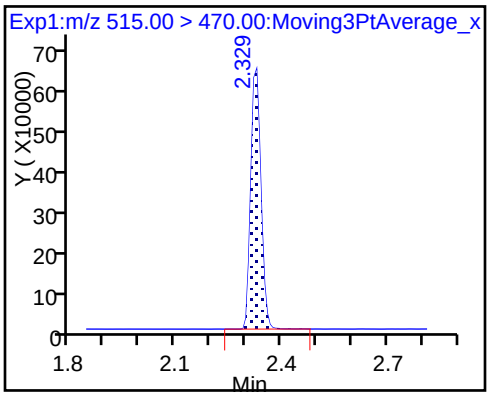
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Report Date: 17-Aug-2017 14:27:20 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_013.d

Injection Date: 16-Aug-2017 13:37:48 Instrument ID: A8_N

Lims ID: CCV L5

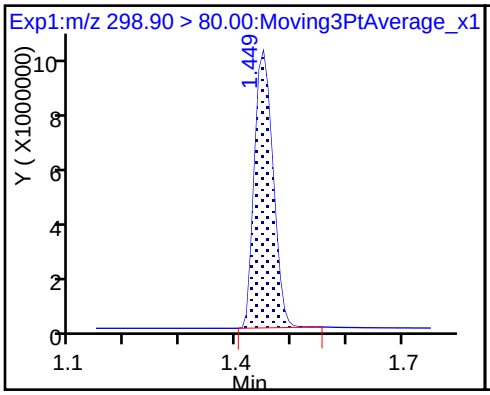
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13

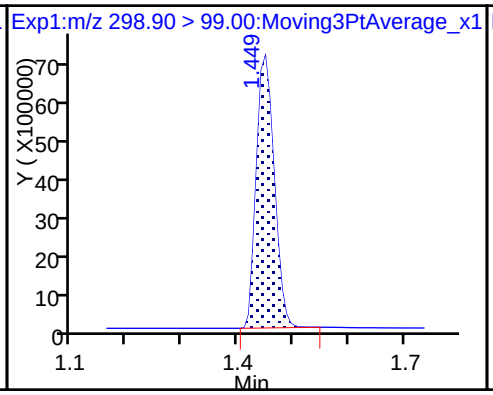
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

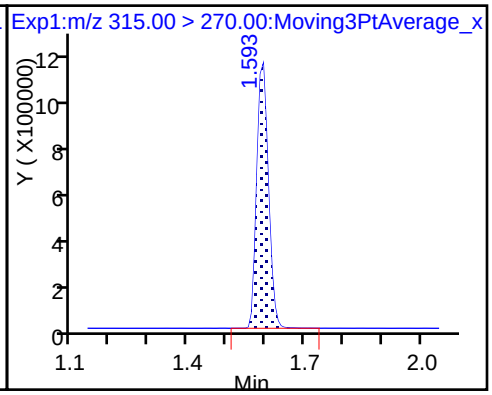
1 Perfluorobutanesulfonic acid



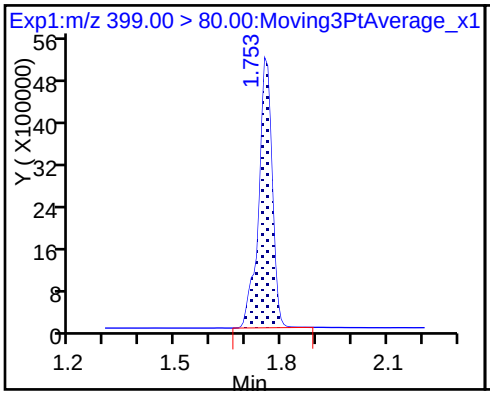
1 Perfluorobutanesulfonic acid



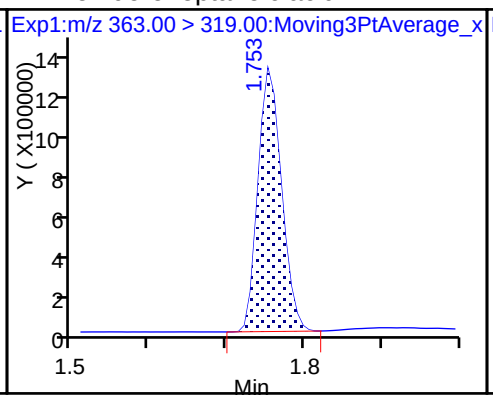
$ 2 13C2 PFHxA



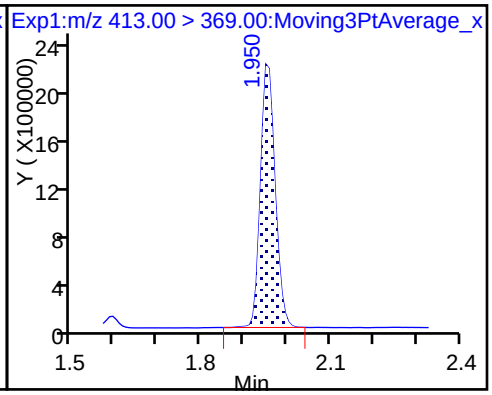
3 Perfluorohexanesulfonic acid



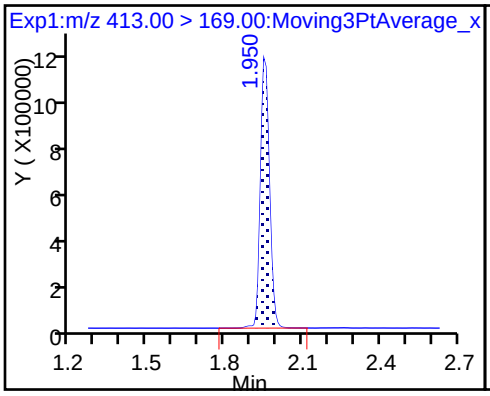
4 Perfluoroheptanoic acid



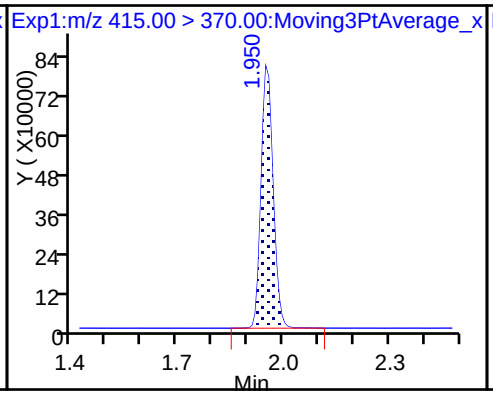
5 Perfluorooctanoic acid



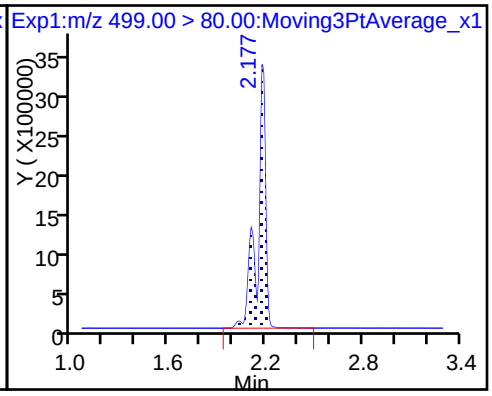
5 Perfluorooctanoic acid



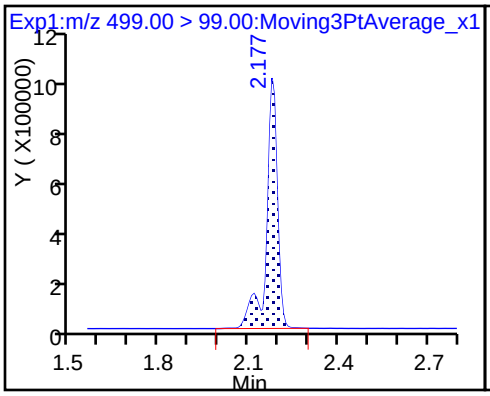
* 6 13C2-PFOA



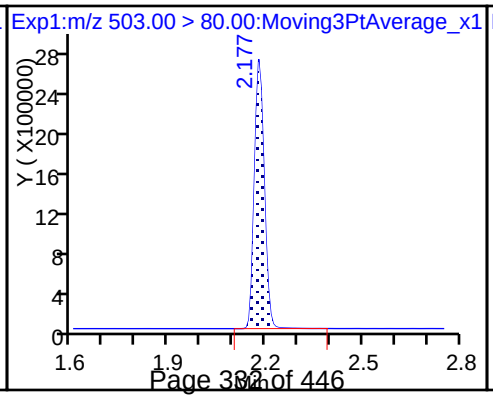
8 Perfluorooctane sulfonic acid



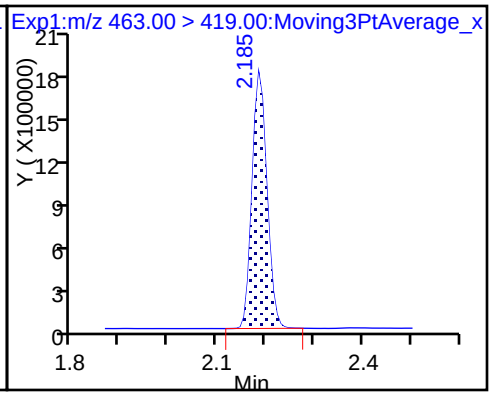
8 Perfluorooctane sulfonic acid



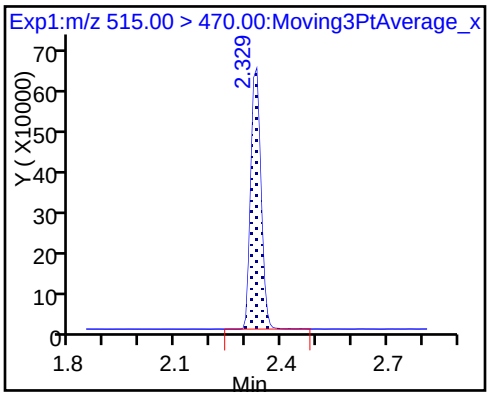
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
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.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179728/20 Calibration Date: 08/16/2017 14:10

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179732/20 Calibration Date: 08/16/2017 14:10

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 14:10:59 ALS Bottle#: 3 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 17-Aug-2017 14:27:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9369038	48.1		1178	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6533892		1.43(0.00-0.00)	1246	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2131889	11.3		6282	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	4544096	15.9		737	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	842196	5.59		72.8	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	1655267	10.4		85.4	
413.00 > 169.00	1.942	1.955	-0.013	1.000	838322		1.97(0.00-0.00)	1122	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1760639	10.0		6727	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	3602430	20.4		3077	
499.00 > 99.00	2.170	2.177	-0.007	1.000	747206		4.82(0.00-0.00)	731	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5486673	28.7		5735	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1179710	11.8		191	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1237744	12.0		5712	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 14:10:59 ALS Bottle#: 3 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 17-Aug-2017 14:27:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9369038	48.1		1178	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6533892		1.43(0.00-0.00)	1246	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2131889	11.3		6282	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	4544096	15.9		737	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	842196	5.59		72.8	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.942	1.955	-0.013	1.000	1655267	10.4		85.4	
413.00 > 169.00	1.942	1.955	-0.013	1.000	838322		1.97(0.00-0.00)	1122	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1760639	10.0		6727	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	3602430	20.4		3077	
499.00 > 99.00	2.170	2.177	-0.007	1.000	747206		4.82(0.00-0.00)	731	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5486673	28.7		5735	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1179710	11.8		191	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1237744	12.0		5712	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 17-Aug-2017 14:27:44 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d

Injection Date: 16-Aug-2017 14:10:59 Instrument ID: A8_N

Lims ID: CCV L3

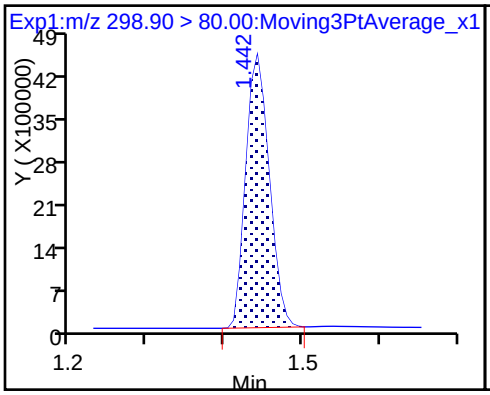
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 20

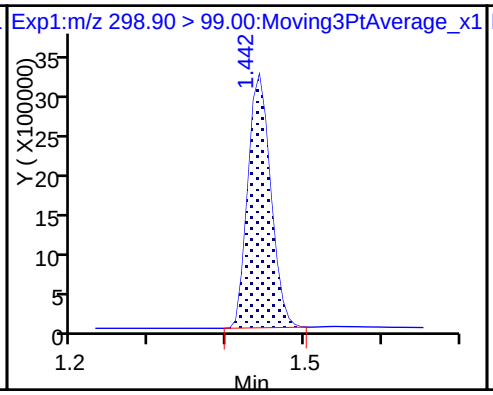
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

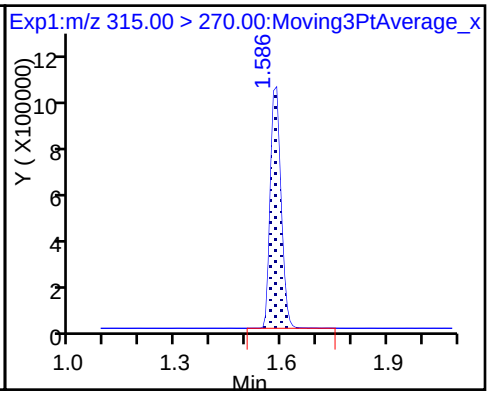
1 Perfluorobutanesulfonic acid



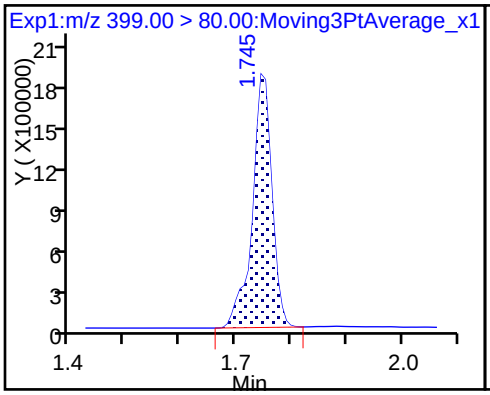
1 Perfluorobutanesulfonic acid



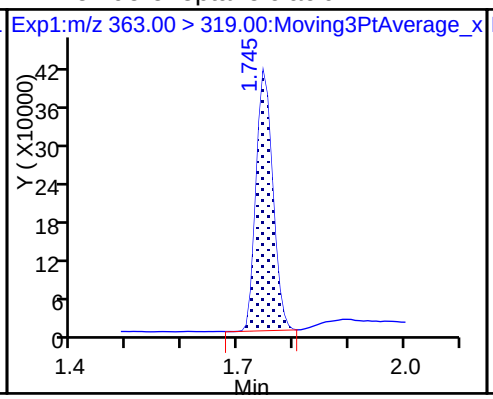
$ 2 13C2 PFHxA



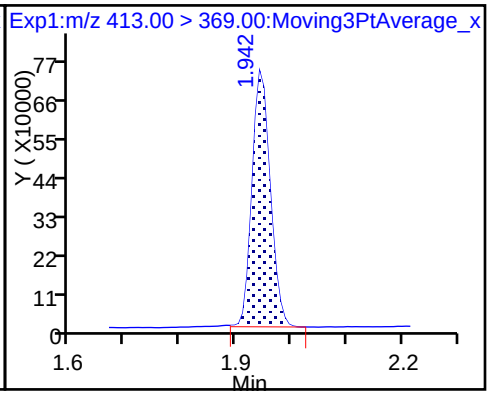
3 Perfluorohexanesulfonic acid



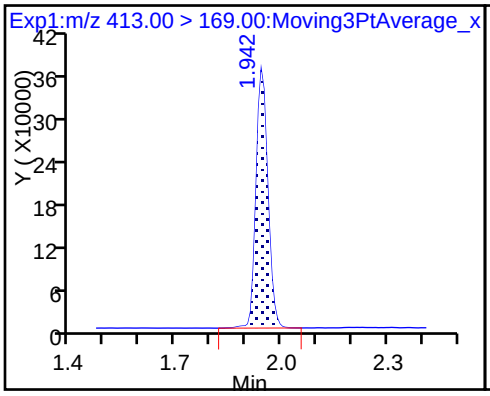
4 Perfluoroheptanoic acid



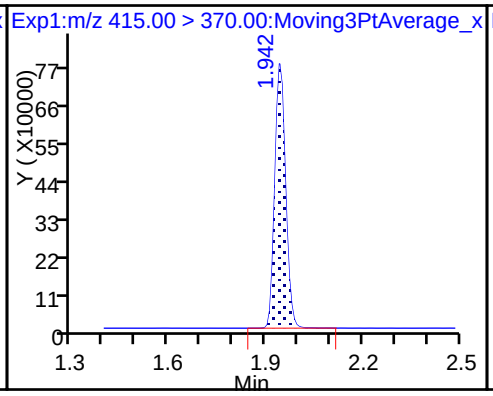
5 Perfluorooctanoic acid



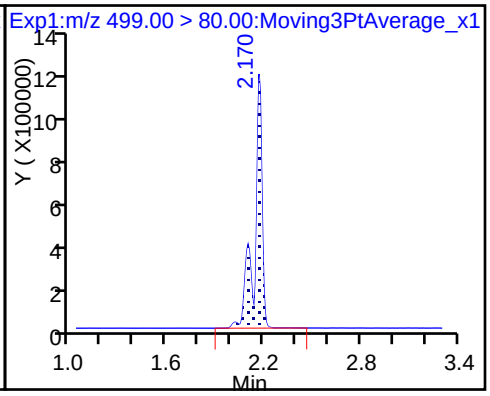
5 Perfluorooctanoic acid



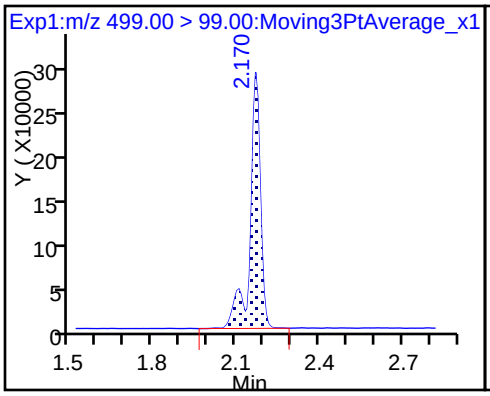
* 6 13C2-PFOA



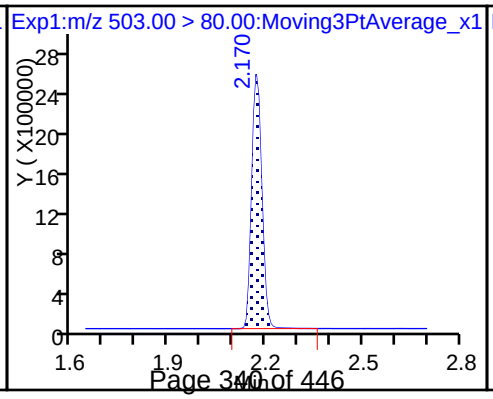
8 Perfluorooctane sulfonic acid



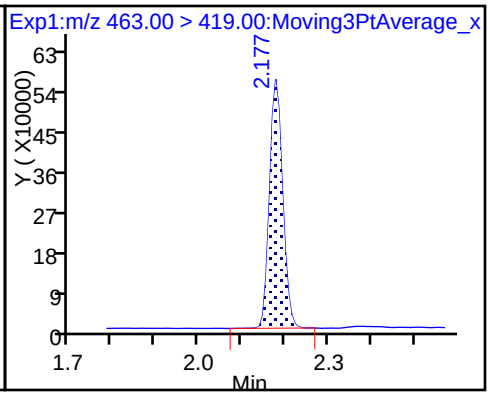
8 Perfluorooctane sulfonic acid



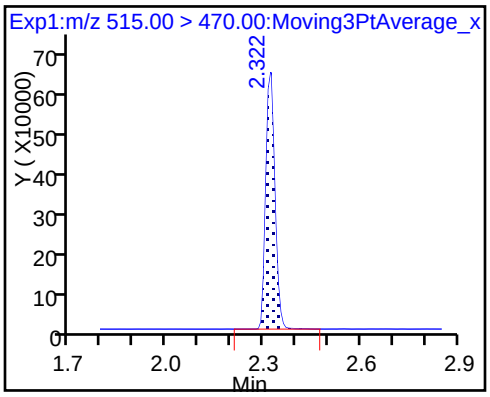
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
2.9
Min

Report Date: 17-Aug-2017 14:27:44 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_020.d

Injection Date: 16-Aug-2017 14:10:59 Instrument ID: A8_N

Lims ID: CCV L3

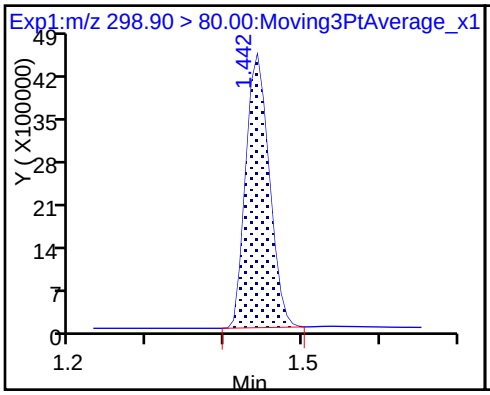
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 20

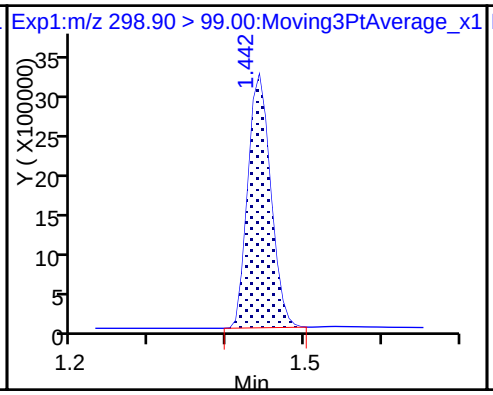
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

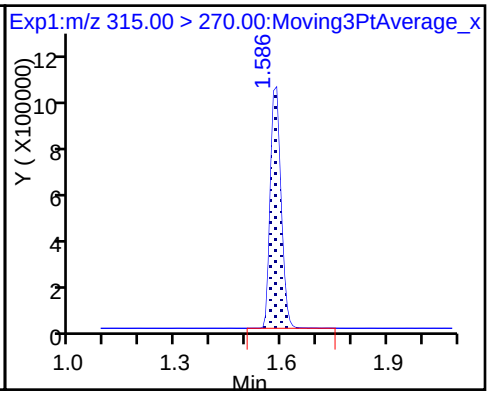
1 Perfluorobutanesulfonic acid



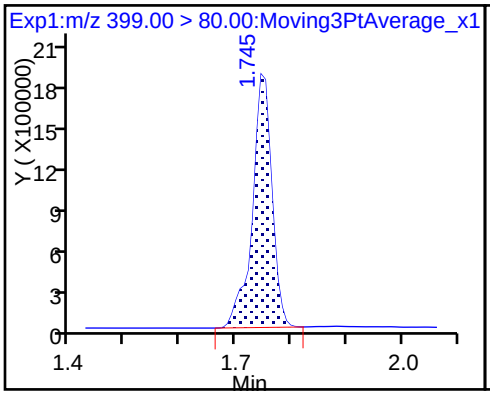
1 Perfluorobutanesulfonic acid



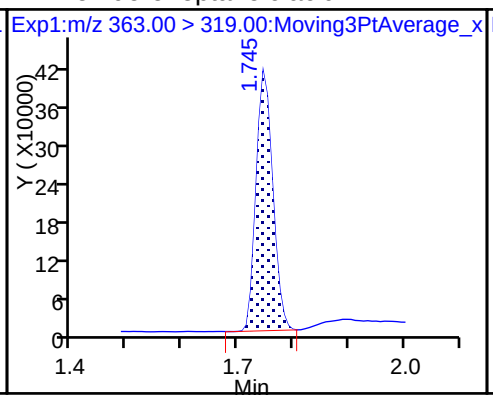
$ 2 13C2 PFHxA



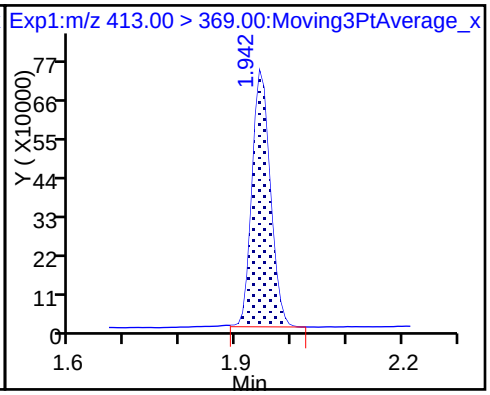
3 Perfluorohexanesulfonic acid



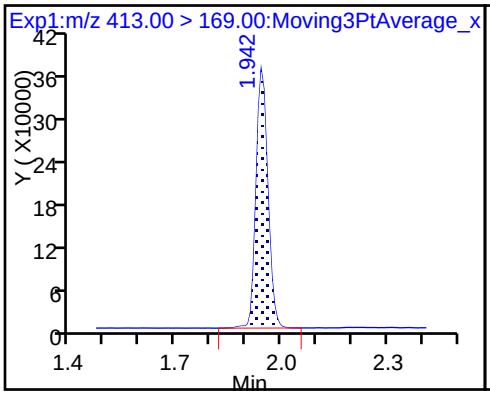
4 Perfluoroheptanoic acid



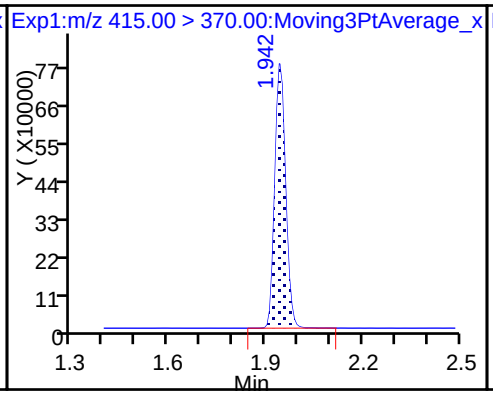
5 Perfluorooctanoic acid



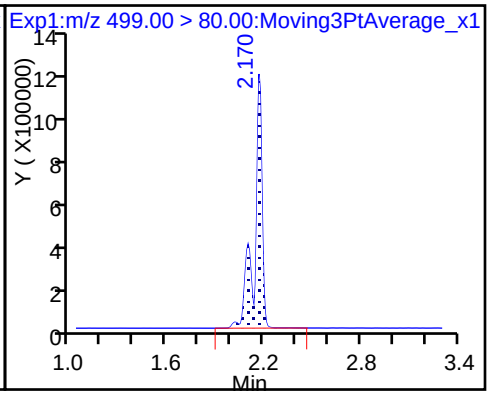
5 Perfluorooctanoic acid



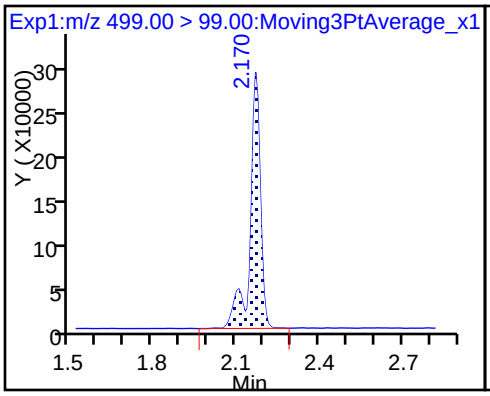
* 6 13C2-PFOA



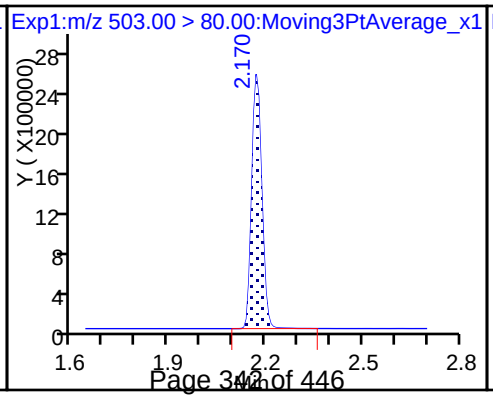
8 Perfluorooctane sulfonic acid



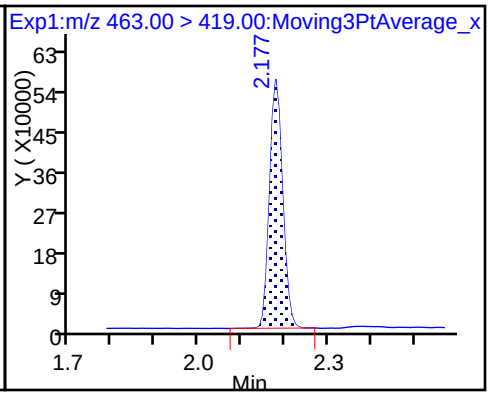
8 Perfluorooctane sulfonic acid



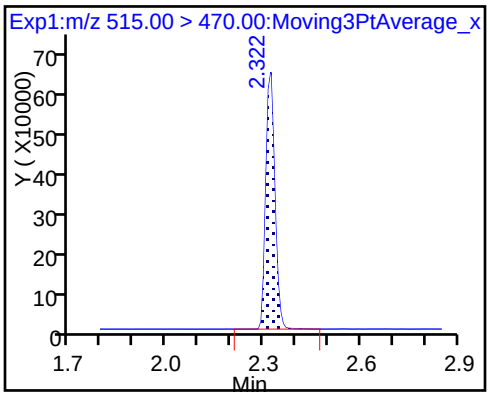
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
2.9
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179732/32 Calibration Date: 08/16/2017 15:07

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179733/32 Calibration Date: 08/16/2017 15:07

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 15:07:50 ALS Bottle#: 5 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:49:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	21715594	132.8		2238	
298.90 > 99.00	1.442	1.453	-0.011	1.000	15722871		1.38(0.00-0.00)	2616	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2211841	11.2		6750	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13030775	44.1		1786	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2606212	16.6		212	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5154927	30.9		263	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2753920		1.87(0.00-0.00)	3051	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1839473	10.0		5404	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11257989	61.7		5836	
499.00 > 99.00	2.177	2.177	0.0	1.000	2387415		4.72(0.00-0.00)	1868	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5667758	28.7		5937	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3626153	34.8		436	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1334632	12.3		6282	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 15:07:50 ALS Bottle#: 5 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:55 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:49:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	21715594	132.8		2238	
298.90 > 99.00	1.442	1.453	-0.011	1.000	15722871		1.38(0.00-0.00)	2616	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2211841	11.2		6750	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	13030775	44.1		1786	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2606212	16.6		212	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	5154927	30.9		263	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2753920		1.87(0.00-0.00)	3051	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1839473	10.0		5404	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	11257989	61.7		5836	
499.00 > 99.00	2.177	2.177	0.0	1.000	2387415		4.72(0.00-0.00)	1868	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5667758	28.7		5937	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3626153	34.8		436	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1334632	12.3		6282	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 17-Aug-2017 14:27:55 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d

Injection Date: 16-Aug-2017 15:07:50 Instrument ID: A8_N

Lims ID: CCV L5

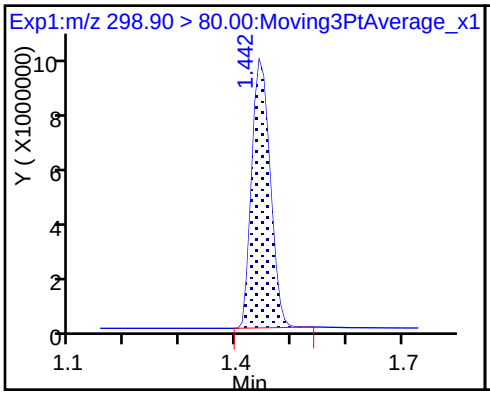
Client ID:

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

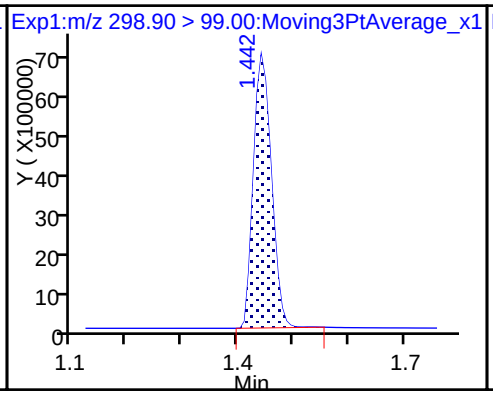
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

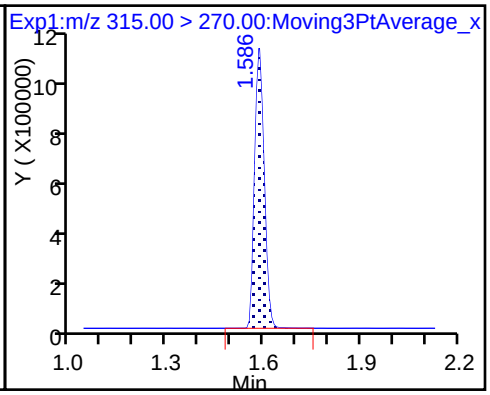
1 Perfluorobutanesulfonic acid



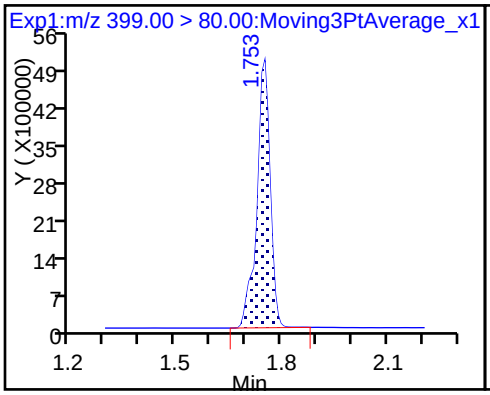
1 Perfluorobutanesulfonic acid



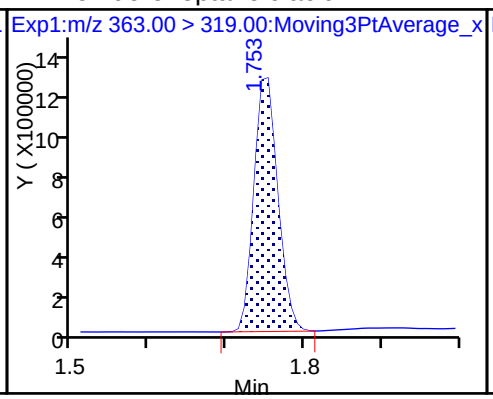
$ 2 13C2 PFHxA



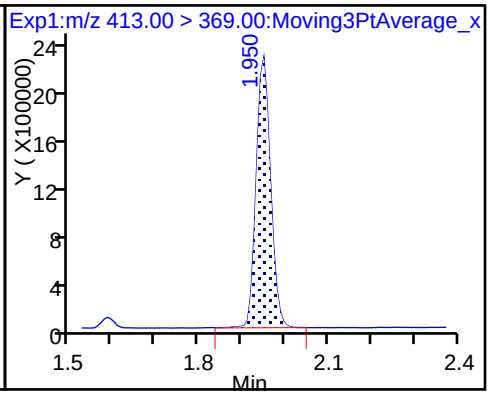
3 Perfluorohexanesulfonic acid



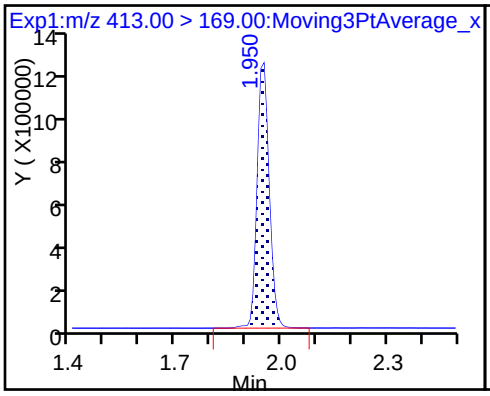
4 Perfluoroheptanoic acid



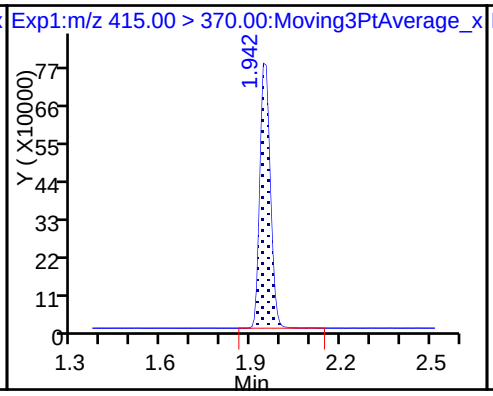
5 Perfluorooctanoic acid



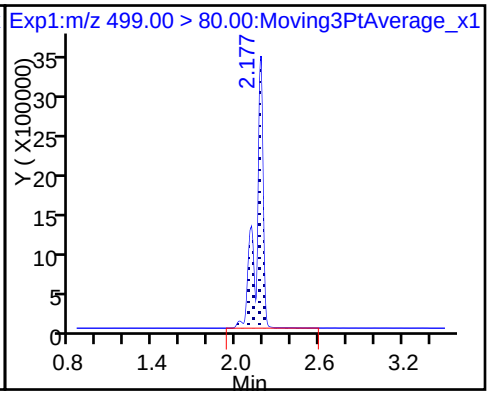
5 Perfluorooctanoic acid



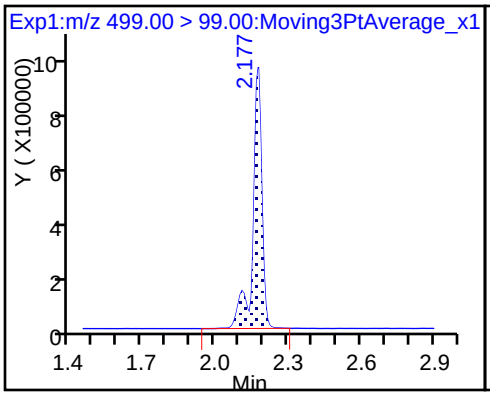
* 6 13C2-PFOA



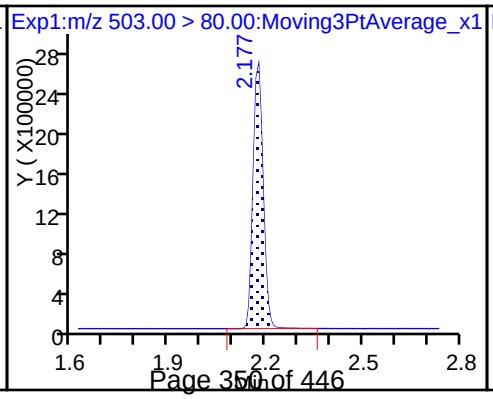
8 Perfluorooctane sulfonic acid



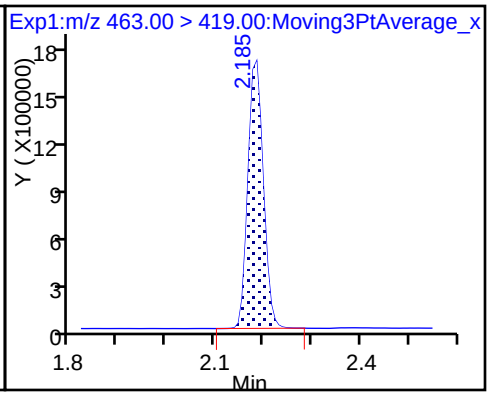
8 Perfluorooctane sulfonic acid



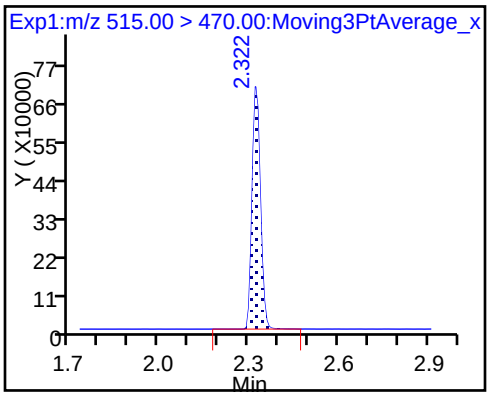
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
2.9
Min

Report Date: 17-Aug-2017 14:27:55 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_032.d

Injection Date: 16-Aug-2017 15:07:50 Instrument ID: A8_N

Lims ID: CCV L5

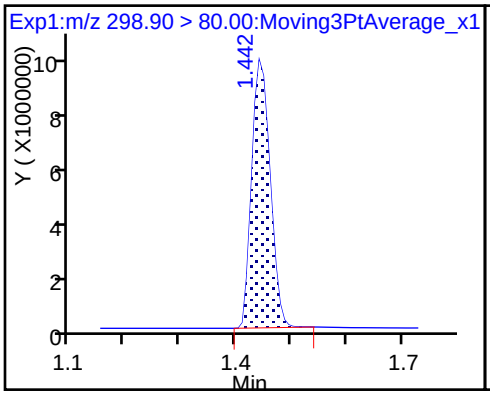
Client ID:

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

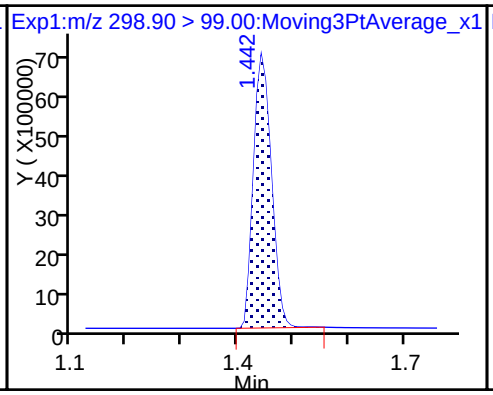
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

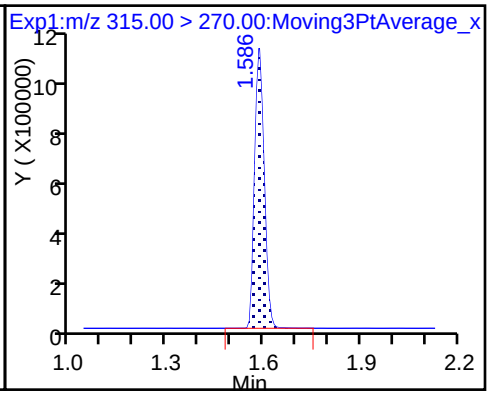
1 Perfluorobutanesulfonic acid



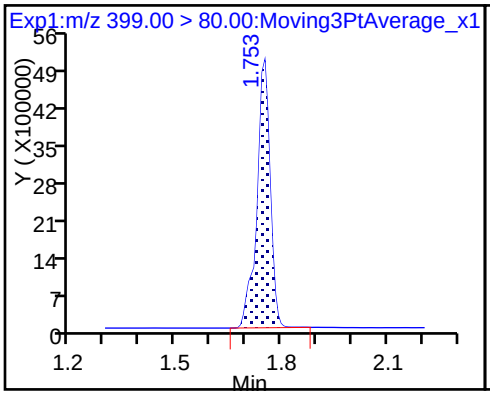
1 Perfluorobutanesulfonic acid



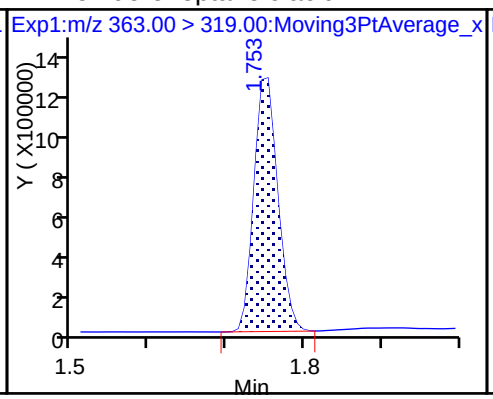
$ 2 13C2 PFHxA



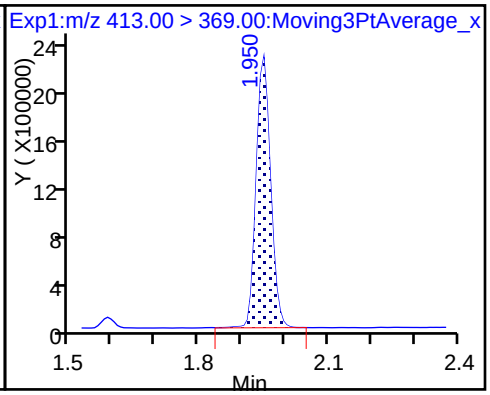
3 Perfluorohexanesulfonic acid



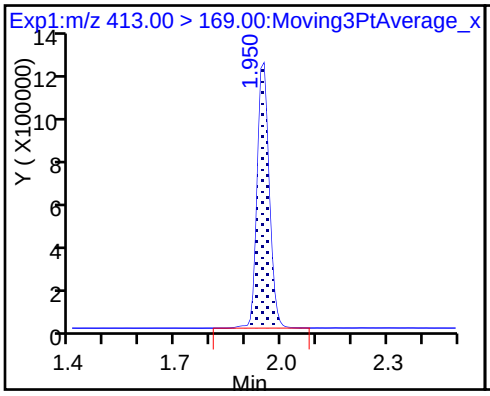
4 Perfluoroheptanoic acid



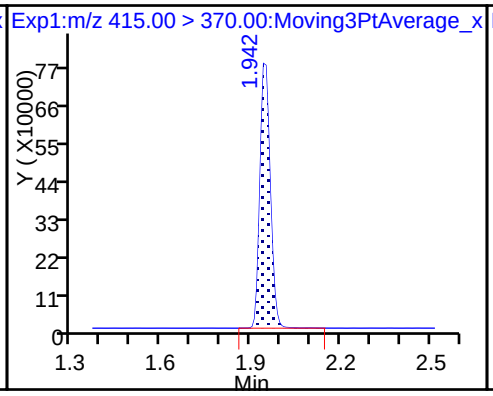
5 Perfluorooctanoic acid



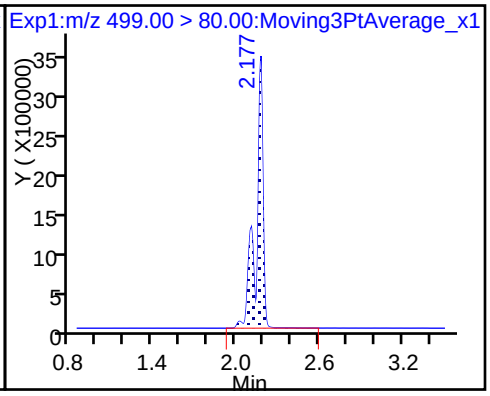
5 Perfluorooctanoic acid



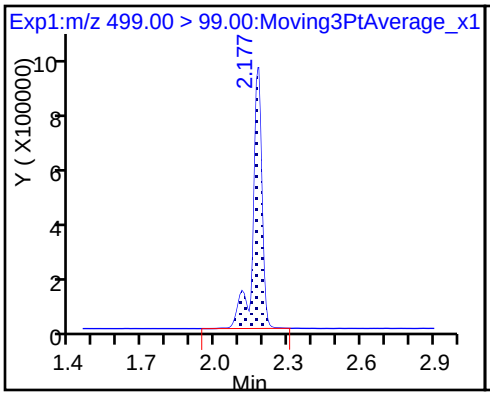
* 6 13C2-PFOA



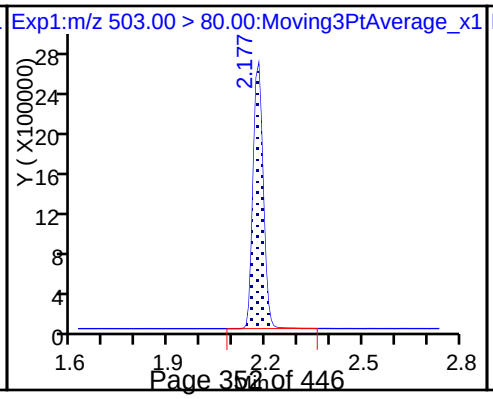
8 Perfluorooctane sulfonic acid



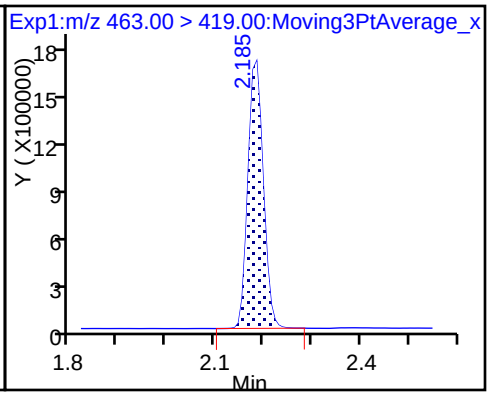
8 Perfluorooctane sulfonic acid



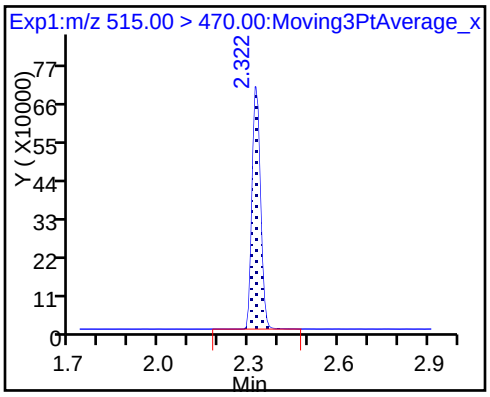
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
2.9
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179733/38 Calibration Date: 08/16/2017 15:36

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_038.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.109		49.1	45.0	9.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9321		5.45	5.00	8.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.555		15.6	15.0	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9246		10.2	10.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6463		11.4	10.0	14.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9188		19.9	20.0	-0.5	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.3	30.0
13C2 PFDA	Ave	0.5877	0.6799		11.6	10.0	15.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_038.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 15:36:19 ALS Bottle#: 3 Worklist Smp#: 38
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:28:00 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 16:01:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9845046	49.1		1918	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6403360		1.54(0.00-0.00)	1179	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2250121	11.3		6751	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	4602752	15.6		721	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	865951	5.45		72.3	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	1718972	10.2		87.9	
413.00 > 169.00	1.950	1.955	-0.005	1.000	886141		1.94(0.00-0.00)	1168	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1857646	10.0		6076	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	3625696	19.9		2858	
499.00 > 99.00	2.170	2.177	-0.007	0.997	754482		4.81(0.00-0.00)	688	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5657569	28.7		6136	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1200850	11.4		166	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1263001	11.6		5917	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 17-Aug-2017 14:28:00 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_038.d

Injection Date: 16-Aug-2017 15:36:19 Instrument ID: A8_N

Lims ID: CCV L3

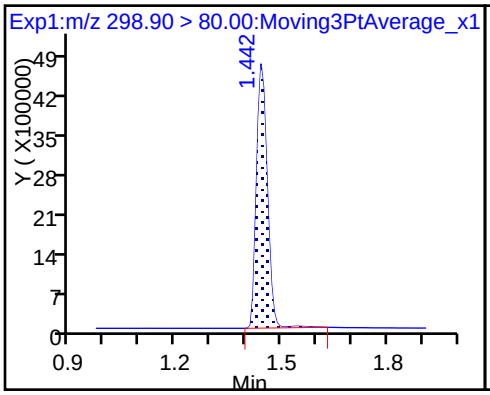
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 38

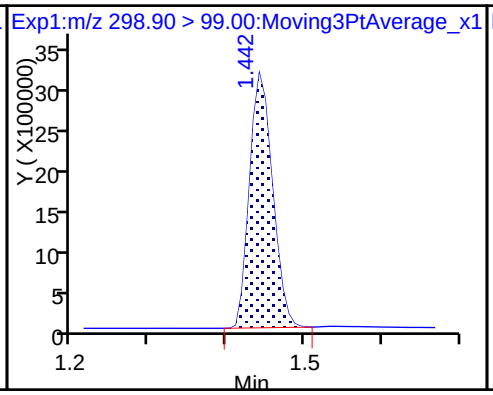
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

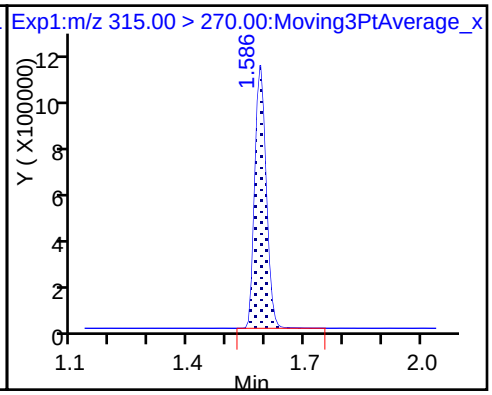
1 Perfluorobutanesulfonic acid



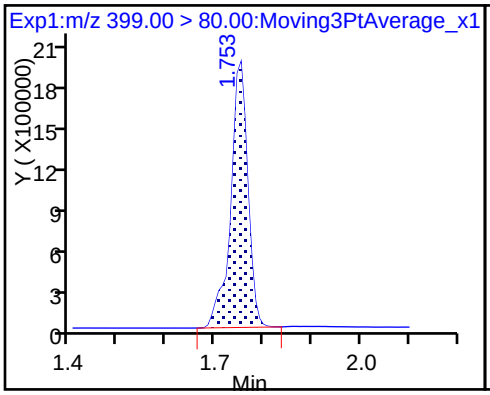
1 Perfluorobutanesulfonic acid



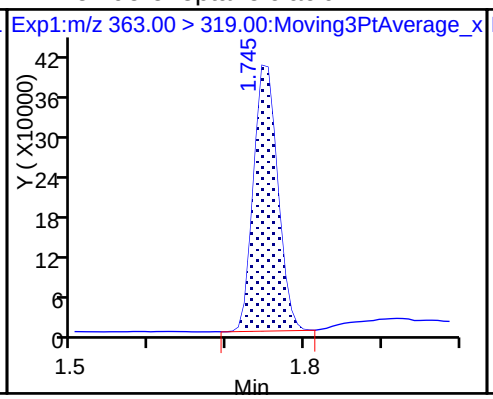
$ 2 13C2 PFHxA



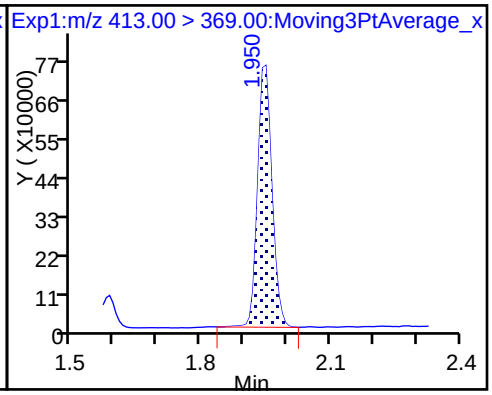
3 Perfluorohexanesulfonic acid



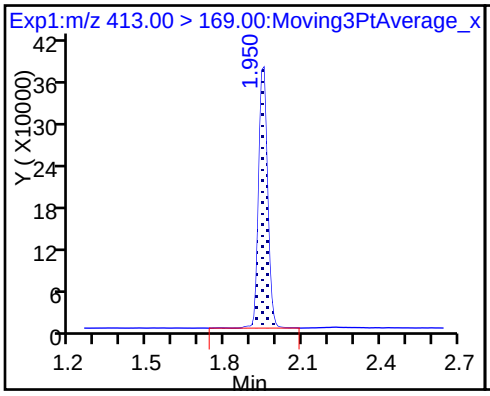
4 Perfluoroheptanoic acid



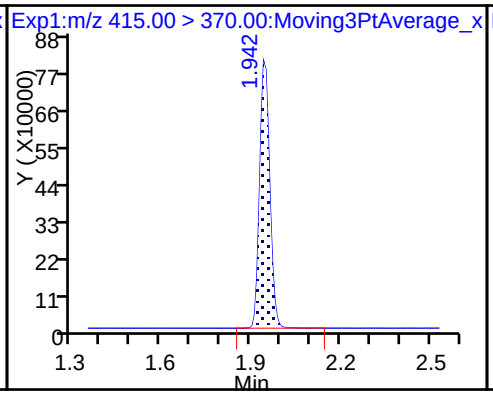
5 Perfluorooctanoic acid



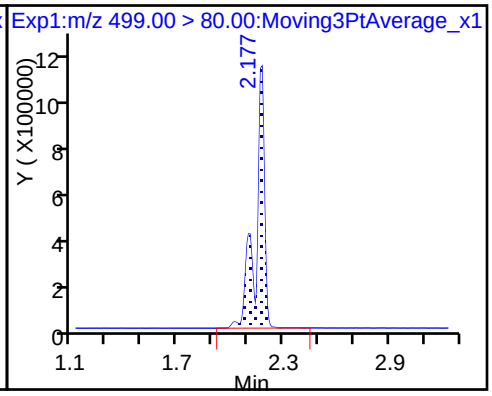
5 Perfluorooctanoic acid



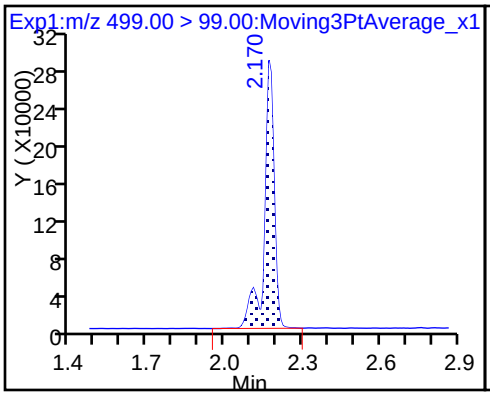
* 6 13C2-PFOA



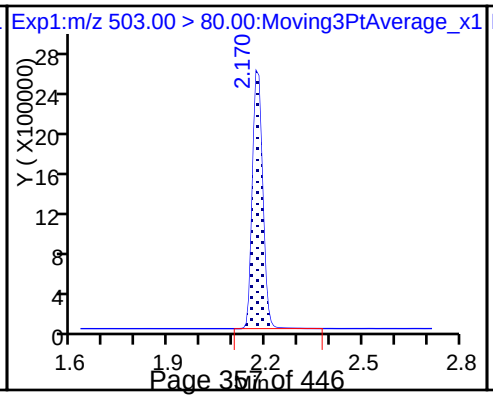
8 Perfluorooctane sulfonic acid



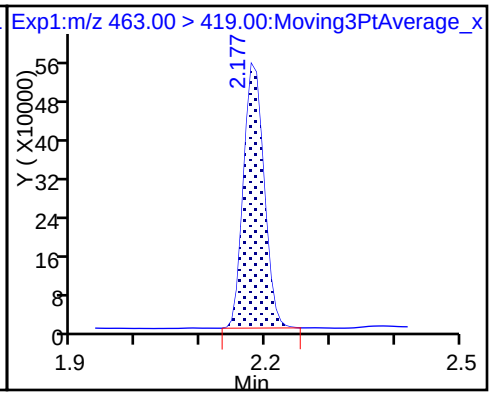
8 Perfluorooctane sulfonic acid



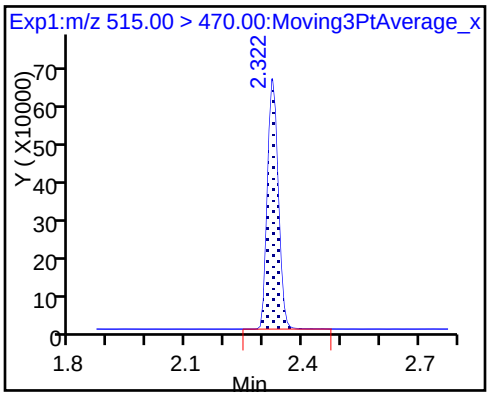
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
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.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179920/1 Calibration Date: 08/16/2017 19:48

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537D_052.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7972		129	135	-4.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9273		16.3	15.0	8.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.468		44.2	45.0	-1.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9342		30.9	30.0	3.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9166		59.6	60.0	-0.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6502		34.4	30.0	14.8	30.0
13C2 PFHxA	Ave	1.069	1.254		11.7	10.0	17.3	30.0
13C2 PFDA	Ave	0.5877	0.6899		11.7	10.0	17.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_052.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 19:48:22 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 18-Aug-2017 09:47:42 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: barnettj Date: 18-Aug-2017 09:47:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.453	-0.019	1.000	20876476	128.6		3504	
298.90 > 99.00	1.434	1.453	-0.019	1.000	15103228		1.38(0.00-0.00)	3736	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.582	-0.012	1.000	2272067	11.7		7456	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.742	-0.005	1.000	12819450	44.2		3473	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.742	-0.012	1.000	2520173	16.3		356	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.955	-0.028	1.000	5080884	30.9		226	
413.00 > 169.00	1.927	1.955	-0.028	1.000	2611782		1.95(0.00-0.00)	4249	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.955	-0.028		1811420	10.0		5818	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.170	-0.015	1.000	10669272	59.6		5348	
499.00 > 99.00	2.155	2.170	-0.015	1.000	2272643		4.69(0.00-0.00)	1694	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.205	-0.050		5562915	28.7		5252	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.213	-0.051	1.000	3533906	34.4		415	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.354	-0.048	1.000	1249774	11.7		5620	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 18-Aug-2017 09:47:42 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_052.d

Injection Date: 16-Aug-2017 19:48:22 Instrument ID: A8_N

Lims ID: CCV L5

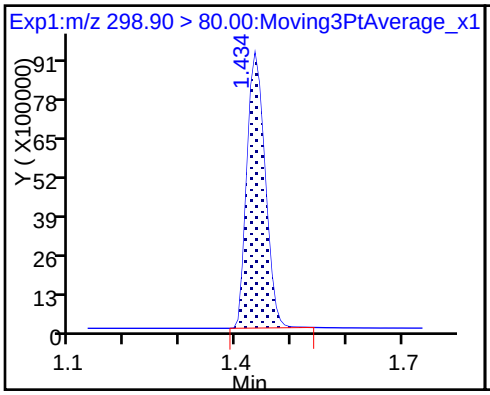
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1

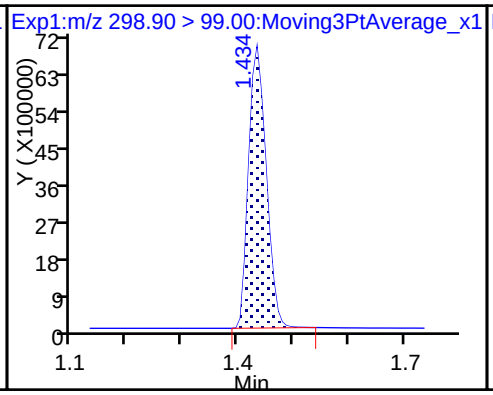
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

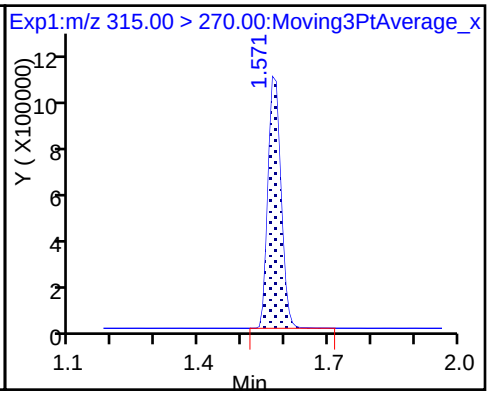
1 Perfluorobutanesulfonic acid



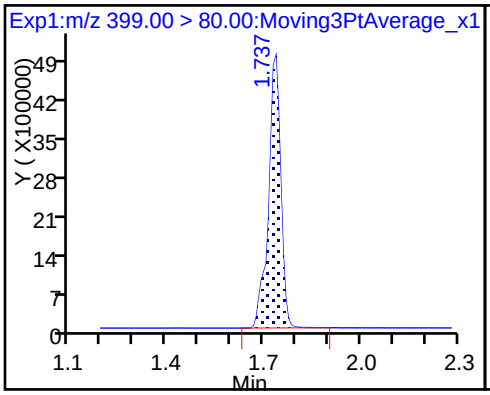
1 Perfluorobutanesulfonic acid



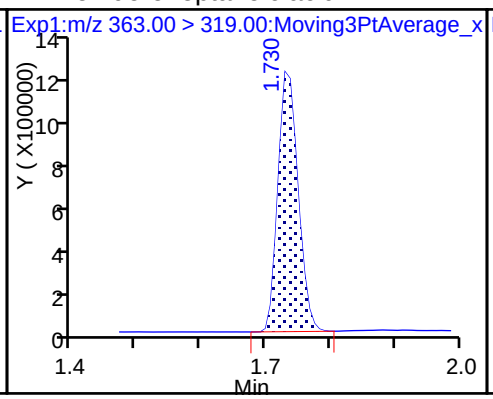
$ 2 13C2 PFHxA



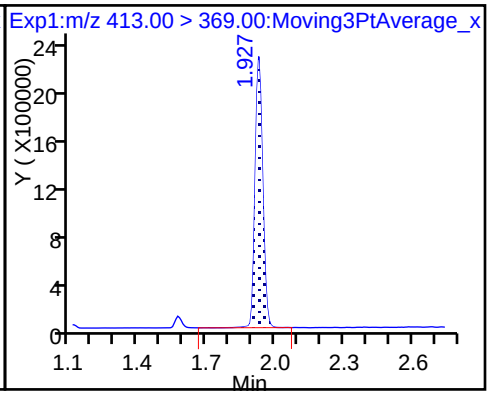
3 Perfluorohexanesulfonic acid



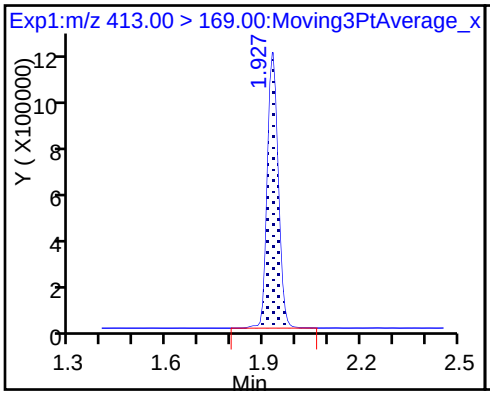
4 Perfluoroheptanoic acid



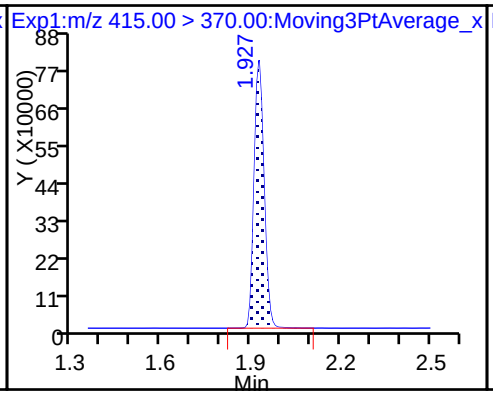
5 Perfluorooctanoic acid



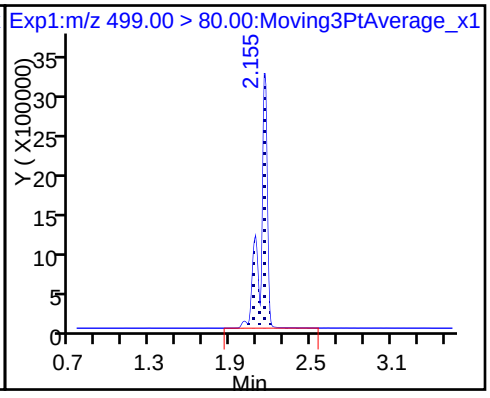
5 Perfluorooctanoic acid



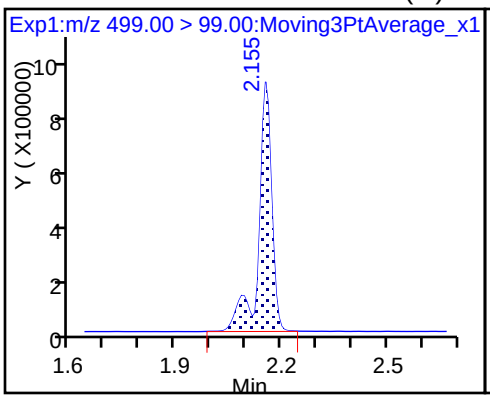
* 6 13C2-PFOA



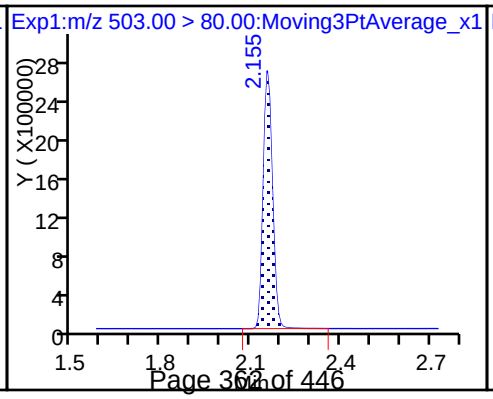
8 Perfluorooctane sulfonic acid



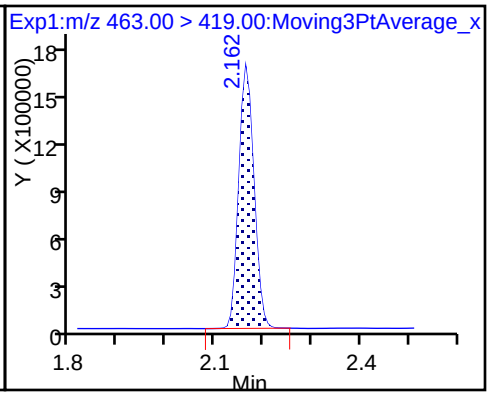
8 Perfluorooctane sulfonic acid (M)



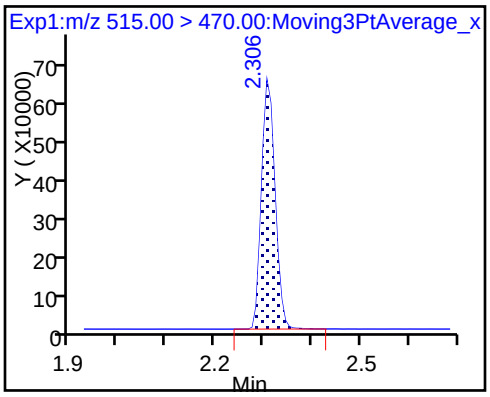
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
70
60
50
40
30
20
10
0
1.9
2.2
2.5
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

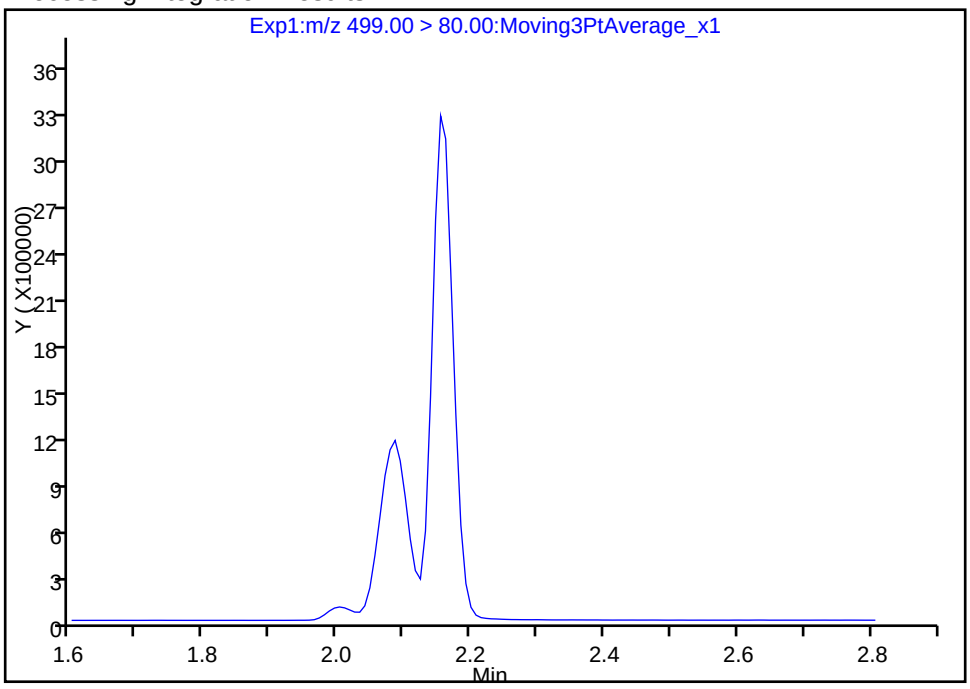
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_052.d
Injection Date: 16-Aug-2017 19:48:22 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

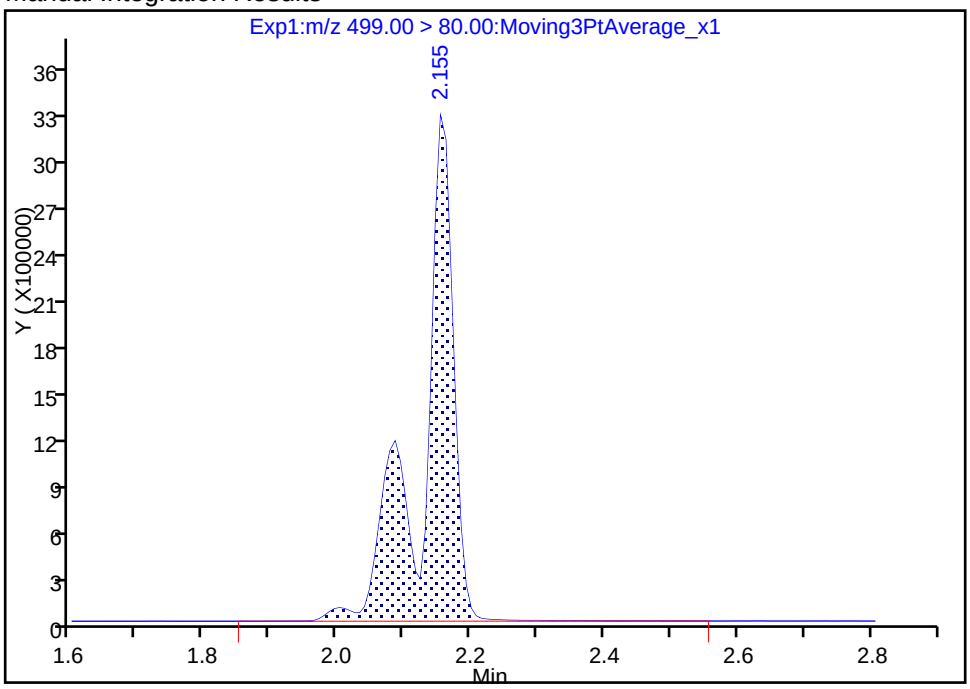
Not Detected
Expected RT: 2.17

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 10669272
Amount: 59.554509
Amount Units: ng/ml



Reviewer: barnettj, 17-Aug-2017 13:41:36
Audit Action: Assigned Compound ID Audit Reason:

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

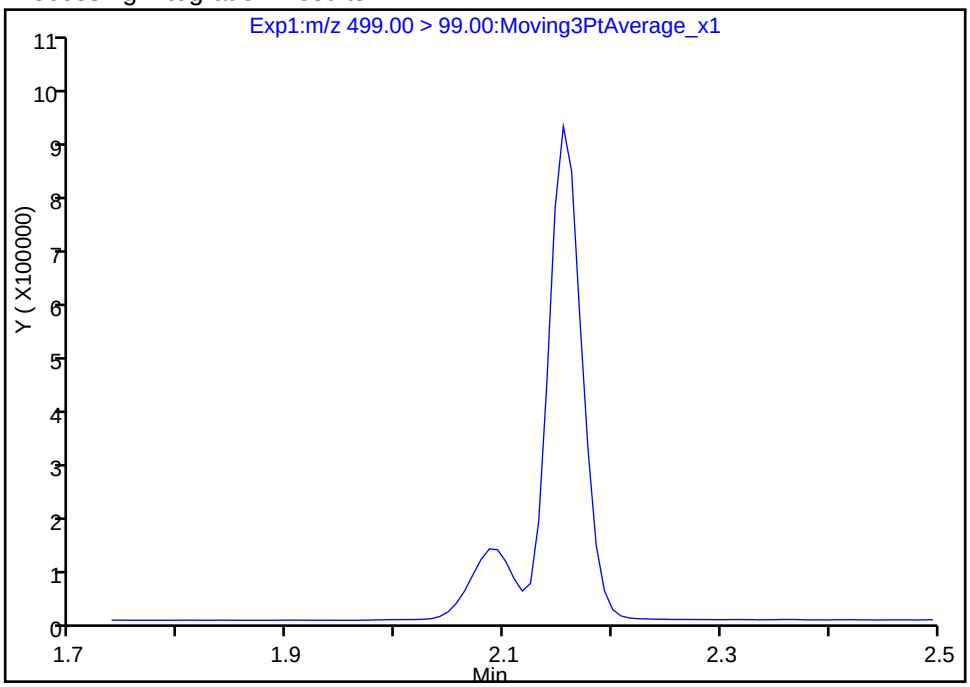
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_052.d
Injection Date: 16-Aug-2017 19:48:22 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

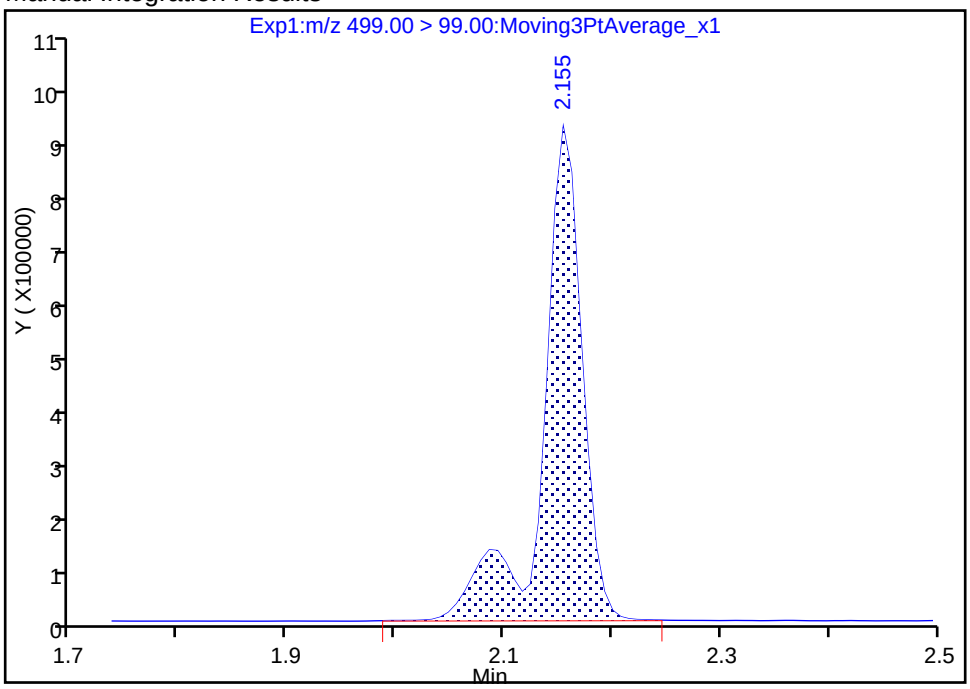
Not Detected
Expected RT: 2.17

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 2272643
Amount: 59.554509
Amount Units: ng/ml



Reviewer: barnettj, 18-Aug-2017 09:46:59
Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

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

SDG No.:

Lab Sample ID: CCV 320-179920/13 Calibration Date: 08/16/2017 20:45

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537D_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.049		46.2	45.0	2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9052		5.29	5.00	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9215		10.2	10.0	1.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9376		20.3	20.0	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6800		12.0	10.0	20.0	30.0
13C2 PFHxA	Ave	1.069	1.250		11.7	10.0	16.9	30.0
13C2 PFDA	Ave	0.5877	0.7215		12.3	10.0	22.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_064.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Aug-2017 20:45:21 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:45:27 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 17-Aug-2017 13:42:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	9306933	46.2		1966	
298.90 > 99.00	1.442	1.453	-0.011	1.000	6497246		1.43(0.00-0.00)	2239	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2318674	11.7		8001	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	4681370	15.9		1576	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	839793	5.29		117	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.955	-0.020	1.000	1710793	10.2		76.7	
413.00 > 169.00	1.935	1.955	-0.020	1.000	873169		1.96(0.00-0.00)	1841	
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.955	-0.020		1854955	10.0		5797	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.170	0.0	1.000	3697035	20.3		3070	
499.00 > 99.00	2.170	2.170	0.0	1.000	781049		4.73(0.00-0.00)	718	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5653051	28.7		5295	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	1261611	12.0		192	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1338324	12.3		6677	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 17-Aug-2017 14:45:28 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b\2017.08.16_537D_064.d

Injection Date: 16-Aug-2017 20:45:21 Instrument ID: A8_N

Lims ID: CCV L3

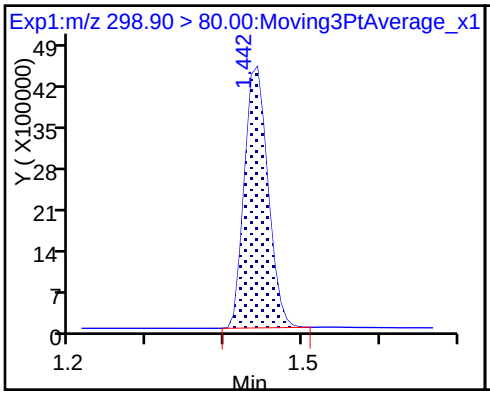
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13

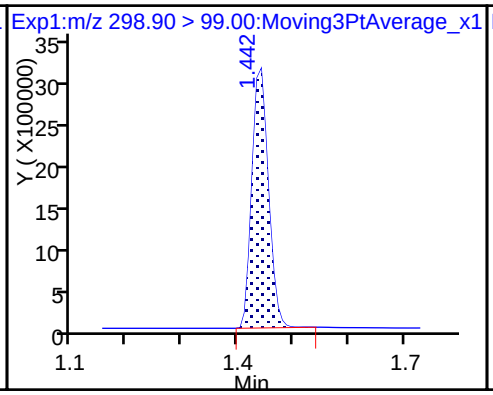
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

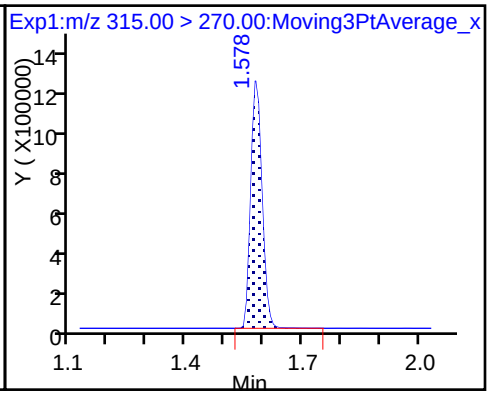
1 Perfluorobutanesulfonic acid



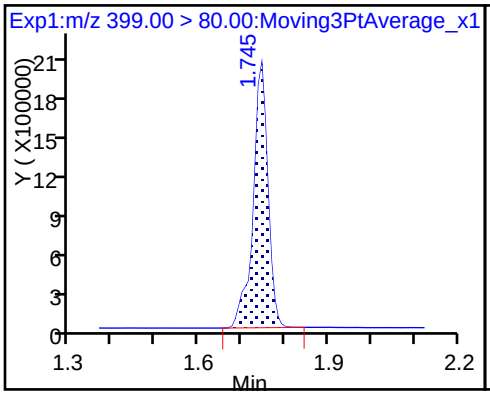
1 Perfluorobutanesulfonic acid



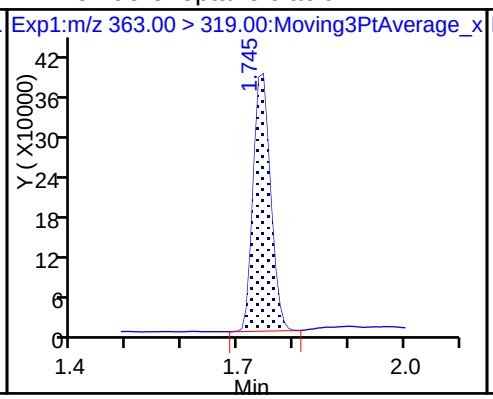
$ 2 13C2 PFHxA



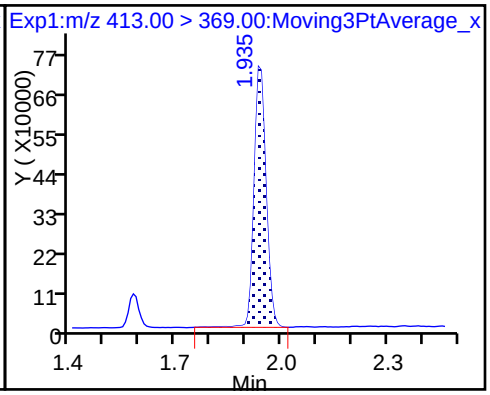
3 Perfluorohexanesulfonic acid



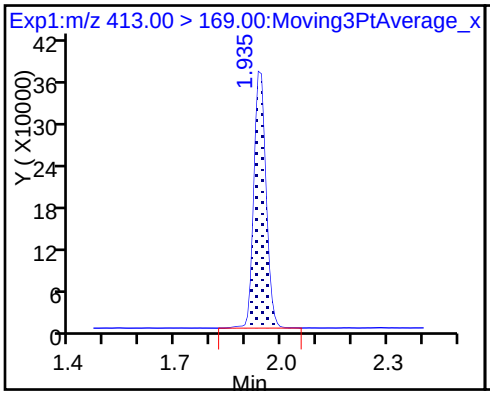
4 Perfluoroheptanoic acid



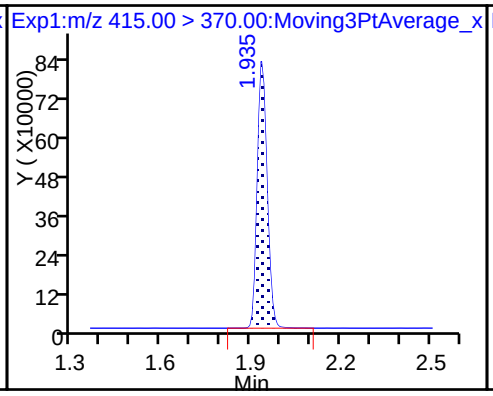
5 Perfluorooctanoic acid



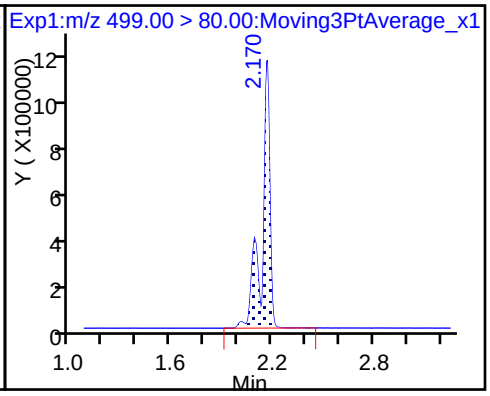
5 Perfluorooctanoic acid



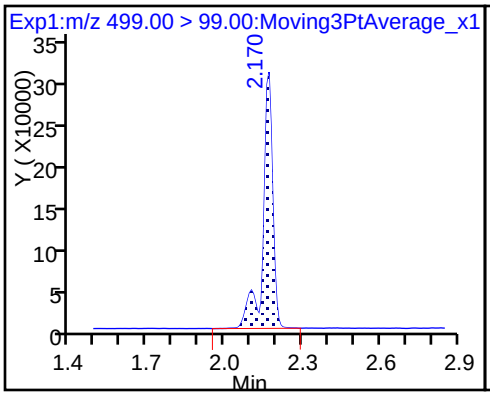
* 6 13C2-PFOA



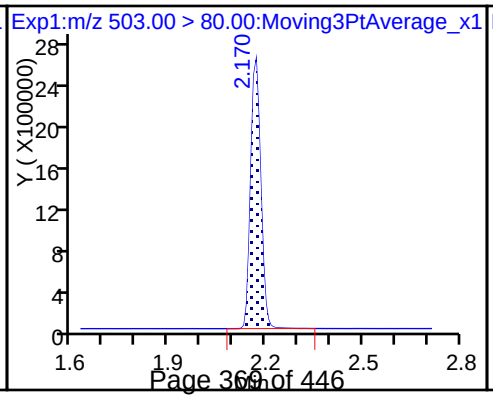
8 Perfluorooctane sulfonic acid



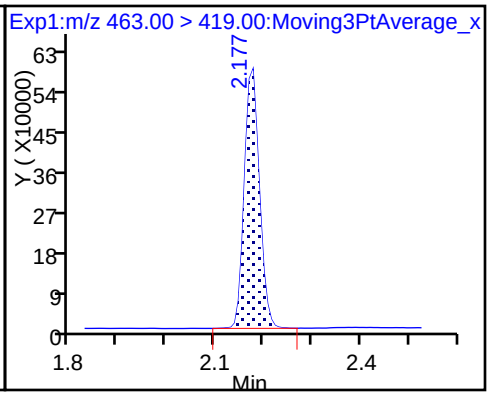
8 Perfluorooctane sulfonic acid



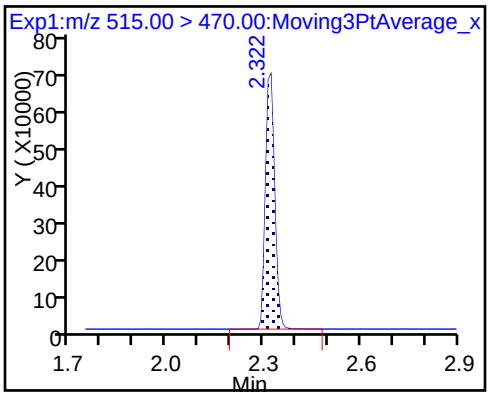
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
80
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
2.9
Min

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-177640/1-A

Matrix: Water | Lab File ID: 2017.08.16_537C_003.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/16/2017 12:50

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	124		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_003.d
Lims ID: MB 320-177640/1-A
Client ID:
Sample Type: MB
Inject. Date: 16-Aug-2017 12:50:20 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-177640/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.593	1.582	0.011	1.000	2188411	10.0		4985	
* 6 13C2-PFOA									
415.00 > 370.00	1.957	1.955	0.002		2039484	10.0		5242	
* 7 13C4 PFOS									
503.00 > 80.00	2.185	2.205	-0.020		5859519	28.7		5047	
$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1488931	12.4		5103	

Report Date: 17-Aug-2017 14:27:13 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_003.d

Injection Date: 16-Aug-2017 12:50:20 Instrument ID: A8_N

Lims ID: MB 320-177640/1-A

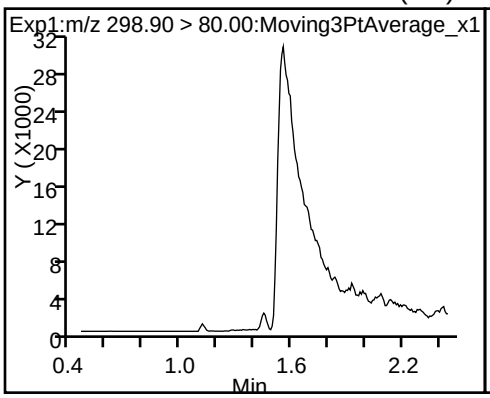
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3

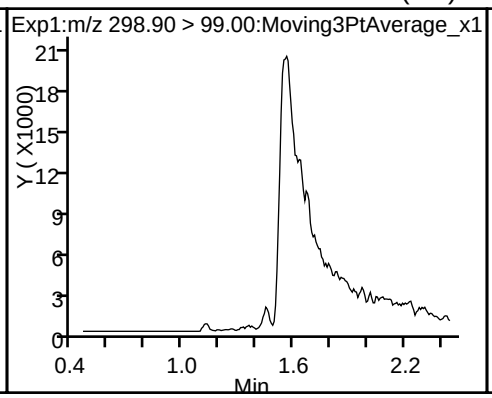
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

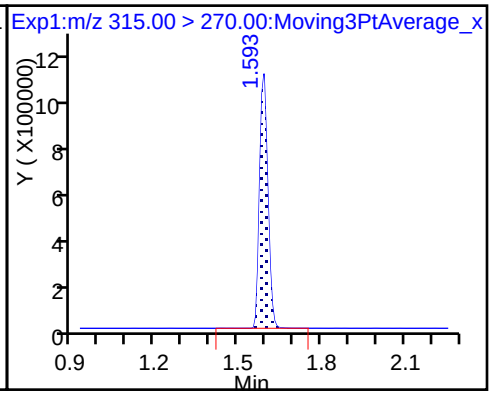
1 Perfluorobutanesulfonic acid (ND)



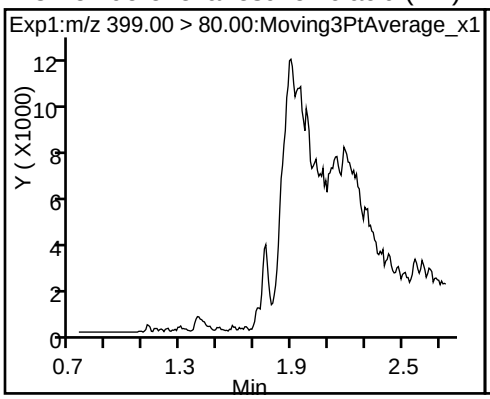
1 Perfluorobutanesulfonic acid (ND)



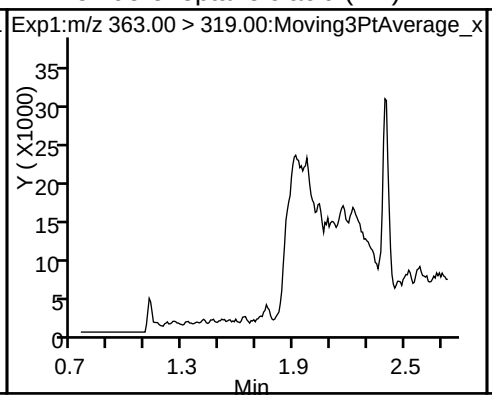
$ 2 13C2 PFHxA



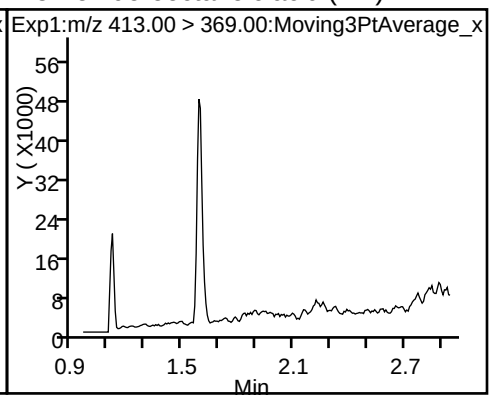
3 Perfluorohexanesulfonic acid (ND)



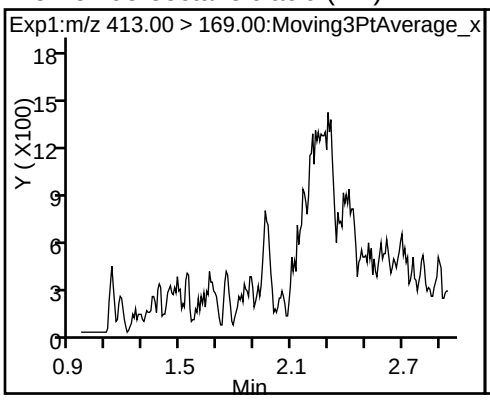
4 Perfluoroheptanoic acid (ND)



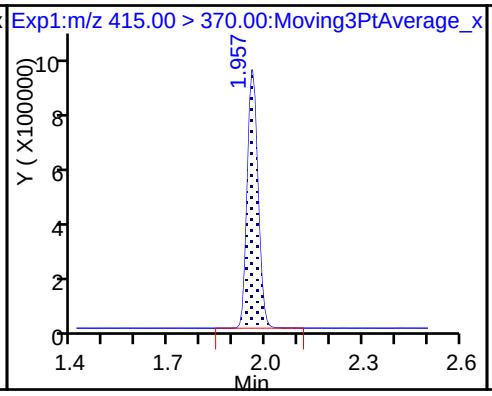
5 Perfluorooctanoic acid (ND)



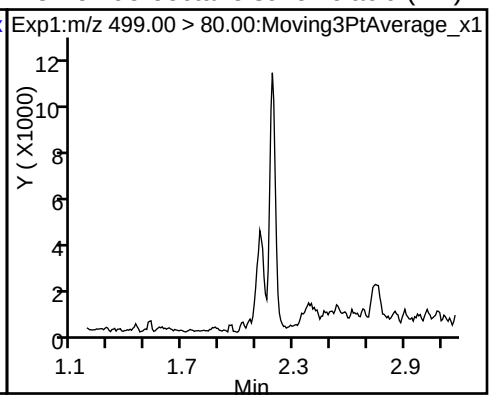
5 Perfluorooctanoic acid (ND)



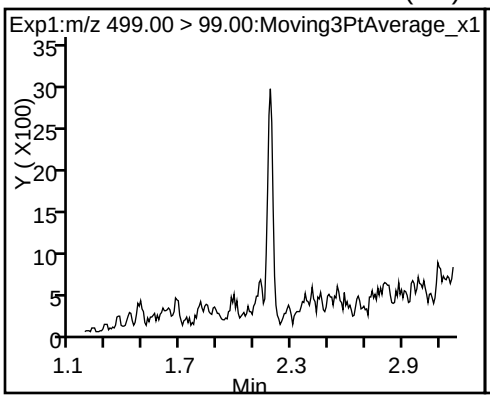
* 6 13C2-PFOA



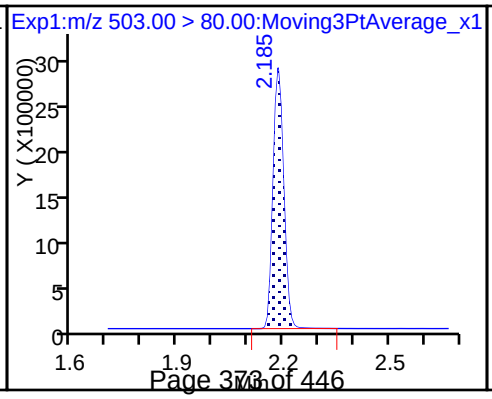
8 Perfluorooctane sulfonic acid (ND)



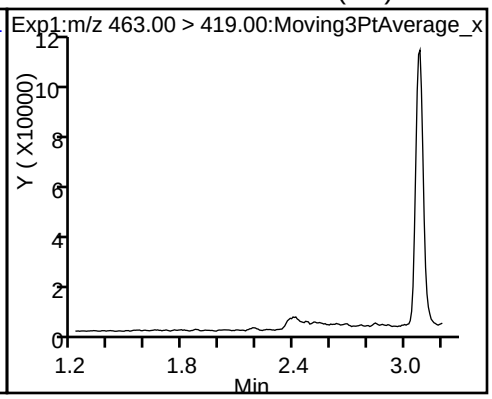
8 Perfluorooctane sulfonic acid (ND)



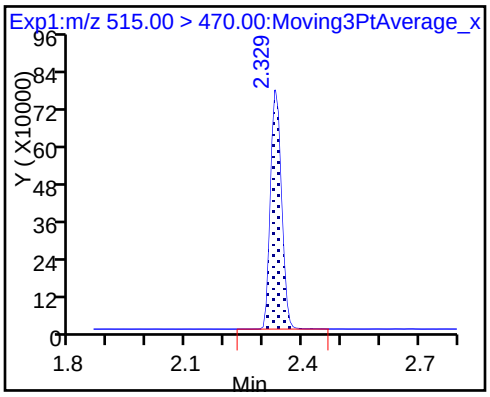
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
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\20170816-46772.b\2017.08.16_537C_003.d				
Lims ID:	MB 320-177640/1-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	16-Aug-2017 12:50:20	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	mb 320-177640/1-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:11	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.0	100.35
$ 10 13C2 PFDA	10.0	12.4	124.23

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_022.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/16/2017 14:20

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	122		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_022.d
Lims ID: MB 320-177651/1-A
Client ID:
Sample Type: MB
Inject. Date: 16-Aug-2017 14:20:27 ALS Bottle#: 26 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-177651/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.582	-0.004	1.000	2052522	9.82		5347	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1954348	10.0		6635	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5738380	28.7		4436	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.354	-0.040	1.000	1405527	12.2		6422	

Report Date: 17-Aug-2017 14:27:46 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_022.d

Injection Date: 16-Aug-2017 14:20:27 Instrument ID: A8_N

Lims ID: MB 320-177651/1-A

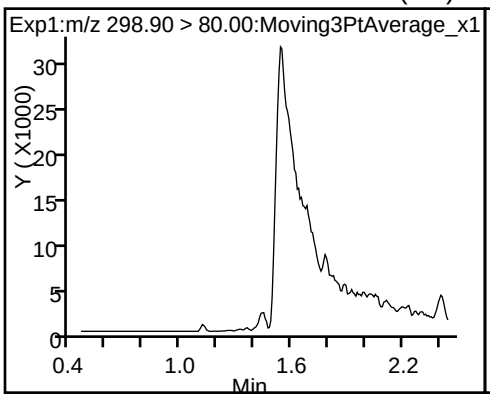
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 26 Worklist Smp#: 22

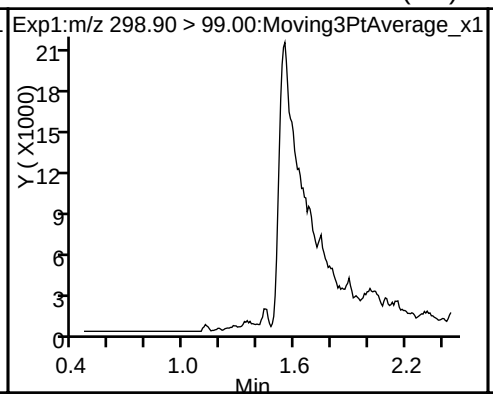
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

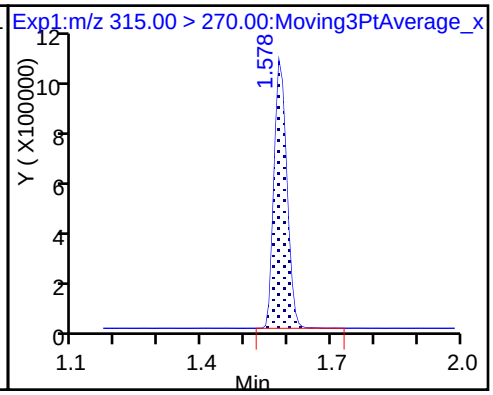
1 Perfluorobutanesulfonic acid (ND)



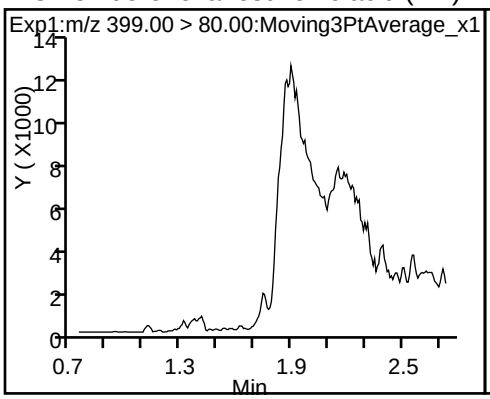
1 Perfluorobutanesulfonic acid (ND)



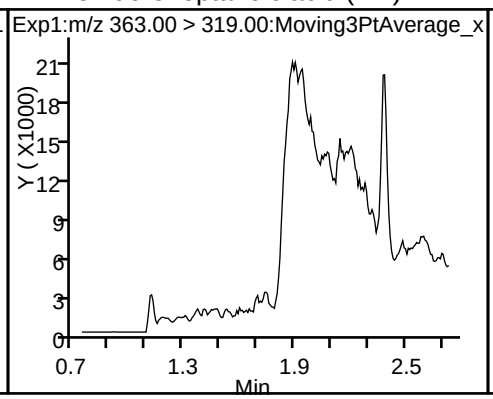
$ 2 13C2 PFHxA



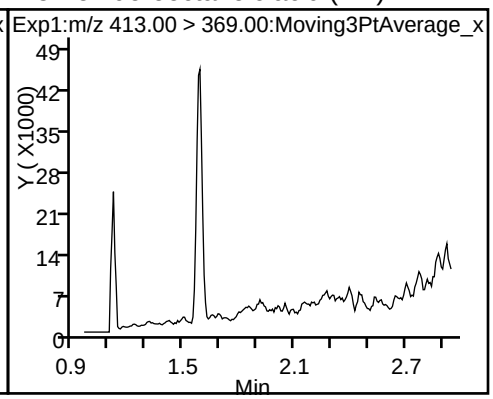
3 Perfluorohexanesulfonic acid (ND)



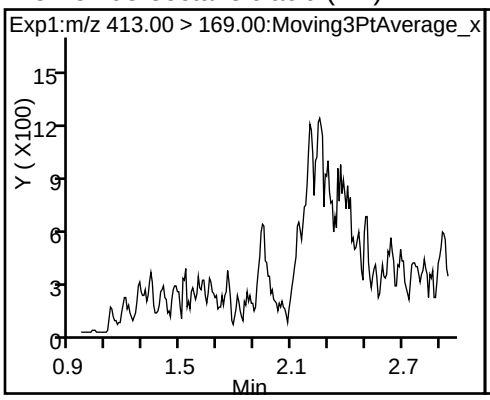
4 Perfluoroheptanoic acid (ND)



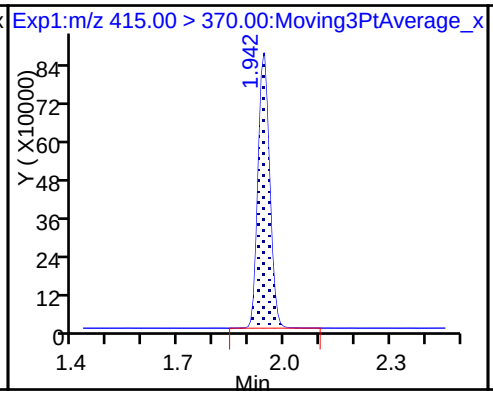
5 Perfluorooctanoic acid (ND)



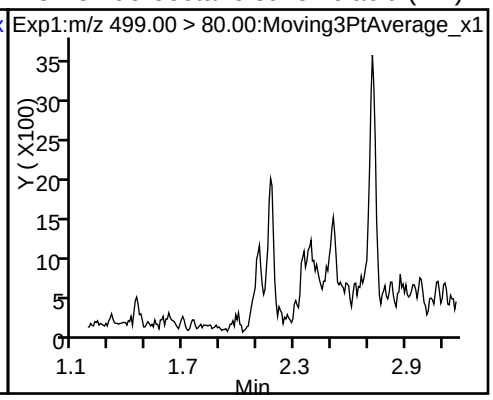
5 Perfluorooctanoic acid (ND)



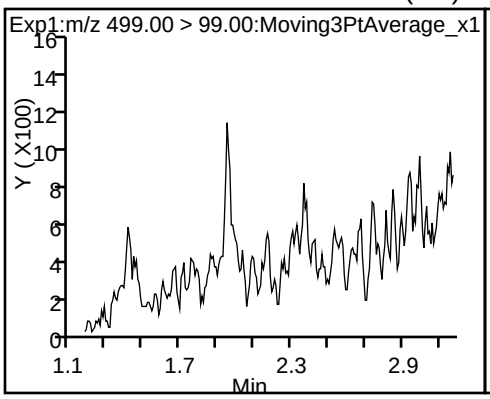
* 6 13C2-PFOA



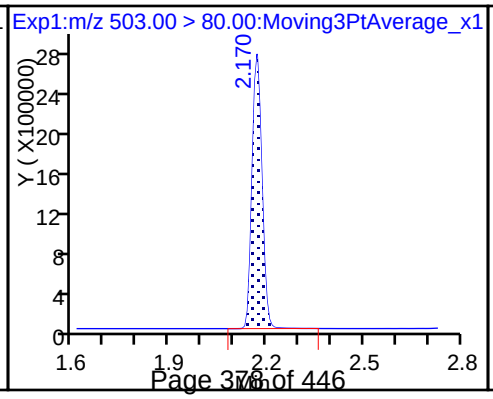
8 Perfluorooctane sulfonic acid (ND)



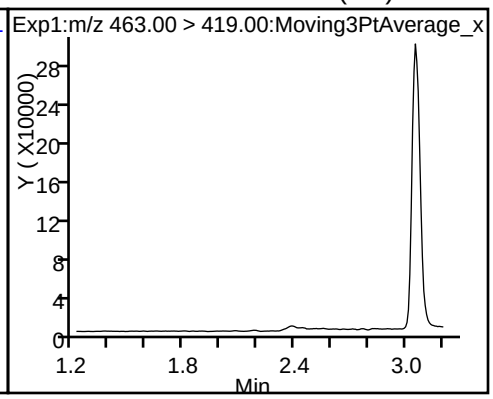
8 Perfluorooctane sulfonic acid (ND)



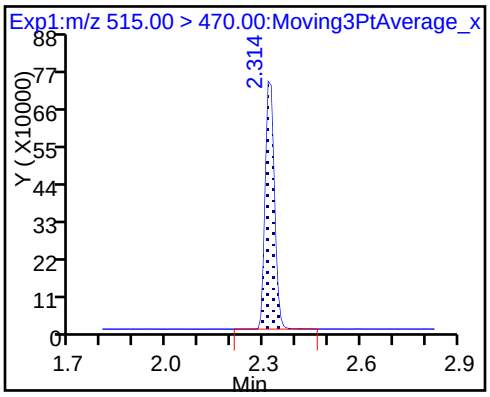
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
88
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_022.d				
Lims ID:	MB 320-177651/1-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	16-Aug-2017 14:20:27	ALS Bottle#:	26	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	mb 320-177651/1-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:44	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.82	98.22
$ 10 13C2 PFDA	10.0	12.2	122.38

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-177640/2-A

Matrix: Water | Lab File ID: 2017.08.16_537C_004.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/16/2017 12:55

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	184		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	83.8		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	99.3		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	121		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	45.5		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	343		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	133	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_004.d
Lims ID: LCS 320-177640/2-A
Client ID:
Sample Type: LCS
Inject. Date: 16-Aug-2017 12:55:05 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-177640/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:31:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	17485375	85.8		1682	
298.90 > 99.00	1.442	1.453	-0.011	1.000	12562463		1.39(0.00-0.00)	1926	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2372977	10.1		5061	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	9835922	30.2		1440	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2140001	11.4		153	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	4171895	21.0		281	
413.00 > 169.00	1.950	1.955	-0.005	1.000	2249500		1.85(0.00-0.00)	2353	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2195855	10.0		5323	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.177	0.0	1.000	9287226	46.1		3653	
499.00 > 99.00	2.177	2.177	0.0	1.000	2089840		4.44(0.00-0.00)	1867	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		6260681	28.7		4303	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3088656	24.8		355	
$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1720998	13.3		6006	

Report Date: 17-Aug-2017 14:27:13 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_004.d

Injection Date: 16-Aug-2017 12:55:05 Instrument ID: A8_N

Lims ID: LCS 320-177640/2-A

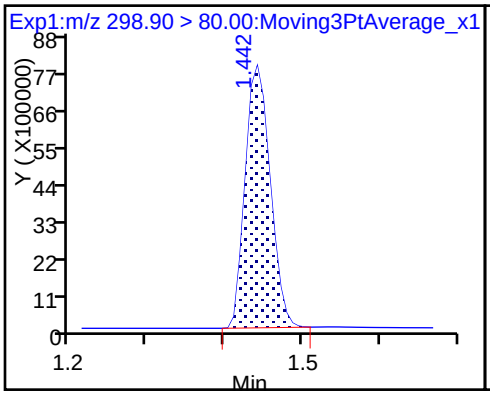
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4

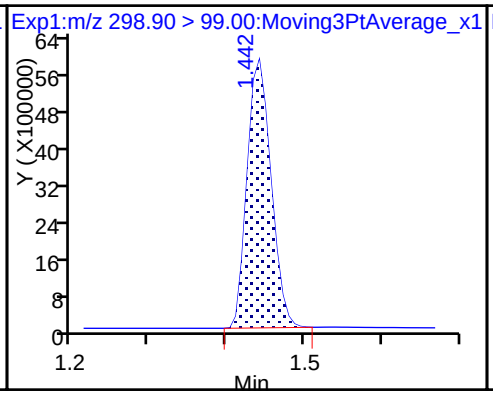
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

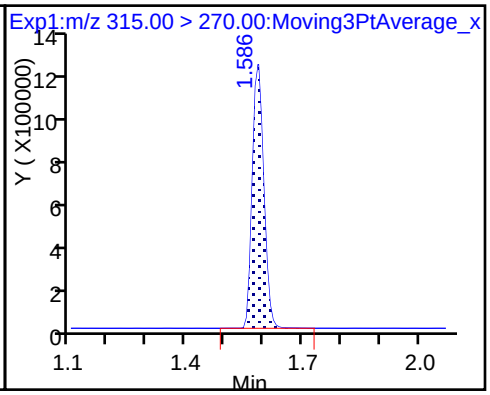
1 Perfluorobutanesulfonic acid



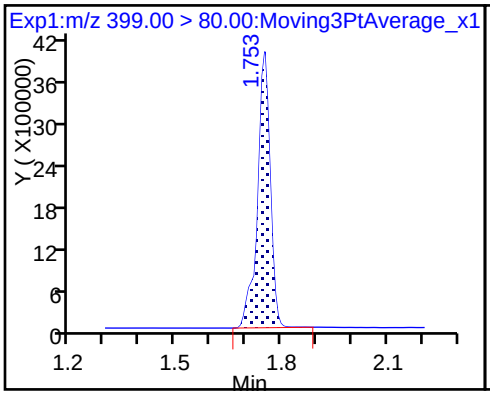
1 Perfluorobutanesulfonic acid



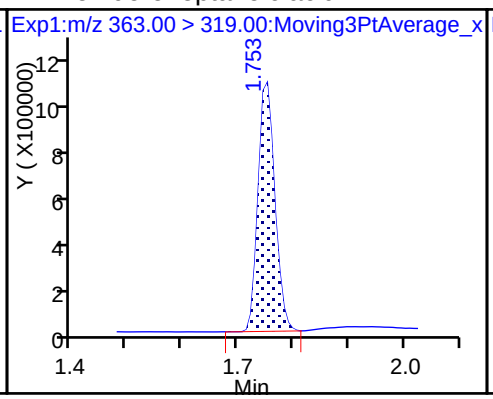
$ 2 13C2 PFHxA



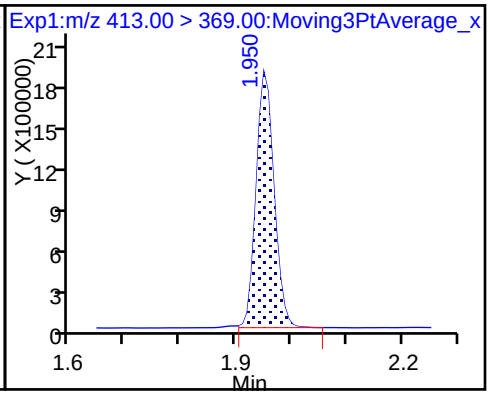
3 Perfluorohexanesulfonic acid



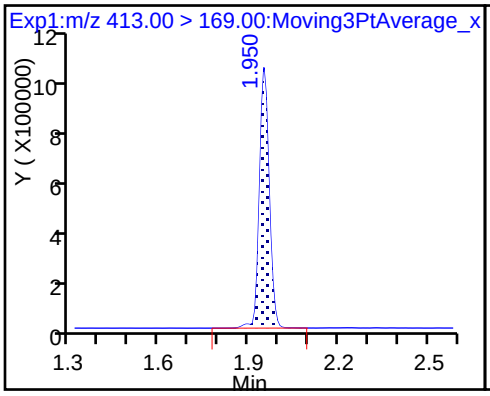
4 Perfluoroheptanoic acid



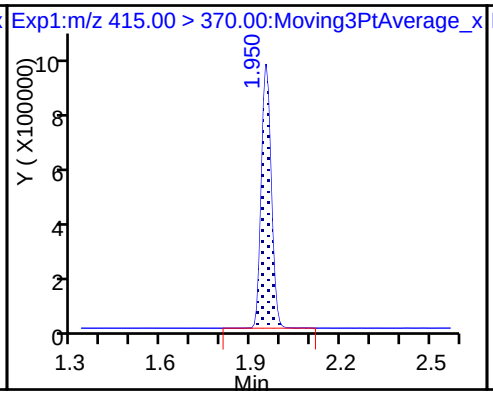
5 Perfluorooctanoic acid



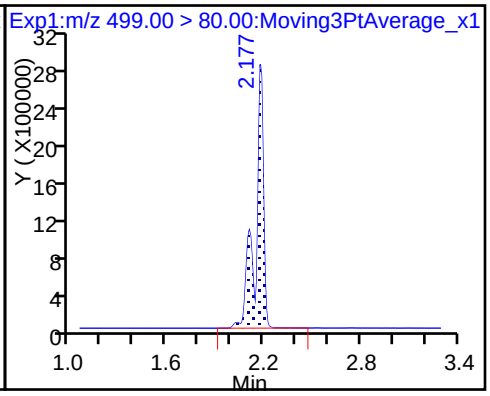
5 Perfluorooctanoic acid



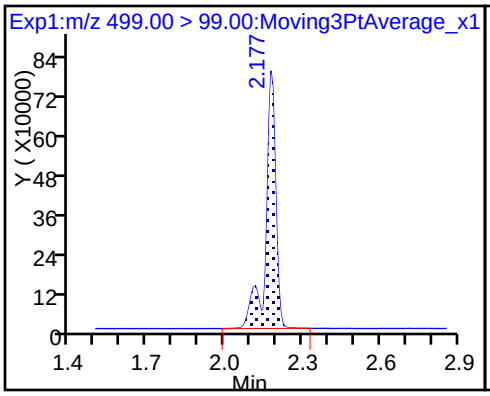
* 6 13C2-PFOA



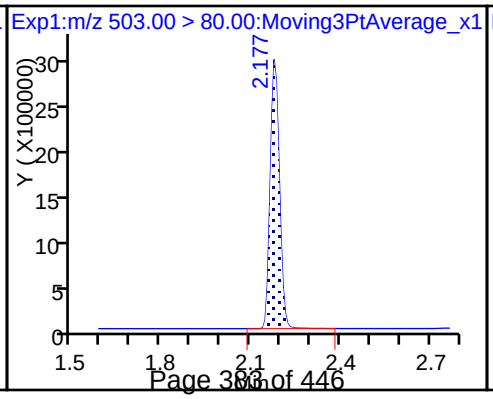
8 Perfluorooctane sulfonic acid



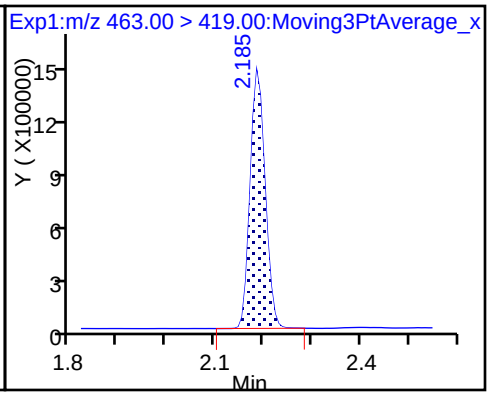
8 Perfluorooctane sulfonic acid



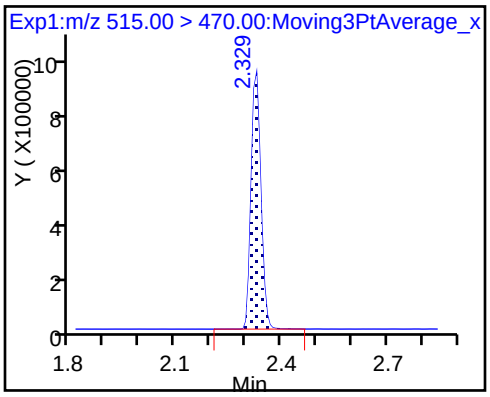
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
Min

Report Date: 17-Aug-2017 14:27:13 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_004.d
Lims ID: LCS 320-177640/2-A
Client ID:
Sample Type: LCS
Inject. Date: 16-Aug-2017 12:55:05 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-177640/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:31:20

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.1	101.07
$ 10 13C2 PFDA	10.0	13.3	133.37

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_023.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/16/2017 14:25

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	332	E	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	155		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	177	E	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	211		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	87.2	E	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	698		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	107		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_023.d
Lims ID: LCS 320-177651/2-A
Client ID:
Sample Type: LCS
Inject. Date: 16-Aug-2017 14:25:11 ALS Bottle#: 27 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-177651/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.453	-0.004	1.000	25096672	174.5		2416	
298.90 > 99.00	1.449	1.453	-0.004	1.000	18349230		1.37(0.00-0.00)	2792	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2167280	10.7		6016	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	15460788	52.8		2083	
4 Perfluoroheptanoic acid									E
363.00 > 319.00	1.753	1.742	0.011	1.000	3524903	21.8		287	E
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	6660757	38.9		405	
413.00 > 169.00	1.950	1.955	-0.005	1.000	3605906		1.85(0.00-0.00)	3800	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1889531	10.0		5611	
8 Perfluorooctane sulfonic acid									E
499.00 > 80.00	2.177	2.177	0.0	1.000	15022010	82.9		5768	E
499.00 > 99.00	2.177	2.177	0.0	1.000	3521666		4.27(0.00-0.00)	2438	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5624637	28.7		4252	
9 Perfluorononanoic acid									E
463.00 > 419.00	2.185	2.213	-0.028	1.000	4724532	44.1		588	E
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1403635	12.6		6764	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Report Date: 17-Aug-2017 14:27:47 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_023.d

Injection Date: 16-Aug-2017 14:25:11 Instrument ID: A8_N

Lims ID: LCS 320-177651/2-A

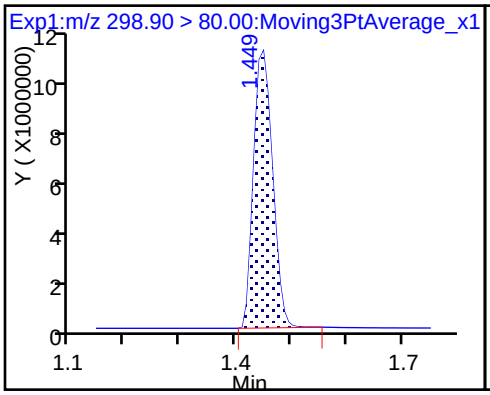
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 23

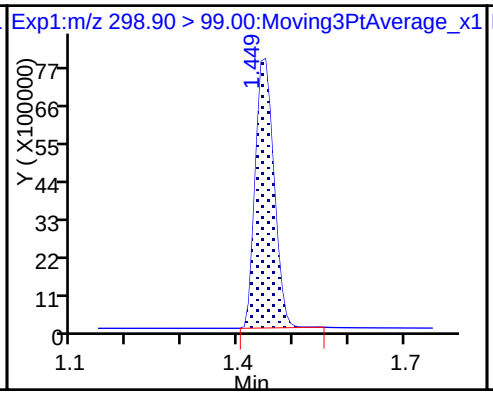
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

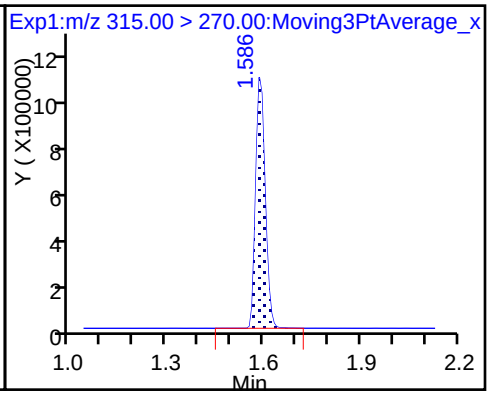
1 Perfluorobutanesulfonic acid



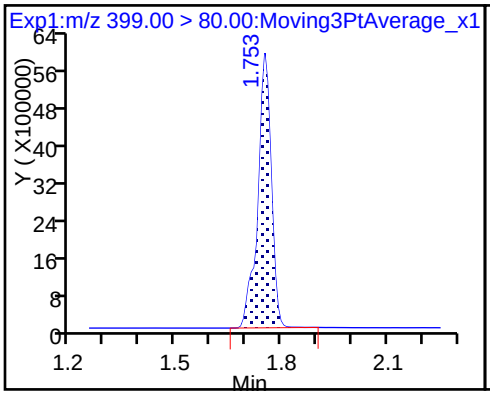
1 Perfluorobutanesulfonic acid



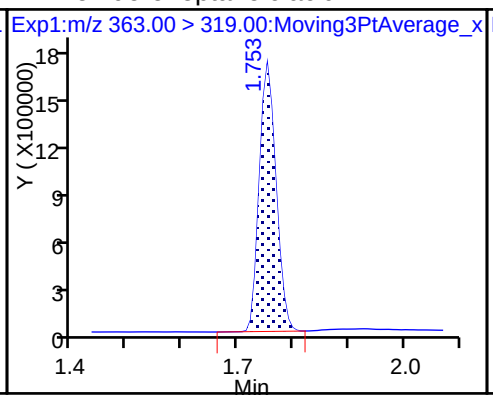
$ 2 13C2 PFHxA



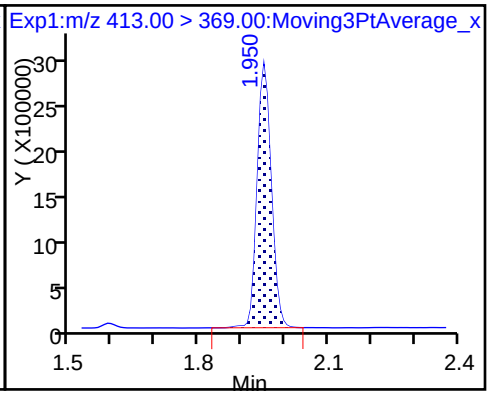
3 Perfluorohexanesulfonic acid



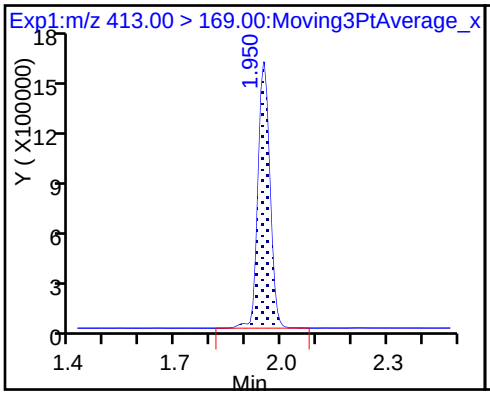
4 Perfluoroheptanoic acid



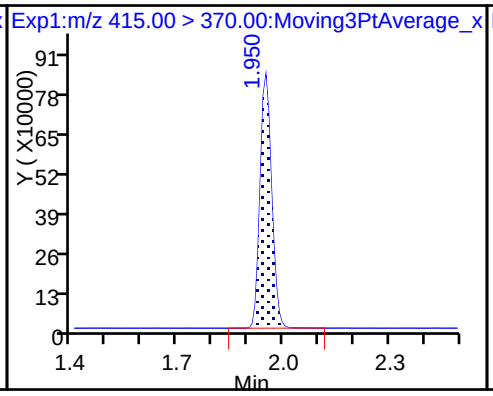
5 Perfluorooctanoic acid



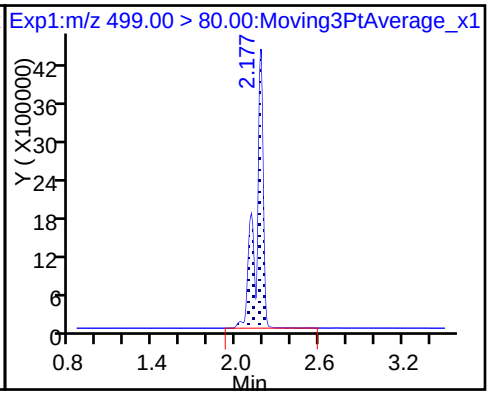
5 Perfluorooctanoic acid



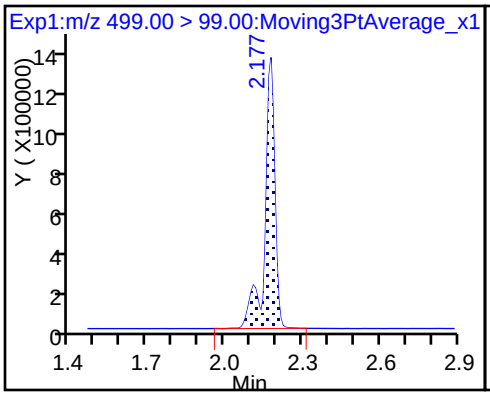
* 6 13C2-PFOA



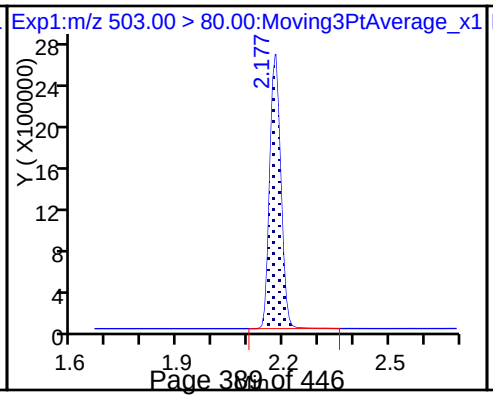
8 Perfluorooctane sulfonic acid



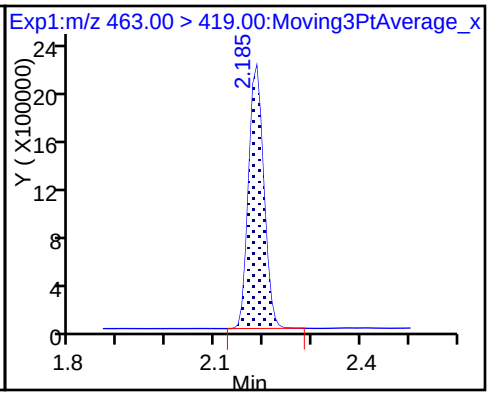
8 Perfluorooctane sulfonic acid



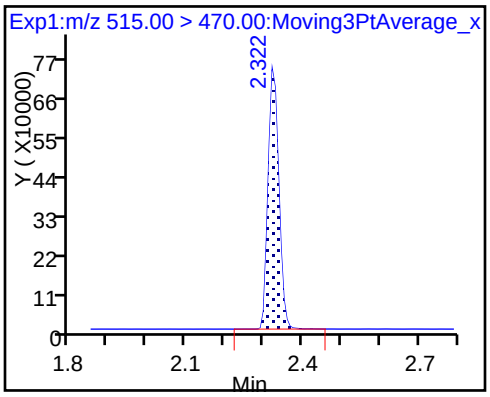
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_023.d				
Lims ID:	LCS 320-177651/2-A				
Client ID:					
Sample Type:	LCS				
Inject. Date:	16-Aug-2017 14:25:11	ALS Bottle#:	27	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	lcs 320-177651/2-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:44	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:04

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.7	107.27
$ 10 13C2 PFDA	10.0	12.6	126.41

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 320-177651/3-A

Matrix: Water | Lab File ID: 2017.08.16_537C_024.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/16/2017 14:29

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

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

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

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	324	E	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	151		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	171	E	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	206		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	84.6	E	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	684		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	102		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_024.d
Lims ID: LCSD 320-177651/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 16-Aug-2017 14:29:55 ALS Bottle#: 28 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-177651/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	24476093	171.1		2278	
298.90 > 99.00	1.442	1.453	-0.011	1.000	18096953		1.35(0.00-0.00)	2518	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	2041250	10.2		6193	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	14825081	51.4		1922	
4 Perfluoroheptanoic acid									E
363.00 > 319.00	1.753	1.742	0.011	1.000	3400965	21.1		292	E
5 Perfluorooctanoic acid									
413.00 > 369.00	1.950	1.955	-0.005	1.000	6439782	37.8		376	
413.00 > 169.00	1.950	1.955	-0.005	1.000	3467596		1.86(0.00-0.00)	3478	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		1879054	10.0		6195	
8 Perfluorooctane sulfonic acid									E
499.00 > 80.00	2.177	2.177	0.0	1.000	14462643	81.1		4742	E
499.00 > 99.00	2.177	2.177	0.0	1.000	3382114		4.28(0.00-0.00)	2223	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		5537284	28.7		4293	
9 Perfluorononanoic acid									E
463.00 > 419.00	2.185	2.213	-0.028	1.000	4559751	42.8		365	E
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1392725	12.6		6498	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Report Date: 17-Aug-2017 14:27:48 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_024.d

Injection Date: 16-Aug-2017 14:29:55 Instrument ID: A8_N

Lims ID: LCSD 320-177651/3-A

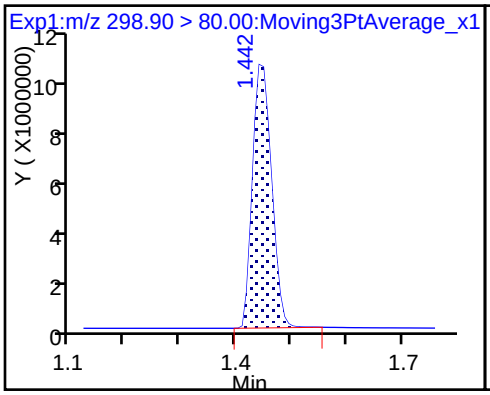
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 24

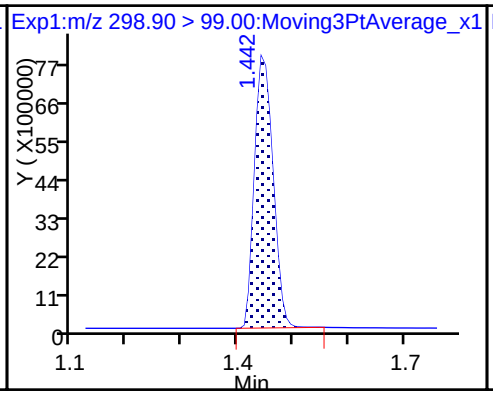
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

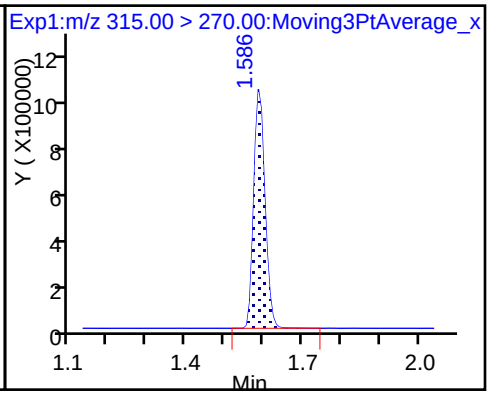
1 Perfluorobutanesulfonic acid



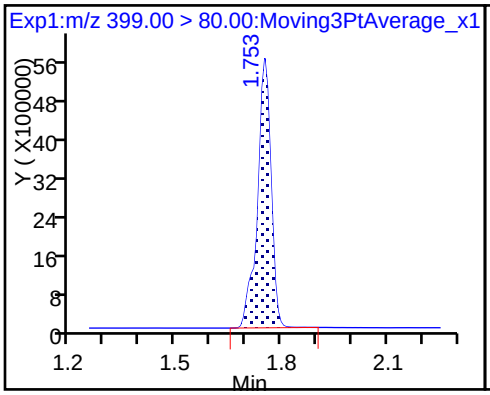
1 Perfluorobutanesulfonic acid



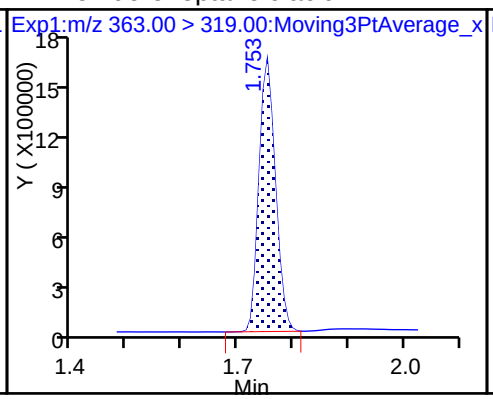
$ 2 13C2 PFHxA



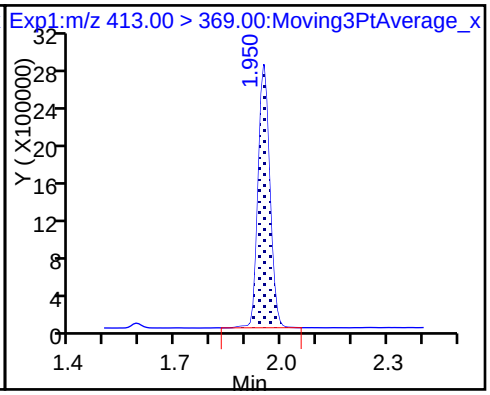
3 Perfluorohexanesulfonic acid



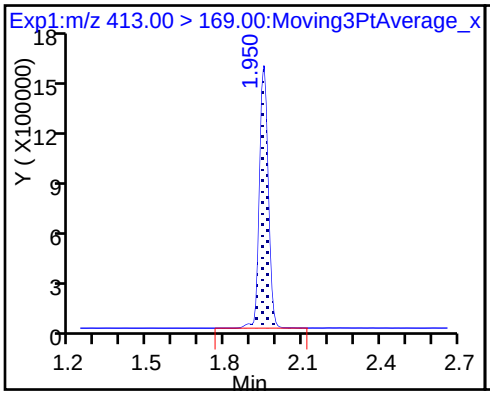
4 Perfluoroheptanoic acid



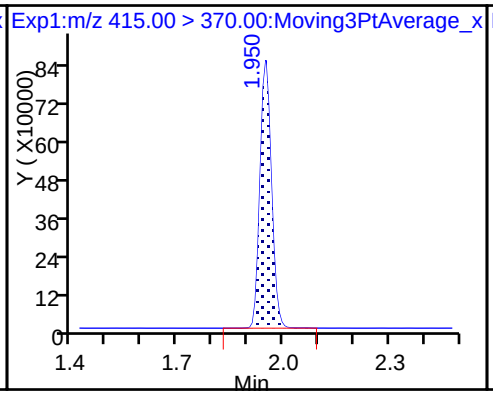
5 Perfluorooctanoic acid



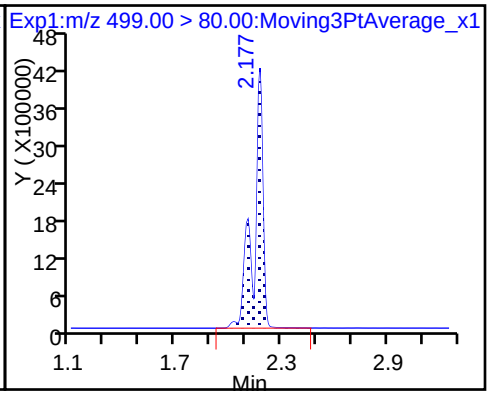
5 Perfluorooctanoic acid



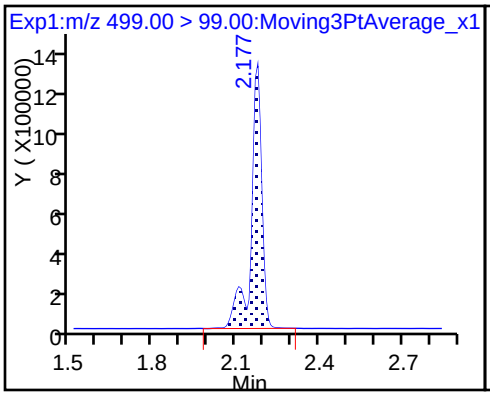
* 6 13C2-PFOA



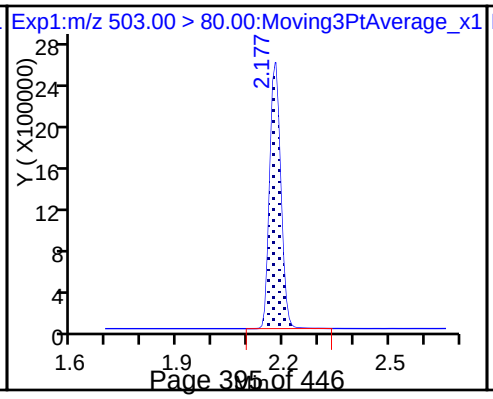
8 Perfluorooctane sulfonic acid



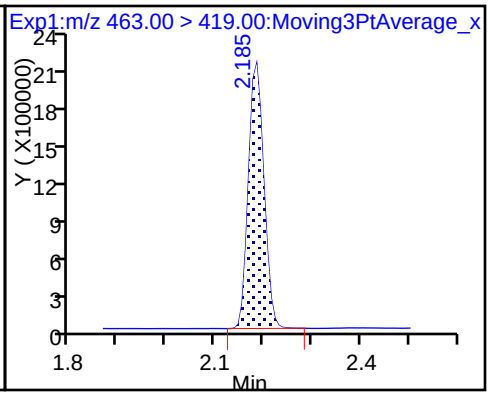
8 Perfluorooctane sulfonic acid



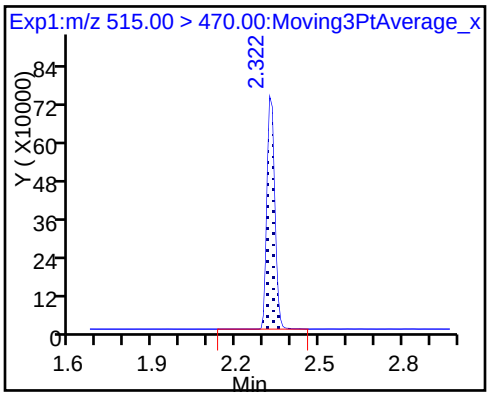
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
84
72
60
48
36
24
12
0
1.6
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_024.d
Lims ID: LCSD 320-177651/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 16-Aug-2017 14:29:55 ALS Bottle#: 28 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-177651/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:44 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:44:24

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.2	101.59
$ 10 13C2 PFDA	10.0	12.6	126.12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_011.d

Analysis Method: 537 | Date Collected: 07/26/2017 10:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 294(mL) | Date Analyzed: 08/16/2017 13:28

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	168		34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	102	M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	90.8	J	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	101		26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	43.3		8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	283		77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	57	Q	70-130
STL00996	13C2 PFDA	130		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d
Lims ID: 320-30191-A-6-B MS
Client ID: NAWC-072617-RW-349
Sample Type: MS
Inject. Date: 16-Aug-2017 13:28:17 ALS Bottle#: 19 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-6-b ms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:38:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	16692617	83.1		1938	
298.90 > 99.00	1.442	1.453	-0.011	1.000	12117829		1.38(0.00-0.00)	2319	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1225368	5.71		2727	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.753	1.742	0.011	1.000	9510963	29.8		1128	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.753	1.742	0.011	1.000	2189501	12.7		142	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.957	1.955	0.002	1.000	5463648	30.0		339	M
413.00 > 169.00	1.957	1.955	0.002	1.000	2913627		1.88(0.00-0.00)	2606	
* 6 13C2-PFOA									
415.00 > 370.00	1.950	1.955	-0.005		2007840	10.0		5442	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.185	2.177	0.008	1.000	9731784	49.3		2939	
499.00 > 99.00	2.177	2.177	0.0	0.997	2131093		4.57(0.00-0.00)	1592	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.205	-0.028		6134519	28.7		3874	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.213	-0.028	1.000	3036854	26.7		122	
$ 10 13C2 PFDA									
515.00 > 470.00	2.329	2.354	-0.025	1.000	1532667	13.0		6719	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:18 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d

Injection Date: 16-Aug-2017 13:28:17 Instrument ID: A8_N

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

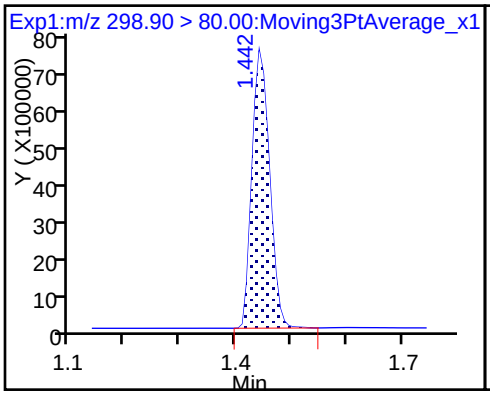
Client ID: NAWC-072617-RW-349

Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 11

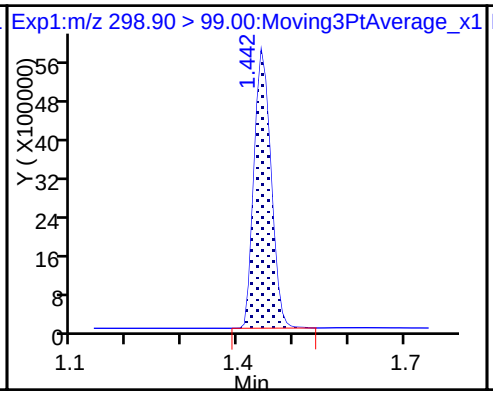
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

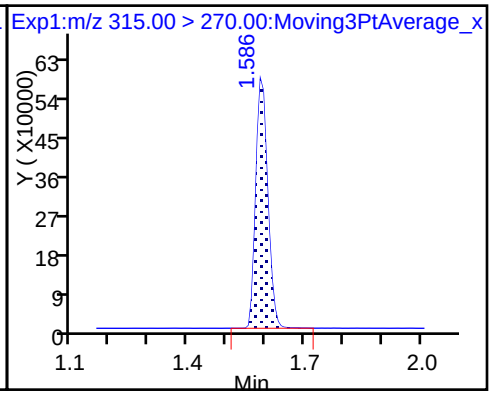
1 Perfluorobutanesulfonic acid



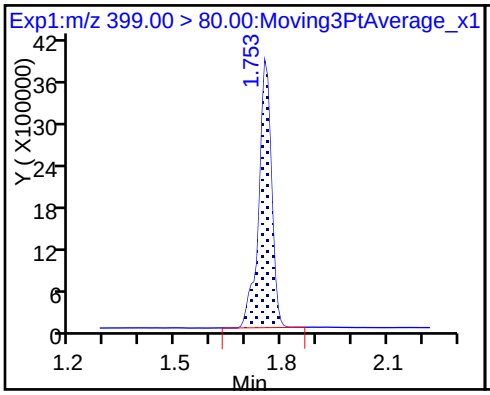
1 Perfluorobutanesulfonic acid



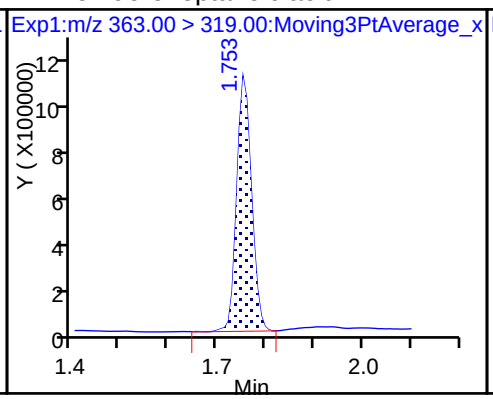
$ 2 13C2 PFHxA



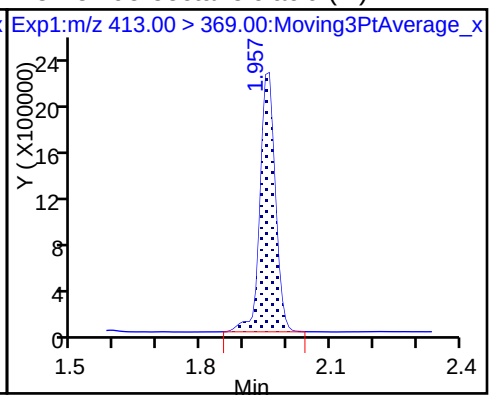
3 Perfluorohexanesulfonic acid



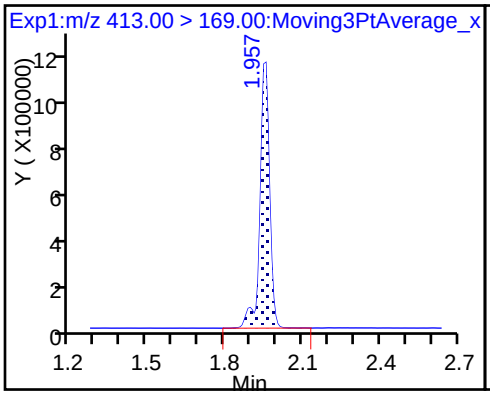
4 Perfluoroheptanoic acid



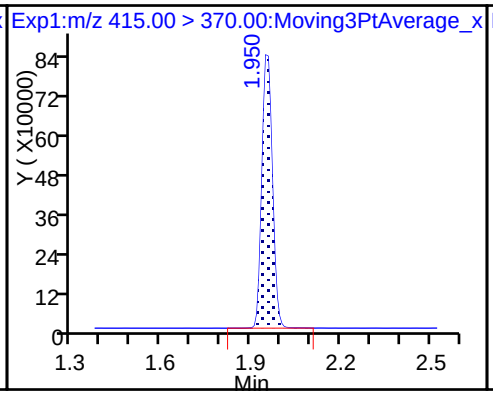
5 Perfluorooctanoic acid (M)



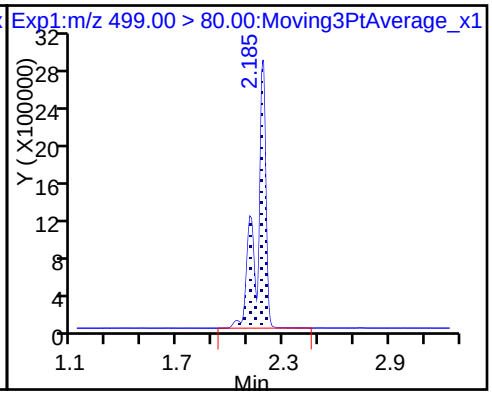
5 Perfluorooctanoic acid



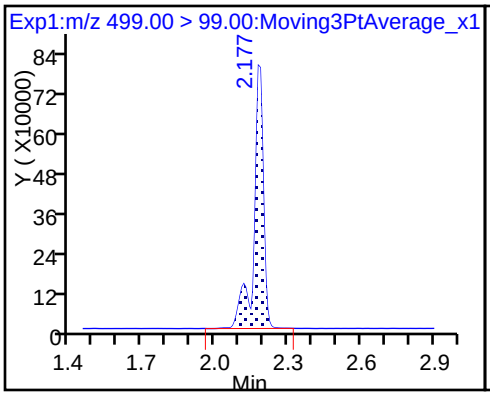
* 6 13C2-PFOA



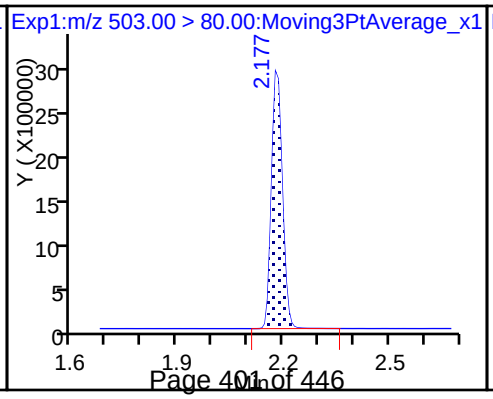
8 Perfluorooctane sulfonic acid



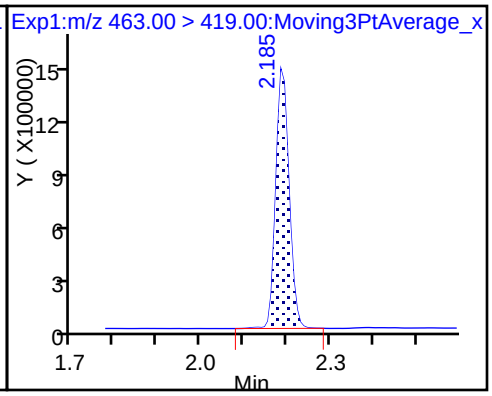
8 Perfluorooctane sulfonic acid



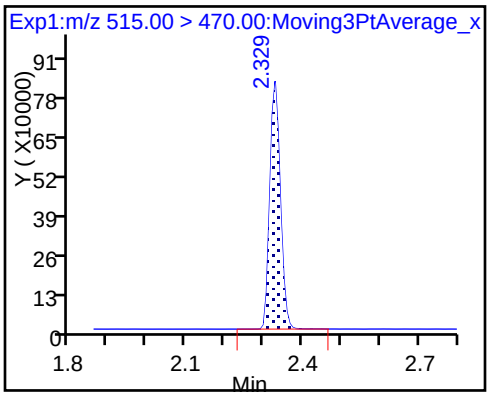
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.329
Y (X10000)
91
78
65
52
39
26
13
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d				
Lims ID:	320-30191-A-6-B MS				
Client ID:	NAWC-072617-RW-349				
Sample Type:	MS				
Inject. Date:	16-Aug-2017 13:28:17	ALS Bottle#:	19	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-6-b ms				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:11	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				

First Level Reviewer: barnettj Date: 16-Aug-2017 15:38:28

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	5.71	57.08
$ 10 13C2 PFDA	10.0	13.0	129.89

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

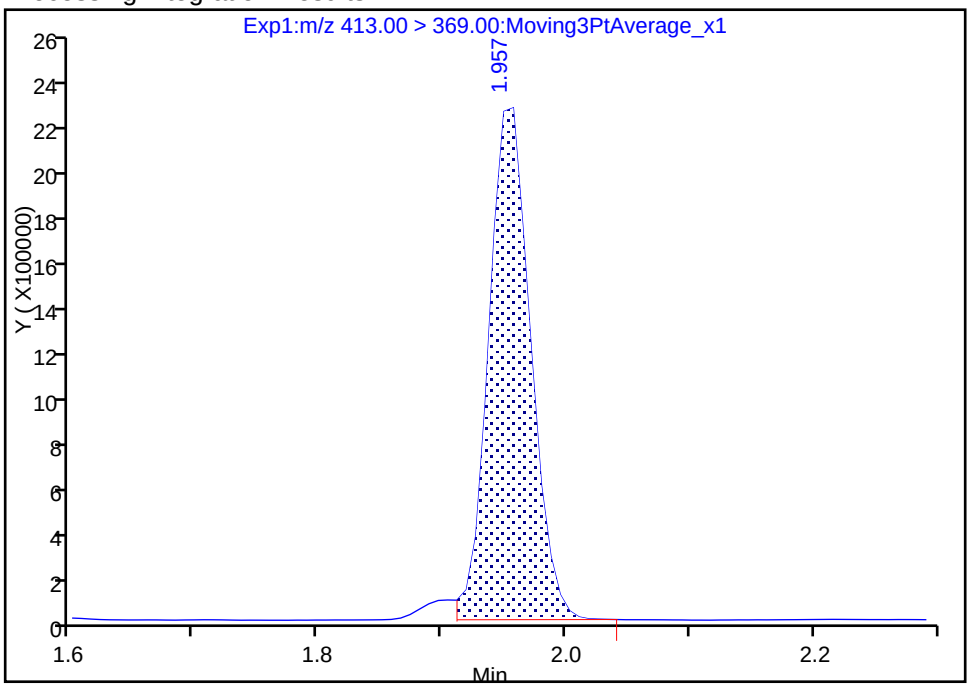
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_011.d				
Injection Date:	16-Aug-2017 13:28:17	Instrument ID:	A8_N		
Lims ID:	320-30191-A-6-B MS				
Client ID:	NAWC-072617-RW-349				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

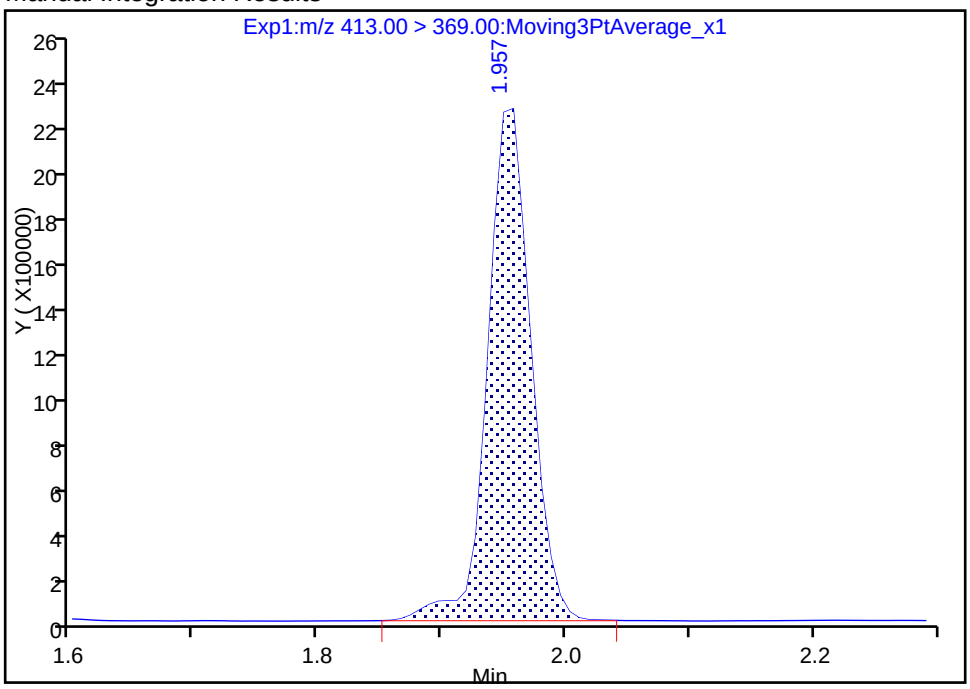
Processing Integration Results

RT: 1.96
Area: 5290190
Amount: 29.054463
Amount Units: ng/ml



Manual Integration Results

RT: 1.96
Area: 5463648
Amount: 30.007119
Amount Units: ng/ml



Reviewer: barnettj, 16-Aug-2017 15:38:08
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water Lab File ID: 2017.08.16_537C_012.d

Analysis Method: 537 Date Collected: 07/26/2017 10:35

Extraction Method: 537 Date Extracted: 08/03/2017 17:23

Sample wt/vol: 287.8(mL) Date Analyzed: 08/16/2017 13:33

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

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

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

Analysis Batch No.: 179727 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	178		35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	107	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	92.5	J	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	109		26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	46.5		8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	304		78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	61	Q	70-130
STL00996	13C2 PFDA	131	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d
Lims ID: 320-30191-A-6-C MSD
Client ID: NAWC-072617-RW-349
Sample Type: MSD
Inject. Date: 16-Aug-2017 13:33:04 ALS Bottle#: 20 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30191-a-6-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 17-Aug-2017 14:27:11 Calib Date: 14-Aug-2017 13:12:40
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d

Column 1 : Det: EXP1
Process Host: XAWRK030

First Level Reviewer: barnettj Date: 16-Aug-2017 15:39:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.453	-0.011	1.000	16196335	87.5		1888	
298.90 > 99.00	1.434	1.453	-0.019	0.995	11405248		1.42(0.00-0.00)	2330	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.582	0.004	1.000	1193305	6.09		3055	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.742	0.003	1.000	9376681	31.5		1142	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.745	1.742	0.003	1.000	2101674	13.4		152	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.942	1.955	-0.013	1.000	5122752	30.8		302	M
413.00 > 169.00	1.942	1.955	-0.013	1.000	2728840		1.88(0.00-0.00)	2671	
* 6 13C2-PFOA									
415.00 > 370.00	1.942	1.955	-0.013		1833456	10.0		6001	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.177	-0.007	1.000	9407985	51.1		3124	
499.00 > 99.00	2.170	2.177	-0.007	1.000	2059674		4.57(0.00-0.00)	1481	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.205	-0.035		5712310	28.7		3880	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.213	-0.036	1.000	2765816	26.6		101	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.354	-0.032	1.000	1410951	13.1		5924	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Aug-2017 14:27:19 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d

Injection Date: 16-Aug-2017 13:33:04 Instrument ID: A8_N

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

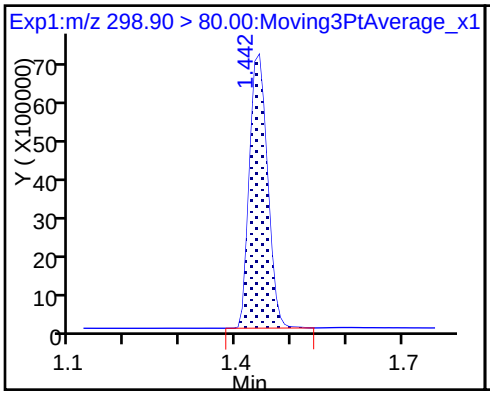
Client ID: NAWC-072617-RW-349

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 12

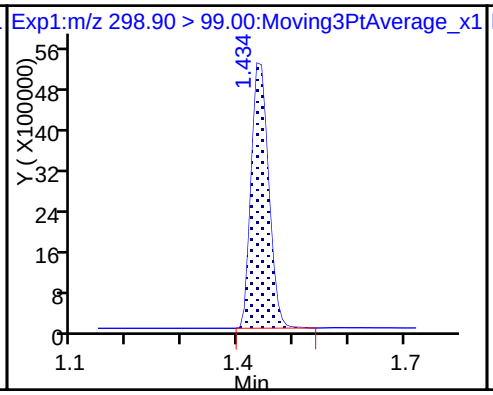
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

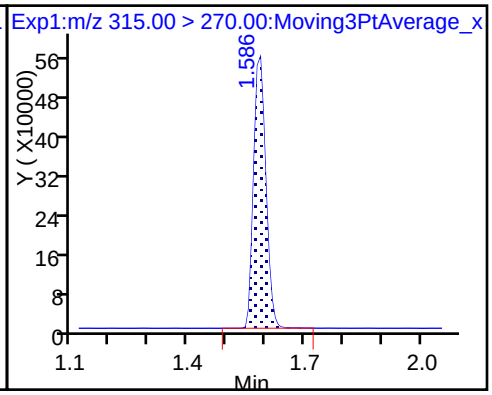
1 Perfluorobutanesulfonic acid



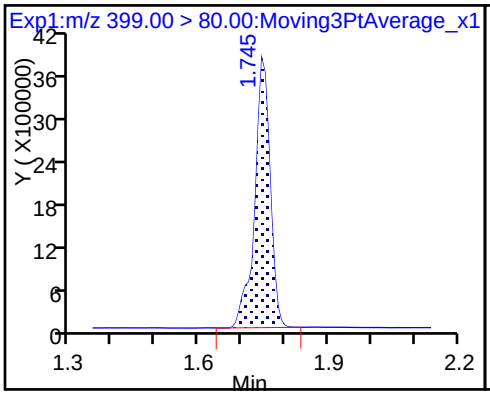
1 Perfluorobutanesulfonic acid



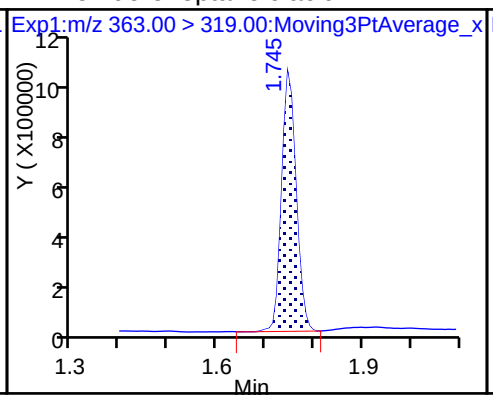
$ 2 13C2 PFHxA



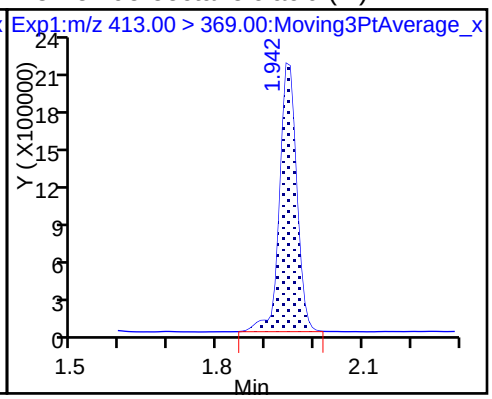
3 Perfluorohexanesulfonic acid



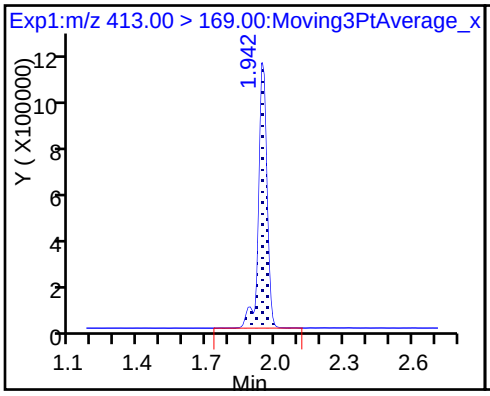
4 Perfluoroheptanoic acid



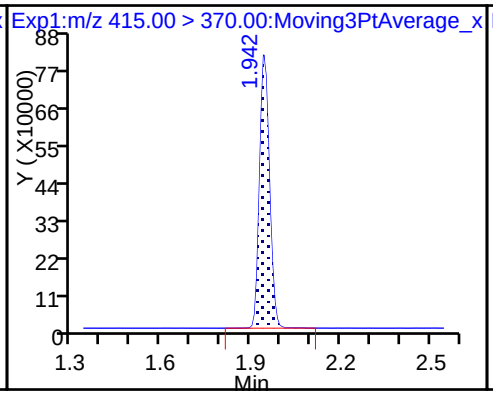
5 Perfluorooctanoic acid (M)



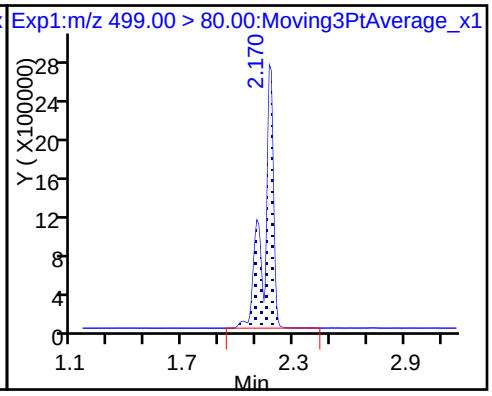
5 Perfluorooctanoic acid



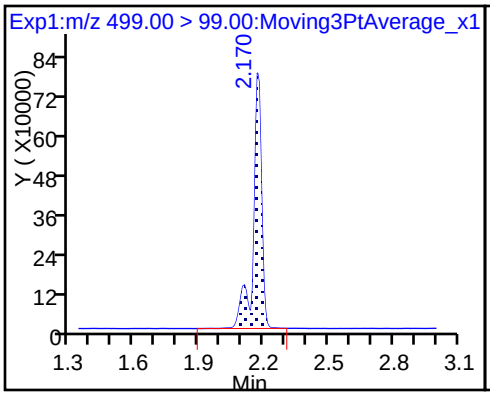
* 6 13C2-PFOA



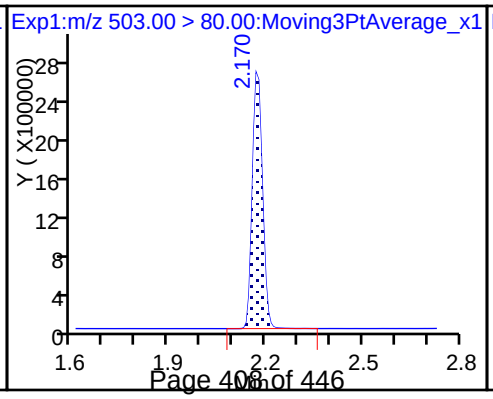
8 Perfluorooctane sulfonic acid



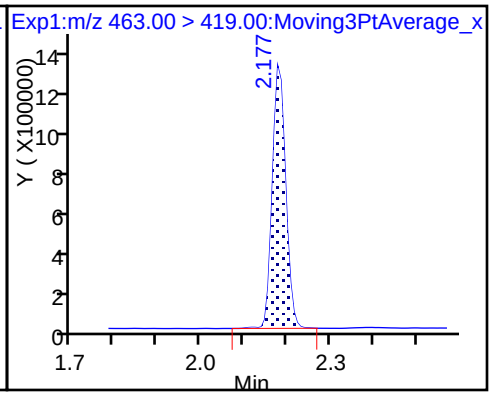
8 Perfluorooctane sulfonic acid



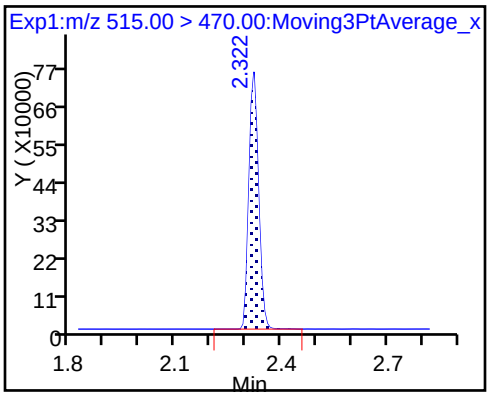
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d				
Lims ID:	320-30191-A-6-C MSD				
Client ID:	NAWC-072617-RW-349				
Sample Type:	MSD				
Inject. Date:	16-Aug-2017 13:33:04	ALS Bottle#:	20	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30191-a-6-c msd				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	17-Aug-2017 14:27:11	Calib Date:	14-Aug-2017 13:12:40		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170814-46675.b\2017.08.14_537ICAL_007.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK030				
First Level Reviewer: barnettj		Date:	16-Aug-2017 15:39:09		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	6.09	60.87
$ 10 13C2 PFDA	10.0	13.1	130.95

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

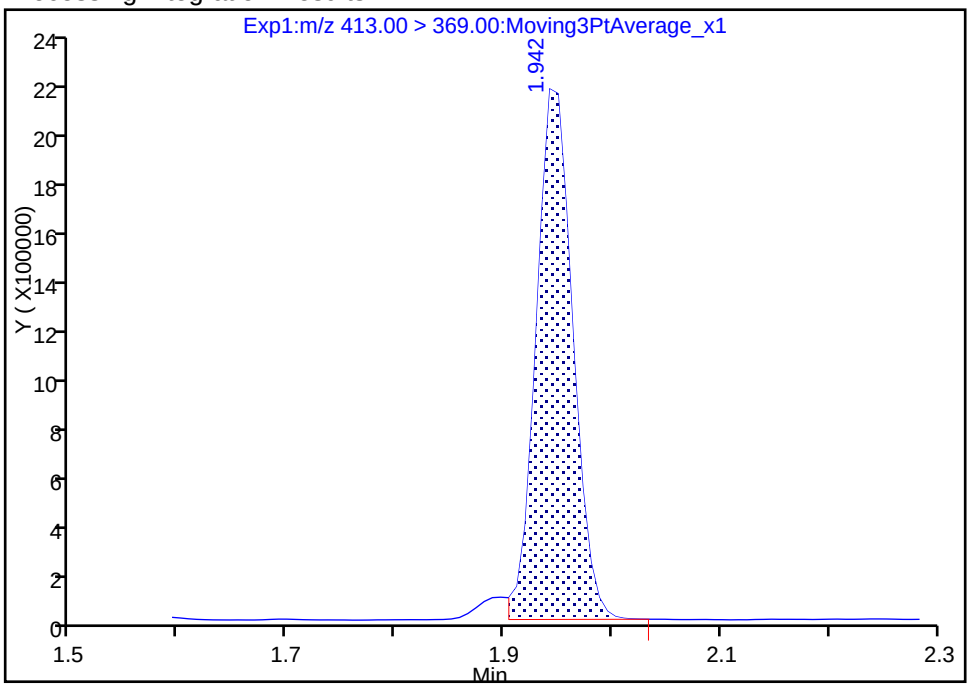
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b\2017.08.16_537C_012.d				
Injection Date:	16-Aug-2017 13:33:04	Instrument ID:	A8_N		
Lims ID:	320-30191-A-6-C MSD				
Client ID:	NAWC-072617-RW-349				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

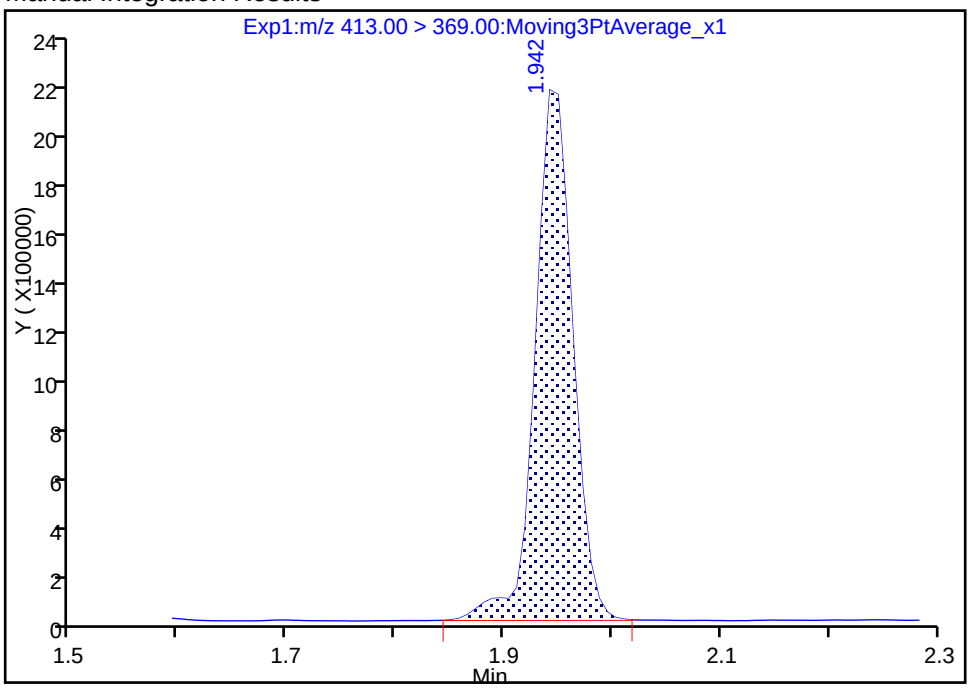
Processing Integration Results

RT: 1.94
Area: 4948005
Amount: 29.759822
Amount Units: ng/ml



Manual Integration Results

RT: 1.94
Area: 5122752
Amount: 30.810839
Amount Units: ng/ml



Reviewer: barnettj, 16-Aug-2017 15:39:01
Audit Action: Manually Integrated Audit Reason: Isomers

LCMS ANALYSIS RUN LOG

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

SDG No.:

Instrument ID: A8_N Start Date: 08/14/2017 12:48

Analysis Batch Number: 179319 End Date: 08/14/2017 13:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-179319/2		08/14/2017 12:48	1	2017.08.14_537I CAL 002.d	GeminiC18 3x100 3(mm)
IC 320-179319/3		08/14/2017 12:53	1	2017.08.14_537I CAL 003.d	GeminiC18 3x100 3(mm)
IC 320-179319/4		08/14/2017 12:58	1	2017.08.14_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-179319/5 ICISAV		08/14/2017 13:03	1	2017.08.14_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-179319/6		08/14/2017 13:07	1	2017.08.14_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-179319/7		08/14/2017 13:12	1	2017.08.14_537I CAL 007.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:17	1		GeminiC18 3x100 3(mm)
CCVL 320-179319/9		08/14/2017 13:22	1	2017.08.14_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:26	1		GeminiC18 3x100 3(mm)
ICV 320-179319/11		08/14/2017 13:31	1	2017.08.14_537I CAL 011.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

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

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 09:11

Analysis Batch Number: 179695 End Date: 08/16/2017 10:13

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-179695/4		08/16/2017 09:11	1	2017.08.15_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-179695/5 CCVIS		08/16/2017 09:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:04	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:08	1		GeminiC18 3x100 3(mm)
CCV 320-179695/17 CCVIS		08/16/2017 10:13	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

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

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 12:40

Analysis Batch Number: 179727 End Date: 08/16/2017 13:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179727/1 CCVIS		08/16/2017 12:40	1	2017.08.16_537C 001.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 12:45	1		GeminiC18 3x100 3(mm)
MB 320-177640/1-A		08/16/2017 12:50	1	2017.08.16_537C _003.d	GeminiC18 3x100 3(mm)
LCS 320-177640/2-A		08/16/2017 12:55	1	2017.08.16_537C 004.d	GeminiC18 3x100 3(mm)
320-30191-1		08/16/2017 12:59	1	2017.08.16_537C 005.d	GeminiC18 3x100 3(mm)
320-30191-2		08/16/2017 13:04	1	2017.08.16_537C _006.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:09	1		GeminiC18 3x100 3(mm)
320-30191-4		08/16/2017 13:14	1	2017.08.16_537C 008.d	GeminiC18 3x100 3(mm)
320-30191-5		08/16/2017 13:18	1	2017.08.16_537C 009.d	GeminiC18 3x100 3(mm)
320-30191-6		08/16/2017 13:23	1	2017.08.16_537C 010.d	GeminiC18 3x100 3(mm)
320-30191-6 MS		08/16/2017 13:28	1	2017.08.16_537C 011.d	GeminiC18 3x100 3(mm)
320-30191-6 MSD		08/16/2017 13:33	1	2017.08.16_537C 012.d	GeminiC18 3x100 3(mm)
CCV 320-179727/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C _013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

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

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 13:37

Analysis Batch Number: 179728 End Date: 08/16/2017 14:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179728/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:42	1		GeminiC18 3x100 3(mm)
320-30191-7		08/16/2017 13:47	1	2017.08.16_537C 015.d	GeminiC18 3x100 3(mm)
320-30191-8		08/16/2017 13:52	1	2017.08.16_537C 016.d	GeminiC18 3x100 3(mm)
320-30191-9		08/16/2017 13:56	1	2017.08.16_537C 017.d	GeminiC18 3x100 3(mm)
320-30191-10		08/16/2017 14:01	1	2017.08.16_537C 018.d	GeminiC18 3x100 3(mm)
320-30191-11		08/16/2017 14:06	1	2017.08.16_537C 019.d	GeminiC18 3x100 3(mm)
CCV 320-179728/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

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

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 14:10

Analysis Batch Number: 179732 End Date: 08/16/2017 15:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179732/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 14:15	1		GeminiC18 3x100 3(mm)
MB 320-177651/1-A		08/16/2017 14:20	1	2017.08.16_537C 022.d	GeminiC18 3x100 3(mm)
LCS 320-177651/2-A		08/16/2017 14:25	1	2017.08.16_537C 023.d	GeminiC18 3x100 3(mm)
LCSD 320-177651/3-A		08/16/2017 14:29	1	2017.08.16_537C 024.d	GeminiC18 3x100 3(mm)
320-30191-12		08/16/2017 14:34	1	2017.08.16_537C 025.d	GeminiC18 3x100 3(mm)
320-30191-13		08/16/2017 14:39	1	2017.08.16_537C 026.d	GeminiC18 3x100 3(mm)
320-30191-14		08/16/2017 14:44	1	2017.08.16_537C 027.d	GeminiC18 3x100 3(mm)
320-30191-15		08/16/2017 14:48	1	2017.08.16_537C 028.d	GeminiC18 3x100 3(mm)
320-30191-16		08/16/2017 14:53	1	2017.08.16_537C 029.d	GeminiC18 3x100 3(mm)
320-30191-17		08/16/2017 14:58	1	2017.08.16_537C 030.d	GeminiC18 3x100 3(mm)
320-30191-18		08/16/2017 15:03	1	2017.08.16_537C 031.d	GeminiC18 3x100 3(mm)
CCV 320-179732/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

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

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 15:07

Analysis Batch Number: 179733 End Date: 08/16/2017 15:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179733/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 15:12	1		GeminiC18 3x100 3(mm)
320-30191-19		08/16/2017 15:17	1	2017.08.16_537C 034.d	GeminiC18 3x100 3(mm)
320-30191-20		08/16/2017 15:22	1	2017.08.16_537C 035.d	GeminiC18 3x100 3(mm)
320-30191-21		08/16/2017 15:26	1	2017.08.16_537C 036.d	GeminiC18 3x100 3(mm)
320-30191-22		08/16/2017 15:31	1	2017.08.16_537C 037.d	GeminiC18 3x100 3(mm)
CCV 320-179733/38 CCVIS		08/16/2017 15:36	1	2017.08.16_537C 038.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

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

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 19:48

Analysis Batch Number: 179920 End Date: 08/16/2017 20:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179920/1 CCVIS		08/16/2017 19:48	1	2017.08.16_537D_052.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:53	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:57	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:07	1		GeminiC18 3x100 3(mm)
320-30191-3		08/16/2017 20:12	1	2017.08.16_537D_057.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:40	1		GeminiC18 3x100 3(mm)
CCV 320-179920/13 CCVIS		08/16/2017 20:45	1	2017.08.16_537D_064.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:50	1		GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

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

SDG No.:

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00046
MB 320-177640/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-177640/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T	322.10 g	29.24 g	292.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T	313.75 g	28.15 g	285.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T	305.55 g	28.18 g	277.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-4	NAWC-072617-RW-341	537, 537	T	306.55 g	28.07 g	278.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T	312.18 g	27.56 g	284.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-6	NAWC-072617-RW-349	537, 537	T	316.97 g	28.12 g	288.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	322.23 g	28.25 g	294 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	315.87 g	28.12 g	287.8 mL	1.00 mL	7 SU	100 uL
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T	314.48 g	27.94 g	286.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-8	NAWC-072617-RW-343	537, 537	T	311.99 g	28.33 g	283.7 mL	1.00 mL	7 SU	100 uL
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T	316.09 g	27.71 g	288.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-10	NAWC-072617-RW-345	537, 537	T	317.11 g	28.09 g	289 mL	1.00 mL	7 SU	100 uL
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T	312.72 g	27.56 g	285.2 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
MB 320-177640/1		537, 537			100 uL	CH ND			
LCS 320-177640/2		537, 537		100 uL	100 uL	CH ND			
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T		100 uL	CH ND			
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T		100 uL	CH ND			
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T		100 uL	CH ND			

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

LCMS BATCH WORKSHEET

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

SDG No.:

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
320-30191-A-4	NAWC-072617-RW-341	537, 537	T		100 uL	CH ND			
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T		100 uL	CH ND			
320-30191-A-6	NAWC-072617-RW-349	537, 537	T		100 uL	CH ND			
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T		100 uL	CH ND			
320-30191-A-8	NAWC-072617-RW-343	537, 537	T		100 uL	CH ND			
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T		100 uL	CH ND			
320-30191-A-10	NAWC-072617-RW-345	537, 537	T		100 uL	CH ND			
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T		100 uL	CH ND			

Batch Notes	
Batch Comment	IS: 1002798
Manifold ID	7,1
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

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

LCMS BATCH WORKSHEET

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

SDG No.:

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Basis	Basis Description
T	Total/NA

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

LCMS BATCH WORKSHEET

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

SDG No.:

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LC537-HSP 00017	LC537-IS 00046
MB 320-177651/1		537, 537				250.00 mL	1.00 mL		100 uL
LCS 320-177651/2		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
LCSD 320-177651/3		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	314.45 g	28.13 g	286.3 mL	1.00 mL		100 uL
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	314.60 g	28.18 g	286.4 mL	1.00 mL		100 uL
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	307.22 g	27.62 g	279.6 mL	1.00 mL		100 uL
320-30191-A-15	NAWC-072617-RW-117	537, 537	T	320.66 g	28.08 g	292.6 mL	1.00 mL		100 uL
320-30191-A-16	NAWC-072617-FRB-117	537, 537	T	306.45 g	27.57 g	278.9 mL	1.00 mL		100 uL
320-30191-A-17	NAWC-072617-DUP04	537, 537	T	307.09 g	28.14 g	279 mL	1.00 mL		100 uL
320-30191-A-18	WGNA-072617-RW-4844	537, 537	T	327.07 g	28.40 g	298.7 mL	1.00 mL		100 uL
320-30191-A-19	WGNA-072617-FRB-4844	537, 537	T	303.88 g	27.84 g	276 mL	1.00 mL		100 uL
320-30191-A-20	WGNA-072617-RW-3103	537, 537	T	305.20 g	28.60 g	276.6 mL	1.00 mL		100 uL
320-30191-A-21	WGNA-072617-FRB-3103	537, 537	T	312.89 g	27.81 g	285.1 mL	1.00 mL		100 uL
320-30191-A-22	WGNA-072617-DUP03	537, 537	T	312.39 g	27.67 g	284.7 mL	1.00 mL		100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046
MB 320-177651/1		537, 537		100 uL
LCS 320-177651/2		537, 537		100 uL
LCSD 320-177651/3		537, 537		100 uL
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	100 uL
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	100 uL
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	100 uL

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

LCMS BATCH WORKSHEET

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

SDG No.:

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046					
320-30191-A-15	NAWC-072617-RW-117	537, 537	T	100 uL					
320-30191-A-16	NAWC-072617-FRB-117	537, 537	T	100 uL					
320-30191-A-17	NAWC-072617-DUP04	537, 537	T	100 uL					
320-30191-A-18	WGNA-072617-RW-4844	537, 537	T	100 uL					
320-30191-A-19	WGNA-072617-FRB-4844	537, 537	T	100 uL					
320-30191-A-20	WGNA-072617-RW-3103	537, 537	T	100 uL					
320-30191-A-21	WGNA-072617-FRB-3103	537, 537	T	100 uL					
320-30191-A-22	WGNA-072617-DUP03	537, 537	T	100 uL					

Batch Notes	
Batch Comment	IS:1002798
Manifold ID	1,4
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

Basis	Basis Description
T	Total/NA

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

A8

Job No: 30191 Instrument ID & Date: 8-16-17 ICAL Batch: 179319

Extraction Batch: 177640 Worklist #: 46772, 46814 TALS Batch: 179727, 179728, 179920

Review Items	--- Level 1 --- 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? NCM	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 8-17-17 2nd Level Reviewer / Date: MWW 8/18/2017

NCM # and Comments: 97996, 97999, 98001

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16AUG2017_537D Worklist Number: 46772
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179727
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-177640/1-A	# 3 MB 320-177640/1-A
# 4 LCS 320-177640/2-A	# 4 LCS 320-177640/2-A
# 5 320-30191-A-1-A	# 5 320-30191-A-1-A
# 6 320-30191-A-2-A	# 6 320-30191-A-2-A
# 7 320-30191-A-3-A	# 7 320-30191-A-3-A
# 8 320-30191-A-4-A	# 8 320-30191-A-4-A
# 9 320-30191-A-5-A	# 9 320-30191-A-5-A
#10 320-30191-A-6-A	#10 320-30191-A-6-A
#11 320-30191-A-6-B MS	#11 320-30191-A-6-B MS
#12 320-30191-A-6-C MSD	#12 320-30191-A-6-C MSD
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 179728
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-30191-A-7-A	#15 320-30191-A-7-A
#16 320-30191-A-8-A	#16 320-30191-A-8-A
#17 320-30191-A-9-A	#17 320-30191-A-9-A
#18 320-30191-A-10-A	#18 320-30191-A-10-A
#19 320-30191-A-11-A	#19 320-30191-A-11-A
#20 CCV L3	#20 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 179732
#20 CCV L3	#20 CCV L3
#21 RB	#21 RB
#22 MB 320-177651/1-A	#22 MB 320-177651/1-A
#23 LCS 320-177651/2-A	#23 LCS 320-177651/2-A
#24 LCSD 320-177651/3-A	#24 LCSD 320-177651/3-A
#25 320-30191-A-12-A	#25 320-30191-A-12-A
#26 320-30191-A-13-A	#26 320-30191-A-13-A
#27 320-30191-A-14-A	#27 320-30191-A-14-A
#28 320-30191-A-15-A	#28 320-30191-A-15-A
#29 320-30191-A-16-A	#29 320-30191-A-16-A
#30 320-30191-A-17-A	#30 320-30191-A-17-A
#31 320-30191-A-18-A	#31 320-30191-A-18-A
#32 CCV L5	#32 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 179733
#32 CCV L5	#32 CCV L5
#33 RB	#33 RB
#34 320-30191-A-19-A	#34 320-30191-A-19-A
#35 320-30191-A-20-A	#35 320-30191-A-20-A
#36 320-30191-A-21-A	#36 320-30191-A-21-A
#37 320-30191-A-22-A	#37 320-30191-A-22-A
#38 CCV L3	#38 CCV L3

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16AUG2017_537G Worklist Number: 46814
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179920
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 320-30391-A-24-A	# 3 320-30391-A-24-A
# 4 320-30327-A-2-A	# 4 320-30327-A-2-A
# 5 LCS 320-177640/2-A	# 5 LCS 320-177640/2-A
# 6 320-30191-A-3-A	# 6 320-30191-A-3-A
# 7 320-30191-A-6-A	# 7 320-30191-A-6-A
# 8 320-30191-A-6-B MS	# 8 320-30191-A-6-B MS
# 9 320-30191-A-6-C MSD	# 9 320-30191-A-6-C MSD
#10 320-30191-A-10-A	#10 320-30191-A-10-A
#11 320-30191-A-18-A	#11 320-30191-A-18-A
#12 320-30191-A-19-A	#12 320-30191-A-19-A
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB

84

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177640
Analyst: Reed, Jonathan E
Batch Open: 8/3/2017 5:23:00PM
Method Code: 320-537_Prep-320
Batch End: 8/9/2017 4:38:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-177640/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A		MB 320-177640/1-A
				1.00 mL								
2	LCS-320-177640/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	RI case 2-12	LCS 320-177640/2-A
				1.00 mL								
3	320-30191-A-1 (537_DOD5)	N/A (320-30191-1)	322.10 g	292.9 mL	7			8/2/17	16_Days	4		320-30191-A-1-A
			29.24 g	1.00 mL								
4	320-30191-A-2 (537_DOD5)	N/A (320-30191-1)	313.75 g	285.6 mL	7			8/2/17	16_Days	4		320-30191-A-2-A
			28.15 g	1.00 mL								
5	320-30191-A-3 (537_DOD5)	N/A (320-30191-1)	305.55 g	277.4 mL	7			8/2/17	16_Days	4	RI case 2-15	320-30191-A-3-A
			28.18 g	1.00 mL								
6	320-30191-A-4 (537_DOD5)	N/A (320-30191-1)	306.55 g	278.5 mL	7			8/2/17	16_Days	4		320-30191-A-4-A
			28.07 g	1.00 mL								
7	320-30191-A-5 (537_DOD5)	N/A (320-30191-1)	312.18 g	284.6 mL	7			8/2/17	16_Days	4		320-30191-A-5-A
			27.56 g	1.00 mL								
8	320-30191-A-6 (537_DOD5)	N/A (320-30191-1)	316.97 g	288.9 mL	7			8/2/17	16_Days	4	RI case 2-18	320-30191-A-6-A
			28.12 g	1.00 mL								
9	320-30191-A-6-MS (537_DOD5)	N/A (320-30191-1)	322.23 g	294 mL	7			8/2/17	16_Days	4	RI case 2-19	320-30191-A-6-B MS
			28.25 g	1.00 mL								
10	320-30191-A-6-MSD (537_DOD5)	N/A (320-30191-1)	315.87 g	287.8 mL	7			8/2/17	16_Days	4	RI case 2-20	320-30191-A-6-C MSD
			28.12 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320 Batch End:

11	320-30191-A-7 (537_DOD5)	N/A (320-30191-1)	314.48 g 27.94 g	286.5 mL 1.00 mL				8/2/17	16_Days	4	
12	320-30191-A-8 (537_DOD5)	N/A (320-30191-1)	311.99 g 28.33 g	283.7 mL 1.00 mL				8/2/17	16_Days	4	
13	320-30191-A-9 (537_DOD5)	N/A (320-30191-1)	316.09 g 27.71 g	288.4 mL 1.00 mL				8/2/17	16_Days	4	
14	320-30191-A-10 (537_DOD5)	N/A (320-30191-1)	317.11 g 28.09 g	289 mL 1.00 mL				8/2/17	16_Days	4	RL case 2-24
15	320-30191-A-11 (537_DOD5)	N/A (320-30191-1)	312.72 g 27.56 g	285.2 mL 1.00 mL				8/2/17	16_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320 Batch End:

Batch Notes

Manifold ID	7,1
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-02
Methanol ID	988835
Reagent Water ID	8/03/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TH
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TH
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TH
Batch Comment	IS: 1002798

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-177640/1	LC537-SU_00046	100 uL	1.00 mL	8/03/17	TH 08/03/17
LCS 320-177640/2	LC537-MSP_00021	100 uL	1.00 mL		
LCS 320-177640/2	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-1	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-2	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-3	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-4	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-5	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-6	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-6 MS	LC537-MSP_00021	100 uL	1.00 mL		
320-30191-A-6 MS	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-6 MSD	LC537-MSP_00021	100 uL	1.00 mL		
320-30191-A-6 MSD	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-7	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-8	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-9	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-10	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-11	LC537-SU_00046	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320 Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): _____ Test: _____

Earliest Holding Time: 8/09/17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	~~N/A~~	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 Cl Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
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	✓	✓

TH 08/09/17

1st Level Reviewer: TH ~~NSH~~ Date: 8/9/17

2nd Level Reviewer: NSH Date: 08/09/17

Comments: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

A8

Job No: 30191 Instrument ID & Date: 8-16-17 ICAL Batch: 179319

Extraction Batch: 177651 Worklist #: ~~179727~~ 46772 TALS Batch: 179732, 179733, 179920

JRB 7/14/17 46814

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 8-17-17 2nd Level Reviewer / Date: [illegible] 8/18/2017

NCM # and Comments: 98002

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 8-14-17 Worklist#: 46675

ICAL Batch: 179319, 179320 Calibration ID number: 33517

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 R² ≥ 0.990 for Linear R² ≥ 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: JRB 8-14-17 2nd Level Reviewer / Date: QBW 8/14/17

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16AUG2017_537D Worklist Number: 46772
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170816-46772.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179727
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-177640/1-A	# 3 MB 320-177640/1-A
# 4 LCS 320-177640/2-A	# 4 LCS 320-177640/2-A
# 5 320-30191-A-1-A	# 5 320-30191-A-1-A
# 6 320-30191-A-2-A	# 6 320-30191-A-2-A
# 7 320-30191-A-3-A	# 7 320-30191-A-3-A
# 8 320-30191-A-4-A	# 8 320-30191-A-4-A
# 9 320-30191-A-5-A	# 9 320-30191-A-5-A
#10 320-30191-A-6-A	#10 320-30191-A-6-A
#11 320-30191-A-6-B MS	#11 320-30191-A-6-B MS
#12 320-30191-A-6-C MSD	#12 320-30191-A-6-C MSD
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 179728
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-30191-A-7-A	#15 320-30191-A-7-A
#16 320-30191-A-8-A	#16 320-30191-A-8-A
#17 320-30191-A-9-A	#17 320-30191-A-9-A
#18 320-30191-A-10-A	#18 320-30191-A-10-A
#19 320-30191-A-11-A	#19 320-30191-A-11-A
#20 CCV L3	#20 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 179732
#20 CCV L3	#20 CCV L3
#21 RB	#21 RB
#22 MB 320-177651/1-A	#22 MB 320-177651/1-A
#23 LCS 320-177651/2-A	#23 LCS 320-177651/2-A
#24 LCSD 320-177651/3-A	#24 LCSD 320-177651/3-A
#25 320-30191-A-12-A	#25 320-30191-A-12-A
#26 320-30191-A-13-A	#26 320-30191-A-13-A
#27 320-30191-A-14-A	#27 320-30191-A-14-A
#28 320-30191-A-15-A	#28 320-30191-A-15-A
#29 320-30191-A-16-A	#29 320-30191-A-16-A
#30 320-30191-A-17-A	#30 320-30191-A-17-A
#31 320-30191-A-18-A	#31 320-30191-A-18-A
#32 CCV L5	#32 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 179733
#32 CCV L5	#32 CCV L5
#33 RB	#33 RB
#34 320-30191-A-19-A	#34 320-30191-A-19-A
#35 320-30191-A-20-A	#35 320-30191-A-20-A
#36 320-30191-A-21-A	#36 320-30191-A-21-A
#37 320-30191-A-22-A	#37 320-30191-A-22-A
#38 CCV L3	#38 CCV L3

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16AUG2017_537G Worklist Number: 46814
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170817-46814.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 179920
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 320-30391-A-24-A	# 3 320-30391-A-24-A
# 4 320-30327-A-2-A	# 4 320-30327-A-2-A
# 5 LCS 320-177640/2-A	# 5 LCS 320-177640/2-A
# 6 320-30191-A-3-A	# 6 320-30191-A-3-A
# 7 320-30191-A-6-A	# 7 320-30191-A-6-A
# 8 320-30191-A-6-B MS	# 8 320-30191-A-6-B MS
# 9 320-30191-A-6-C MSD	# 9 320-30191-A-6-C MSD
#10 320-30191-A-10-A	#10 320-30191-A-10-A
#11 320-30191-A-18-A	#11 320-30191-A-18-A
#12 320-30191-A-19-A	#12 320-30191-A-19-A
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB

81

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End: 8/7/2017 9:59:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-177651/1 N/A	N/A		250.00 mL 1.00 mL				N/A	N/A	N/A		MB 320-177651/1-A
2	LCS-320-177651/2 N/A	N/A		250.00 mL 1.00 mL				N/A	N/A	N/A		LCS 320-177651/2-A
3	LCSD-320-177651/3 N/A	N/A		250.00 mL 1.00 mL				N/A	N/A	N/A		LCSD 320-177651/3-A
4	320-30191-A-12 (537_DOD5)	N/A (320-30191-1)	314.45 g 28.13 g	286.3 mL 1.00 mL				8/2/17	16_Days	4		320-30191-A-12-A
5	320-30191-A-13 (537_DOD5)	N/A (320-30191-1)	314.60 g 28.18 g	286.4 mL 1.00 mL				8/2/17	16_Days	4		320-30191-A-13-A
6	320-30191-A-14 (537_DOD5)	N/A (320-30191-1)	307.22 g 27.62 g	279.6 mL 1.00 mL				8/2/17	16_Days	4		320-30191-A-14-A
7	320-30191-A-15 (537_DOD5)	N/A (320-30191-1)	320.66 g 28.08 g	292.6 mL 1.00 mL				8/2/17	16_Days	4		320-30191-A-15-A
8	320-30191-A-16 (537_DOD5)	N/A (320-30191-1)	306.45 g 27.57 g	278.9 mL 1.00 mL				8/2/17	16_Days	4		320-30191-A-16-A
9	320-30191-A-17 (537_DOD5)	N/A (320-30191-1)	307.09 g 28.14 g	279 mL 1.00 mL				8/2/17	16_Days	4		320-30191-A-17-A
10	320-30191-A-18 (537_DOD5)	N/A (320-30191-1)	327.07 g 28.40 g	298.7 mL 1.00 mL				8/2/17	16_Days	4	RI Case 2-35	320-30191-A-18-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320 Batch End:

11	320-30191-A-19 (537_DOD5)	N/A (320-30191-1)	303.88 g 27.84 g	276 mL 1.00 mL				8/2/17	16_Days	4	RI Cute 7-36
12	320-30191-A-20 (537_DOD5)	N/A (320-30191-1)	305.20 g 28.60 g	276.6 mL 1.00 mL				8/2/17	16_Days	4	
13	320-30191-A-21 (537_DOD5)	N/A (320-30191-1)	312.89 g 27.81 g	285.1 mL 1.00 mL				8/2/17	16_Days	4	
14	320-30191-A-22 (537_DOD5)	N/A (320-30191-1)	312.39 g 27.67 g	284.7 mL 1.00 mL				8/2/17	16_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320 Batch End:

Batch Notes

Manifold ID	1,4
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-02
Methanol ID	988835
Reagent Water ID	8/03/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Batch Comment	IS: 1002798

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-177651/1	LC537-SU_00046	100 uL	1.00 mL	8/03/17	TH 08/03/17
LCS 320-177651/2	LC537-HSP_00017	100 uL	1.00 mL		
LCS 320-177651/2	LC537-SU_00046	100 uL	1.00 mL		
LCSD 320-177651/3	LC537-HSP_00017	100 uL	1.00 mL		
LCSD 320-177651/3	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-12	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-13	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-14	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-15	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-16	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-17	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-18	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-19	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-20	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-21	LC537-SU_00046	100 uL	1.00 mL		
320-30191-A-22	LC537-SU_00046	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651 Analyst: Reed, Jonathan E Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320 Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 177651 Test: 537

Earliest Holding Time: 8/09/17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
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 Cl Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
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: TAF Date: 08/07/17

2nd Level Reviewer: [signature] Date: 8/17/17

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: 7/26/17	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 _____			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			

320-30191 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-072617-RW-332A	7/26/2017	8:05	G	DW	2	N	N	Y	
NAWC-072617-RW-332B	7/26/2017	8:10	G	DW	2	N	N	Y	
NAWC-072617-FRB-332A	7/26/2017	8:00	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-341	7/26/2017	8:35	G	DW	2	N	N	Y	
NAWC-072617-FRB-341	7/26/2017	8:30	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-349	7/26/2017	10:35	G	DW	6	N	Y	Y	MS/MSD
NAWC-072617-FRB-349	7/26/2017	10:30	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-343	7/26/2017	13:55	G	DW	2	N	N	Y	
NAWC-072617-FRB-343	7/26/2017	13:50	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-345	7/26/2017	15:15	G	DW	2	N	N	Y	
NAWC-072617-FRB-345	7/26/2017	15:10	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-DUP03	7/26/2017	07:00	G	DW	2	N	N	Y	Duplicate

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.8 Corr'd: 5.8 | Therm ID No.: AK-7

Relinquished by: Mary Kay Bond	Company: Tetra Tech	Date/Time: 7/26/17 18:00	Received by:	Company: TAWS	Date/Time: 7/27/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

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

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

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 7/26/17	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	2 of 2 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Andy Frebowitz, Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-3244	TAT if different from Below _____			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-072617-RW-342	7/26/2017	12:10	G	DW	2	N	N	Y	
NAWC-072617-RW-332B	7/26/2017	12:05	G	DW	2	N	N	Y	
NAWC-072617-RW-117	7/26/2017	12:35	G	DW	2	N	N	Y	
NAWC-072617-FRB-117	7/26/2017	12:30	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-DUP04	7/26/2017	07:00	G	DW	2	N	N	Y	Duplicate
WGNA-072617-RW-4844	7/26/2017	9:35	G	DW	2	N	N	Y	
WGNA-072617-FRB-4844	7/25/2017	9:30	G	BLK	2	N	N	Y	Field Reagent Blank
WGNA-072617-RW-3103	7/26/2017	11:10	G	DW	2	N	N	Y	
WGNA-072617-FRB-3103	7/26/2017	11:05	G	BLK	2	N	N	Y	Field Reagent Blank
WGNA-072617-DUP03	7/26/2017	7:00	G	DW	2	N	N	Y	Duplicate

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☑ Flammable ☑ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.8 Corr'd: 3.8 | Therm ID No.: AL-2

Relinquished by: Mary Kay Bond (Mary Kay Bond)	Company: Tetra Tech	Date/Time: 7/26/17 18:00	Received by:	Company: TAWS	Date/Time: 7/27/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-30191-1

Login Number: 30191
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","9.7","ng/L","J","5.8","DL","","TRG","","","34","LOQ","YES","-99","","292.9","1.00","14",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","12","ng/L","J M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","292.9","1.00","6.8",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.2","ng/L","J","4.7","DL","","TRG","","","26","LOQ","YES","-99","","292.9","1.00","10",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","31","ng/L","U M","14","DL","","TRG","","","77","LOQ","YES","-99","","292.9","1.00","31",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","2.9","ng/L","J","1.6","DL","","TRG","","","8.5","LOQ","YES","-99","","292.9","1.00","3.4",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17","ng/L","U M","6.8","DL","","TRG","","","20","LOQ","YES","-99","","292.9","1.00","17",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","STL00993","13C2 PFHxA","31","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","34.1","","292.9","1.00","0",""
"NAWC-072617-RW-332A","537","RES","320-30191-1","TALSAC","STL00996","13C2 PFDA","42","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","34.1","","292.9","1.00","0",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","42","ng/L","","5.9","DL","","TRG","","","35","LOQ","YES","-99","","289","1.00","14",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","42","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","289","1.00","6.9",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","8.1","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES","-99","","289","1.00","10",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES","-99","","289","1.00","31",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","11","ng/L","","1.6","DL","","TRG","","","8.7","LOQ","YES","-99","","289","1.00","3.5",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17","ng/L","U M","6.9","DL","","TRG","","","21","LOQ","YES","-99","","289","1.00","17",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","STL00993","13C2 PFHxA","31","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","34.6","","289","1.00","0",""
"NAWC-072617-RW-345","537","RES","320-30191-10","TALSAC","STL00996","13C2 PFDA","47","ng/L","Q","-99","DL","","SURR","135","","-99","LOQ","YES","34.6","","289","1.00","0",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","285.2","1.00","14",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","285.2","1.00","7.0",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","285.2","1.00","11",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","285.2","1.00","32",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","285.2","1.00","3.5",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","285.2","1.00","18",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","35.1","","285.2","1.00","0",""
"NAWC-072617-FRB-345","537","RES","320-30191-11","TALSAC","STL00996","13C2 PFDA","42","ng/L","","-99","DL","","SURR","120","","-99","LOQ","YES","35.1","","285.2","1.00","0",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","12","ng/L","J","5.9","DL","","TRG","","","35","LOQ","YES","-99","","286.3","1.00","14",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","23","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","286.3","1.00","7.0",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","286.3","1.00","10",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","286.3","1.00","31",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.6","ng/L","J","1.7","DL","","TRG","","","8.7","LOQ","YES","-99","","286.3","1.00","3.5",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U M","7.0","DL","","TRG","","","21","LOQ","YES","-99","","286.3","1.00","17",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","STL00993","13C2
PFHxA","28","ng/L","","-99","DL","","SURR","80","","-99","LOQ","YES","34.9","","286.3","1.00","0",""
"NAWC-072617-DUP03","537","RES","320-30191-12","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","34.9","","286.3","1.00","0",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","12","ng/L","J","5.9","DL","","TRG","","","35","LOQ","YES","-99","","286.4","1.00","14",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","24","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","286.4","1.00","7.0",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","286.4","1.00","10",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","286.4","1.00","31",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","8.4","ng/L","J","1.7","DL","","TRG","","","8.7","LOQ","YES","-99","","286.4","1.00","3.5",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U M","7.0","DL","","TRG","","","21","LOQ","YES","-99","","286.4","1.00","17",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","-99","DL","","SURR","83","","-99","LOQ","YES","34.9","","286.4","1.00","0",""
"NAWC-072617-RW-342","537","RES","320-30191-13","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","34.9","","286.4","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","279.6","1.00","14",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","279.6","1.00","7.2",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","279.6","1.00","11",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES","-99","","279.6","1.00","32",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","8.9","LOQ","YES","-99","","279.6","1.00","3.6",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","21","LOQ","YES","-99","","279.6","1.00","18",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","35.8","","279.6","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-14","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","35.8","","279.6","1.00","0",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","31","ng/L","J","5.8","DL","","TRG","","","34","LOQ","YES","-99","","292.6","1.00","14",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","23","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","292.6","1.00","6.8",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","16","ng/L","J","4.7","DL","","TRG","","","26","LOQ","YES","-99","","292.6","1.00","10",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","TRG","","","77","LOQ","YES","-99","","292.6","1.00","31",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.2","ng/L","J","1.6","DL","","TRG","","","8.5","LOQ","YES","-99","","292.6","1.00","3.4",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","17","ng/L","U M","6.8","DL","","TRG","","","21","LOQ","YES","-99","","292.6","1.00","17",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","34.2","","292.6","1.00","0",""
"NAWC-072617-RW-117","537","RES","320-30191-15","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","120","","-99","LOQ","YES","34.2","","292.6","1.00","0",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","278.9","1.00","14",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","278.9","1.00","7.2",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","278.9","1.00","11",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES","-99","","278.9","1.00","32",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","278.9","1.00","3.6",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","278.9","1.00","18",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","35.9","","278.9","1.00","0",""
"NAWC-072617-FRB-117","537","RES","320-30191-16","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","126","","-99","LOQ","YES","35.9","","278.9","1.00","0",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J","6.1","DL","","TRG","","","36","LOQ","YES","-99","","279","1.00","14",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","13","ng/L","J M","2.5","DL","","TRG","","","18","LOQ","YES","-99","","279","1.00","7.2",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.4","ng/L","J","4.9","DL","","TRG","","","27","LOQ","YES","-99","","279","1.00","11",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES","-99","","279","1.00","32",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","J","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","279","1.00","3.6",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.2","DL","","TRG","","","22","LOQ","YES","-99","","279","1.00","18",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","35.8","","279","1.00","0",""
"NAWC-072617-DUP04","537","RES","320-30191-17","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","124","","-99","LOQ","YES","35.8","","279","1.00","0",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","7.9","ng/L","J M","5.7","DL","","TRG","","","33","LOQ","YES","-99","","298.7","1.00","13",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","14","ng/L","J M","2.3","DL","","TRG","","","17","LOQ","YES","-99","","298.7","1.00","6.7",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.6","DL","","TRG","","","25","LOQ","YES","-99","","298.7","1.00","10",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","30","ng/L","U","13","DL","","TRG","","","75","LOQ","YES","-99","","298.7","1.00","30",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.0","ng/L","J","1.6","DL","","TRG","","","8.4","LOQ","YES","-99","","298.7","1.00","3.3",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U M","6.7","DL","","TRG","","","20","LOQ","YES","-99","","298.7","1.00","17",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","33.5","","298.7","1.00","0",""
"WGNA-072617-RW-4844","537","RES","320-30191-18","TALSAC","STL00996","13C2
PFDA","45","ng/L","Q","-99","DL","","SURR","136","","-99","LOQ","YES","33.5","","298.7","1.00","0",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","14","ng/L","U","6.2","DL","","TRG","","","36","LOQ","YES","-99","","276","1.00","14",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","276","1.00","7.2",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","276","1.00","11",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","276","1.00","33",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.1","LOQ","YES","-99","","276","1.00","3.6",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","276","1.00","18",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","36.2","","276","1.00","0",""
"WGNA-072617-FRB-4844","537","RES","320-30191-19","TALSAC","STL00996","13C2
PFDA","50","ng/L","Q","-99","DL","","SURR","138","","-99","LOQ","YES","36.2","","276","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","285.6","1.00","14",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","285.6","1.00","7.0",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","285.6","1.00","11",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","285.6","1.00","32",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","285.6","1.00","3.5",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","285.6","1.00","18",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","35.0","","285.6","1.00","0",""
"NAWC-072617-RW-332B","537","RES","320-30191-2","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","35.0","","285.6","1.00","0",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","7.4","ng/L","J","6.1","DL","","TRG","","","36","LOQ","YES","-99","","276.6","1.00","14",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.7","ng/L","J M","2.5","DL","","TRG","","","18","LOQ","YES","-99","","276.6","1.00","7.2",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","276.6","1.00","11",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","81","LOQ","YES","-99","","276.6","1.00","33",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","2.2","ng/L","J M","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","276.6","1.00","3.6",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.2","DL","","TRG","","","22","LOQ","YES","-99","","276.6","1.00","18",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","36.2","","276.6","1.00","0",""
"WGNA-072617-RW-3103","537","RES","320-30191-20","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","36.2","","276.6","1.00","0",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","285.1","1.00","14",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","285.1","1.00","7.0",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","285.1","1.00","11",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","285.1","1.00","32",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","285.1","1.00","3.5",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","285.1","1.00","18",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","35.1","","285.1","1.00","0",""
"WGNA-072617-FRB-3103","537","RES","320-30191-21","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","127","","-99","LOQ","YES","35.1","","285.1","1.00","0",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","7.1","ng/L","J","6.0","DL","","TRG","","","35","LOQ","YES","-99","","284.7","1.00","14",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.7","ng/L","J M","2.5","DL","","TRG","","","18","LOQ","YES","-99","","284.7","1.00","7.0",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","4.8","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES","-99","","284.7","1.00","11",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","284.7","1.00","32",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","2.3","ng/L","J","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","284.7","1.00","3.5",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.0","DL","","TRG","","","21","LOQ","YES","-99","","284.7","1.00","18",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","STL00993","13C2
PFHxA","31","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","35.1","","284.7","1.00","0",""
"WGNA-072617-DUP03","537","RES","320-30191-22","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","123","","-99","LOQ","YES","35.1","","284.7","1.00","0",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","277.4","1.00","14",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","277.4","1.00","7.2",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","277.4","1.00","11",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","15","DL","","TRG","","","81","LOQ","YES","-99","","277.4","1.00","32",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","277.4","1.00","3.6",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","277.4","1.00","18",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","36.0","","277.4","1.00","0",""
"NAWC-072617-FRB-332A","537","RES","320-30191-3","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","36.0","","277.4","1.00","0",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","12","ng/L","J","6.1","DL","","TRG","","","36","LOQ","YES","-99","","278.5","1.00","14",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","11","ng/L","J M","2.5","DL","","TRG","","","18","LOQ","YES","-99","","278.5","1.00","7.2",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","278.5","1.00","11",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES","-99","","278.5","1.00","32",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","2.9","ng/L","J","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","278.5","1.00","3.6",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.2","DL","","TRG","","","22","LOQ","YES","-99","","278.5","1.00","18",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","STL00993","13C2

PFHxA","29","ng/L","","-99","DL","","SURR","81","","-99","LOQ","YES","35.9","","278.5","1.00","0",""
"NAWC-072617-RW-341","537","RES","320-30191-4","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","126","","-99","LOQ","YES","35.9","","278.5","1.00","0",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","284.6","1.00","14",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","284.6","1.00","7.0",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","284.6","1.00","11",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","284.6","1.00","32",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","284.6","1.00","3.5",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","284.6","1.00","18",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","35.1","","284.6","1.00","0",""
"NAWC-072617-FRB-341","537","RES","320-30191-5","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","127","","-99","LOQ","YES","35.1","","284.6","1.00","0",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J","5.9","DL","","TRG","","","35","LOQ","YES","-99","","288.9","1.00","14",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","29","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES","-99","","288.9","1.00","6.9",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","7.2","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES","-99","","288.9","1.00","10",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES","-99","","288.9","1.00","31",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.7","ng/L","J","1.6","DL","","TRG","","","8.7","LOQ","YES","-99","","288.9","1.00","3.5",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U J M","6.9","DL","","TRG","","","21","LOQ","YES","-99","","288.9","1.00","17",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","STL00993","13C2
PFHxA","19","ng/L","Q","-99","DL","","SURR","56","","-99","LOQ","YES","34.6","","288.9","1.00","0",""
"NAWC-072617-RW-349","537","RES","320-30191-6","TALSAC","STL00996","13C2
PFDA","45","ng/L","Q","-99","DL","","SURR","131","","-99","LOQ","YES","34.6","","288.9","1.00","0",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","168","ng/L","","5.8","DL","","SPK","110","","34","LOQ","YES","136","NAWC-072617-RW-
349","294","1.00","14",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","102","ng/L","M","2.4","DL","","SPK","107","","17","LOQ","YES","68.0","NAWC-072617-RW-
349","294","1.00","6.8",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","101","ng/L","","4.7","DL","","SPK","92","","26","LOQ","YES","102","NAWC-072617-RW-
349","294","1.00","10",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","283","ng/L","","14","DL","","SPK","94","","77","LOQ","YES","300","NAWC-072617-RW-
349","294","1.00","31",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","43.3","ng/L","","1.6","DL","","SPK","109","","8.5","LOQ","YES","33.7","NAWC-072617-RW-
349","294","1.00","3.4",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","90.8","ng/L","J","6.8","DL","","SPK","139","","20","LOQ","YES","65.5","NAWC-072617-RW-
349","294","1.00","17",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","STL00993","13C2

PFHxA","19.4","ng/L","Q","-99","DL","","SURR","57","","-99","LOQ","YES","34.0","NAWC-072617-RW-349","294","1.00","0",""
"NAWC-072617-RW-349MS","537","RES","320-30191-6MS","TALSAC","STL00996","13C2 PFDA","44.2","ng/L","","-99","DL","","SURR","130","","-99","LOQ","YES","34.0","NAWC-072617-RW-349","294","1.00","0",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","178","ng/L","","5.9","DL","","SPK","115","6","35","LOQ","YES","139","NAWC-072617-RW-349","287.8","1.00","14",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","107","ng/L","M","2.4","DL","","SPK","112","5","17","LOQ","YES","69.4","NAWC-072617-RW-349","287.8","1.00","6.9",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","109","ng/L","","4.8","DL","","SPK","98","8","26","LOQ","YES","104","NAWC-072617-RW-349","287.8","1.00","10",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","304","ng/L","","14","DL","","SPK","99","7","78","LOQ","YES","307","NAWC-072617-RW-349","287.8","1.00","31",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","46.5","ng/L","","1.7","DL","","SPK","116","7","8.7","LOQ","YES","34.4","NAWC-072617-RW-349","287.8","1.00","3.5",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","92.5","ng/L","J","6.9","DL","","SPK","138","2","21","LOQ","YES","66.9","NAWC-072617-RW-349","287.8","1.00","17",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","STL00993","13C2 PFHxA","21.1","ng/L","Q","-99","DL","","SURR","61","","-99","LOQ","YES","34.7","NAWC-072617-RW-349","287.8","1.00","0",""
"NAWC-072617-RW-349MSD","537","RES","320-30191-6MSD","TALSAC","STL00996","13C2 PFDA","45.5","ng/L","Q","-99","DL","","SURR","131","","-99","LOQ","YES","34.7","NAWC-072617-RW-349","287.8","1.00","0",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","5.9","DL","","TRG","","","35","LOQ","YES","-99","","286.5","1.00","14",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.0","ng/L","U","2.4","DL","","TRG","","","17","LOQ","YES","-99","","286.5","1.00","7.0",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","286.5","1.00","10",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","31","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","286.5","1.00","31",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.7","LOQ","YES","-99","","286.5","1.00","3.5",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","286.5","1.00","17",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","STL00993","13C2 PFHxA","37","ng/L","","-99","DL","","SURR","106","","-99","LOQ","YES","34.9","","286.5","1.00","0",""
"NAWC-072617-FRB-349","537","RES","320-30191-7","TALSAC","STL00996","13C2 PFDA","45","ng/L","","-99","DL","","SURR","130","","-99","LOQ","YES","34.9","","286.5","1.00","0",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","J","6.0","DL","","TRG","","","35","LOQ","YES","-99","","283.7","1.00","14",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","12","ng/L","J M","2.5","DL","","TRG","","","18","LOQ","YES","-99","","283.7","1.00","7.0",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","5.0","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES","-99","","283.7","1.00","11",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","283.7","1.00","32",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","375-85-9","Perfluoroheptanoic acid

(PFHpA)","3.5","ng/L","J","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","283.7","1.00","3.5",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.0","DL","","TRG","","","21","LOQ","YES","-99","","283.7","1.00","18",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","STL00993","13C2
PFHxA","30","ng/L","","-99","DL","","SURR","84","","-99","LOQ","YES","35.2","","283.7","1.00","0",""
"NAWC-072617-RW-343","537","RES","320-30191-8","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","125","","-99","LOQ","YES","35.2","","283.7","1.00","0",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","5.9","DL","","TRG","","","35","LOQ","YES","-99","","288.4","1.00","14",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","6.9","ng/L","U","2.4","DL","","TRG","","","17","LOQ","YES","-99","","288.4","1.00","6.9",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","288.4","1.00","10",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES","-99","","288.4","1.00","31",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.6","DL","","TRG","","","8.7","LOQ","YES","-99","","288.4","1.00","3.5",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U","6.9","DL","","TRG","","","21","LOQ","YES","-99","","288.4","1.00","17",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","34.7","","288.4","1.00","0",""
"NAWC-072617-FRB-343","537","RES","320-30191-9","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","126","","-99","LOQ","YES","34.7","","288.4","1.00","0",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","184","ng/L","","6.8","DL","","SPK","115","","40","LOQ","YES","160","","250.00","1.00","16",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","83.8","ng/L","","2.8","DL","","SPK","105","","20","LOQ","YES","79.9","","250.00","1.00","8.0",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","121","ng/L","","5.5","DL","","SPK","100","","30","LOQ","YES","120","","250.00","1.00","12",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","343","ng/L","","16","DL","","SPK","97","","90","LOQ","YES","353","","250.00","1.00","36",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","45.5","ng/L","","1.9","DL","","SPK","115","","10","LOQ","YES","39.6","","250.00","1.00","4.0",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","99.3","ng/L","","8.0","DL","","SPK","129","","24","LOQ","YES","77.0","","250.00","1.00","20",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","STL00993","13C2
PFHxA","40.4","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LCS 320-177640/2-A","537","RES","LCS 320-177640/2-A","TALSAC","STL00996","13C2
PFDA","53.3","ng/L","Q","-99","DL","","SURR","133","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","332","ng/L","E","6.8","DL","","SPK","110","","40","LOQ","YES","300","","250.00","1.00","16",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","155","ng/L","","2.8","DL","","SPK","104","","20","LOQ","YES","150","","250.00","1.00","8.0",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","211","ng/L","","5.5","DL","","SPK","94","","30","LOQ","YES","225","","250.00","1.00","12",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","698","ng/L","","16","DL","","SPK","105","","90","LOQ","YES","663","","250.00","1.00","36",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","87.2","ng/L","E","1.9","DL","","SPK","117","","10","LOQ","YES","74.3","","250.00","1.00","4.0",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","177","ng/L","E","8.0","DL","","SPK","122","","24","LOQ","YES","144","","250.00","1.00","20",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","STL00993","13C2
PFHxA","42.9","ng/L","","-99","DL","","SURR","107","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LCS 320-177651/2-A","537","RES","LCS 320-177651/2-A","TALSAC","STL00996","13C2

PFDA","50.6","ng/L","","-99","DL","","SURR","126","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","324","ng/L","E","6.8","DL","","SPK","108","2","40","LOQ","YES","300","LCS 320-177651/2-A","250.00","1.00","16",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","151","ng/L","","2.8","DL","","SPK","101","3","20","LOQ","YES","150","LCS 320-177651/2-A","250.00","1.00","8.0",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","206","ng/L","","5.5","DL","","SPK","91","3","30","LOQ","YES","225","LCS 320-177651/2-A","250.00","1.00","12",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","684","ng/L","","16","DL","","SPK","103","2","90","LOQ","YES","663","LCS 320-177651/2-A","250.00","1.00","36",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","84.6","ng/L","E","1.9","DL","","SPK","114","3","10","LOQ","YES","74.3","LCS 320-177651/2-A","250.00","1.00","4.0",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","171","ng/L","E","8.0","DL","","SPK","119","3","24","LOQ","YES","144","LCS 320-177651/2-A","250.00","1.00","20",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","STL00993","13C2 PFHxA","40.6","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","40.0","LCS 320-177651/2-A","250.00","1.00","0",""
"LCSD 320-177651/3-A","537","RES","LCSD 320-177651/3-A","TALSAC","STL00996","13C2 PFDA","50.4","ng/L","","-99","DL","","SURR","126","","-99","LOQ","YES","40.0","LCS 320-177651/2-A","250.00","1.00","0",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.00","1.00","16",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.00","1.00","8.0",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.00","1.00","12",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.00","1.00","36",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.00","1.00","4.0",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.00","1.00","20",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","STL00993","13C2 PFHxA","40.1","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-177640/1-A","537","RES","MB 320-177640/1-A","TALSAC","STL00996","13C2 PFDA","49.7","ng/L","","-99","DL","","SURR","124","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.00","1.00","16",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.00","1.00","8.0",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.00","1.00","12",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.00","1.00","36",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.00","1.00","4.0",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.00","1.00","20",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","STL00993","13C2

PFHxA","39.3","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-177651/1-A","537","RES","MB 320-177651/1-A","TALSAC","STL00996","13C2
PFDA","49.0","ng/L","","-99","DL","","SURR","122","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"Unknown","Unknown","NAWC-072617-RW-332A","07/26/2017 08:05","AQ","320-30191-
1","NM","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
12:59","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-345","07/26/2017 15:15","AQ","320-30191-
10","NM","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
14:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179728","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-FRB-345","07/26/2017 15:10","AQ","320-30191-
11","FB","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
14:06","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179728","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-DUP03","07/26/2017 07:00","AQ","320-30191-
12","FD","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:34","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-342","07/26/2017 12:10","AQ","320-30191-
13","NM","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:39","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-332B","07/26/2017 12:05","AQ","320-30191-
14","NM","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:44","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-117","07/26/2017 12:35","AQ","320-30191-
15","NM","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:48","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-FRB-117","07/26/2017 12:30","AQ","320-30191-
16","FB","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:53","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-DUP04","07/26/2017 07:00","AQ","320-30191-
17","FD","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:58","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","WGNA-072617-RW-4844","07/26/2017 09:35","AQ","320-30191-
18","NM","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
15:03","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","WGNA-072617-FRB-4844","07/25/2017 09:30","AQ","320-30191-
19","FB","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
15:17","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179733","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-332B","07/26/2017 08:10","AQ","320-30191-
2","NM","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","WGNA-072617-RW-3103","07/26/2017 11:10","AQ","320-30191-
20","NM","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
15:22","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-

179733","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","WGNA-072617-FRB-3103","07/26/2017 11:05","AQ","320-30191-
21","FB","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
15:26","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179733","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","WGNA-072617-DUP03","07/26/2017 07:00","AQ","320-30191-
22","FD","","3.80","537","METHOD","RES","08/03/2017 17:40","08/16/2017
15:31","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179733","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-FRB-332A","07/26/2017 08:00","AQ","320-30191-
3","FB","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
20:12","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179920","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-341","07/26/2017 08:35","AQ","320-30191-
4","NM","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-FRB-341","07/26/2017 08:30","AQ","320-30191-
5","FB","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:18","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-349","07/26/2017 10:35","AQ","320-30191-
6","NM","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-349MS","07/26/2017 10:35","AQ","320-30191-
6MS","MS","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-349MSD","07/26/2017 10:35","AQ","320-30191-
6MSD","MSD","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-FRB-349","07/26/2017 10:30","AQ","320-30191-
7","FB","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:47","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179728","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-RW-343","07/26/2017 13:55","AQ","320-30191-
8","NM","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:52","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179728","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","NAWC-072617-FRB-343","07/26/2017 13:50","AQ","320-30191-
9","FB","","3.80","537","METHOD","RES","08/03/2017 17:23","08/16/2017
13:56","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179728","320-30191-1","07/27/2017 09:20","07/28/2017 10:15",""
"Unknown","Unknown","LCS 320-177640/2-A","","AQ","LCS 320-177640/2-
A","LCS","","-99","537","METHOD","RES","08/03/2017 17:23","08/16/2017
12:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","08/03/2017 17:23","07/28/2017 10:15",""
"Unknown","Unknown","LCS 320-177651/2-A","","AQ","LCS 320-177651/2-
A","LCS","","-99","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:25","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","08/03/2017 17:40","07/28/2017 10:15",""
"Unknown","Unknown","LCSD 320-177651/3-A","","AQ","LCSD 320-177651/3-

A","LCSD","","-99","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:29","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","08/03/2017 17:40","07/28/2017 10:15",""
"Unknown","Unknown","MB 320-177640/1-A","","AQ","MB 320-177640/1-
A","MB","","-99","537","METHOD","RES","08/03/2017 17:23","08/16/2017
12:50","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177640","320-177640","NA","320-
179727","320-30191-1","08/03/2017 17:23","07/28/2017 10:15",""
"Unknown","Unknown","MB 320-177651/1-A","","AQ","MB 320-177651/1-
A","MB","","-99","537","METHOD","RES","08/03/2017 17:40","08/16/2017
14:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-177651","320-177651","NA","320-
179732","320-30191-1","08/03/2017 17:40","07/28/2017 10:15",""

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. FREBOWITZ** **DATE:** **AUGUST 28, 2017**

FROM: **TERRI L. SOLOMON** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-30191-1

SAMPLES: 9/Field Reagent Blank (FRB)

NAWC-072617-FRB-345	NAWC-072617-FRB-342
NAWC-072617-FRB-117	WGNA-072617-FRB-4844
WGNA-072617-FRB-3103	NAWC-072617-FRB-332A
NAWC-072617-FRB-341	NAWC-072617-FRB-349
NAWC-072617-FRB-343	

13/Drinking Water

NAWC-072617-RW-332A	NAWC-072617-RW-332B
NAWC-072617-RW-345	NAWC-072617-DUP03
NAWC-072617-RW-342	NAWC-072617-RW-117
NAWC-072617-DUP04	WGNA-072617-RW-4844
WGNA-072617-RW-3103	WGNA-072617-DUP03
NAWC-072617-RW-341	NAWC-072617-RW-349
NAWC-072617-RW-343	

Overview

The sample set for NAS JRB Willow Grove, SDG 320-30191-1, consisted of thirteen (13) drinking water samples and nine (9) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). Three (3) field duplicate pairs (NAWC-072617-RW-342 / NAWC-072617-DUP03, NAWC-072617-RW-343 / NAWC-072617-DUP04 and WGNA-072617-RW-3103 / WGNA-072617-DUP03) were included in this SDG.

The samples were collected by Tetra Tech on July 26, 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/laboratory control sample duplicate results, internal standard areas and recoveries, matrix spike / matrix spike duplicate recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

- Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).

- The following surrogate recoveries were either above the 130% or below the 70% quality control limits. The samples were reanalyzed by the laboratory with similar recoveries and the original analyses were reported. The detected and nondetected results reported in the affected samples were qualified as estimated (J) and (UJ), respectively in sample NAWC-072617-RW-349. Detected results only in the samples associated with high recoveries were qualified as estimated, (J).

Sample	Surrogate
NAWC-072617-RW-349	13C2 Perfluorohexanoic acid (<70%); 13C2 Perfluorodecanoic acid (>130%)
NAWC-072617-RW-345	13C2 Perfluorodecanoic acid (>130%)
WGNA-072617-RW-4844	13C2 Perfluorodecanoic acid (>130%)
WGNA-072617-FRB-4844	13C2 Perfluorodecanoic acid (>130%)

Notes

The sampling date of 07/25/2017 on the chain of custody (COC) was incorrect for sample WGNA-072617-FRB-4844. The project manager confirmed the correct date. The chain of custody and Form I were amended with the correct sampling date of 07/26/2017.

Sample NAWC-072617-RW-332B was listed on the COC with a sampling time of 8:10 and 12:05. The laboratory analyzed both samples and all results were nondetects. There was no field blank associated with sample NAWC-072617-RW-342 listed on the COC. The project manager confirmed that sample NAWC-072617-RW-332B was sampled at 8:10 and the sample at 12:05 was NAWC-072617-FRB-342. The COC appeared to have not been changed from the previous sampling event. The Form Is and COC were amended with the correct samples.

The matrix spike / matrix spike duplicate (MS/MSD) percent recoveries (%Rs) for perfluorononanoic acid were greater than the 130% quality control limit for sample NAWC-072617-RW-349. No validation actions were warranted as the sample result was nondetected.

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

Sample	**Associated FRB**
NAWC-072617-RW-345	NAWC-072617-FRB-345
NAWC-072617-RW-342	NAWC-072617-FRB-342
NAWC-072617-DUP03	NAWC-072617-FRB-342
NAWC-072617-RW-117	NAWC-072617-FRB-117
NAWC-072617-RW-332A	NAWC-072617-FRB-332A
NAWC-072617-RW-341	NAWC-072617-FRB-341
NAWC-072617-RW-349	NAWC-072617-FRB-349
NAWC-072617-RW-343	NAWC-072617-FRB-343
NAWC-072617-DUP04	NAWC-072617-FRB-343
WGNA-072617-RW-4844	WGNA-072617-FRB-4844
WGNA-072617-RW-3103	WGNA-072617-FRB-3103
WGNA-072617-DUP03	WGNA-072617-FRB-3103

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

Executive Summary

Laboratory Performance: Three samples contained one high surrogate recovery and one sample contained two surrogate recoveries outside of quality control limits.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 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-072617-DUP03			NAWC-072617-DUP04			NAWC-072617-FRB-117			NAWC-072617-FRB-332A		
SDG: 320-30191-1	LAB_ID	320-30191-12			320-30191-17			320-30191-16			320-30191-3		
FRACTION: PFAS	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
MEDIA: WATER	QC_TYPE	FD			FD			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	NAWC-072617-RW-342			NAWC-072617-RW-343								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		23			13	J	P	7.2	U		7.2	U	
PERFLUOROBUTANESULFONIC ACID		31	U		32	U		32	U		32	U	
PERFLUOROHEPTANOIC ACID		7.6	J	P	3.9	J	P	3.6	U		3.6	U	
PERFLUOROHEXANESULFONIC ACID		10	U		5.4	J	P	11	U		11	U	
PERFLUORONONANOIC ACID		17	U		18	U		18	U		18	U	
PERFLUOROOCTANE SULFONIC ACID		12	J	P	17	J	P	14	U		14	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-072617-FRB-341			NAWC-072617-FRB-342			NAWC-072617-FRB-343			NAWC-072617-FRB-345		
SDG: 320-30191-1	LAB_ID	320-30191-5			320-30191-14			320-30191-9			320-30191-11		
FRACTION: PFAS	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
MEDIA: WATER	QC_TYPE	FB			NM			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7	U		7.2	U		6.9	U		7	U	
PERFLUOROBUTANESULFONIC ACID		32	U		32	U		31	U		32	U	
PERFLUOROHEPTANOIC ACID		3.5	U		3.6	U		3.5	U		3.5	U	
PERFLUOROHEXANESULFONIC ACID		11	U		11	U		10	U		11	U	
PERFLUORONONANOIC ACID		18	U		18	U		17	U		18	U	
PERFLUOROOCTANE SULFONIC ACID		14	U		14	U		14	U		14	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-072617-FRB-349			NAWC-072617-RW-117			NAWC-072617-RW-332A			NAWC-072617-RW-332B		
SDG: 320-30191-1	LAB_ID	320-30191-7			320-30191-15			320-30191-1			320-30191-14		
FRACTION: PFAS	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
MEDIA: WATER	QC_TYPE	FB			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7	U		23			12	J	P	7	U	
PERFLUOROBUTANESULFONIC ACID		31	U		31	U		31	U		32	U	
PERFLUOROHEPTANOIC ACID		3.5	U		6.2	J	P	2.9	J	P	3.5	U	
PERFLUOROHEXANESULFONIC ACID		10	U		16	J	P	7.2	J	P	11	U	
PERFLUORONONANOIC ACID		17	U		17	U		17	U		18	U	
PERFLUOROOCTANE SULFONIC ACID		14	U		31	J	P	9.7	J	P	14	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-072617-RW-341			NAWC-072617-RW-342			NAWC-072617-RW-343			NAWC-072617-RW-345		
SDG: 320-30191-1	LAB_ID	320-30191-4			320-30191-13			320-30191-8			320-30191-10		
FRACTION: PFAS	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
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		11	J	P	24			12	J	P	42	J	R
PERFLUOROBUTANESULFONIC ACID		32	U		31	U		32	U		31	U	
PERFLUOROHEPTANOIC ACID		2.9	J	P	8.4	J	P	3.5	J	P	11	J	R
PERFLUOROHEXANESULFONIC ACID		11	U		10	U		5	J	P	8.1	J	PR
PERFLUORONONANOIC ACID		18	U		17	U		18	U		17	U	
PERFLUOROOCTANE SULFONIC ACID		12	J	P	12	J	P	16	J	P	42	J	R

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-072617-RW-349			WGNA-072617-DUP03			WGNA-072617-FRB-3103			WGNA-072617-FRB-4844		
SDG: 320-30191-1	LAB_ID	320-30191-6			320-30191-22			320-30191-21			320-30191-19		
FRACTION: PFAS	SAMP_DATE	7/26/2017			7/26/2017			7/26/2017			7/26/2017		
MEDIA: WATER	QC_TYPE	NM			FD			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				WGNA-072617-RW-3103								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		29	J	R	7.7	J	P	7	U		7.2	U	
PERFLUOROBUTANESULFONIC ACID		31	U		32	U		32	U		33	U	
PERFLUOROHEPTANOIC ACID		6.7	J	PR	2.3	J	P	3.5	U		3.6	U	
PERFLUOROHEXANESULFONIC ACID		7.2	J	PR	4.8	J	P	11	U		11	U	
PERFLUORONONANOIC ACID		17	U		18	U		18	U		18	U	
PERFLUOROOCTANE SULFONIC ACID		17	J	PR	7.1	J	P	14	U		14	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-072617-RW-3103			WGNA-072617-RW-4844		
SDG: 320-30191-1	LAB_ID	320-30191-20			320-30191-18		
FRACTION: PFAS	SAMP_DATE	7/26/2017			7/26/2017		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		8.7	J	P	14	J	PR
PERFLUOROBUTANESULFONIC ACID		33	U		30	U	
PERFLUOROHEPTANOIC ACID		2.2	J	P	7	J	PR
PERFLUOROHEXANESULFONIC ACID		11	U		10	U	
PERFLUORONONANOIC ACID		18	U		17	U	
PERFLUOROOCTANE SULFONIC ACID		7.4	J	P	7.9	J	PR

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_005.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 292.9(mL) | Date Analyzed: 08/16/2017 12:59

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

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

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-RW-332B | Lab Sample ID: 320-30191-2

Matrix: Water | Lab File ID: 2017.08.16_537C_006.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 285.6(mL) | Date Analyzed: 08/16/2017 13:04

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

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

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

Analysis Batch No.: 179727 | Units: ng/L

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

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

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

Client Sample ID: NAWC-072617-FRB-332A | Lab Sample ID: 320-30191-3

Matrix: Water | Lab File ID: 2017.08.16_537D_057.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 277.4(mL) | Date Analyzed: 08/16/2017 20:12

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

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

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

Analysis Batch No.: 179920 | Units: ng/L

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

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

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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

SDG No.:

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

Matrix: Water | Lab File ID: 2017.08.16_537C_008.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 278.5(mL) | Date Analyzed: 08/16/2017 13:14

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	11	J ~~M~~	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U ~~M~~	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	126		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-341 | Lab Sample ID: 320-30191-5

Matrix: Water | Lab File ID: 2017.08.16_537C_009.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 284.6(mL) | Date Analyzed: 08/16/2017 13:18

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-349 | Lab Sample ID: 320-30191-6

Matrix: Water | Lab File ID: 2017.08.16_537C_010.d

Analysis Method: 537 | Date Collected: 07/26/2017 10:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 288.9(mL) | Date Analyzed: 08/16/2017 13:23

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	29	~~M~~ J	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	~~U J M~~ UJ	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	~~U~~ UJ	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	56	Q	70-130
STL00996	13C2 PFDA	131	Q	70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-349 | Lab Sample ID: 320-30191-7

Matrix: Water | Lab File ID: 2017.08.16_537C_015.d

Analysis Method: 537 | Date Collected: 07/26/2017 10:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 286.5(mL) | Date Analyzed: 08/16/2017 13:47

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

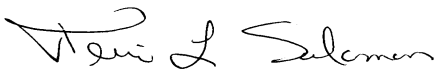
Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	130		70-130



08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-343 | Lab Sample ID: 320-30191-8

Matrix: Water | Lab File ID: 2017.08.16_537C_016.d

Analysis Method: 537 | Date Collected: 07/26/2017 13:55

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 283.7(mL) | Date Analyzed: 08/16/2017 13:52

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	12	J ~~M~~	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U ~~M~~	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.0	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	125		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-343 | Lab Sample ID: 320-30191-9

Matrix: Water | Lab File ID: 2017.08.16_537C_017.d

Analysis Method: 537 | Date Collected: 07/26/2017 13:50

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 288.4(mL) | Date Analyzed: 08/16/2017 13:56

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	U	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-345 | Lab Sample ID: 320-30191-10

Matrix: Water | Lab File ID: 2017.08.16_537C_018.d

Analysis Method: 537 | Date Collected: 07/26/2017 15:15

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 289(mL) | Date Analyzed: 08/16/2017 14:01

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42		35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	42	~~M~~	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U ~~M~~	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	135	Q	70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-345 | Lab Sample ID: 320-30191-11

Matrix: Water | Lab File ID: 2017.08.16_537C_019.d

Analysis Method: 537 | Date Collected: 07/26/2017 15:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 285.2(mL) | Date Analyzed: 08/16/2017 14:06

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	120		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-DUP03 | Lab Sample ID: 320-30191-12

Matrix: Water | Lab File ID: 2017.08.16_537C_025.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 286.3(mL) | Date Analyzed: 08/16/2017 14:34

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	23	~~M~~	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U ~~M~~	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	123		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-342 | Lab Sample ID: 320-30191-13

Matrix: Water | Lab File ID: 2017.08.16_537C_026.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 286.4(mL) | Date Analyzed: 08/16/2017 14:39

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24	~~M~~	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U ~~M~~	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	125		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: ~~NAWC-072617-RW-332B~~ NAWC-072617-FRB-342 | Lab Sample ID: 320-30191-14

Matrix: Water | Lab File ID: 2017.08.16_537C_027.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 279.6(mL) | Date Analyzed: 08/16/2017 14:44

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-117 | Lab Sample ID: 320-30191-15

Matrix: Water | Lab File ID: 2017.08.16_537C_028.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 292.6(mL) | Date Analyzed: 08/16/2017 14:48

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	23	~~M~~	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U ~~M~~	21	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	120		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-117 | Lab Sample ID: 320-30191-16

Matrix: Water | Lab File ID: 2017.08.16_537C_029.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 278.9(mL) | Date Analyzed: 08/16/2017 14:53

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-DUP04 | Lab Sample ID: 320-30191-17

Matrix: Water | Lab File ID: 2017.08.16_537C_030.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 279(mL) | Date Analyzed: 08/16/2017 14:58

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	13	J ~~M~~	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U ~~M~~	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.4	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	124		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-RW-4844 | Lab Sample ID: 320-30191-18

Matrix: Water | Lab File ID: 2017.08.16_537C_031.d

Analysis Method: 537 | Date Collected: 07/26/2017 09:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 298.7(mL) | Date Analyzed: 08/16/2017 15:03

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.9	J ~~M~~	33	13	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J ~~M~~	17	6.7	2.3
375-95-1	Perfluorononanoic acid (PFNA)	17	U ~~M~~	20	17	6.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	8.4	3.3	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U	75	30	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	136	Q	70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-FRB-4844 | Lab Sample ID: 320-30191-19

Matrix: Water | Lab File ID: 2017.08.16_537C_034.d

Analysis Method: 537 | Date Collected: 07/~~25~~26/2017 09:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 276(mL) | Date Analyzed: 08/16/2017 15:17

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	138	Q	70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-RW-3103 | Lab Sample ID: 320-30191-20

Matrix: Water | Lab File ID: 2017.08.16_537C_035.d

Analysis Method: 537 | Date Collected: 07/26/2017 11:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 276.6(mL) | Date Analyzed: 08/16/2017 15:22

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.4	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	8.7	J ~~M~~	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U ~~M~~	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.2	J ~~M~~	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-FRB-3103 | Lab Sample ID: 320-30191-21

Matrix: Water | Lab File ID: 2017.08.16_537C_036.d

Analysis Method: 537 | Date Collected: 07/26/2017 11:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 285.1(mL) | Date Analyzed: 08/16/2017 15:26

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

Teri L Salemon

08/28/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-DUP03 | Lab Sample ID: 320-30191-22

Matrix: Water | Lab File ID: 2017.08.16_537C_037.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 284.7(mL) | Date Analyzed: 08/16/2017 15:31

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.1	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	J ~~M~~	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U ~~M~~	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.8	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

08/28/2017

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-332A | Lab Sample ID: 320-30191-1

Matrix: Water | Lab File ID: 2017.08.16_537C_005.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 292.9(mL) | Date Analyzed: 08/16/2017 12:59

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.7	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	12	J M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U M	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	123		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-332B | Lab Sample ID: 320-30191-2

Matrix: Water | Lab File ID: 2017.08.16_537C_006.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 285.6(mL) | Date Analyzed: 08/16/2017 13:04

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-332A | Lab Sample ID: 320-30191-3

Matrix: Water | Lab File ID: 2017.08.16_537D_057.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 277.4(mL) | Date Analyzed: 08/16/2017 20:12

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179920 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-341 | Lab Sample ID: 320-30191-4

Matrix: Water | Lab File ID: 2017.08.16_537C_008.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 278.5(mL) | Date Analyzed: 08/16/2017 13:14

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	11	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	126		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-341 | Lab Sample ID: 320-30191-5

Matrix: Water | Lab File ID: 2017.08.16_537C_009.d

Analysis Method: 537 | Date Collected: 07/26/2017 08:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 284.6(mL) | Date Analyzed: 08/16/2017 13:18

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-349 | Lab Sample ID: 320-30191-6

Matrix: Water | Lab File ID: 2017.08.16_537C_010.d

Analysis Method: 537 | Date Collected: 07/26/2017 10:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 288.9(mL) | Date Analyzed: 08/16/2017 13:23

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	29	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U J M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	56	Q	70-130
STL00996	13C2 PFDA	131	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-349 | Lab Sample ID: 320-30191-7

Matrix: Water | Lab File ID: 2017.08.16_537C_015.d

Analysis Method: 537 | Date Collected: 07/26/2017 10:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 286.5(mL) | Date Analyzed: 08/16/2017 13:47

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	130		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-343 | Lab Sample ID: 320-30191-8

Matrix: Water | Lab File ID: 2017.08.16_537C_016.d

Analysis Method: 537 | Date Collected: 07/26/2017 13:55

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 283.7(mL) | Date Analyzed: 08/16/2017 13:52

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	12	J M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.0	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-343 | Lab Sample ID: 320-30191-9

Matrix: Water | Lab File ID: 2017.08.16_537C_017.d

Analysis Method: 537 | Date Collected: 07/26/2017 13:50

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 288.4(mL) | Date Analyzed: 08/16/2017 13:56

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	U	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-345 | Lab Sample ID: 320-30191-10

Matrix: Water | Lab File ID: 2017.08.16_537C_018.d

Analysis Method: 537 | Date Collected: 07/26/2017 15:15

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 289(mL) | Date Analyzed: 08/16/2017 14:01

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42		35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	42	M	17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	135	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-345 | Lab Sample ID: 320-30191-11

Matrix: Water | Lab File ID: 2017.08.16_537C_019.d

Analysis Method: 537 | Date Collected: 07/26/2017 15:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 285.2(mL) | Date Analyzed: 08/16/2017 14:06

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179728 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	120		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-DUP03 | Lab Sample ID: 320-30191-12

Matrix: Water | Lab File ID: 2017.08.16_537C_025.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 286.3(mL) | Date Analyzed: 08/16/2017 14:34

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	80		70-130
STL00996	13C2 PFDA	123		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-342 | Lab Sample ID: 320-30191-13

Matrix: Water | Lab File ID: 2017.08.16_537C_026.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 286.4(mL) | Date Analyzed: 08/16/2017 14:39

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.: NAWC-072617-FRB-342

Client Sample ID: ~~NAWC-072617-RW-332B~~ | Lab Sample ID: 320-30191-14

Matrix: Water | Lab File ID: 2017.08.16_537C_027.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 279.6(mL) | Date Analyzed: 08/16/2017 14:44

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	125		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-RW-117 | Lab Sample ID: 320-30191-15

Matrix: Water | Lab File ID: 2017.08.16_537C_028.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 292.6(mL) | Date Analyzed: 08/16/2017 14:48

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31	J	34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	23	M	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	120		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-FRB-117 | Lab Sample ID: 320-30191-16

Matrix: Water | Lab File ID: 2017.08.16_537C_029.d

Analysis Method: 537 | Date Collected: 07/26/2017 12:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 278.9(mL) | Date Analyzed: 08/16/2017 14:53

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	126		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: NAWC-072617-DUP04 | Lab Sample ID: 320-30191-17

Matrix: Water | Lab File ID: 2017.08.16_537C_030.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 279(mL) | Date Analyzed: 08/16/2017 14:58

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	13	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.4	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	124		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-RW-4844 | Lab Sample ID: 320-30191-18

Matrix: Water | Lab File ID: 2017.08.16_537C_031.d

Analysis Method: 537 | Date Collected: 07/26/2017 09:35

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 298.7(mL) | Date Analyzed: 08/16/2017 15:03

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.9	J M	33	13	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	14	J M	17	6.7	2.3
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	20	17	6.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	8.4	3.3	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U	75	30	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	136	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-FRB-4844 | Lab Sample ID: 320-30191-19

Matrix: Water | Lab File ID: 2017.08.16_537C_034.d

Analysis Method: 537 | Date Collected: 07/~~25~~26/2017 09:30

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 276(mL) | Date Analyzed: 08/16/2017 15:17

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	138	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-RW-3103 | Lab Sample ID: 320-30191-20

Matrix: Water | Lab File ID: 2017.08.16_537C_035.d

Analysis Method: 537 | Date Collected: 07/26/2017 11:10

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 276.6(mL) | Date Analyzed: 08/16/2017 15:22

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.4	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	8.7	J M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.2	J M	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-FRB-3103 | Lab Sample ID: 320-30191-21

Matrix: Water | Lab File ID: 2017.08.16_537C_036.d

Analysis Method: 537 | Date Collected: 07/26/2017 11:05

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 285.1(mL) | Date Analyzed: 08/16/2017 15:26

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	127		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: WGNA-072617-DUP03 | Lab Sample ID: 320-30191-22

Matrix: Water | Lab File ID: 2017.08.16_537C_037.d

Analysis Method: 537 | Date Collected: 07/26/2017 07:00

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 284.7(mL) | Date Analyzed: 08/16/2017 15:31

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179733 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.1	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	J M	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.8	J	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	123		70-130

Appendix C

Support Documentation

ANALYTE	ORIGINAL NAWC-072617-RW-342	DUPLICATE NAWC-072617-DUP03	RL	RPD	RPD > 50%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
Perfluorooctanesulfonic acid (PFOS)	12	12	35	0.000	FALSE	FALSE	FALSE	FALSE
Perfluorooctanoic acid (PFOA)	24	23	17	4.255	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	8.4	7.6	8.7	10.000	FALSE	FALSE	FALSE	FALSE

ANALYTE	ORIGINAL NAWC-072617-RW-343	DUPLICATE NAWC-072617-DUP04	RL	RPD	RPD > 50%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
Perfluorooctanesulfonic acid (PFOS)	16	17	35	6.061	FALSE	FALSE	FALSE	FALSE
Perfluorooctanoic acid (PFOA)	12	13	18	8.000	FALSE	FALSE	FALSE	FALSE
Perfluorohexanesulfonic acid (PFHxS)	5	5.4	26	7.692	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	3.5	3.9	8.8	10.811	FALSE	FALSE	FALSE	FALSE

ANALYTE	ORIGINAL WGNA-072617-RW-3103	DUPLICATE WGNA-072617-DUP03	RL	RPD	RPD > 50%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
Perfluorooctanoic acid (PFOA)	8.7	7.7	18	12.195	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	2.2	2.3	9	4.444	FALSE	FALSE	FALSE	FALSE
Perfluorohexanesulfonic acid (PFHxS)	11	4.8	27	78.481	TRUE	FALSE	FALSE	FALSE
Perfluorooctanesulfonic acid (PFOS)	7.4	7.1	36	4.138	FALSE	FALSE	FALSE	FALSE

TestAmerica Sacramento
880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☑ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 7/26/17	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	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 _____			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			

320-30191 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-072617-RW-332A	7/26/2017	8:05	G	DW	2	N	N	Y	
NAWC-072617-RW-332B	7/26/2017	8:10	G	DW	2	N	N	Y	
NAWC-072617-FRB-332A	7/26/2017	8:00	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-341	7/26/2017	8:35	G	DW	2	N	N	Y	
NAWC-072617-FRB-341	7/26/2017	8:30	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-349	7/26/2017	10:35	G	DW	6	N	Y	Y	MS/MSD
NAWC-072617-FRB-349	7/26/2017	10:30	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-343	7/26/2017	13:55	G	DW	2	N	N	Y	
NAWC-072617-FRB-343	7/26/2017	13:50	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-RW-345	7/26/2017	15:15	G	DW	2	N	N	Y	
NAWC-072617-FRB-345	7/26/2017	15:10	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-DUP03	7/26/2017	07:00	G	DW	2	N	N	Y	Duplicate

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.8 Corr'd: 5.8 | Therm ID No.: AK-7

Relinquished by: Mary Kay Bond	Company: Tetra Tech	Date/Time: 7/26/17 18:00	Received by:	Company: TAS	Date/Time: 7/27/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

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

Regulatory Program: ☑ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 7/26/17	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	2 of 2 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Andy Frebowitz, Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-3244	TAT if different from Below _____			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-072617-RW-342	7/26/2017	12:10	G	DW	2	N	N	Y	
NAWC-072617-RW-332B	7/26/2017	12:05	G	DW	2	N	N	Y	Should be sample NAWC-072617-FRB-342
NAWC-072617-RW-117	7/26/2017	12:35	G	DW	2	N	N	Y	
NAWC-072617-FRB-117	7/26/2017	12:30	G	BLK	2	N	N	Y	Field Reagent Blank
NAWC-072617-DUP04	7/26/2017	07:00	G	DW	2	N	N	Y	Duplicate
WGNA-072617-RW-4844	7/26/2017	9:35	G	DW	2	N	N	Y	
WGNA-072617-FRB-4844	7/25/2017	9:30	G	BLK	2	N	N	Y	Should be sample date of 07/26/2017 — Field Reagent Blank
WGNA-072617-RW-3103	7/26/2017	11:10	G	DW	2	N	N	Y	
WGNA-072617-FRB-3103	7/26/2017	11:05	G	BLK	2	N	N	Y	Field Reagent Blank
WGNA-072617-DUP03	7/26/2017	7:00	G	DW	2	N	N	Y	Duplicate

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☑ Flammable ☑ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Fed Ex Tracking: 6612 1992 7551 / 6612 1992 7562

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.8 Corr'd: 3.8 | Therm ID No.: AL-2

Relinquished by: Mary Kay Bond (Mary Kay Bond)	Company: Tetra Tech	Date/Time: 7/26/17 18:00	Received by:	Company: TAWS	Date/Time: 7/27/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Job Narrative
320-30191-1

Receipt
The samples were received on 7/27/2017 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

LCMS
Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 537: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-177640 and analytical batch 320-179727 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537: Surrogate recovery for the following samples was outside control limits: NAWC-072617-RW-349 (320-30191-6), NAWC-072617-RW-349 (320-30191-6[MS]), NAWC-072617-RW-349 (320-30191-6[MSD]) and (LCS 320-177640/2-A). Re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 537: Surrogate recovery for the following sample was outside control limits: NAWC-072617-RW-345 (320-30191-10). Re-analysis was performed with concurring results. The original analysis has been reported.

Method(s) 537: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) has E flags because it is spiked at the upper level of the calibration curve as specified in the method. (LCS 320-177651/2-A) and (LCSD 320-177651/3-A)

Method(s) 537: Surrogate recovery for the following samples was outside control limits: WGNA-072617-RW-4844 (320-30191-18) and WGNA-072617-FRB-4844 (320-30191-19). Re-analysis was performed with concurring results. The original analysis has been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-177651.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-30191-1

Method	Method Description	Protocol	Laboratory
537	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-30191-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-30191-1	NAWC-072617-RW-332A	Water	07/26/17 08:05	07/27/17 09:20
320-30191-2	NAWC-072617-RW-332B	Water	07/26/17 08:10	07/27/17 09:20
320-30191-3	NAWC-072617-FRB-332A	Water	07/26/17 08:00	07/27/17 09:20
320-30191-4	NAWC-072617-RW-341	Water	07/26/17 08:35	07/27/17 09:20
320-30191-5	NAWC-072617-FRB-341	Water	07/26/17 08:30	07/27/17 09:20
320-30191-6	NAWC-072617-RW-349	Water	07/26/17 10:35	07/27/17 09:20
320-30191-7	NAWC-072617-FRB-349	Water	07/26/17 10:30	07/27/17 09:20
320-30191-8	NAWC-072617-RW-343	Water	07/26/17 13:55	07/27/17 09:20
320-30191-9	NAWC-072617-FRB-343	Water	07/26/17 13:50	07/27/17 09:20
320-30191-10	NAWC-072617-RW-345	Water	07/26/17 15:15	07/27/17 09:20
320-30191-11	NAWC-072617-FRB-345	Water	07/26/17 15:10	07/27/17 09:20
320-30191-12	NAWC-072617-DUP03	Water	07/26/17 07:00	07/27/17 09:20
320-30191-13	NAWC-072617-RW-342	Water	07/26/17 12:10	07/27/17 09:20
320-30191-14	~~NAWC-072617-RW-332B~~ NAWC-072617-FRB-342	Water	07/26/17 12:05	07/27/17 09:20
320-30191-15	NAWC-072617-RW-117	Water	07/26/17 12:35	07/27/17 09:20
320-30191-16	NAWC-072617-FRB-117	Water	07/26/17 12:30	07/27/17 09:20
320-30191-17	NAWC-072617-DUP04	Water	07/26/17 07:00	07/27/17 09:20
320-30191-18	WGNA-072617-RW-4844	Water	07/26/17 09:35	07/27/17 09:20
320-30191-19	WGNA-072617-FRB-4844	Water	07/26/17 ~~07/25/17~~ 09:30	07/27/17 09:20
320-30191-20	WGNA-072617-RW-3103	Water	07/26/17 11:10	07/27/17 09:20
320-30191-21	WGNA-072617-FRB-3103	Water	07/26/17 11:05	07/27/17 09:20
320-30191-22	WGNA-072617-DUP03	Water	07/26/17 07:00	07/27/17 09:20

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-072617-RW-332A	320-30191-1	91	123
NAWC-072617-RW-332B	320-30191-2	100	125
NAWC-072617-FRB-332A	320-30191-3	101	125
NAWC-072617-RW-341	320-30191-4	81	126
NAWC-072617-FRB-341	320-30191-5	98	127
NAWC-072617-RW-349	320-30191-6	56 Q	131 Q
NAWC-072617-FRB-349	320-30191-7	106	130
NAWC-072617-RW-343	320-30191-8	84	125
NAWC-072617-FRB-343	320-30191-9	101	126
NAWC-072617-RW-345	320-30191-10	90	135 Q
NAWC-072617-FRB-345	320-30191-11	95	120
NAWC-072617-DUP03	320-30191-12	80	123
NAWC-072617-RW-342	320-30191-13	83	125
NAWC-072617-RW-332B	320-30191-14	101	125
NAWC-072617-RW-117	320-30191-15	92	120
NAWC-072617-FRB-117	320-30191-16	101	126
NAWC-072617-DUP04	320-30191-17	88	124
WGNA-072617-RW-4844	320-30191-18	88	136 Q
WGNA-072617-FRB-4844	320-30191-19	96	138 Q
WGNA-072617-RW-3103	320-30191-20	89	123
WGNA-072617-FRB-3103	320-30191-21	98	127
WGNA-072617-DUP03	320-30191-22	89	123
	MB 320-177640/1-A	100	124
	MB 320-177651/1-A	98	122
	LCS 320-177640/2-A	101	133 Q
	LCS 320-177651/2-A	107	126
	LCSD 320-177651/3-A	102	126

	QC LIMITS
PFHxA = 13C2 PFHxA	70-130
PFDA = 13C2 PFDA	70-130

Column to be used to flag recovery values

FORM II 537

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-072617-RW-349 MS	320-30191-6 MS	57 Q	130
NAWC-072617-RW-349 MSD	320-30191-6 MSD	61 Q	131 Q

	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.: 320-30191-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_004.d

Lab ID: LCS 320-177640/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	160	184	115	70-130	
Perfluorooctanoic acid (PFOA)	79.9	83.8	105	70-130	
Perfluorononanoic acid (PFNA)	77.0	99.3	129	70-130	
Perfluorohexanesulfonic acid (PFHxS)	120	121	100	70-130	
Perfluoroheptanoic acid (PFHpA)	39.6	45.5	115	70-130	
Perfluorobutanesulfonic acid (PFBS)	353	343	97	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_023.d

Lab ID: LCS 320-177651/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	300	332	110	70-130	E
Perfluorooctanoic acid (PFOA)	150	155	104	70-130	
Perfluorononanoic acid (PFNA)	144	177	122	70-130	E
Perfluorohexanesulfonic acid (PFHxS)	225	211	94	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	87.2	117	70-130	E
Perfluorobutanesulfonic acid (PFBS)	663	698	105	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_024.d

Lab ID: LCSD 320-177651/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	300	324	108	2	30	70-130	E
Perfluorooctanoic acid (PFOA)	150	151	101	3	30	70-130	
Perfluorononanoic acid (PFNA)	144	171	119	3	30	70-130	E
Perfluorohexanesulfonic acid (PFHxS)	225	206	91	3	30	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	84.6	114	3	30	70-130	E
Perfluorobutanesulfonic acid (PFBS)	663	684	103	2	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_011.d

Lab ID: 320-30191-6 MS Client ID: NAWC-072617-RW-349 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	136	17 J	168	110	70-130	
Perfluorooctanoic acid (PFOA)	68.0	29	102	107	70-130	M
Perfluorononanoic acid (PFNA)	65.5	17 U	90.8	139	70-130	J
Perfluorohexanesulfonic acid (PFHxS)	102	7.2 J	101	92	70-130	
Perfluoroheptanoic acid (PFHpA)	33.7	6.7 J	43.3	109	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	31 U	283	94	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.16_537C_012.d

Lab ID: 320-30191-6 MSD Client ID: NAWC-072617-RW-349 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	139	178	115	6	30	70-130	
Perfluorooctanoic acid (PFOA)	69.4	107	112	5	30	70-130	M
Perfluorononanoic acid (PFNA)	66.9	92.5	138	2	30	70-130	J
Perfluorohexanesulfonic acid (PFHxS)	104	109	98	8	30	70-130	
Perfluoroheptanoic acid (PFHpA)	34.4	46.5	116	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	307	304	99	7	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab File ID: 2017.08.16_537C_003.d Lab Sample ID: MB 320-177640/1-A

Matrix: Water Date Extracted: 08/03/2017 17:23

Instrument ID: A8_N Date Analyzed: 08/16/2017 12:50

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-177640/2-A	2017.08.16_537C_004.d	08/16/2017 12:55
NAWC-072617-RW-332A	320-30191-1	2017.08.16_537C_005.d	08/16/2017 12:59
NAWC-072617-RW-332B	320-30191-2	2017.08.16_537C_006.d	08/16/2017 13:04
NAWC-072617-RW-341	320-30191-4	2017.08.16_537C_008.d	08/16/2017 13:14
NAWC-072617-FRB-341	320-30191-5	2017.08.16_537C_009.d	08/16/2017 13:18
NAWC-072617-RW-349	320-30191-6	2017.08.16_537C_010.d	08/16/2017 13:23
NAWC-072617-RW-349 MS	320-30191-6 MS	2017.08.16_537C_011.d	08/16/2017 13:28
NAWC-072617-RW-349 MSD	320-30191-6 MSD	2017.08.16_537C_012.d	08/16/2017 13:33
NAWC-072617-FRB-349	320-30191-7	2017.08.16_537C_015.d	08/16/2017 13:47
NAWC-072617-RW-343	320-30191-8	2017.08.16_537C_016.d	08/16/2017 13:52
NAWC-072617-FRB-343	320-30191-9	2017.08.16_537C_017.d	08/16/2017 13:56
NAWC-072617-RW-345	320-30191-10	2017.08.16_537C_018.d	08/16/2017 14:01
NAWC-072617-FRB-345	320-30191-11	2017.08.16_537C_019.d	08/16/2017 14:06
NAWC-072617-FRB-332A	320-30191-3	2017.08.16_537D_057.d	08/16/2017 20:12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-177640/1-A

Matrix: Water | Lab File ID: 2017.08.16_537C_003.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/03/2017 17:23

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/16/2017 12:50

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179727 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	124		70-130

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab File ID: 2017.08.16_537C_022.d Lab Sample ID: MB 320-177651/1-A

Matrix: Water Date Extracted: 08/03/2017 17:40

Instrument ID: A8_N Date Analyzed: 08/16/2017 14:20

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-177651/2-A	2017.08.16_537C_023.d	08/16/2017 14:25
	LCSD 320-177651/3-A	2017.08.16_537C_024.d	08/16/2017 14:29
NAWC-072617-DUP03	320-30191-12	2017.08.16_537C_025.d	08/16/2017 14:34
NAWC-072617-RW-342	320-30191-13	2017.08.16_537C_026.d	08/16/2017 14:39
NAWC-072617-RW-332B	320-30191-14	2017.08.16_537C_027.d	08/16/2017 14:44
NAWC-072617-RW-117	320-30191-15	2017.08.16_537C_028.d	08/16/2017 14:48
NAWC-072617-FRB-117	320-30191-16	2017.08.16_537C_029.d	08/16/2017 14:53
NAWC-072617-DUP04	320-30191-17	2017.08.16_537C_030.d	08/16/2017 14:58
WGNA-072617-RW-4844	320-30191-18	2017.08.16_537C_031.d	08/16/2017 15:03
WGNA-072617-FRB-4844	320-30191-19	2017.08.16_537C_034.d	08/16/2017 15:17
WGNA-072617-RW-3103	320-30191-20	2017.08.16_537C_035.d	08/16/2017 15:22
WGNA-072617-FRB-3103	320-30191-21	2017.08.16_537C_036.d	08/16/2017 15:26
WGNA-072617-DUP03	320-30191-22	2017.08.16_537C_037.d	08/16/2017 15:31

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30191-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-177651/1-A

Matrix: Water | Lab File ID: 2017.08.16_537C_022.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/03/2017 17:40

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/16/2017 14:20

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 179732 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	8.0	U	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	122		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2250916	1.95	5850602	2.21		
UPPER LIMIT		3376374	2.45	8775903	2.71		
LOWER LIMIT		1125458	1.45	2925301	1.71		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-179319/9		2177935	1.94	5998180	2.20		
ICV 320-179319/11		1980065	1.94	5824653	2.19		
CCVL 320-179695/4		2440436	1.99	6032262	2.21		
CCV 320-179727/1 CCVIS		2038727	1.95	5758922	2.18		
MB 320-177640/1-A		2039484	1.96	5859519	2.19		
LCS 320-177640/2-A		2195855	1.95	6260681	2.18		
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18		
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18		
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17		
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18		
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18		
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18		
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17		
CCV 320-179727/13 CCVIS		1866257	1.95	5698459	2.18		
CCV 320-179728/13 CCVIS		1866257	1.95	5698459	2.18		
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17		
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17		
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17		
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17		
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17		
CCV 320-179728/20 CCVIS		1760639	1.94	5486673	2.17		
CCV 320-179732/20 CCVIS		1760639	1.94	5486673	2.17		
MB 320-177651/1-A		1954348	1.94	5738380	2.17		
LCS 320-177651/2-A		1889531	1.95	5624637	2.18		
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18		
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18		
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/14/2017 13:12

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2250916	1.95	5850602	2.21		
UPPER LIMIT		3376374	2.45	8775903	2.71		
LOWER LIMIT		1125458	1.45	2925301	1.71		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17		
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18		
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17		
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17		
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18		
CCV 320-179732/32 CCVIS		1839473	1.94	5667758	2.18		
CCV 320-179733/32 CCVIS		1839473	1.94	5667758	2.18		
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17		
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17		
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17		
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17		
CCV 320-179733/38 CCVIS		1857646	1.94	5657569	2.17		
CCV 320-179920/1 CCVIS		1811420	1.93	5562915	2.16		
320-30191-3	NAWC-072617-FRB-332A	1923676	1.93	5905224	2.16		
CCV 320-179920/13 CCVIS		1854955	1.94	5653051	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179727/1 Date Analyzed: 08/16/2017 12:40

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_001 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2038727	1.95	5758922	2.18		
UPPER LIMIT		2854218	2.45	8062491	2.68		
LOWER LIMIT		1427109	1.45	4031245	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-177640/1-A		2039484	1.96	5859519	2.19		
LCS 320-177640/2-A		2195855	1.95	6260681	2.18		
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18		
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18		
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17		
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18		
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18		
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18		
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179727/13 Date Analyzed: 08/16/2017 13:37

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1866257	1.95	5698459	2.18		
UPPER LIMIT		2612760	2.45	7977843	2.68		
LOWER LIMIT		1306380	1.45	3988921	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-177640/1-A		2039484	1.96	5859519	2.19		
LCS 320-177640/2-A		2195855	1.95	6260681	2.18		
320-30191-1	NAWC-072617-RW-332A	2020164	1.95	6134523	2.18		
320-30191-2	NAWC-072617-RW-332B	2127356	1.95	6059329	2.18		
320-30191-4	NAWC-072617-RW-341	2157461	1.94	6097174	2.17		
320-30191-5	NAWC-072617-FRB-341	2000116	1.94	5653808	2.18		
320-30191-6	NAWC-072617-RW-349	2100574	1.95	6164558	2.18		
320-30191-6 MS	NAWC-072617-RW-349 MS	2007840	1.95	6134519	2.18		
320-30191-6 MSD	NAWC-072617-RW-349 MSD	1833456	1.94	5712310	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179728/13 Date Analyzed: 08/16/2017 13:37

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_013 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1866257	1.95	5698459	2.18		
UPPER LIMIT		2612760	2.45	7977843	2.68		
LOWER LIMIT		1306380	1.45	3988921	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17		
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17		
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17		
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17		
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179728/20 Date Analyzed: 08/16/2017 14:10

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1760639	1.94	5486673	2.17		
UPPER LIMIT		2464895	2.44	7681342	2.67		
LOWER LIMIT		1232447	1.44	3840671	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-7	NAWC-072617-FRB-349	1940120	1.95	5962050	2.17		
320-30191-8	NAWC-072617-RW-343	1885325	1.94	6016316	2.17		
320-30191-9	NAWC-072617-FRB-343	1958218	1.95	5829271	2.17		
320-30191-10	NAWC-072617-RW-345	1920128	1.94	6011521	2.17		
320-30191-11	NAWC-072617-FRB-345	1902168	1.95	5793398	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179732/20 Date Analyzed: 08/16/2017 14:10

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_020 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1760639	1.94	5486673	2.17		
UPPER LIMIT		2464895	2.44	7681342	2.67		
LOWER LIMIT		1232447	1.44	3840671	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-177651/1-A		1954348	1.94	5738380	2.17		
LCS 320-177651/2-A		1889531	1.95	5624637	2.18		
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18		
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18		
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17		
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17		
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18		
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17		
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17		
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179732/32 Date Analyzed: 08/16/2017 15:07

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1839473	1.94	5667758	2.18		
UPPER LIMIT		2575262	2.44	7934861	2.68		
LOWER LIMIT		1287631	1.44	3967431	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-177651/1-A		1954348	1.94	5738380	2.17		
LCS 320-177651/2-A		1889531	1.95	5624637	2.18		
LCSD 320-177651/3-A		1879054	1.95	5537284	2.18		
320-30191-12	NAWC-072617-DUP03	1945840	1.95	5952793	2.18		
320-30191-13	NAWC-072617-RW-342	1846233	1.94	5819124	2.17		
320-30191-14	NAWC-072617-RW-332B	2111823	1.94	6443289	2.17		
320-30191-15	NAWC-072617-RW-117	1893783	1.95	5733136	2.18		
320-30191-16	NAWC-072617-FRB-117	1975032	1.94	5809268	2.17		
320-30191-17	NAWC-072617-DUP04	1896096	1.94	5765134	2.17		
320-30191-18	WGNA-072617-RW-4844	1878429	1.95	5801526	2.18		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179733/32 Date Analyzed: 08/16/2017 15:07

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_032 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1839473	1.94	5667758	2.18		
UPPER LIMIT		2575262	2.44	7934861	2.68		
LOWER LIMIT		1287631	1.44	3967431	1.68		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17		
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17		
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17		
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179733/38 Date Analyzed: 08/16/2017 15:36

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537C_038 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1857646	1.94	5657569	2.17		
UPPER LIMIT		2600704	2.44	7920597	2.67		
LOWER LIMIT		1300352	1.44	3960298	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-19	WGNA-072617-FRB-4844	2122046	1.94	6209142	2.17		
320-30191-20	WGNA-072617-RW-3103	1903761	1.94	5711717	2.17		
320-30191-21	WGNA-072617-FRB-3103	2016088	1.94	5922386	2.17		
320-30191-22	WGNA-072617-DUP03	1910474	1.94	5704175	2.17		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179920/1 Date Analyzed: 08/16/2017 19:48

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537D_052 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1811420	1.93	5562915	2.16		
UPPER LIMIT		2535988	2.43	7788081	2.66		
LOWER LIMIT		1267994	1.43	3894041	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-3	NAWC-072617-FRB-332A	1923676	1.93	5905224	2.16		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Sample No.: CCV 320-179920/13 Date Analyzed: 08/16/2017 20:45

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.08.16_537D_064 Heated Purge: (Y/N) N

Calibration ID: 33517

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1854955	1.94	5653051	2.17		
UPPER LIMIT		2596937	2.44	7914271	2.67		
LOWER LIMIT		1298469	1.44	3957136	1.67		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30191-3	NAWC-072617-FRB-332A	1923676	1.93	5905224	2.16		

13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1 Analy Batch No.: 179319

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1417 0.7313	1.1495	1.0943	0.9210	0.7959	QuaF		1.1266	-0.002254						0.9980		0.9600
Perfluoroheptanoic acid (PFHpA)	0.8346 0.8325	0.8724	0.8737	0.8715	0.8517	Ave		0.8560				2.2		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.4757 1.3970	1.5378	1.5080	1.5703	1.4756	Ave		1.4941				4.0		30.0			
Perfluorooctanoic acid (PFOA)	0.8851 0.9102	0.8837	0.8984	0.9375	0.9261	Ave		0.9068				2.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8922 0.9252	0.9148	0.9148	0.9461	0.9486	Ave		0.9236				2.3		30.0			
Perfluorononanoic acid (PFNA)	0.5491 0.5714	0.5670	0.5764	0.5665	0.5686	Ave		0.5665				1.6		30.0			
13C2 PFHxA	1.0141 1.0999	1.0032	1.0998	1.0933	1.1053	Ave		1.0693				4.4		30.0			
13C2 PFDA	0.5512 0.6012	0.5785	0.5919	0.5906	0.6127	Ave		0.5877				3.6		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1 Analy Batch No.: 179319

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	2176776 26040065	4858409	10071471	16707104	21165476	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	198176 3589599	455479	965342	1966143	2763295	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	938005 16584369	2166866	4626981	9496666	13083092	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	420599 7854398	923370	1986507	4232647	6012905	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	756213 14645432	1718775	3742396	7629588	11213929	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	260762 4927051	592024	1273686	2556105	3689416	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	2407096 2370885	2356458	2429839	2465941	2390227	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1308306 1295768	1358920	1307668	1332089	1324957	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1 Analy Batch No.: 179319

SDG No.:

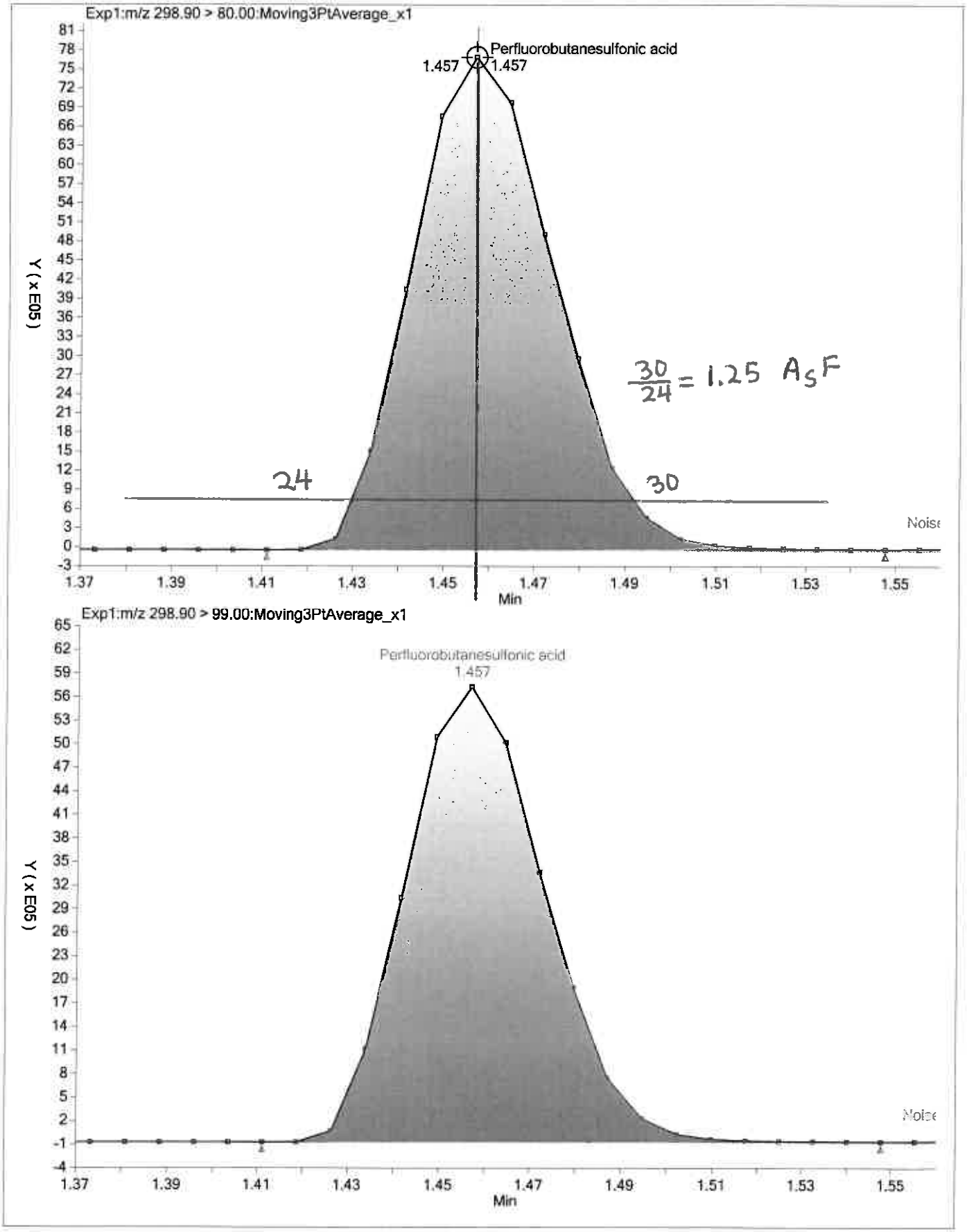
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

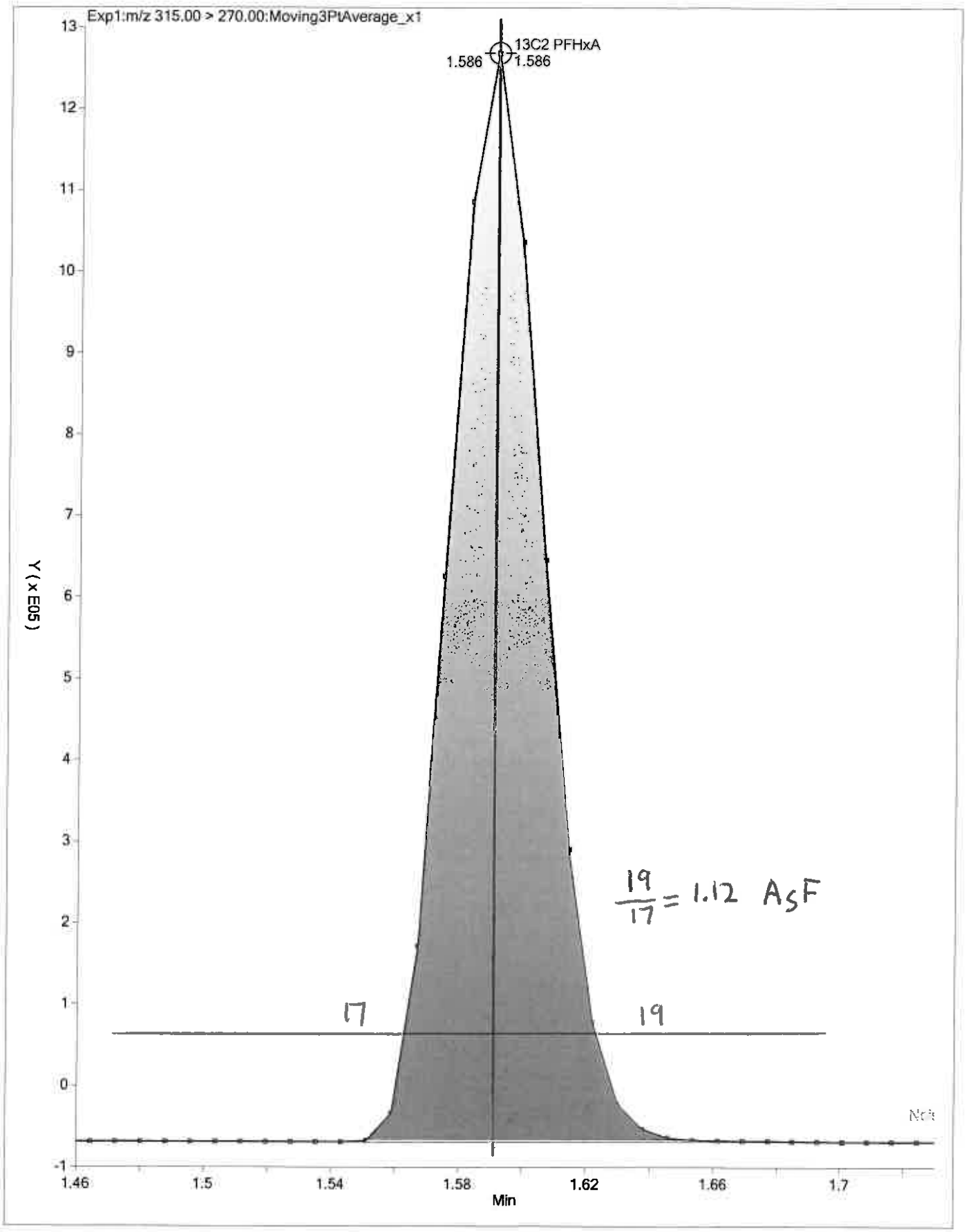
Calibration Start Date: 08/14/2017 12:48 Calibration End Date: 08/14/2017 13:12 Calibration ID: 33517

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-179319/2	2017.08.14_537ICAL_002.d
Level 2	IC 320-179319/3	2017.08.14_537ICAL_003.d
Level 3	IC 320-179319/4	2017.08.14_537ICAL_004.d
Level 4	IC 320-179319/5	2017.08.14_537ICAL_005.d
Level 5	IC 320-179319/6	2017.08.14_537ICAL_006.d
Level 6	IC 320-179319/7	2017.08.14_537ICAL_007.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	3.3	6.6	7.5	-0.4	-5.0	3.4	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-2.5	1.9	2.1	1.8	-0.5	-2.8	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-1.2	2.9	0.9	5.1	-1.2	-6.5	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-2.4	-2.5	-0.9	3.4	2.1	0.4	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-3.4	-1.0	-1.0	2.4	2.7	0.2	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	-3.1	0.1	1.7	0.0	0.4	0.9	50	50	50	50	50	50
13C2 PFHxA	-5.2	-6.2	2.9	2.2	3.4	2.9	30	30	30	30	30	30
13C2 PFDA	-6.2	-1.6	0.7	0.5	4.3	2.3	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.457
1.457
Y (x E05)
24
30
30/24 = 1.25 AsF
Noise
Min
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.457
Y (x E05)
Noise
Min


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.586
1.586
Y (x E05)
Min
1.46
1.5
1.54
1.58
1.62
1.66
1.7
17
19
19/17 = 1.12 ASF

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCVL 320-179319/9 Calibration Date: 08/14/2017 13:22

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.14_537ICAL_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.212		22.5	20.0	12.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9386		2.44	2.22	9.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.568		7.00	6.67	4.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9308		4.57	4.45	2.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9255		8.91	8.89	0.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6283		4.93	4.45	10.9	50.0
13C2 PFHxA	Ave	1.069	1.128		10.5	10.0	5.5	30.0
13C2 PFDA	Ave	0.5877	0.6289		10.7	10.0	7.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: ICV 320-179319/11 Calibration Date: 08/14/2017 13:31

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.14_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9251		104	100	3.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9672		11.3	10.0	13.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.761		23.7	20.1	17.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9396		21.2	20.5	3.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.7333		26.1	20.1	29.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	1.121		23.9	19.7	21.3	30.0
13C2 PFHxA	Ave	1.069	1.124		10.5	10.0	5.1	30.0
13C2 PFDA	Ave	0.5877	0.6385		10.9	10.0	8.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCVL 320-179695/4 Calibration Date: 08/16/2017 09:11

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.15_537A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.167		21.7	20.0	8.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.7567		1.96	2.22	-11.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.526		6.81	6.67	2.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9013		4.42	4.45	-0.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9279		8.93	8.89	0.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.5763		4.52	4.45	1.7	50.0
13C2 PFHxA	Ave	1.069	0.9803		9.17	10.0	-8.3	30.0
13C2 PFDA	Ave	0.5877	0.6186		10.5	10.0	5.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179727/1 Calibration Date: 08/16/2017 12:40

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.062		46.8	45.0	4.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9427		5.51	5.00	10.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.585		15.9	15.0	6.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9145		10.1	10.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9443		20.5	20.0	2.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6560		11.6	10.0	15.8	30.0
13C2 PFHxA	Ave	1.069	1.200		11.2	10.0	12.3	30.0
13C2 PFDA	Ave	0.5877	0.7379		12.6	10.0	25.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179727/13 Calibration Date: 08/16/2017 13:37

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179728/13 Calibration Date: 08/16/2017 13:37

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8102		132	135	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9374		16.4	15.0	9.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.495		45.0	45.0	0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9069		30.0	30.0	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9327		60.6	60.0	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6646		35.2	30.0	17.3	30.0
13C2 PFHxA	Ave	1.069	1.239		11.6	10.0	15.9	30.0
13C2 PFDA	Ave	0.5877	0.6862		11.7	10.0	16.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179728/20 Calibration Date: 08/16/2017 14:10

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179732/20 Calibration Date: 08/16/2017 14:10

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.088		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9565		5.59	5.00	11.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9394		10.4	10.0	3.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9413		20.4	20.0	1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6699		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.2	30.0
13C2 PFDA	Ave	0.5877	0.7030		12.0	10.0	19.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179732/32 Calibration Date: 08/16/2017 15:07

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179733/32 Calibration Date: 08/16/2017 15:07

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8139		133	135	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9443		16.6	15.0	10.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.465		44.1	45.0	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9334		30.9	30.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9492		61.7	60.0	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6570		34.8	30.0	16.0	30.0
13C2 PFHxA	Ave	1.069	1.202		11.2	10.0	12.5	30.0
13C2 PFDA	Ave	0.5877	0.7256		12.3	10.0	23.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179733/38 Calibration Date: 08/16/2017 15:36

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537C_038.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.109		49.1	45.0	9.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9321		5.45	5.00	8.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.555		15.6	15.0	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9246		10.2	10.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6463		11.4	10.0	14.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9188		19.9	20.0	-0.5	30.0
13C2 PFHxA	Ave	1.069	1.211		11.3	10.0	13.3	30.0
13C2 PFDA	Ave	0.5877	0.6799		11.6	10.0	15.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179920/1 Calibration Date: 08/16/2017 19:48

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537D_052.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7972		129	135	-4.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9273		16.3	15.0	8.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.468		44.2	45.0	-1.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9342		30.9	30.0	3.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9166		59.6	60.0	-0.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6502		34.4	30.0	14.8	30.0
13C2 PFHxA	Ave	1.069	1.254		11.7	10.0	17.3	30.0
13C2 PFDA	Ave	0.5877	0.6899		11.7	10.0	17.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Lab Sample ID: CCV 320-179920/13 Calibration Date: 08/16/2017 20:45

Instrument ID: A8_N Calib Start Date: 08/14/2017 12:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/14/2017 13:12

Lab File ID: 2017.08.16_537D_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.049		46.2	45.0	2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8560	0.9052		5.29	5.00	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.494	1.583		15.9	15.0	6.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9068	0.9215		10.2	10.0	1.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9236	0.9376		20.3	20.0	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.5665	0.6800		12.0	10.0	20.0	30.0
13C2 PFHxA	Ave	1.069	1.250		11.7	10.0	16.9	30.0
13C2 PFDA	Ave	0.5877	0.7215		12.3	10.0	22.8	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Start Date: 08/14/2017 12:48

Analysis Batch Number: 179319 End Date: 08/14/2017 13:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-179319/2		08/14/2017 12:48	1	2017.08.14_537I CAL 002.d	GeminiC18 3x100 3(mm)
IC 320-179319/3		08/14/2017 12:53	1	2017.08.14_537I CAL 003.d	GeminiC18 3x100 3(mm)
IC 320-179319/4		08/14/2017 12:58	1	2017.08.14_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-179319/5 ICISAV		08/14/2017 13:03	1	2017.08.14_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-179319/6		08/14/2017 13:07	1	2017.08.14_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-179319/7		08/14/2017 13:12	1	2017.08.14_537I CAL 007.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:17	1		GeminiC18 3x100 3(mm)
CCVL 320-179319/9		08/14/2017 13:22	1	2017.08.14_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/14/2017 13:26	1		GeminiC18 3x100 3(mm)
ICV 320-179319/11		08/14/2017 13:31	1	2017.08.14_537I CAL 011.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 09:11

Analysis Batch Number: 179695 End Date: 08/16/2017 10:13

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-179695/4		08/16/2017 09:11	1	2017.08.15_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-179695/5 CCVIS		08/16/2017 09:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:45	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 09:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:04	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 10:08	1		GeminiC18 3x100 3(mm)
CCV 320-179695/17 CCVIS		08/16/2017 10:13	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 12:40

Analysis Batch Number: 179727 End Date: 08/16/2017 13:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179727/1 CCVIS		08/16/2017 12:40	1	2017.08.16_537C 001.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 12:45	1		GeminiC18 3x100 3(mm)
MB 320-177640/1-A		08/16/2017 12:50	1	2017.08.16_537C _003.d	GeminiC18 3x100 3(mm)
LCS 320-177640/2-A		08/16/2017 12:55	1	2017.08.16_537C 004.d	GeminiC18 3x100 3(mm)
320-30191-1		08/16/2017 12:59	1	2017.08.16_537C 005.d	GeminiC18 3x100 3(mm)
320-30191-2		08/16/2017 13:04	1	2017.08.16_537C _006.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:09	1		GeminiC18 3x100 3(mm)
320-30191-4		08/16/2017 13:14	1	2017.08.16_537C 008.d	GeminiC18 3x100 3(mm)
320-30191-5		08/16/2017 13:18	1	2017.08.16_537C 009.d	GeminiC18 3x100 3(mm)
320-30191-6		08/16/2017 13:23	1	2017.08.16_537C 010.d	GeminiC18 3x100 3(mm)
320-30191-6 MS		08/16/2017 13:28	1	2017.08.16_537C 011.d	GeminiC18 3x100 3(mm)
320-30191-6 MSD		08/16/2017 13:33	1	2017.08.16_537C 012.d	GeminiC18 3x100 3(mm)
CCV 320-179727/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C _013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 13:37

Analysis Batch Number: 179728 End Date: 08/16/2017 14:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179728/13 CCVIS		08/16/2017 13:37	1	2017.08.16_537C 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 13:42	1		GeminiC18 3x100 3(mm)
320-30191-7		08/16/2017 13:47	1	2017.08.16_537C 015.d	GeminiC18 3x100 3(mm)
320-30191-8		08/16/2017 13:52	1	2017.08.16_537C 016.d	GeminiC18 3x100 3(mm)
320-30191-9		08/16/2017 13:56	1	2017.08.16_537C 017.d	GeminiC18 3x100 3(mm)
320-30191-10		08/16/2017 14:01	1	2017.08.16_537C 018.d	GeminiC18 3x100 3(mm)
320-30191-11		08/16/2017 14:06	1	2017.08.16_537C 019.d	GeminiC18 3x100 3(mm)
CCV 320-179728/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 14:10

Analysis Batch Number: 179732 End Date: 08/16/2017 15:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179732/20 CCVIS		08/16/2017 14:10	1	2017.08.16_537C 020.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 14:15	1		GeminiC18 3x100 3(mm)
MB 320-177651/1-A		08/16/2017 14:20	1	2017.08.16_537C 022.d	GeminiC18 3x100 3(mm)
LCS 320-177651/2-A		08/16/2017 14:25	1	2017.08.16_537C 023.d	GeminiC18 3x100 3(mm)
LCSD 320-177651/3-A		08/16/2017 14:29	1	2017.08.16_537C 024.d	GeminiC18 3x100 3(mm)
320-30191-12		08/16/2017 14:34	1	2017.08.16_537C 025.d	GeminiC18 3x100 3(mm)
320-30191-13		08/16/2017 14:39	1	2017.08.16_537C 026.d	GeminiC18 3x100 3(mm)
320-30191-14		08/16/2017 14:44	1	2017.08.16_537C 027.d	GeminiC18 3x100 3(mm)
320-30191-15		08/16/2017 14:48	1	2017.08.16_537C 028.d	GeminiC18 3x100 3(mm)
320-30191-16		08/16/2017 14:53	1	2017.08.16_537C 029.d	GeminiC18 3x100 3(mm)
320-30191-17		08/16/2017 14:58	1	2017.08.16_537C 030.d	GeminiC18 3x100 3(mm)
320-30191-18		08/16/2017 15:03	1	2017.08.16_537C 031.d	GeminiC18 3x100 3(mm)
CCV 320-179732/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 15:07

Analysis Batch Number: 179733 End Date: 08/16/2017 15:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179733/32 CCVIS		08/16/2017 15:07	1	2017.08.16_537C 032.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 15:12	1		GeminiC18 3x100 3(mm)
320-30191-19		08/16/2017 15:17	1	2017.08.16_537C 034.d	GeminiC18 3x100 3(mm)
320-30191-20		08/16/2017 15:22	1	2017.08.16_537C 035.d	GeminiC18 3x100 3(mm)
320-30191-21		08/16/2017 15:26	1	2017.08.16_537C 036.d	GeminiC18 3x100 3(mm)
320-30191-22		08/16/2017 15:31	1	2017.08.16_537C 037.d	GeminiC18 3x100 3(mm)
CCV 320-179733/38 CCVIS		08/16/2017 15:36	1	2017.08.16_537C 038.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Instrument ID: A8_N Start Date: 08/16/2017 19:48

Analysis Batch Number: 179920 End Date: 08/16/2017 20:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-179920/1 CCVIS		08/16/2017 19:48	1	2017.08.16_537D_052.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:53	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 19:57	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:07	1		GeminiC18 3x100 3(mm)
320-30191-3		08/16/2017 20:12	1	2017.08.16_537D_057.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:40	1		GeminiC18 3x100 3(mm)
CCV 320-179920/13 CCVIS		08/16/2017 20:45	1	2017.08.16_537D_064.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/16/2017 20:50	1		GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00046
MB 320-177640/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-177640/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T	322.10 g	29.24 g	292.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T	313.75 g	28.15 g	285.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T	305.55 g	28.18 g	277.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-4	NAWC-072617-RW-341	537, 537	T	306.55 g	28.07 g	278.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T	312.18 g	27.56 g	284.6 mL	1.00 mL	7 SU	100 uL
320-30191-A-6	NAWC-072617-RW-349	537, 537	T	316.97 g	28.12 g	288.9 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	322.23 g	28.25 g	294 mL	1.00 mL	7 SU	100 uL
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	315.87 g	28.12 g	287.8 mL	1.00 mL	7 SU	100 uL
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T	314.48 g	27.94 g	286.5 mL	1.00 mL	7 SU	100 uL
320-30191-A-8	NAWC-072617-RW-343	537, 537	T	311.99 g	28.33 g	283.7 mL	1.00 mL	7 SU	100 uL
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T	316.09 g	27.71 g	288.4 mL	1.00 mL	7 SU	100 uL
320-30191-A-10	NAWC-072617-RW-345	537, 537	T	317.11 g	28.09 g	289 mL	1.00 mL	7 SU	100 uL
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T	312.72 g	27.56 g	285.2 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
MB 320-177640/1		537, 537			100 uL	CH ND			
LCS 320-177640/2		537, 537		100 uL	100 uL	CH ND			
320-30191-A-1	NAWC-072617-RW-332A	537, 537	T		100 uL	CH ND			
320-30191-A-2	NAWC-072617-RW-332B	537, 537	T		100 uL	CH ND			
320-30191-A-3	NAWC-072617-FRB-332A	537, 537	T		100 uL	CH ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00046	AnalysisComment			
320-30191-A-4	NAWC-072617-RW-341	537, 537	T		100 uL	CH ND			
320-30191-A-5	NAWC-072617-FRB-341	537, 537	T		100 uL	CH ND			
320-30191-A-6	NAWC-072617-RW-349	537, 537	T		100 uL	CH ND			
320-30191-A-6 MS	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-6 MSD	NAWC-072617-RW-349	537, 537	T	100 uL	100 uL	CH ND			
320-30191-A-7	NAWC-072617-FRB-349	537, 537	T		100 uL	CH ND			
320-30191-A-8	NAWC-072617-RW-343	537, 537	T		100 uL	CH ND			
320-30191-A-9	NAWC-072617-FRB-343	537, 537	T		100 uL	CH ND			
320-30191-A-10	NAWC-072617-RW-345	537, 537	T		100 uL	CH ND			
320-30191-A-11	NAWC-072617-FRB-345	537, 537	T		100 uL	CH ND			

Batch Notes	
Batch Comment	IS: 1002798
Manifold ID	7,1
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Batch Number: 177640 Batch Start Date: 08/03/17 17:23 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/09/17 16:38

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LC537-HSP 00017	LC537-IS 00046
MB 320-177651/1		537, 537				250.00 mL	1.00 mL		100 uL
LCS 320-177651/2		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
LCSD 320-177651/3		537, 537				250.00 mL	1.00 mL	100 uL	100 uL
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	314.45 g	28.13 g	286.3 mL	1.00 mL		100 uL
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	314.60 g	28.18 g	286.4 mL	1.00 mL		100 uL
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	307.22 g	27.62 g	279.6 mL	1.00 mL		100 uL
320-30191-A-15	NAWC-072617-RW-117	537, 537	T	320.66 g	28.08 g	292.6 mL	1.00 mL		100 uL
320-30191-A-16	NAWC-072617-FRB-117	537, 537	T	306.45 g	27.57 g	278.9 mL	1.00 mL		100 uL
320-30191-A-17	NAWC-072617-DUP04	537, 537	T	307.09 g	28.14 g	279 mL	1.00 mL		100 uL
320-30191-A-18	WGNA-072617-RW-4844	537, 537	T	327.07 g	28.40 g	298.7 mL	1.00 mL		100 uL
320-30191-A-19	WGNA-072617-FRB-4844	537, 537	T	303.88 g	27.84 g	276 mL	1.00 mL		100 uL
320-30191-A-20	WGNA-072617-RW-3103	537, 537	T	305.20 g	28.60 g	276.6 mL	1.00 mL		100 uL
320-30191-A-21	WGNA-072617-FRB-3103	537, 537	T	312.89 g	27.81 g	285.1 mL	1.00 mL		100 uL
320-30191-A-22	WGNA-072617-DUP03	537, 537	T	312.39 g	27.67 g	284.7 mL	1.00 mL		100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046
MB 320-177651/1		537, 537		100 uL
LCS 320-177651/2		537, 537		100 uL
LCSD 320-177651/3		537, 537		100 uL
320-30191-A-12	NAWC-072617-DUP03	537, 537	T	100 uL
320-30191-A-13	NAWC-072617-RW-342	537, 537	T	100 uL
320-30191-A-14	NAWC-072617-RW-332B	537, 537	T	100 uL

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30191-1

SDG No.:

Batch Number: 177651 Batch Start Date: 08/03/17 17:40 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/07/17 21:59

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00046					
320-30191-A-15	NAWC-072617-RW-117	537, 537	T	100 uL					
320-30191-A-16	NAWC-072617-FRB-117	537, 537	T	100 uL					
320-30191-A-17	NAWC-072617-DUP04	537, 537	T	100 uL					
320-30191-A-18	WGNA-072617-RW-4844	537, 537	T	100 uL					
320-30191-A-19	WGNA-072617-FRB-4844	537, 537	T	100 uL					
320-30191-A-20	WGNA-072617-RW-3103	537, 537	T	100 uL					
320-30191-A-21	WGNA-072617-FRB-3103	537, 537	T	100 uL					
320-30191-A-22	WGNA-072617-DUP03	537, 537	T	100 uL					

Batch Notes	
Batch Comment	IS:1002798
Manifold ID	1,4
Methanol ID	988835
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
SPE Cartridge ID	6357081-02
Trizma ID	SLBR4303V
Reagent Water ID	8/03/17

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

84

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End: 8/9/2017 4:38:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-177640/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A		
				1.00 mL								
2	LCS-320-177640/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	RI case 2-12	
				1.00 mL								
3	320-30191-A-1 (537_DOD5)	N/A (320-30191-1)	322.10 g	292.9 mL	7			8/2/17	16_Days	4		
			29.24 g	1.00 mL								
4	320-30191-A-2 (537_DOD5)	N/A (320-30191-1)	313.75 g	285.6 mL	7			8/2/17	16_Days	4		
			28.15 g	1.00 mL								
5	320-30191-A-3 (537_DOD5)	N/A (320-30191-1)	305.55 g	277.4 mL	7			8/2/17	16_Days	4	RI case 2-15	
			28.18 g	1.00 mL								
6	320-30191-A-4 (537_DOD5)	N/A (320-30191-1)	306.55 g	278.5 mL	7			8/2/17	16_Days	4		
			28.07 g	1.00 mL								
7	320-30191-A-5 (537_DOD5)	N/A (320-30191-1)	312.18 g	284.6 mL	7			8/2/17	16_Days	4		
			27.56 g	1.00 mL								
8	320-30191-A-6 (537_DOD5)	N/A (320-30191-1)	316.97 g	288.9 mL	7			8/2/17	16_Days	4	RI case 2-18	
			28.12 g	1.00 mL								
9	320-30191-A-6-MS (537_DOD5)	N/A (320-30191-1)	322.23 g	294 mL	7			8/2/17	16_Days	4	RI case 2-19	
			28.25 g	1.00 mL								
10	320-30191-A-6-MSD (537_DOD5)	N/A (320-30191-1)	315.87 g	287.8 mL	7			8/2/17	16_Days	4	RI case 2-20	
			28.12 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-30191-A-7 (537_DOD5)	N/A (320-30191-1)	314.48 g 27.94 g	286.5 mL 1.00 mL				8/2/17	16_Days	4	
12	320-30191-A-8 (537_DOD5)	N/A (320-30191-1)	311.99 g 28.33 g	283.7 mL 1.00 mL				8/2/17	16_Days	4	
13	320-30191-A-9 (537_DOD5)	N/A (320-30191-1)	316.09 g 27.71 g	288.4 mL 1.00 mL				8/2/17	16_Days	4	
14	320-30191-A-10 (537_DOD5)	N/A (320-30191-1)	317.11 g 28.09 g	289 mL 1.00 mL				8/2/17	16_Days	4	RI curve 2-24
15	320-30191-A-11 (537_DOD5)	N/A (320-30191-1)	312.72 g 27.56 g	285.2 mL 1.00 mL				8/2/17	16_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177640

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:23:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID	7,1
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-02
Methanol ID	988835
Reagent Water ID	8/03/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TH
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TH
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TH
Batch Comment	IS: 1002798

Comments

8L

Aqueous Extraction Analysis Sheet

AB 8/16/17

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End: 8/7/2017 9:59:00PM

8/24

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB-320-177651/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		MB 320-177651/1-A
				1.00 mL								
2	LCS-320-177651/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCS 320-177651/2-A
				1.00 mL								
3	LCSD-320-177651/3 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCSD 320-177651/3-A
				1.00 mL								
4	320-30191-A-12 (537_DOD5)	N/A (320-30191-1)	314.45 g	286.3 mL				8/2/17	16_Days	4		320-30191-A-12-A
			28.13 g	1.00 mL								
5	320-30191-A-13 (537_DOD5)	N/A (320-30191-1)	314.60 g	286.4 mL				8/2/17	16_Days	4		320-30191-A-13-A
			28.18 g	1.00 mL								
6	320-30191-A-14 (537_DOD5)	N/A (320-30191-1)	307.22 g	279.6 mL				8/2/17	16_Days	4		320-30191-A-14-A
			27.62 g	1.00 mL								
7	320-30191-A-15 (537_DOD5)	N/A (320-30191-1)	320.66 g	292.6 mL				8/2/17	16_Days	4		320-30191-A-15-A
			28.08 g	1.00 mL								
8	320-30191-A-16 (537_DOD5)	N/A (320-30191-1)	306.45 g	278.9 mL				8/2/17	16_Days	4		320-30191-A-16-A
			27.57 g	1.00 mL								
9	320-30191-A-17 (537_DOD5)	N/A (320-30191-1)	307.09 g	279 mL				8/2/17	16_Days	4		320-30191-A-17-A
			28.14 g	1.00 mL								
10	320-30191-A-18 (537_DOD5)	N/A (320-30191-1)	327.07 g	298.7 mL				8/2/17	16_Days	4	RI	320-30191-A-18-A
			28.40 g	1.00 mL								

Case 2-35

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-30191-A-19 (537_DOD5)	N/A (320-30191-1)	303.88 g 27.84 g	276 mL 1.00 mL				8/2/17	16_Days	4	RI Cube 2-36
12	320-30191-A-20 (537_DOD5)	N/A (320-30191-1)	305.20 g 28.60 g	276.6 mL 1.00 mL				8/2/17	16_Days	4	
13	320-30191-A-21 (537_DOD5)	N/A (320-30191-1)	312.89 g 27.81 g	285.1 mL 1.00 mL				8/2/17	16_Days	4	
14	320-30191-A-22 (537_DOD5)	N/A (320-30191-1)	312.39 g 27.67 g	284.7 mL 1.00 mL				8/2/17	16_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-177651

Analyst: Reed, Jonathan E

Batch Open: 8/3/2017 5:40:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID	1,4
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-02
Methanol ID	988835
Reagent Water ID	8/03/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TN
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Batch Comment	IS: 100298

Comments

PFAS Calibration Calculations:

Initial Calibration 8/14/2017
Instrument A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3	938005	6074703	28.7	1.47720	1.4757
6.67	2166866	6060332	28.7	1.53848	1.5378
15	4626981	5865253	28.7	1.50939	1.508
30	9496666	5780409	28.7	1.57171	1.5703
45	13083092	5649456	28.7	1.47698	1.4756
60	16584369	5673459	28.7	1.39824	1.397
			Average	1.49533	1.4941
			Standard Deviation	0.0600	
			RSD	0.0401	
			%RSD	4.01090	4

Continuing Calibration 08/16/2017 @ 12:40
A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
15	4775829	5758922	28.7	1.5867	6.1985394	1.585	6.1

Wallops Island
SDG 320-30191-1

Sample Identification	NAWC-072617-RW-349	
Compound	Perfluorohexanesulfonic acid	
Compound Area	664619	
Internal Standard Amount (ng)	28.7	
Dilution Factor	1	
Internal Standard Area	6164558	
Average RRF	1.4941	
Sample Volume(ml)	288.9	
Volume Extract (ml)	1	
Injection Volume (µl)	1	
µl to ml	1000.00	
Concentration	7.17	ng/L

Preliminary Data - For Official Use Only

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